Communicable Diseases Watch

Communicable Diseases Watch (CDW) is an online bi-weekly on communicable diseases published by the Centre for Health Protection (CHP). The publication aims at providing healthcare professionals with up-to-date infectious disease news and knowledge relevant to Hong Kong. It is also an indication of CHP's commitment to responsive risk communication in addressing the growing community interest on infectious diseases.

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CDW Website

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Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection
衞生署 Department of Health

FEATURE IN FOCUS

Updated Situation of Seasonal Influenza

Reported by Miss Vera Chow, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Recent influenza surveillance data of the Centre for Health Protection (CHP) of the Department of Health showed that the overall influenza activity in Hong Kong has significantly increased since late December of 2014, which indicates the arrival of the winter influenza season.

Among the respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) of CHP, the percentage tested positive for seasonal influenza viruses rose from 3.46% in the week ending December 20, 2014 to 9.22% and 14.40% in those ending December 27, 2014 and January 3, 2015 respectively, as compared to 1.76% in that ending December 6, 2014 (Figure 1). Over 90% of the circulating influenza viruses among positive influenza virus detections in the last two weeks (December 21, 2014 and January 3, 2015) were influenza A(H3N2).

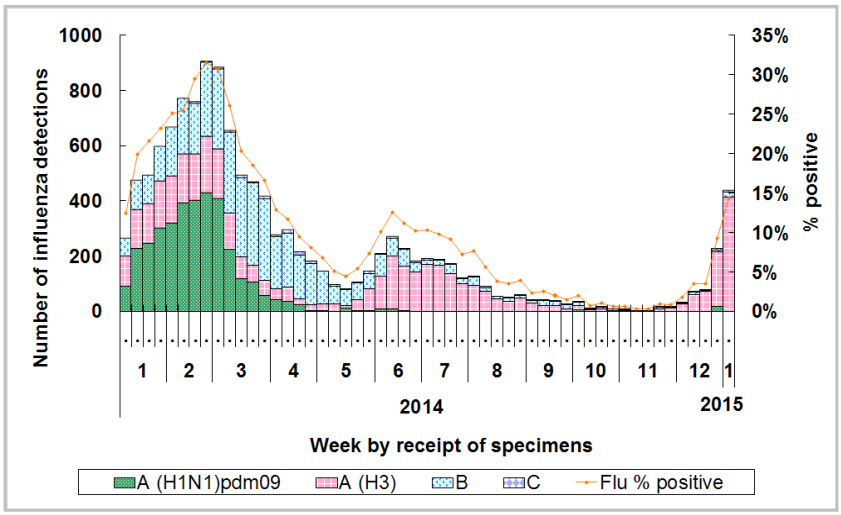


Figure 1 - Weekly number of influenza detections by PHLSB and percentage positive among respiratory specimens, 2014-2015.

Moreover, there has been an increase in the number of institutional influenza-like illness (ILI) outbreaks reported to CHP. It increased from four outbreaks in the week ending December 27, 2014 to eight outbreaks in the following week. In the first three days of the current week, eight outbreaks were recorded by CHP. The main places of occurrence of the ILI outbreaks recorded between December 21, 2014 and January 6, 2015 included residential care home for the elderly (11, 55%), hospital (4, 20%), residential care home for the disabled (3, 15%), kindergarten (1, 5%) and residential home (1, 5%). It is foreseen that the number of ILI outbreaks in schools will increase after the Christmas and New Year holiday.

In view of increasing influenza activity, CHP has collaborated with the Hospital Authority and private hospitals to reactivate the enhanced surveillance system for influenza-associated intensive care unit (ICU) admissions and deaths among adult patients aged 18 years or above from January 2, 2015 onward, so as to timely monitor the severity of influenza infection during this influenza season. Separately, an ongoing reporting system is in place for monitoring influenza-associated severe complications/ deaths among paediatric patients aged below 18 years. From January 2 to 7, 2015, 15 adult cases of influenza-associated ICU admission/death (including two deaths) and one paediatric case of influenza-associated severe complication were recorded. All of the above adult and paediatric severe cases were confirmed to have influenza A(H3N2) infection.

Globally, a sustained increase in influenza activity has also been noted worldwide including Beijing, Japan, the United States of America (US), Canada and the United Kingdom (UK) since late November 2014. Similar to Hong Kong, influenza A(H3N2) has been the major circulating virus in these places. Data from Japan, US, Canada, UK and Europe showed that all the seasonal influenza viruses detected in this season remained sensitive to the antivirals oseltamivir (Tamiflu) and zanamivir (Relenza).

In Beijing, the number of cases of ILI has been increasing since the week ending November 16 and exceeded the threshold in the following two weeks. Laboratory surveillance showed that the percentage positive for influenza viruses increased from 10.95% in the week ending November 16 to 26.01% and 24.29% in the following two weeks.

The influenza season in Japan started earlier than usual. The rate of ILI reported in sentinel sites rose from 1.90 in the week ending November 30 to 15.17 in the week ending December 21, exceeding the level of 1.00 which indicates the start of the season in early December. The number of positive influenza virus detections in public health institutes increased from 91 between November 17 and 23 to 163 between December 1 and 7.

Influenza activity in the US has been on the rise since late November. Out-patient surveillance increased from 2.5% of patient visits due to ILI in the week ending December 6 to 5.9% in the week ending December 27, which were above the national baseline of 2.0%. The percentage of specimens tested positive for influenza viruses under laboratory surveillance increased from 14.5% in the week ending November 22 to 30.4% in the week ending December 27.

Canada recorded a continual increase in influenza activity as well. Laboratory surveillance revealed that the percentage positive for influenza viruses significantly increased from 8.6% in the week ending November 22 to 29.1% in the week ending December 20. The national ILI consultation rate rose from 29.1 per 1 000 consultations in the week ending November 29 to 44.3 in the next week. Laboratory-confirmed outbreaks of influenza A continued to increase, particularly in long-term care facilities (LTCFs), as 125 outbreaks were newly reported in the week ending December 20 of which 94 (75%) involved LTCFs, rising from 72 (including 57 in LTCFs, 79%) in the preceding week. In both laboratory detections and hospitalizations, the majority of cases were seniors aged 65 and above.

Influenza activity in the UK also increased in late December. Laboratory surveillance in England showed that the percentage of specimens that tested positive for influenza viruses rose to 30.8% in the week ending December 28, exceeding the threshold level of 6%.

The influenza season in Europe appeared to be starting during the first week of 2015. The proportion of influenza virus-positive sentinel specimens increased to 13% in the week ending December 28, exceeding the threshold of 10%, as compared to 9% in the previous week.

In the current season, laboratory analyses in the US and Canada revealed that some H3N2 viruses detected were different from the H3N2 virus in the influenza vaccine recommended by the World Health Organization for 2014/15 for the Northern Hemisphere (i.e. an A/Texas/50/2012 (H3N2)-like virus), but most of the influenza A (H1N1)pdm09 and influenza B viruses identified were the same as those covered by the vaccine. According to the US Centers for Disease Control and Prevention (CDC), 183 (68.3%) of the 268 viruses tested showed either reduced titres with antiserum produced against A/Texas/50/2012 or belonged to a genetic group that typically shows reduced titres to A/Texas/50/2012 (as of December 27, 2014). Among them, most were antigenically similar to A/Switzerland/9715293/2013, which is the A/H3N2 component selected for the 2015 Southern Hemisphere influenza vaccine. In Canada, 31 of the 37 influenza A (H3N2) viruses characterised by the National Microbiology Laboratory were antigenically similar to the A/Switzerland/9715293/2013 (as of December 20, 2014).

According to the US CDC, the A/Switzerland/9715293/2013 strain is related to, but antigenically and genetically distinguishable from, the A/Texas/50/2012 vaccine strain. Nonetheless, influenza vaccine remains the single best way to prevent influenza. It protects against the strains covered in the vaccine and may have some effectiveness against a drifted strain, since antibodies induced by vaccination with one strain is expected to have a certain degree of cross-protection against different but related strains of influenza viruses.

The CHP will continue to closely monitor the influenza activity. As the influenza activity will continue to increase in the coming weeks, members of the public are urged to get vaccinated as soon as possible for personal protection before the arrival of the peak, except those with known contraindications. Influenza vaccination remains one of the effective and safe means to prevent the influenza infection, its complications and associated hospitalisation and death. The immune response takes about two to four weeks to develop. Children (aged between six months and less than 6 years, or attending a kindergarten or child care centre in Hong Kong) and elderly (aged 65 years or above), who are eligible, can be subsidised for seasonal influenza vaccination from enrolled private doctors participating in the Government's vaccination subsidy schemes starting from October 6, 2014. Besides, the Government Vaccination Programme 2014/15 provides free seasonal influenza vaccination to eligible people from November 3, 2014. Further information can be obtained from the following CHP's webpages:

- The influenza page (www.chp.gov.hk/en/view_content/14843.html)
- The vaccination schemes page (www.chp.gov.hk/en/view_content/17980.html) and the list of participating doctors (www.chp.gov.hk/en/view_content/34664.html)

Cases of New Delhi metallo-β-lactamase (NDM) Carbapenemase-producing Enterobacteriaceae in Hong Kong in 2014

Reported by Ms Sheree Chong, Scientific Officer, CD Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

New Delhi metallo-β-lactamase (NDM) is an enzyme which can inactivate carbapenems (e.g. imipenem, meropenem) and other beta-lactams (e.g. penicillins, cephalosporins). The gene encoding for the enzyme is mainly found in Gram negative bacteria belonging to the family Enterobacteriaceae (e.g. *Escherichia coli, Klebsiella spp*., etc.). These enzymes are usually encoded on plasmids that harbour multiple resistance determinants and are transmitted easily from one Enterobacteriaceae to another.

When found in clinical culture, NDM-producing Enterobacteriaceae can represent a colonisation or infection. Colonising NDM-producing strains can go on to cause infections if they gain access to body sites that are usually sterile, such as the urinary bladder, the lungs, or the bloodstream. Infections are usually associated with symptoms which vary based on the site that is infected. The level of risk depends on which part of the body is affected by the infection, and the general health of the patient. NDM-producing Enterobacteriaceae can spread from person to person through contact with infected or colonised people, particularly their wounds or stool. These bacteria can also enter the body through medical devices, such as ventilators or urinary catheters. Infections caused by NDM producers include urinary tract infections, peritonitis, bloodstream infections, pulmonary infections, device-associated infections and soft tissue infections.

NDM-producing Enterobacteriaceae was first reported in a Swedish patient of Indian origin, who was hospitalised in New Delhi, India, due to *K. pneumoniae* urinary tract infection in 2008[1]. The Indian subcontinent, the Balkans regions, and the Middle East are considered to be the main reservoirs of NDM producers[2]. However, NDM-related cases have now been reported worldwide. Many early reports of NDM-producing isolates identified overseas were found in patients who had exposure to healthcare in India and Pakistan[3]. Both hospital- and community-acquired infections have been reported. The first fatal case was identified in 2010 in a patient who received medical treatment in Pakistan before being repatriated to Belgium[4].

In Hong Kong, as part of the infection control strategies to prevent the spread of carbapenem resistant Enterobacteriaceae (CRE), local public hospitals collect rectal swab or stool sample from patients for screening of infected individuals and carriers: from (1) patients who had been hospitalized as in-patient outside Hong Kong in the past six months, and (2) patients staying in the same cubicle with any laboratory-confirmed CRE cases for two days or more and are still in the hospital. Any positive isolates of CRE will be sent to the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP) of the Department of Health for confirmation and typing.

The first NDM detection was recorded in Hong Kong by PHLSB in 2009. In 2014, a total of 45 patients were found to have positive NDM detections which was much higher than the range of one to 19 patients recorded annually between 2009 and 2013 (Figure 1). Among the 45 patients, 28 (62%) were male, and the median age was 58 years (ranged from four months to 95 years). A diverse NDM genotypes were recorded, which included NDM-1 (23 cases), NDM-4 (3 cases), NDM-5 (17 cases), and NDM-7 (2 cases).

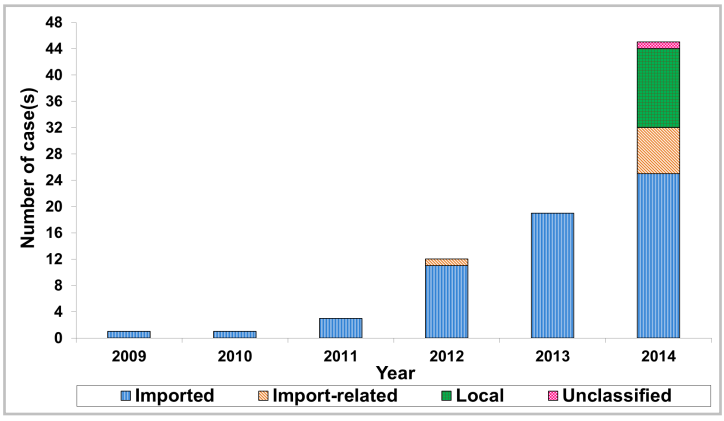


Figure 1 - NDM cases by year and importation status in Hong Kong (2009 to 2014).

Twenty-five patients (56%) recorded in 2014 had previous history of admission to hospitals or attendance at healthcare facilities during their stay in Mainland China (19 cases), India (4 cases), Nepal (1 case) and Vietnam (1 case), and were classified as imported cases. Except for one case who had signs of NDM infection (wound infection), the other twenty-four cases were all asymptomatic carriers. There were seven import-related cases (16%) identified in the course of contact tracing for a cluster of patients with carbapenemase-producing Enterobacteriaceae. The index patient of this outbreak was an Indian male who had history of cellulitis with surgical debridement done in India. Rectal swabs for screening of these seven import-related cases were tested positive for NDM-1.

Moreover, 12 patients were detected to have NDM incidentally when presented to local healthcare facilities due to accidents or their underlying condition, and they were classified as local cases. Four of these patients had signs of NDM infection (three had urinary tract infections and one had bloodstream infection) while the other eight patients were asymptomatic carriers. Five of them had history of travel (one day to three weeks) to places including Cambodia, Canada, Macau, Mainland China, Singapore, and Taiwan before symptoms onset but had no history of hospital admission or attendance at healthcare facilities during travel while all others had no history of travel outside Hong Kong in the past six months. There was one unclassified case that had history of travel to India (12 days), but had no history of hospital admission while staying in there.

All five cases who had signs of infection had recovered uneventfully, while six asymptomatic carriers passed away due to their underlying illnesses unrelated to NDM. Except for the above mentioned cluster of seven import-related cases, all other cases were sporadic detections without further spread identified after contact tracing and enhancement of infection control measures.

As a significant proportion of these cases recorded did not have history of hospital admission outside Hong Kong, universal infection control measures are of paramount importance to prevent spread of these potentially dangerous organisms. Individual reports of NDM will not be published in future, but ongoing statistics on detections of NDM-producing Enterobacteriaceae by CHP are still available at CHP's website under laboratory surveillance on multi-antimicrobial resistant bacteria http://www.chp.gov.hk/en/epidemiology/29/97/119/564.html.

[1] Yong D, Toleman MA, Giske CG, *et al*. Characterization of a new metallo-b-lactamase gene, *bla*$_{NDM-1}$, and a novel erythromycin esterase gene carried on a unique genetic structure in *Klebsiella pneumoniae* sequence type 14 from India. *Antimicrob Agents Chemother* 2009; 53:5046–54.

[2] Dortet L, Poirel L & Nordmann P. Worldwide dissemination of the NDM-type carbapenemases in gram-negative bacteria. *Biomed Res Int* 2014; 249856.

[3] Kumarasamy KK, Toleman MA, Walsh TR, *et al*. Emergence of a new antibiotic resistance mechanism in India, Pakistan, and the UK: a molecular, biological, and epidemiological study. *The Lancet Infectious Diseases* 2010; 10 (9);597 – 602.

[4] Bogaerts P, Bouchahrouf W, Rezende de Castro R, *et al*. Emergence of NDM-1-producing Enterobacteriaceae in Belgium. *Antimicrob Agents Chemother* 2011; 55:3036–3038.

NEWS IN BRIEF

A confirmed case of necrotising fasciitis caused by Group A *Streptococcus*

On December 10, 2014, the Centre for Health Protection (CHP) recorded a case of scarlet fever affecting a 4-year-old girl. She was born in Hong Kong and had unremarkable past health. She presented with fever, sore throat, skin rash, left axillary pain and left thumb painful swelling since December 7, 2014. She was seen at the out-patient clinic of a private hospital on December 9 and was diagnosed to have scarlet fever and left axillary lymphadenitis. She was referred to the Accident and Emergency Department of a public hospital and was admitted for further management on the same day. On December 11, she was noted to have decreased left upper limb movement and persistent fever. She was diagnosed to have necrotising fasciitis involving left shoulder and left chest wall requiring surgical debridement operations. Wound swab taken from left axilla and left thumb pustule both yielded *Streptococcus pyogenes*. She required post-operative intensive care and her condition was all along stable. She was discharged on December 26. She had no recent travel history and her home contacts were asymptomatic. The kindergarten she attended had no recent outbreak.

Field Epidemiology Training Courses

The Hong Kong Field Epidemiology Training Programme of CHP organised two training courses. A one-day course on "Introduction to Field Epidemiology" on December 15, 2014 provided background on field epidemiology to participants. Another five-day course during December 16 - 20, 2014 on "Vaccinology" equipped participants with scientific concepts, skills and tools in conducting surveillance and studies on effectiveness, impact and safety of vaccines. There were presentations by facilitators and interactive practical case studies. The training courses were well-received with very positive feedbacks.

CA-MRSA cases in December 2014

In December, CHP recorded a total of 57 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 40 males and 17 females with ages ranging from 2 years to 79 years (median = 39 years). Among them, there were 34 Chinese, 5 Filipinos, 3 British, 2 Indian, 2 Japanese, 1 African, 1 American, 1 Pakistani, 1 South African, 1 Swiss and 6 of unknown ethnicity. Isolates of all these 57 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (41) or V (16).

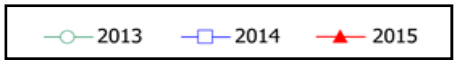
All cases presented with skin or soft tissue infections. Three clusters, with each affecting two persons, were identified during this reporting period. Two clusters occurred in households and one occurred in a residential care home for the elderly. Screening and decolonisation were provided to the close contacts of these six cases. No cases involving healthcare worker were reported in December.

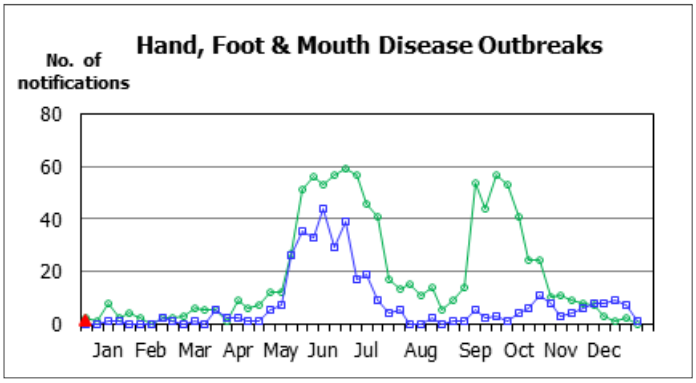
(Note: The number of cases in November 2014 was revised to 74).

Laboratory surveillance on multi-antimicrobial resistant bacteria (November 2014)

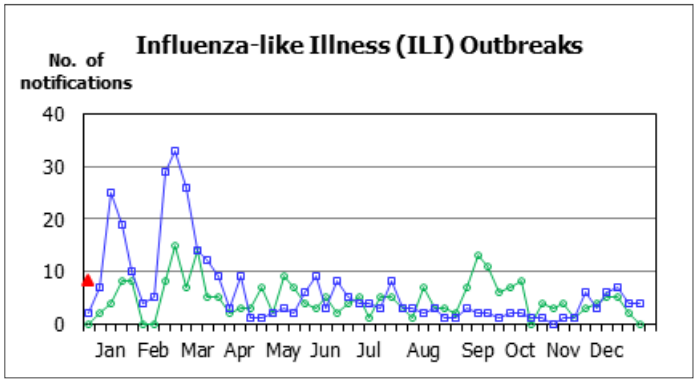
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website:http://www.chp.gov.hk/files/pdf/mdr_lab_surveillance_2014nov.pdf

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 52 - WEEK 1)

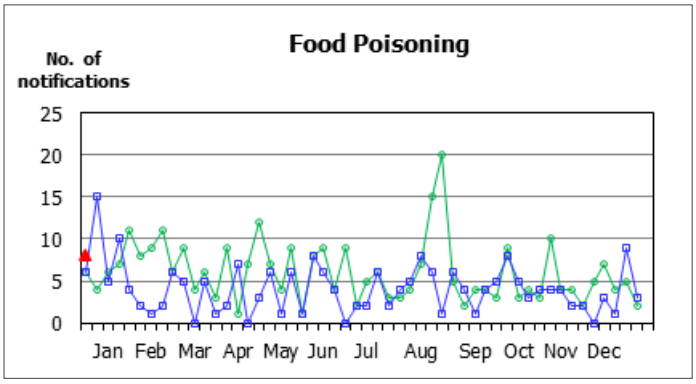




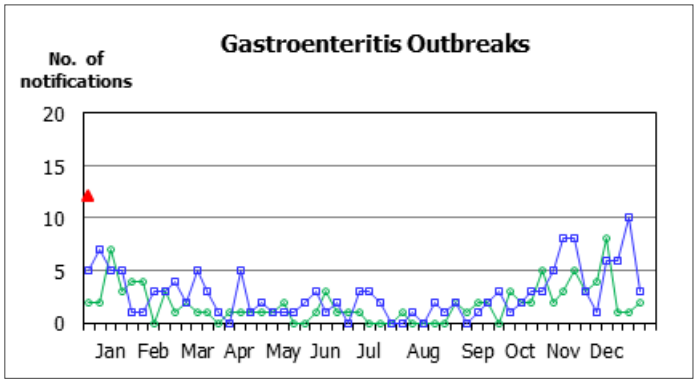
Week 50	9	Week 51	7
Week 52	**1**	**Week 1**	**1**



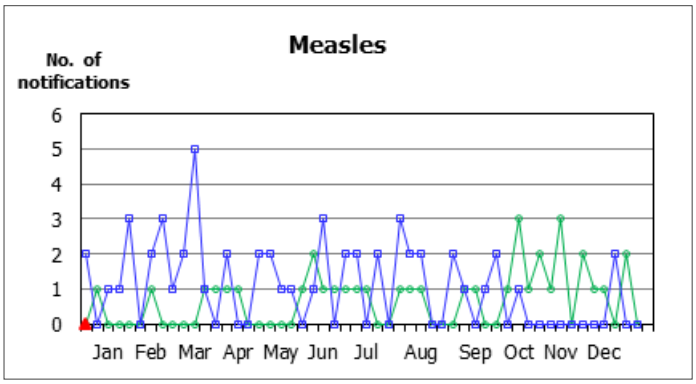
Week 50	7	Week 51	4
Week 52	**4**	**Week 1**	**8**



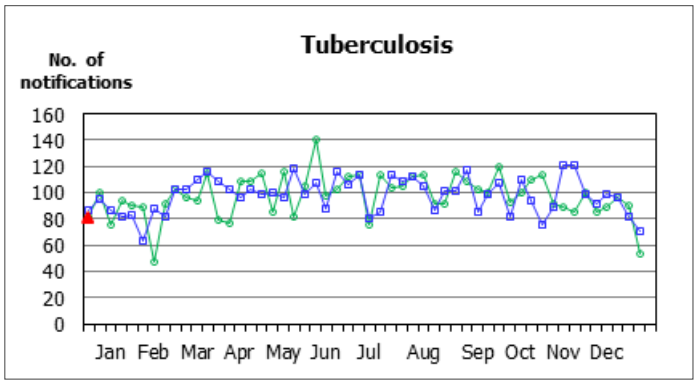
Week 50	1	Week 51	9
Week 52	**3**	**Week 1**	**8**



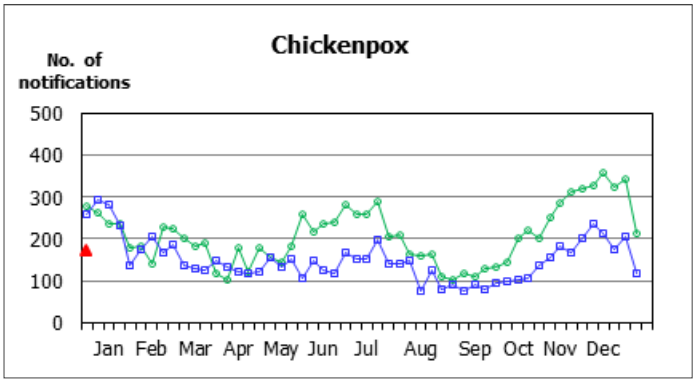
Week 50	6	Week 51	10
Week 52	**3**	**Week 1**	**12**



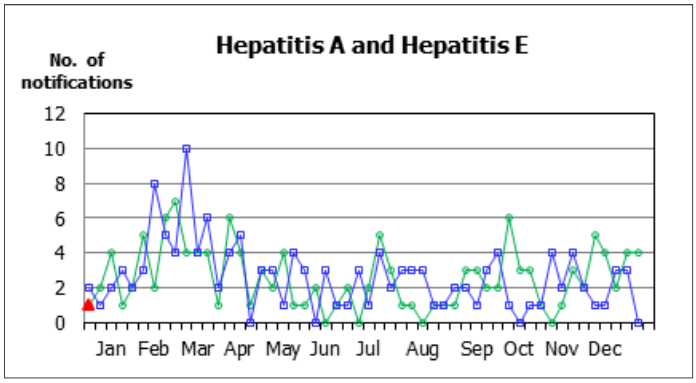
Week 50	2	Week 51	0
Week 52	**0**	**Week 1**	**0**



Week 50	97	Week 51	82
Week 52	**71**	**Week 1**	**80**



Week 50	176	Week 51	205
Week 52	**117**	**Week 1**	**170**



Week 50	3	Week 51	3
Week 52	**0**	**Week 1**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until January 3, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jan 4- Jan 17, 2015 WEEKS 2-3 VOL 12 ISSUE N^{0} 2

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Review of human rabies in Hong Kong

Reported by Dr Conan Tsang, Medical and Health Officer, Dr Gary Ying, Medical and Health Officer, and Dr Billy Ho, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Rabies is a zoonotic viral disease that can cause fatal encephalitis in human. Human get infected most commonly through bites or scratches of infected animals. Dogs are the main host and transmitter of rabies and they are the main source of human infections in Asia and Africa. Bats are also a common source of human rabies death cases in the Americas. Rarely, human deaths have been reported following exposure to infected foxes, raccoons, skunks, jackals and other wild carnivore species.

When humans are bitten, scratched or licked over their broken skin by an infected animal, the virus in the saliva of the infected animal enters the human body through the wound and travels through nerves to the brain. The incubation period for human patients, which depends on the amount of virus in the inoculum and site of inoculation, is one to three months on average, but can range from less than one week to over one year.

The symptoms at early onset are usually non-specific and similar to many other febrile illnesses such as fever, headache and malaise. There may be discomfort or paraesthesia at the site of exposure. As the disease progresses, rabies can present as either hyperactivity or paralysis. Those with hyperactivity present with excited behaviour, spasms, hypersalivation, hydrophobia and sometimes aerophobia, which is inevitably followed by cardiorespiratory arrest. For those with paralytic form, the course of illness is usually less dramatic and longer. Patients usually present with muscle weakness and paralysis, and progress to coma and death. Thorough cleansing and immunisation within a few hours after exposure can help to prevent the onset of the disease. However, rabies is almost always fatal once symptoms appear.

According to the World Health Organization, the estimated human mortality from endemic canine rabies is around 55 000 deaths per year, although under-reporting of cases is common worldwide. Vast majority of these deaths occur in rural areas of Asia and Africa. Rabies in dogs is the main source of human infections globally. Human rabies is currently a very rare disease in industrialized countries as rabies in dogs is being eliminated through reductions in the number of strays and vaccination. Rabies is a vaccine preventable disease and mass dog vaccination shows effective results.

In Hong Kong, notification of suspected cases of human rabies by doctors is obligatory under the Prevention and Control of Disease Ordinance (Chapter 599). The last local human rabies was reported in 1981. Subsequently, eight imported cases have been recorded. The latest human case was imported from Indonesia and notified in December 2014. All were fatal cases.

Most cases of human rabies occurred in rural areas where health education and preventive measures are inadequate, and effective treatments such as human vaccines and immunoglobulins are not readily available. In fact, human rabies is highly preventable. In Hong Kong, the preventive and control measures of rabies include disease surveillance, comprehensive laboratory diagnostic capacity, clinical management such as pre-exposure vaccination of people at frequent risk of exposure, wound management, post-exposure prophylaxis after suspected rabid animal bites and disease prevention in animals.

Hong Kong has been free of animal rabies since 1988. To prevent the disease occurring in animals in Hong Kong, a number of measures which focus on dogs and cats, backed by laws, have been put in place. These include importation control for animals and animal products and prevention of animal smuggling; dogs must be licensed, microchipped, vaccinated against rabies and properly under control in public places; quarantine of biter animals; rabies surveillance on any animals that die or display clinical signs consistent with rabies within the seven day observation period; taking enforcement action against owners who abandoned their animals and stray animal management with the aim to minimise the number of susceptible stray animals at large. According to a Thematic Household Survey on Keeping of Dogs and Cats commissioned by the Census and Statistics Department, it was estimated that in the pet owning population, 85.7% of dogs had been vaccinated against rabies, microchipped and licensed.

On December 31, 2014, the Centre for Health Protection recorded an imported confirmed case of human rabies affecting a 28-year-old Chinese man. He worked in North Sumatra of Indonesia and had unremarkable past health. He first presented with on-and-off non-specific low back pain since September 2014. He then presented with low grade fever, loin pain and vomiting in early November 2014, right lower limb weakness around mid-November and walking difficulty towards end of November. He came back to Hong Kong on December 1 to seek medical treatment and was admitted to a public hospital on the same day. He was transferred to Intensive Care Unit with intubation on December 8 as his condition deteriorated. He eventually succumbed on December 22. The brain tissue collected on December 29 by post-mortem examination was tested PCR positive for rabies virus. His blood specimens for serological test also showed seroconversion of rabies IgG. His family members were asymptomatic. Close contacts including family members and healthcare workers were arranged to receive post-exposure prophylaxis (PEP) of rabies vaccination. Retrospective enquires of family members revealed that the patient had been bitten by a dog over his left upper arm at his working place in Indonesia around July, 2014 and he did not receive medical attention or vaccination after the dog bite.

Prevention tips

- ☑ *Dog owners should make sure their dogs are licensed and vaccinated against rabies.*
- ☑ *Avoid stray animals such as dogs, cats, monkeys, etc.*
- ☑ *After being bitten by animal, wash wound thoroughly with plain water and soap immediately. Seek medical attention at the nearest Accident and Emergency Department.*
- ☑ *Attending doctors would consider the need of post-exposure prophylaxis such as vaccination or immunoglobulins.*

Updated situation of Middle East Respiratory Syndrome

Reported by Dr Phillippa Tsui, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

The Middle East Respiratory Syndrome (MERS) is caused by the novel coronavirus Middle East Respiratory Syndrome Coronavirus (MERS-CoV) emerged in the Middle East. The earliest case reported to the World Health Organization (WHO) had disease onset in March 2012. Since late 2012, MERS has spread across the Middle East especially in the Kingdom of Saudi Arabia (KSA) and United Arab Emirates (UAE). A total of nine, 168, 768 and ten cases were reported to the WHO in 2012, 2013, 2014 and 2015 (as of January 21, 2015) respectively.

The sharp increase in number of cases in 2014 was due to a huge upsurge of cases reported from April to June (Figure 1). Among the 768 cases in 2014, 628 (81.8%) were recorded in these three months with the majority occurring in KSA and UAE. According to the WHO, the upsurge was explained by hospital-related outbreaks that resulted from a lack of systematic implementation of infection prevention and control measures. The number of cases started to decline after June. Since then, MERS cases continued to appear sporadically in the Middle East but there was no evidence of sustained human-to-human transmission in communities. The seventh meeting of the WHO's International Health Regulations Emergency Committee concerning MERS-CoV held in September 2014 concluded that activities conducted to reduce international spread of MERS-CoV seemed to be effective. Despite small clusters of infection still occurred, transmission in health care settings seemed to be contained in general.

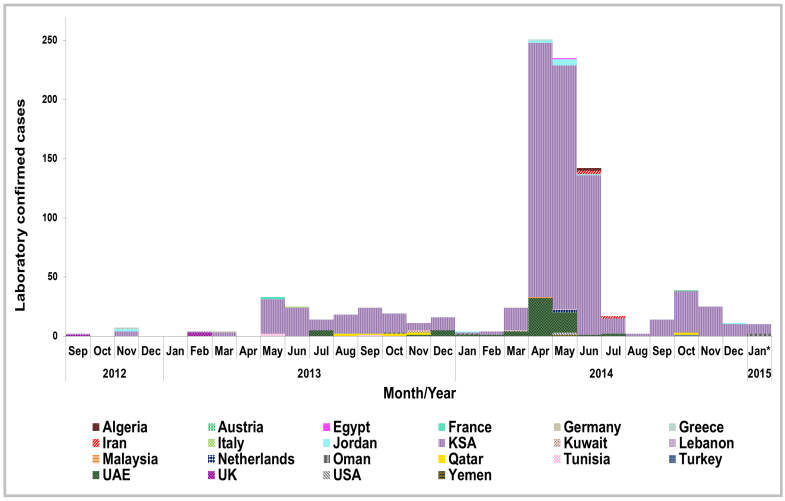


*Figure 1 - Monthly number of laboratory confirmed MERS cases reported to WHO, by month and by reporting country (n = 955)(*As of January 21, 2015).*

As of January 21, 2015, a total of 955 confirmed human cases of MERS worldwide have been reported to the WHO, including at least 351 deaths (Figure 1). The majority of the cases (932 cases; 97.6%) were confirmed in nine Middle East countries, including KSA (828), UAE (69), Jordan (12), Qatar (9), Iran (5), Oman (4), Kuwait (3), Lebanon (1), and Yemen (1) (Table 1). The remaining 23 cases reported outside the Middle East, were all linked to the Middle East, either through recent travel to the region (imported case) or exposure to a patient who acquired the infection in the region (import-related case). Countries outside the Middle East which had reported confirmed imported or import-related cases included the United Kingdom (4), Tunisia (3), Algeria (2), France (2), Germany (2), the Netherlands (2), the United States (2), Austria (1), Egypt (1), Greece (1), Italy (1), Malaysia (1), and Turkey (1). Among them, 18 had travel history to the Middle East within the incubation period and five acquired the infection through contact with MERS cases infected in the Middle East.

The ages of the confirmed cases ranged from three months to 99 years (median = 51 years)[1] and 64% of them were males[2]. People of all age groups were affected although males of middle and older ages were over-represented. Three hundred and ninety seven cases (48.2%) were known to have chronic diseases[3]. People with chronic diseases or immunocompromised conditions are considered to be at high risk of severe disease from MERS-CoV infection. Among the 423 confirmed cases with details released by the WHO, 337 patients (79.7%) presented with relatively more severe illnesses such as pneumonia, 37 patients (8.7%) had mild illnesses such as influenza-like illness, and the remaining 49 patients (11.6%) were reported to be asymptomatic. The overall case fatality rate was at least 36.8%.

Table 1 - Number of confirmed MERS cases based on the place of reporting to the WHO (as of January 21, 2015).

Reporting country		Case (N=955)
Middle East	Kingdom of Saudi Arabia (KSA)	828
	United Arab Emirates (UAE)	69
	Jordan	12
	Qatar	9
	Iran	5
	Oman	4
	Kuwait	3
	Lebanon	1
	Yemen	1
Outside Middle East	United Kingdom	4
	Tunisia	3
	Algeria	2
	France	2
	Germany	2
	Netherlands	2
	United States	2
	Austria	1
	Egypt	1
	Greece	1
	Italy	1
	Malaysia	1
	Turkey	1

Healthcare workers (HCWs) were also overrepresented and constituted about 24% of the cases, which was related to transmissions in healthcare settings. The large hospital outbreaks which occurred in KSA and UAE emphasised the importance of infection control strategies and practices when caring for patients at all circumstances, regardless of their diagnosis. It is not always possible to identify patients with MERS-CoV early because the early symptoms of MERS are non-specific. As such, HCWs should apply standard precautions consistently with all patients and in all work practices all the time. Droplet precautions should be added to the standard precautions when providing care to any patient with symptoms of acute respiratory infection.

Current scientific evidence revealed that camels are a likely primary source of the MERS-CoV infecting humans. The WHO postulated that the current pattern of disease appears to be the result of repeated introductions of MERS-CoV from camels to people, resulting in limited human-to-human transmission, but not sustained transmission. Genetic studies of MERS-CoV from humans and camels in Egypt, Oman, Qatar and KSA demonstrated a close link between the virus found in camels and that found in people in the same geographic area. Besides, studies have found MERS-CoV antibodies in camels in Africa and the Middle East. According to the WHO, preliminary results from an ongoing investigation in Qatar showed that people working closely with camels (e.g. farm workers, slaughterhouse workers and veterinarians) might be at higher risk of MERS-CoV infection than people who did not have regular close contacts with camels. Another published study concerning epidemiological investigation of a fatal case of human MERS-CoV infection provided evidence of direct camel-to-human transmission of MERS-CoV through close contact with an infected camel[4]. Evidence also suggested that infected camels may shed MERS-CoV through their nasal and eye discharge, faeces, urine and milk[5].

Given the available evidence, the WHO noted that the best protection is to avoid any direct contact with camels and practise good personal hygiene. People, especially those at high risk of developing severe disease (e.g., those with chronic illnesses such as diabetes, renal failure, chronic lung disease, and immunocompromised persons), should take precautions and avoid contact with camels, drinking raw camel milk or urine, and eating meat that has not been thoroughly cooked.

MERS is a notifiable disease in Hong Kong. Medical practitioners should notify any suspected cases to the Centre for Health Protection (CHP) for prompt investigation. So far, a total of 138 suspected cases were reported to the CHP and all of them were tested negative for MERS-CoV.

As infected persons may have mild or atypical presentation, doctors should manage patients as potentially infected when clinical and epidemiological clues strongly suggest MERS-CoV infection even if an initial test on a nasopharyngeal swab is negative. Tests should be repeated in highly suspected cases, preferably on specimens from the lower respiratory tract, such as sputum, endotracheal aspirate, or bronchoalveolar lavage. Regarding infection control, apart from standard precautions, contact precautions and eye protection should be added when caring for suspected or confirmed cases, and airborne precautions should be applied when undertaking aerosol-generating procedures.

To better prepare and respond to the threat of MERS, the Government has launched the "Preparedness Plan for MERS" and activated the "Alert" Response Level on June 12, 2014. According to the WHO, an increase in primary cases is expected in springtime in the Middle East, which may be related to the weaning of young camels from their mothers in spring each year[6]. It is likely that cases will continue to be exported from the Middle East to other countries by tourists and travellers who might acquire infection following exposure to an animal or human source in these regions. With the seasonal upsurge expected in the coming spring, the CHP will continue to maintain vigilance and the on-going prevention and control efforts.

To prevent MERS, members of the public are reminded to take heed of personal, food and environmental hygiene when travelling:

- ☑ Avoid close contact with sick people, especially with those suffering from acute respiratory infections, and avoid visits to healthcare settings with MERS patients;
- ☑ Adhere to food safety and hygiene rules such as avoiding consuming raw or uncooked animal products, including milk and meat, or foods which may be contaminated by animal secretions, excretions (such as urine) or products, unless they have been properly cooked, washed or peeled; and
- ☑ If feeling unwell, put on a surgical mask and seek medical attention immediately and,

  - ❖ Before departure: postpone travel until recovery;
  - ❖ While at overseas: inform hotel staff or tour leader;
  - ❖ After returning home: inform doctor of recent travel history during medical consultation.

[1] Calculated with 413 confirmed cases with age of individual cases known.
[2] 14 cases in KAS with unknown sex and were not included in the calculation of percentage.
[3] 131 cases identified through retrospective review by KSA with unknown underlying medical conditions were not included in the calculation of the percentage.
[4] Azhar EL, et al. Evidence for Camel-to-human Transmission of MERS Coronavirus. N Engl J Med. 2014 Jun 26;370(26):2499-505.
[5] Reusken CB, et al. Middle East respiratory syndrome coronavirus RNA and neutralizing antibodies in milk collected according to local customs from dromedary camels, Qatar, April 2014. Euro Surveill. 2014 Jun 12;19(23).
[6] Middle East respiratory syndrome coronavirus (MERS-CoV), WHO summary and literature update, World Health Organization. Available at http://www.who.int/csr/disease/coronavirus_infections/MERS_CoV_Update_09_May_2014.pdf?ua=1

NEWS IN BRIEF

Inclusion of "invasive pneumococcal disease" as a notifiable disease

The Government has amended the Prevention and Control of Disease Ordinance (Cap 599) to include "invasive pneumococcal disease" (IPD) as one of the notifiable infectious diseases and the amendment has been gazetted under the Prevention and Control of Disease Ordinance (Amendment of Schedule 1) Notice 2015 on January 9, 2015 with immediate effect.

Medical practitioners are reminded to stay alert for IPD cases and are required to notify the Director of Health of any confirmed cases. The Centre for Health Protection (CHP) of the Department of Health has issued letters to doctors and hospitals to inform them of the notification requirements.

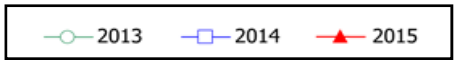
A sporadic case of human myiasis

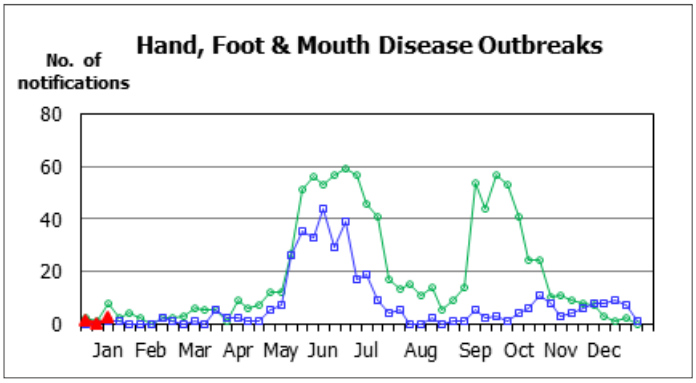
On January 16, 2015, CHP recorded a local case of human myiasis affecting a 91-year-old elderly home resident. He was bedbound with multiple medical illnesses and was on Ryle's tube feeding. He was admitted to a public hospital on January 9 for feeding problem and was subsequently found to have maggots in mouth with ulceration. The worms were identified to be *Chrysomya bezziana*. The patient's condition deteriorated after admission and he passed away on January 16 due to underlying medical condition. Advice on oral care for Ryle's tube fed residents and environmental hygiene was given to the elderly home.

Scarlet fever update (December 21, 2014 – January 17, 2015)

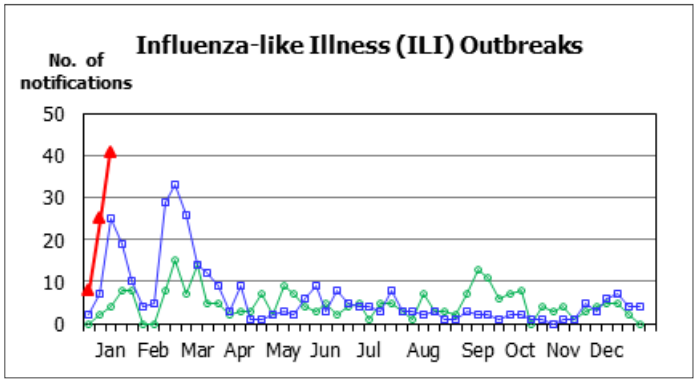
Scarlet fever activity in this reporting period is similar to that in the previous 4 weeks. It remained at an elevated level in the past two months when compared with the activity from August to October 2014. From December 21, 2014 – January 17, 2015, CHP recorded 114 cases of scarlet fever with a range of 20 to 42 cases per week as compared with 117 cases with a range of 18 to 37 cases per week in the previous reporting period (November 23 – December 20, 2014). The cases recorded in this reporting period included 60 males and 54 females aged between one to 21 years old (median = 6 years). There was one school cluster affecting two persons in a kindergarten. No fatal cases were reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 2 - WEEK 3)

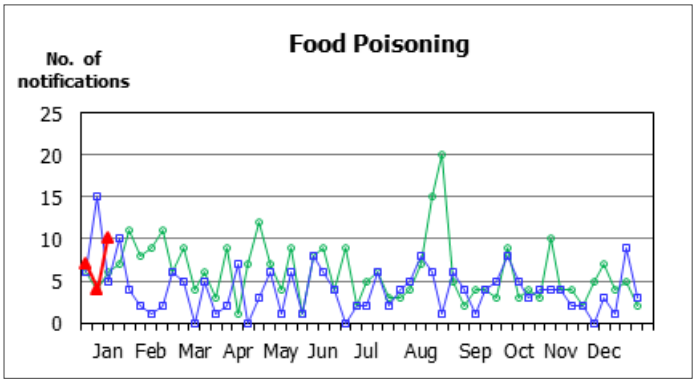




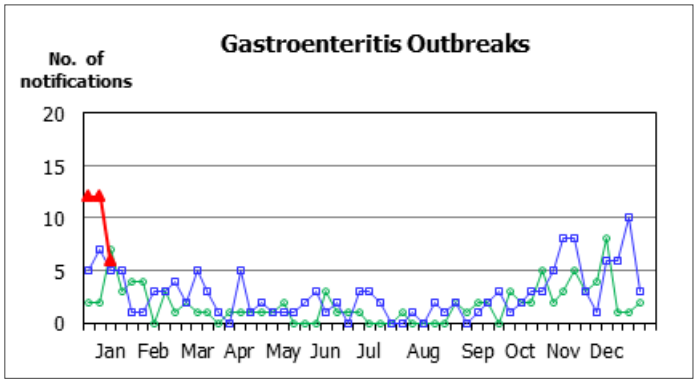
Week 52	1	Week 1	1
Week 2	**0**	**Week 3**	**2**



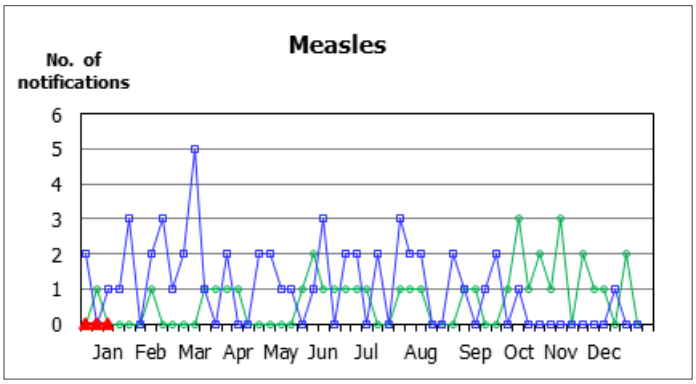
Week 52	4	Week 1	8
Week 2	**25**	**Week 3**	**41**



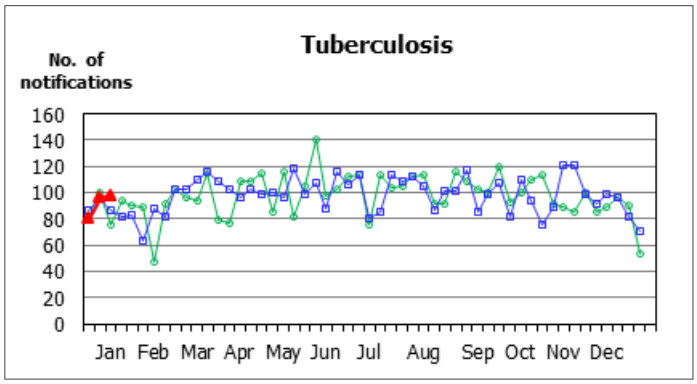
Week 52	3	Week 1	7
Week 2	**4**	**Week 3**	**10**



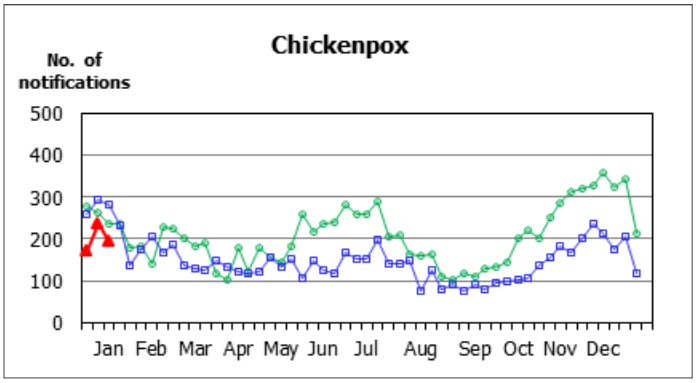
Week 52	3	Week 1	12
Week 2	**12**	**Week 3**	**6**



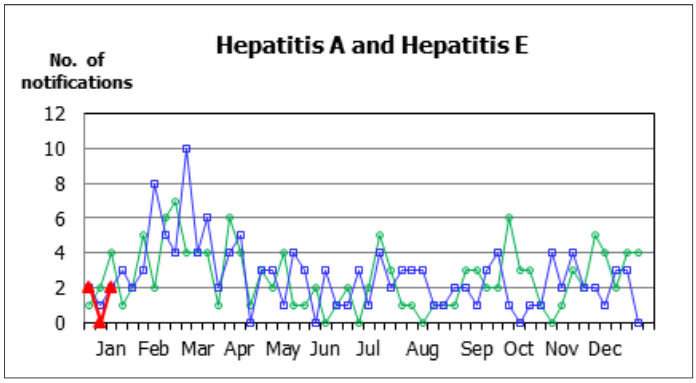
Week 52	0	Week 1	0
Week 2	**0**	**Week 3**	**0**



Week 52	71	Week 1	80
Week 2	**96**	**Week 3**	**98**



Week 52	116	Week 1	172
Week 2	**238**	**Week 3**	**195**



Week 52	0	Week 1	2
Week 2	**0**	**Week 3**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until January 17, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jan 18 - Jan 31, 2015 WEEKS 4-5 VOL 12 ISSUE N^{0} 3

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Comparison of current winter influenza season with previous seasons from 2005 to 2014 in Hong Kong

Reported by Miss Vera Chow, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Hong Kong entered the winter influenza season in late December 2014. Since then, the activity of seasonal influenza has continued to increase and rapidly reached a very high level in mid to late January 2015, comparable to the peak levels in previous seasons with high activities. The predominating circulating virus in this season is influenza A (H3N2), which now accounts for over 95% of positive influenza detections by the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP).

We compared the surveillance data collected by CHP in this season with those in previous seasons from 2005 to 2014*, including (i) influenza-like illness (ILI) consultation rates in sentinel general practitioners (GPs) and general outpatient clinics (GOPCs); (ii) ILI attendance rate in Accident and Emergency Departments (AED); (iii) institutional ILI outbreaks reported to CHP; (iv) influenza associated hospital admissions in public hospitals; and (v) severe influenza cases reported to CHP. It was noted that the influenza activity in 2009, when the pandemic of influenza A(H1N1)pdm09 occurred, was exceptionally high.

Table - Maximum weekly average ILI consultation rates (ILI cases per 1 000 consultations) among sentinel GPs and GOPCs, 2005-2015.

Year	Sentinel GPs	Sentinel GOPCs
2005	89.5	19.7
2006	78.9	11.9
2007	71.6	8.9
2008	76.1	12.3
2009	118.6	9.4
2010	60.8	8.4
2011	71.3	10.7
2012	66.8	8.6
2013	53.7	5.4
2014	59.5	9.3
2015 (as of Jan 31)	69.4	10.0

ILI consultation rates in sentinel GPs and GOPCs

The average ILI consultation rate among sentinel GPs has increased from 32.6 (per 1 000 consultations) for the week ending December 26, 2014 to 61.1 for the week ending January 31, 2015. Over the same period, the rate among sentinel GOPCs rose from 5.4 (per 1 000 consultations) to 10.0. Figures 1 and 2 show the respective historical statistics since 2005. The rates in this season so far were very high and comparable to the peak levels recorded in previous seasons with high activities. Apart from 2009 when the influenza pandemic occurred, the rates were particularly high in 2005, 2006, 2008 and 2011 (Table).

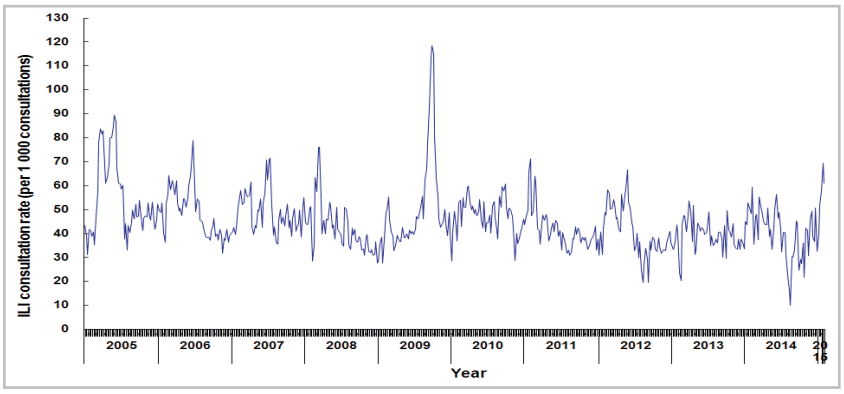


Figure1 - Average ILI consultation rates among sentinel GPs by week, 2005-2015 (as of January 31, 2015).

ILI syndromic surveillance in AED

CHP has collaborated with the Hospital Authority (HA) to monitor AED attendance rate for the ILI syndrome group which includes the AED diagnostic codes influenza, upper respiratory tract infection, fever, cough, throat pain and pneumonia. The weekly average ILI attendance rate rose from 181.0 (per 1 000 coded cases) in the week ending December 26, 2014 to 255.6 in the week ending January 31, 2015. Apart from 2009, higher rates were previously recorded in years 2005 (271.69), 2008 (261.43), 2011 (339.46) and 2014 (254.11) (Figure 3).

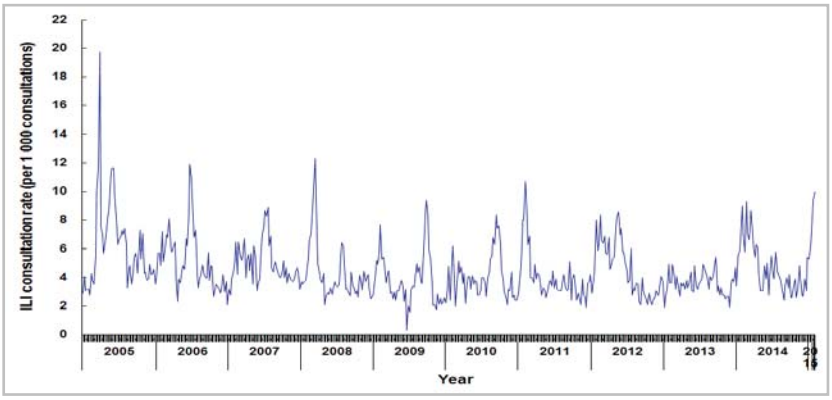


Figure 2 - Average ILI consultation rate among sentinel GOPCs by week, 2005-2015 (as of January 31, 2015).

*Some of the data were not available for the whole period.

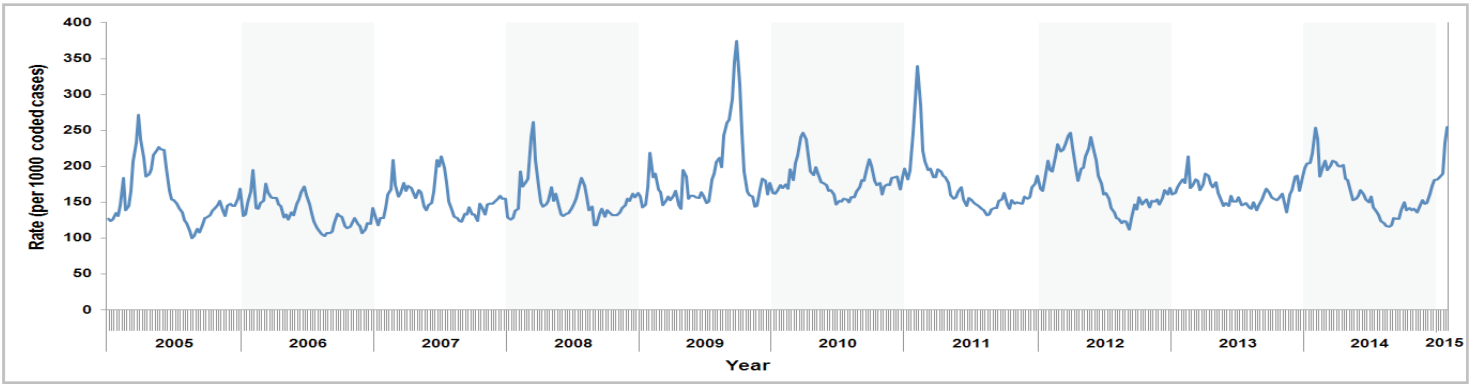


Figure 3 - Average ILI attendance rate at AED by week, 2005-2015 (as of January 31, 2015).

Institutional ILI outbreaks

The weekly number of institutional outbreaks reported to CHP in this season significantly rose from eight (affecting 53 persons) in the week ending January 3 to 95 (514 persons) in the week ending January 31. The outbreaks in the four-week period from 4 to 31 January mainly occurred in primary schools (33.5%), residential care homes for the elderly (31.2%) and kindergartens or child care centres (14.0%). Figure 4 shows the historical statistics of ILI outbreaks since 2005. The current number of outbreaks was at a very high level as compared with the past ten years. The weekly number of outbreaks reached a record level of 341 during the pandemic in September 2009. Apart from 2009, relatively higher numbers of outbreaks were recorded in 2005, 2008, 2011 and 2012, with maximum weekly number of 67, 112, 58 and 65 outbreaks recorded respectively.

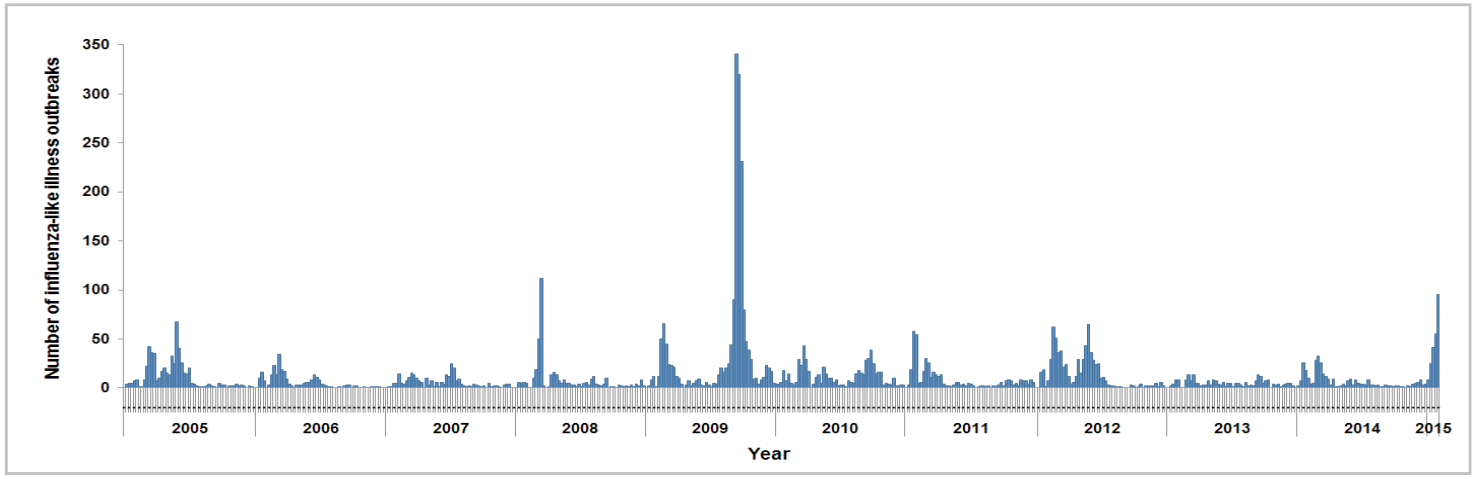


Figure 4 - Weekly number of institutional ILI outbreaks, 2005-2015 (as of January 31, 2015).

Influenza associated hospital admissions

Among children aged under 5 years, the admission rate with principal diagnosis of influenza in public hospitals increased from 1.01 (per 10 000 population) in the week ending January 3, 2015 to 2.92 and 2.49 in that ending January 24 and 31 respectively. Likewise, the rate among elderly aged 65 years or above rose from 1.26 to 4.58 and 4.56 (per 10 000 population). Higher hospital admission rates were recorded during previous winter influenza seasons in Hong Kong (Figure 5). Of note, the hospital admission rate of influenza among elderly aged 65 years or above was at an especially high level in this season, exceeding the highest rates recorded in the past few years. In recent years, relatively higher influenza admission rates among elderly aged 65 years or above were also recorded in 2012 when the H3N2 virus was circulating.

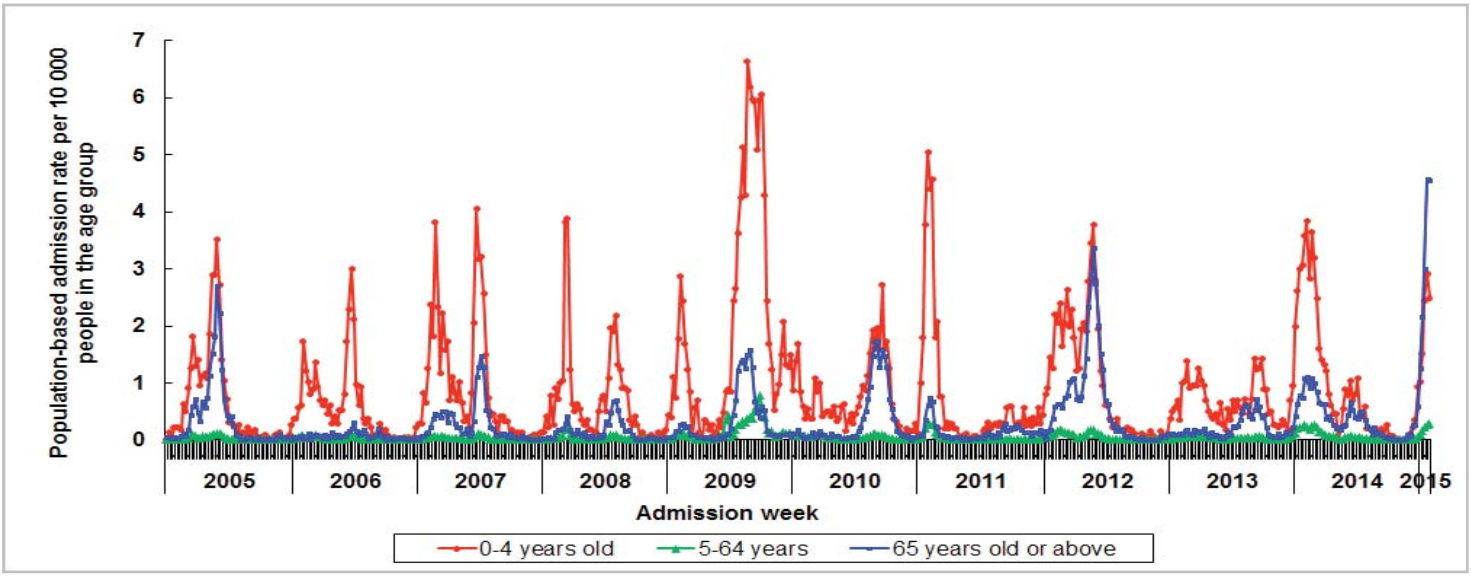


Figure 5 - Weekly admission rates with principal diagnosis of influenza (counting by admission week) in public hospitals, 2005-2015.

Severe influenza cases

Since 2011, CHP has collaborated with HA and private hospitals to set up the enhanced surveillance of influenza associated deaths and admissions to Intensive Care Units (ICU) among adult patients aged 18 years or above during influenza seasons. In addition, CHP has established an on-going reporting system to monitor paediatric influenza-associated severe complications and deaths among patients below 18 years.

This year, CHP reactivated the enhanced surveillance for adults on January 2, 2015. As of February 4 noon, 187 cases of influenza-associated ICU admission or death (including 118 deaths) among patients aged 18 or above have been recorded. Among them, 175 were influenza A(H3N2), 7 were influenza B and 5 were influenza A pending subtype. 155 cases (82.9%) and 108 deaths (91.5%) involved elderly persons aged 65 years or above. About 85% were known to have chronic diseases. Separately, 11 cases of severe paediatric influenza-associated complication (no fatality) among patients aged under 18 years were reported this year. All of them contracted influenza A(H3N2).

So far, 198 severe cases (including 118 deaths) with laboratory confirmed influenza were recorded for all ages. As comparison, the number of severe cases reported in the winter influenza season in 2011, 2012 (a prolonged season), 2013 and 2014 was 123 (34 deaths), 347 (227 deaths), 78 (29 deaths) and 289 (136 deaths) respectively. It is noted that the weekly number of 45 and 64 severe cases recorded in the week ending January 24 and 31 respectively already exceeded the highest weekly number of 33 severe cases recorded during the second half of the 2012 season in which H3N2 was predominating (Figure 6).

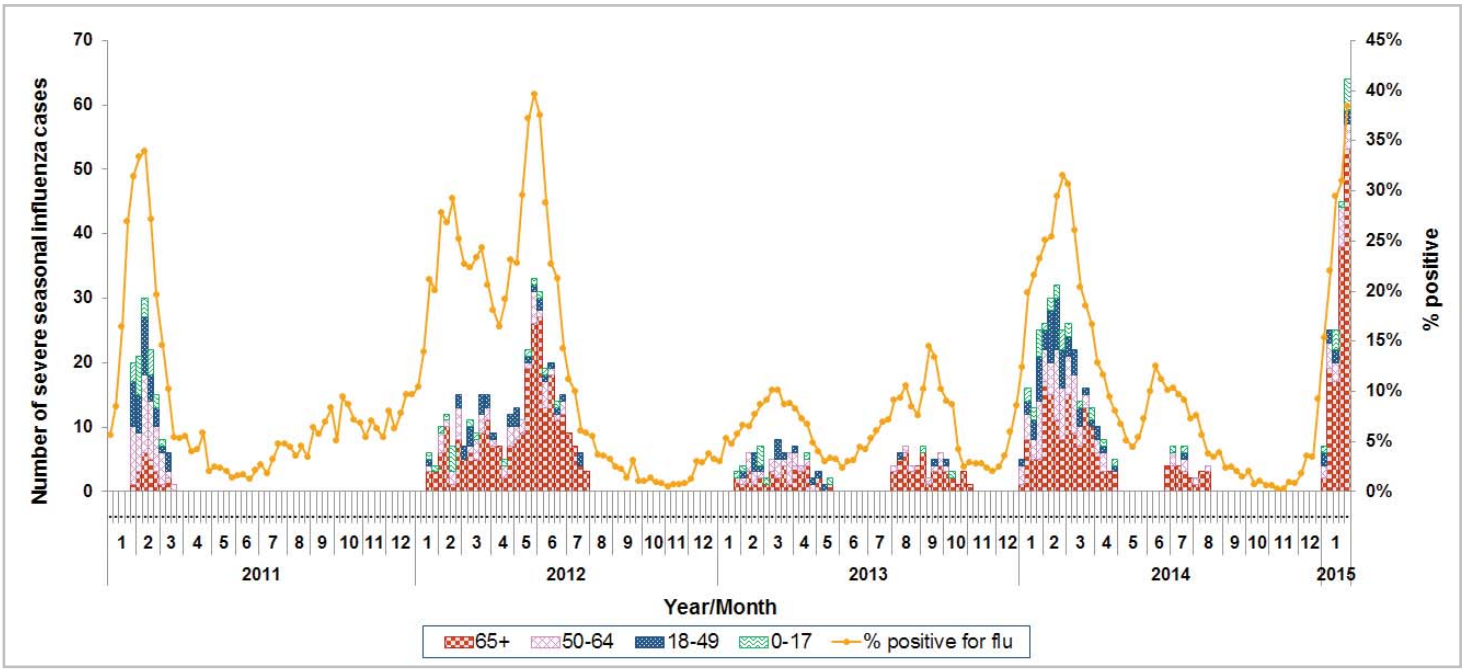


Figure 6 - Weekly number of reported severe cases (including both adult and paediatric cases) and percentage positive for influenza among the respiratory specimens tested by PHLSB, 2011-2015. (Remark:The enhanced surveillance system for severe cases among patients aged 18 years or above was only activated intermittently during influenza seasons.)

We estimated the fatality rates among influenza patients admitted to public hospitals using deaths recorded by the above two surveillance systems for severe cases and the hospital admissions with principal diagnosis of influenza in public hospitals during influenza seasons. Among the hospitalised patients with principal diagnosis of influenza, the percentage of influenza associated deaths in the three-week period from January 4 to 24, 2015 was 3.2% (provisional estimate), as compared to 2.2%, 3.8%, 2.5% and 3.5% during influenza seasons in 2011, 2012, 2013 and 2014 respectively.

In summary, the overall influenza activity in the current winter season as reflected by various surveillance data was at a very high level, which may further increase in the coming weeks. Besides, the severity as reflected by the weekly number of severe influenza cases recorded was higher than the previous winter seasons. Elderly aged 65 and above were the most affected in this season as reflected by the hospital admission rates, the proportion of ILI outbreaks occurring in residential care homes for the elderly and age distribution of severe influenza cases. Based on historical data, winter influenza seasons in Hong Kong usually last about two to three months, but longer durations have been recorded occasionally, such as in 2012 when the winter season (due to influenza B) and summer season (due to H3N2) merged together. CHP will continue to closely monitor the situation as the current influenza season has not run its course yet.

In view of the very high influenza activity in Hong Kong currently, the public should avoid going to crowded or poorly ventilated public places. High risk individuals may consider putting on surgical masks when staying in crowded or poorly ventilated public places for personal protection. Besides, school children should check the body temperature every day before going to school and should refrain from class if they have fever. The public should continue to pay attention to personal and environmental hygiene.

Although there is mismatch of the circulating and vaccine strains of influenza H3N2 strain in this season, it is expected that influenza vaccine would afford a certain degree of cross-protection against different but related strains, and also reduce the likelihood of severe outcomes such as hospitalisations and deaths, particularly for high-risk groups. As such, vaccination remains an important means to prevent influenza.

Review of *Streptococcus suis* infections in Hong Kong, 2010 – 2014

Reported by Ms Sheree Chong, Scientific Officer, CD Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

In Hong Kong, *Streptococcus suis* (*S. suis*) infection is a notifiable infectious disease under the Prevention and Control of Disease Ordinance. Between 2010 and 2014, the Centre for Health Protection of the Department of Health has recorded a total of 45 sporadic cases of *S. suis* infection with annual notifications ranged from eight to 12 cases (Figure 1). The age range of the cases was between 37 and 94 years (median = 63 years) with a male-to-female ratio of 1.8:1. Forty-two cases (93%) acquired the infection locally. Three cases contracted the illness from Macao, Mainland China, and the Philippines. Twenty-nine cases (64%) suffered from chronic illnesses, including diabetes, heart disease, and hypertension, etc.

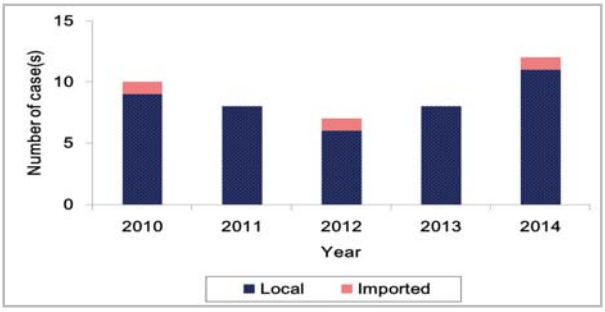


Figure 1 - Annual number of cases reported from 2010 to 2014 (n = 45).

Among all the reported cases, 29 of them had history of handling raw pork and 16 cases did not report having definite exposure to pigs or raw pork. For those who had exposure to raw pork, 10 of them recalled having skin lesion/wound while handling it. The most common manifestations included meningitis (29%), followed by sepsis (18%), and mixed meningitis and sepsis (9%). Fourteen cases (31%) had hearing impairment after the infection, and a total of three fatal cases (6%) associated with *S. suis* infection were recorded in 2013 (1) and 2014 (2) respectively.

As *S. suis* infection may also be an occupational hazard in certain occupations, it has also been included as a notifiable occupational disease under the Occupational Safety and Health Ordinance in Hong Kong. From 2010 to 2014, six cases of occupational *S. suis* infection were confirmed. The Occupational Safety and Health Branch of the Labour Department has published relevant materials to the workers in the pig processing industry for increasing their awareness of the disease as well as the preventive measures to be taken while handling raw pork. In essence, employees should wear cut-proof gloves when chopping the pork to prevent the hands from being injured. If a wound is presented after an injury, it should be cleaned and bandaged immediately and properly to prevent infection. It is also very important to pay attention to personal hygiene and keep both hands clean.

To prevent *S. suis* infection, the general public should observe the following measures:

- ☑ Maintain good personal, food and environmental hygiene;
- ☑ Avoid contact with pigs;
- ☑ When handling pigs or raw pork, wear protective gloves and avoid injury;
- ☑ Wash hands after handling pigs or raw pork;
- ☑ Disinfect and cover all wounds properly;
- ☑ Raw pork and cooked food should be dealt with and kept separately;
- ☑ Pork should be cooked thoroughly before consumption; and
- ☑ Do not bring meat into Hong Kong without a permit.

Facts on *Streptococcus suis*

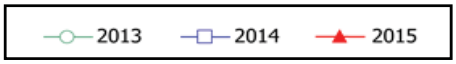
Streptococcus suis infection is a bacterial disease caused by *S. suis*. The incubation period of this disease ranges from a few hours to two weeks. The disease may present as meningitis, sepsis, and less commonly endocarditis, arthritis and bronchopneumonia. The characteristic complication of *S. suis* infection is deafness, which is generally permanent. Pigs are considered to be the principal host animals of the bacteria. Transmission to humans occurs mainly in adults and is often related to exposure through direct contact with infected pigs or raw pig products via cuts or abrasions on the skin. Moreover, people who are immunosuppressed, including those who have had their spleens removed, are also at increased risk of infection. As far as occupational exposures are concerned, the occupations at risk include pig breeders, abattoir workers, meat processing and transport workers, butchers and cooks. *S. suis* infection can be treated with antibiotics.

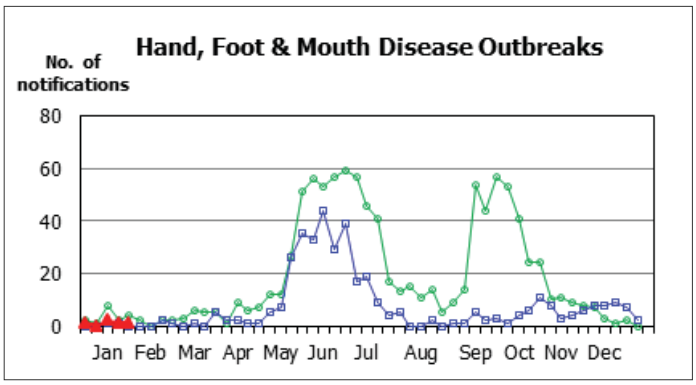
NEWS IN BRIEF

Laboratory surveillance on multi-antimicrobial resistant bacteria (December 2014)

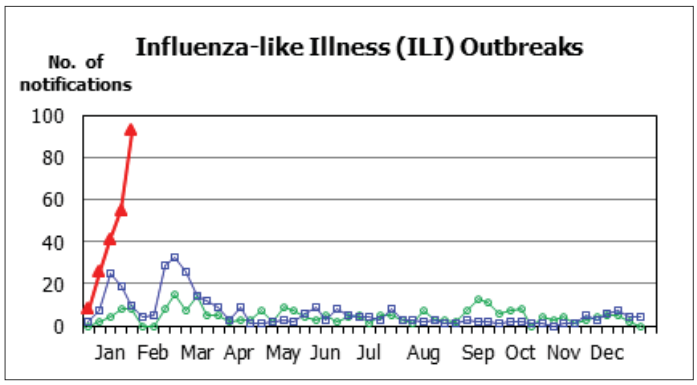
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website: http://www.chp.gov.hk/en/data/1/10/641/695/3452.html

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 4 - WEEK 5)

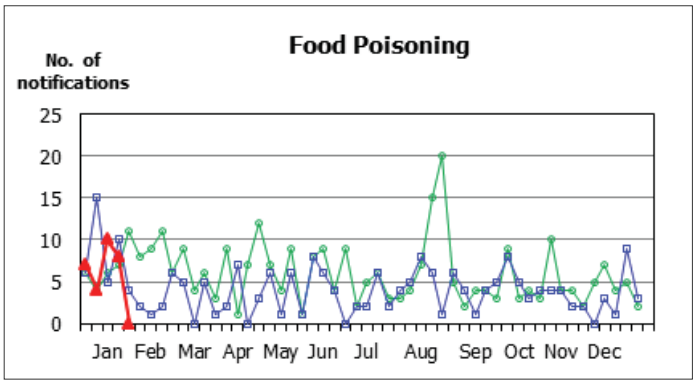




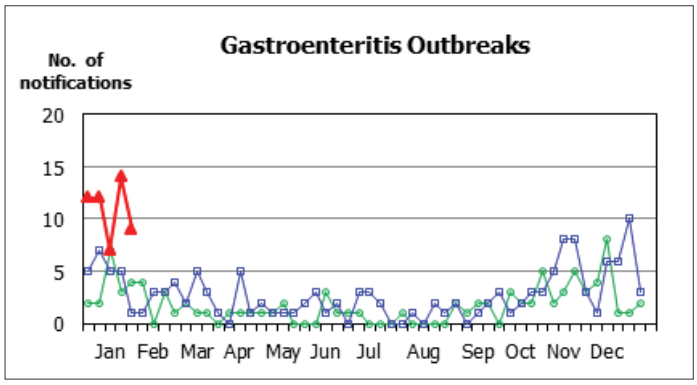
Week 2	0	Week 3	2
Week 4	**1**	**Week 5**	**1**



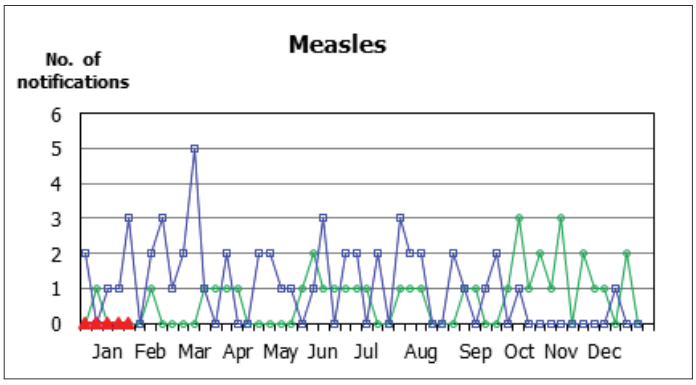
Week 2	26	Week 3	41
Week 4	**55**	**Week 5**	**93**



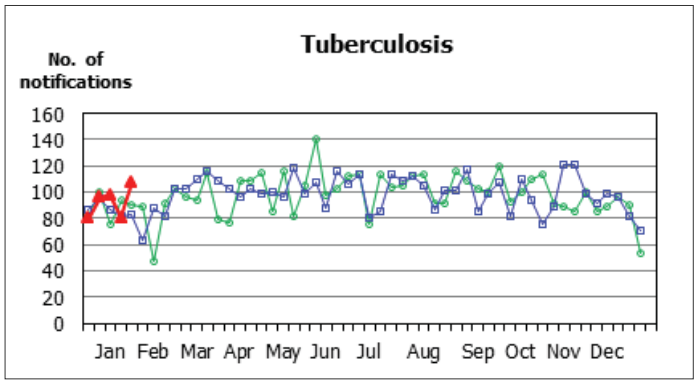
Week 2	4	Week 3	10
Week 4	**8**	**Week 5**	**0**



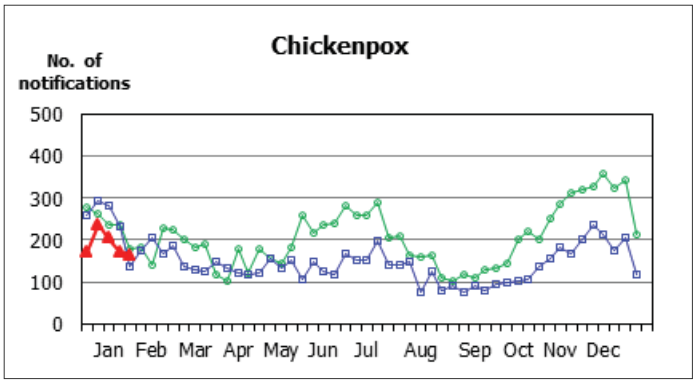
Week 2	12	Week 3	7
Week 4	**14**	**Week 5**	**9**



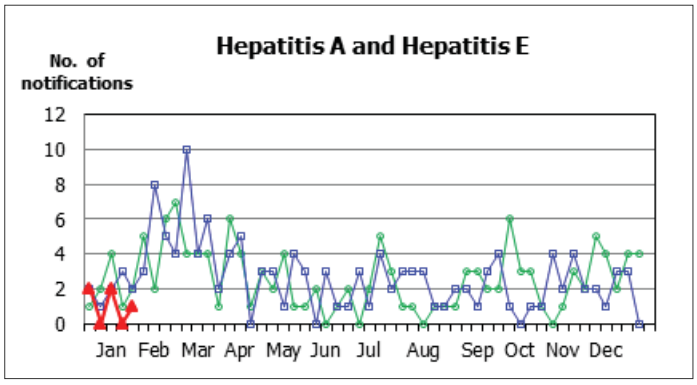
Week 2	0	Week 3	0
Week 4	**0**	**Week 5**	**0**



Week 2	96	Week 3	98
Week 4	**81**	**Week 5**	**108**



Week 2	238	Week 3	204
Week 4	**173**	**Week 5**	**164**



Week 2	0	Week 3	2
Week 4	**0**	**Week 5**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until January 31, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Feb 1 - Feb 14, 2015 WEEKS 6 - 7 VOL 12 ISSUE N^{0} 4

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

2014 Year in Review

Reported by Surveillance Section, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

The year 2014 marked the 10th anniversary of Centre for Health Protection (CHP) of the Department of Health, and at the same time, witnessed an unprecedented public health crisis in the midst of the largest Ebola outbreak ever. While CHP will keep staying on high alert and preparedness for these evolving challenges, this issue let's review some infectious diseases of significant local concern in the past year.

Avian influenza

In 2014, there were nine human cases of avian influenza A(H7N9) infection recorded in Hong Kong and all were imported from Guangdong province. Their ages ranged from 5 months to 85 years (median = 65 years) and the male to female ratio was 0.8 : 1. Eight cases occurred in the second wave, with onset dates between January and April 2014, while the remaining case occurred in the current third wave with onset in December 2014. Among the nine cases, three were fatal, five had recovered and the most recent case remained in critical condition. Epidemiological investigation revealed that eight of the nine cases had visited a wet market or had relevant history of exposure to poultry or their environments. Extensive contact tracing conducted for all the cases did not identify any secondary transmission.

Chikungunya fever

Chikungunya fever was made notifiable in Hong Kong on March 6, 2009. Since then, 10 sporadic imported cases have been recorded by CHP (Figure 1). In 2014, two cases, involving one male and one female, were recorded in April and May respectively. The first patient presented with fever, headache and joint pain while the second patient presented with fever, muscle pain, joint pain and rash. Both patients were admitted to hospitals and their serum samples were tested positive for chikungunya virus genomic sequences by polymerase chain reaction. All of them recovered afterwards. Both patients had history of travel to Indonesia within the incubation periods.

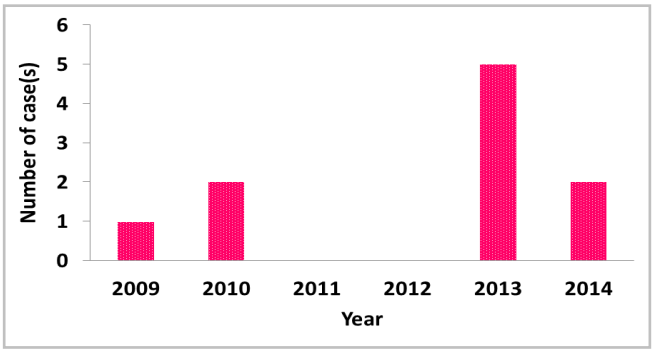


Figure 1- Annual number of chikungunya fever cases from March 6, 2009 to 2014.

Dengue fever

CHP recorded 111 dengue fever cases in 2014, which was higher than the annual number of 30 to 103 cases in the past 10 years (Figure 2). Fifty seven males and 54 females, with ages ranging from five to 80 years (median: 37 years) were affected. Among all cases, fever was the most common symptom (95%), followed by rash (55%), headache (54%) and myalgia (49%). Other symptoms included arthralgia (18%) and eye pain (13%). Eighty-three patients (75%) required hospitalisation and three cases (2.7%) of dengue haemorrhagic fever were recorded. All of the patients recovered and no fatal case was recorded.

The majority of the cases (108 cases, 97%) were imported infections among patients who had travelled to countries and areas including Indonesia (25), Mainland China (20), Thailand (16), Malaysia (13), the Philippines (10), India (6), Sri Lanka (3), Maldives (2), East Timor (1) and Vietnam (1). Eleven patients had travelled to multiple countries during the incubation period.

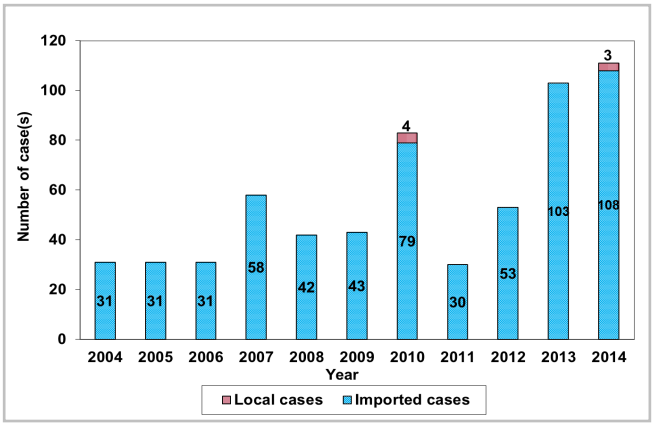


Figure 2 - Annual number of dengue fever cases from 2004 to 2014.

Three local cases were recorded during October and November. The first two local cases were epidemiologically linked and both had history of mosquito bites in a construction site in Sai Ying Pun. The third local case, who recalled mosquito bites in Tsing Yi, was a sporadic case. The patient's blood specimen was tested positive for dengue virus type four while the epidemiologically linked cases demonstrated dengue virus type one. The findings indicated different sources of infection.

Among the 87 patients with positive dengue virus genomic sequences detected in serum samples by polymerase chain reaction, the most common type of dengue virus was type one (56.3%), followed by type two (26.4%), type three (13.8%) and type four (3.4%).

Hand, foot and mouth disease (HFMD)

Following a cyclically high level of activity in 2013, the overall hand, foot and mouth disease (HFMD) activity in 2014 turned moderate. Both the sentinel surveillance system[1] and number of institutional HFMD/herpangina outbreaks (Figure 3) showed similar seasonal patterns with activity starting to increase in May, peaking in early June, declining in late June and, returning to baseline in August 2014.

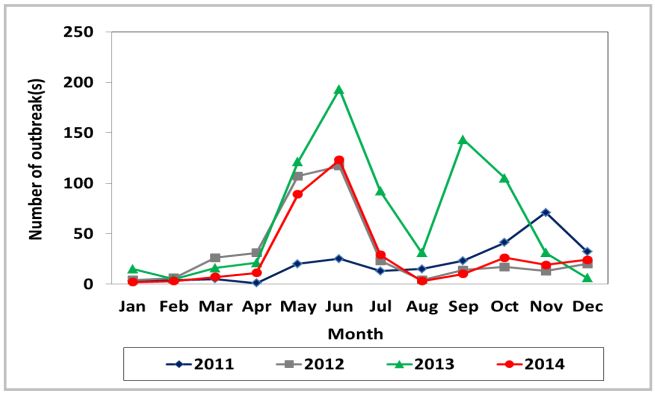


Figure 3 - Number of institutional HFMD/herpangina outbreaks reported, 2011 to 2014.

In 2014, a total of 346 HFMD/herpangina institutional outbreaks affecting about 2 000 persons were recorded (779 and 382 outbreaks in 2013 and 2012 respectively). There were 224 (64.7%) outbreaks which occurred in child care centres/ kindergartens, 62 (17.9%) in primary schools, and 43 (12.4%) in secondary schools. The remaining 17 outbreaks occurred in other institutions such as special school, home for handicapped and other residential institution/hostel. The size of outbreaks ranged from two to 52 (median = 4). Fifty-two (15.0%) institutional outbreaks had causative agents confirmed by laboratory. The majority of these outbreaks were associated with CA16 (30.8%), followed by CA4 (13.5%), CA6 (11.5%), EV71 (11.5%), CA10 (9.6%) and, untyped enteroviruses (23.1%).

A higher number (68 cases) of enterovirus 71 (EV71) infections was recorded in 2014, as compared with 59 and 12 in 2012 and 2013 respectively. The male-to-female ratio was 1.4:1 and their ages ranged from three months to 18 years old (median: 2.7 years). Sixty two EV71 cases required hospitalisation with a median length of stay of three days (range: discharged on the same day of admission to 50 days). Eleven cases developed severe complications (e.g. encephalitis, meningitis, acute flaccid paralysis and meningoencephalitis). One fatal case affecting a two year old girl, who enjoyed good past health, was recorded in 2014.

There were 21 cases of severe paediatric enterovirus infections (other than EV71 and poliovirus) in 2014 as compared with 16 and 8 cases in 2012 and 2013 respectively. The male-to-female ratio was 1.1:1. The patients' age ranged from 20 days to 11 years (median: 3 months). All were inpatients with a median length of stay of seven days (range: three days to 40 days). The patients were complicated with meningitis, encephalitis, meningoencephalitis and cerebellar ataxia but none were fatal. The causative agents involved in these cases were coxsakievirus B5 (7 cases), echovirus type 6 (3 cases), type 15 (1 case) and type 25 (1 case). The remaining cases were untyped enterovirus other than poliovirus and EV71.

[1]Sentinel surveillance based at child care centres/kindergartens, general practitioners, general out-patient clinics and the Accident & Emergency Department.

Invasive pneumococcal disease (IPD)

"Paediatric invasive pneumococcal disease" has been included as one of the communicable diseases of topical public health concern with effect from January 2, 2014. From January 2 to December 31, 2014, a total of 37 confirmed paediatric IPD cases were reported, with the age ranging from nine months to 17 years (median = 3.8 years). Of these 37 cases, 54% were female. All cases except one were Chinese (97%) and only one case was imported infection. Over 83% of the cases were reported by public hospitals. Over 70% of the cases were reported in the first half of 2014 (Figure 4).

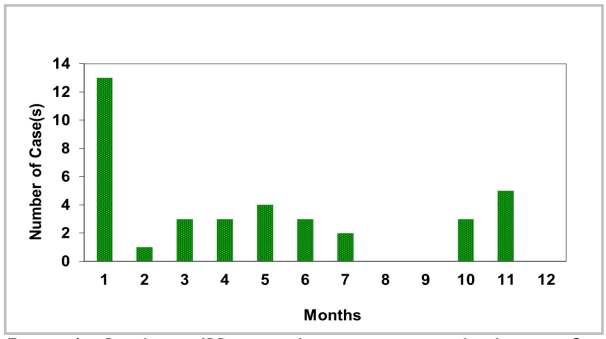


Figure 4 - Paediatric IPD cases by reporting months, January 2 – December 31, 2014.

More than 45% of the cases had co-infection and all but one case presented with respiratory symptoms. Chest drain insertion and decortication were required for 62% and 22% of the cases respectively. Around 57% of these cases required ICU care. There were three fatal cases, one of them being an imported case from Mainland China.

Serotypes 3 and 19A accounted for 78% of all paediatric IPD cases in 2014 (Figure 5). For the 20 cases caused by serotype 3 pneumococci, half of them had received three or four doses of PCV13 whereas the remaining half had received none. Among the nine cases caused by serotype 19A pneumococci, one (11%) had received four doses of PCV13, two (22%) had received

one dose, one (11%) had received three doses with the exact type not known and the remaining five (56%) had not received any.

On January 9, 2015, the Government further amended the Prevention and Control of Disease Ordinance (Cap 599) to include "invasive pneumococcal disease" (IPD) of all ages as one of the notifiable infectious diseases. Medical practitioners are reminded to stay alert for IPD cases and are required to notify the Director of Health of any confirmed cases.

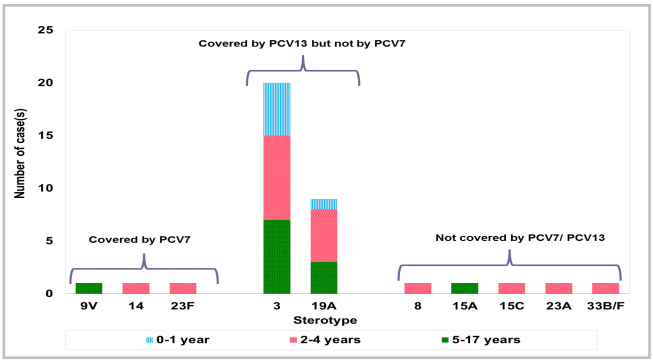


Figure 5 - Serotype distribution of paediatric IPD cases by age group, January 2 – December 31, 2014.

Japanese encephalitis (JE)

In 2014, CHP recorded five cases of Japanese encephalitis (JE) of which three were locally aquired and two were imported infections. The five cases included three females and two males. Their ages ranged from four to 54 years (median age = 35 years). All cases presented with fever. Three (60%) of them had various forms of neurological symptoms, namely, confusion (2 cases, 40%) and convulsion (2 cases, 40%). Other symptoms such as headache and vomiting were present in 100% and 40% of the patients, respectively. None of them required intensive care. All of them were discharged from hospital and no neurological sequelae were documented. No fatal case was recorded in 2014. Over the past decade (2005-2014), zero to six cases of JE were recorded annually in Hong Kong (Figure 6).

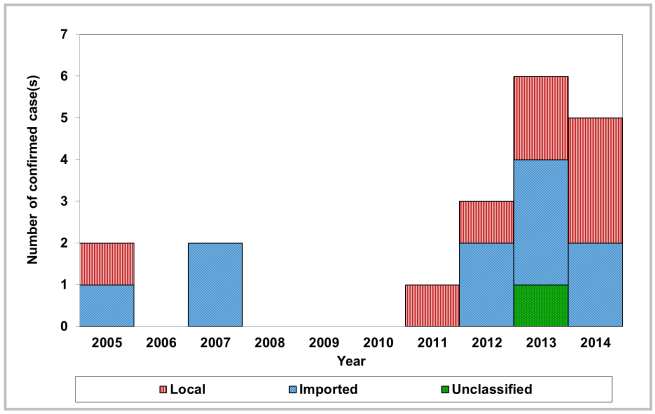


Figure 6 - Number of JE cases notified to CHP, 2005 – 2014.

The three local cases in 2014 were recorded in June, July and August. Two of the patients resided in Tin Shui Wai and Yuen Long with pig farms within two km of their homes. The third patient lived in Tuen Mun with no pig farm within two km of his home. The principal vector, *Culex tritaeniorynchus*, were found in the vicinity of their homes. Laboratory test results confirmed that the JE virus was found in a batch of specimens of adult *Culex tritaeniorhynchus* collected in Mong Tseng Wai, Lau Fau Shan, Yuen Long. Various government departments had strengthened inspections and mounted special operations in the vicinity, including larviciding, fogging and removal of mosquito breeding places, as well as enhancing publicity and health education.

The two imported cases in 2014 were recorded in July. Both patients lived in Mainland China and travelled to Hong Kong after onset of symptoms.

Under the surveillance of JE vector by the Food and Environmental Hygiene Department, a total of 69 batches (4 983 adults and 50 larvae/pupae of *Culex tritaeniorynchus*) were trapped and tested for JE virus during the rainy season in 2014. All results from routine vector survey were negative.

Legionnaires' Disease (LD)

A total of 41 Legionnaires' Disease (LD) cases were recorded in 2014, (Figure 7) as compared with 28 cases in 2013, with 12 cases (29.3%) reported in July. Their ages ranged between 34 and 90 years (median = 64 years) and the male to female ratio was 9.3:1. All the patients presented with pneumonia requiring hospitalization and 15 cases (36.6%) required intensive care. Fifteen cases (36.6%) were active smokers and another ten (24.4%) were ex-smokers. Five cases (12.2%) died due to LD. Regarding the initial positive diagnostic test, 29 (70.7%) and seven (17.1%) cases were initially diagnosed by urinary antigen test and polymerase chain reaction test for respiratory specimens (such as sputum and tracheal aspirate) respectively, and only five cases (12.2%) were initially diagnosed by serological tests.Regarding environmental investigations, 29 specimens (including swabs and water samples) related to 12 cases yielded positive culture for *Legionella pneumophila serogroup* 1 (Lp1). However, no further molecular comparison could be done to establish the causal relationship because all the 12 cases did not have any respiratory specimen cultured positive for Lp1 (either without respiratory specimen collected or with negative culture results). Thirty-three cases and six cases were classified as local acquired infection and imported infection respectively, while the remaining two cases were unclassified because the patients had stayed both in and outside Hong Kong during the incubation period and the place of infection could not be determined. All were sporadic cases and no epidemiological linkage was identified. One local case acquired the infection in hospital.

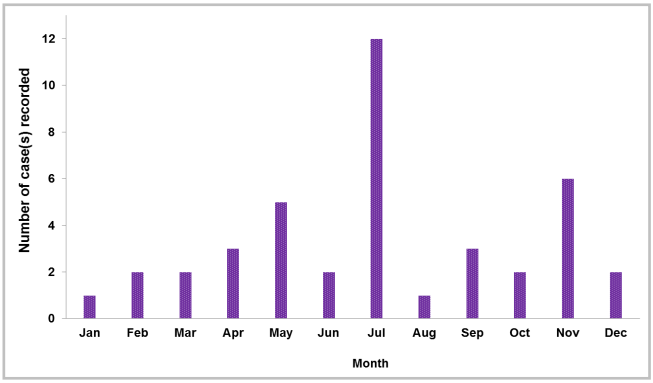


Figure 7 - Monthly number of LD cases in 2014.

Measles

In 2014, an increased number of measles cases was recorded in Hong Kong. There were a total of 50 measles cases in 2014 as compared with 38 cases in 2013.

Among these 50 cases, the male-to-female ratio was 1:1.8, with ages ranging from three months to 48 years. Twenty cases (40%) occurred in children under one year of age, when the first dose of measles-containing vaccine (MCV) under the Hong Kong Childhood Immunisation Programme (HKCIP) was not due. Seven cases (14%) were aged one to four years where one was imported from Mainland China without any measles-containing vaccines received. Among 22 cases at or above 20 years of age, the majority (19 cases) had unknown vaccination history. Only two of the 50 cases had received two doses of measles-containing vaccines (Figure 8).

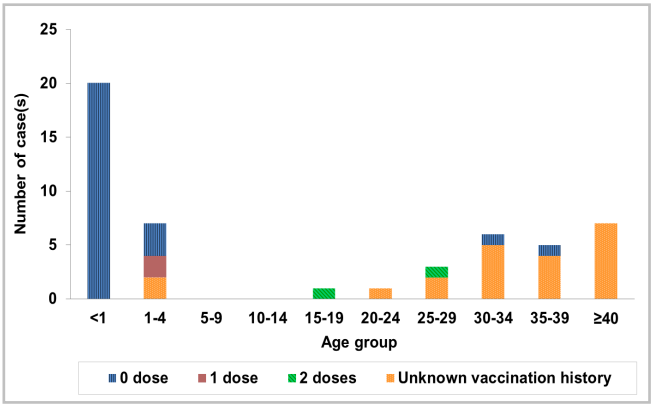


Figure 8 - Number of MCV doses received by measles cases among different age groups, 2014.

Majority of the cases were sporadic infection without linkage to other imported or local cases. The majority of the cases (92%) were laboratory confirmed. Of the 50 cases reported in 2014, four were imported infection and all were from Mainland China. There were six clusters with four occurring in hospitals and two domestic outbreaks in 2014. Each clusters involved two persons. Thorough contact tracing, infection control measures and medical surveillance of the susceptible close contacts were conducted to control the outbreaks.

In 2014, six cases were domestic helpers (including five Filipinos and one Indonesian) with unknown vaccination status. In view of this, CHP issued letters and a fact sheet on measles, mumps and rubella (MMR) vaccination to employment agencies via the Consulate General of the Philippines, Indonesia and Thailand to encourage foreign domestic helpers to get immunised if they have not done so. CHP also uploaded a letter to its website to urge employers to advise their domestic helpers to get immunised.

Pertussis

Pertussis is a cyclical disease which peaks every three to five years in Hong Kong. CHP recorded 30 cases of pertussis cases in 2014, an increase of 50 percent from the previous year and the highest count recorded since 2008 (Figure 9). The age of the affected persons ranged from 20 days to 92 years (median = 3 months), and cases were almost evenly distributed between the two sexes (16 females and 14 males). Twenty-four (80%) cases were locally acquired infection while the remaining were all imported cases from Mainland China. The disease predominantly occurred in infants under six months of age (17 cases, 57%) for whom the primary series of diphtheria, tetanus and pertussis (DTP) vaccination was not completed. Among these cases, eight of them were aged under two months old and had not reached the recommended age for the first dose of DTP vaccine under the Hong Kong Childhood Immunisation Programme. For the adult cases, they were either unvaccinated or had unknown vaccination status. There were three domestic outbreaks each affecting two to three persons, yet no fatal case was recorded in the past year.

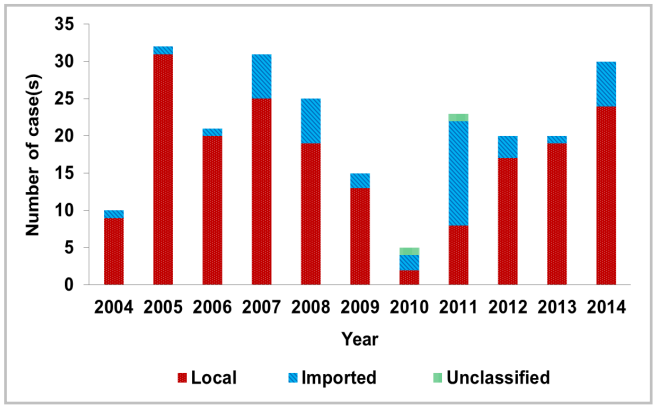


Figure 9 - Annual notification of pertussis by year, 2004 – 2014.

Rabies

In 2014, there was one imported fatal human case of rabies recorded in December that affected a 28-year-old Chinese man who worked in North Sumatra of Indonesia. Retrospective enquires of family members revealed that the patient had been bitten by a dog over his left upper arm at his workplace in Indonesia around July and he did not receive medical attention or vaccination after the dog bite. His family members were asymptomatic. Close contacts including family members and healthcare workers were arranged to receive post-exposure prophylaxis of rabies vaccination.

Seasonal influenza

In 2014, the winter influenza season started in early January and lasted until late April with duration of about 17 weeks. Among the respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB), the percentage tested positive for seasonal influenza viruses reached the peak level of 31.5% in late February and then started to decrease since early March. The influenza activity returned to the baseline level in late April, indicating the end of this winter season.

Influenza A and B viruses co-circulated in this season with the first half dominated by influenza A viruses and the later half dominated by influenza B viruses. Overall, the influenza viruses detected by PHLSB included influenza B (38.9%), influenza A

(H1N1)pdm09 (38.7%), influenza A(H3N2) (21.5%) and influenza C (0.9%). The majority (82.3%) of the influenza B viruses belonged to the Yamagata lineage which was well matched with the vaccine virus for the 2013/14 season.

The influenza activity started to increase again since late May and maintained at a level above the baseline in June and July. It started to decline gradually in late July and returned to the baseline level in late August. The increase in the summer was mainly caused by increase in activity of influenza A(H3N2) which constituted about 75% of all positive influenza detections during June and July. Nonetheless, the overall increase in influenza activity during June and July was not prominent when compared with that in the winter season in early 2014.

During the enhanced surveillance period for severe influenza infections among adults aged 18 years or above from January 3 to April 25 (i.e. about 17 weeks) and from June 23 to August 18 (about 8 weeks), 297 laboratory-confirmed influenza cases who required admission to intensive care unit (ICU) or died (including 150 deaths) were reported. Correspondingly, 25 paediatric patients of influenza associated severe complications including four deaths were reported during the same periods. In total, 322 severe cases (including 154 deaths) with laboratory confirmation of influenza were recorded among all ages during influenza seasons. Most of the severe cases (78%) had at least one underlying medical condition. Only 48 severe cases (14.9%) were reported to have received the influenza vaccine for the 2013/14 season.

NEWS IN BRIEF

A probable case of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on February 13, 2015, affecting a 65-year-old man with unremarkable past health. He presented with dizziness since August 2014 and developed onset of cognitive decline since September 21, 2014. He was admitted to a public hospital on September 22, 2014. Subsequently, he developed rapidly progressive dementia, cerebellar disturbance and extrapyramidal dysfunction. Findings from magnetic resonance imaging of the brain and electroencephalography were suggestive of CJD. He was classified as a probable case of sporadic CJD. He had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. His condition continued to deteriorate and he succumbed on January 5 2015.

CA-MRSA cases in January 2015

In January 2015, CHP recorded a total of 93 cases of community-associated methicillin resistant Staphylococcus aureus (CA-MRSA) infection, affecting 47 males and 46 females with ages ranging from 3 months to 69 years (median = 35 years). Among them, there were 58 Chinese, 14 Filipinos, 7 Caucasian, 3 Pakistani, 1 Bangladeshi, 1 Korean, 1 Thai, 1 Vietnamese, 2 others, and 5 of unknown ethnicity. Isolates of all these 93 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (69) or V (24).

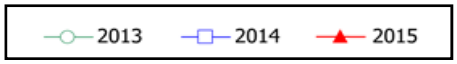
Eighty-eight cases presented with skin and soft tissue infections. The remaining five cases had invasive CA-MRSA infections including deep abscess, pneumonia and sepsis. The first case was a 47-year-old man with good past health who presented with fever, chills, facial and neck swelling since December 19, 2014. He was admitted to hospital on December 21 and was diagnosed to have sepsis. His blood specimen was cultured positive for CA-MRSA. The second case was a 67-year-old woman with underlying medical conditions who presented with fever, cough with sputum and chest discomfort in late December 2014. She was admitted to hospital on January 1 and was diagnosed to have pneumonia and sepsis. Her blood specimen collected on January 2 was cultured positive for CA-MRSA. The third case was a 61-year-old woman with history of renal transplantation who presented with fever and loin pain since December 16, 2014 and was admitted to hospital on the same day. She was found to have abscess in her graft kidney with aspirate cultured positive for CA-MRSA. The fourth case was a 36-year-old man with history of intravenous drug use and deep vein thrombosis of left lower limb. He was admitted to hospital due to drowsiness on January 4 and was found to have lung and pelvic abscesses and septic arthritis of his left hip. His blood, sputum, pelvic muscle tissue and hip fluid specimens collected between January 6 and 15 were cultured positive for CA-MRSA. The last case was a 32-year-old man with good past health who presented with fever since January 2 and was admitted to hospital on the same day. He was found to have right retroperitoneal abscess which was cultured positive for CA-MRSA. Three cases (47/M, 61/F, and 32/M) recovered and were discharged while the other two cases (67/F and 36/M) were in stable condition after antibiotic treatment and remained hospitalised. All the close contacts of these five cases were asymptomatic, and screening and decolonization were provided to them.

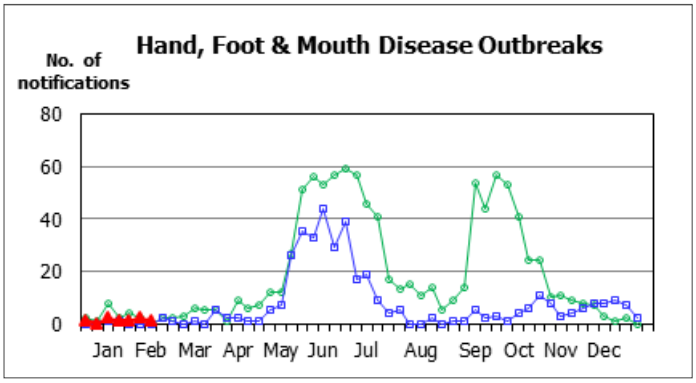
Among the 93 cases, one case was a healthcare worker working in a residential care home for the elderly. Investigation did not reveal any epidemiological linkage to other cases. Besides, seven family clusters, with each affecting two persons, were identified. Screening and decolonization were provided to the close contacts of these 14 cases. (Note: The number of cases in December 2014 was revised to 61)

Scarlet fever update (January 18 – February 14, 2015)

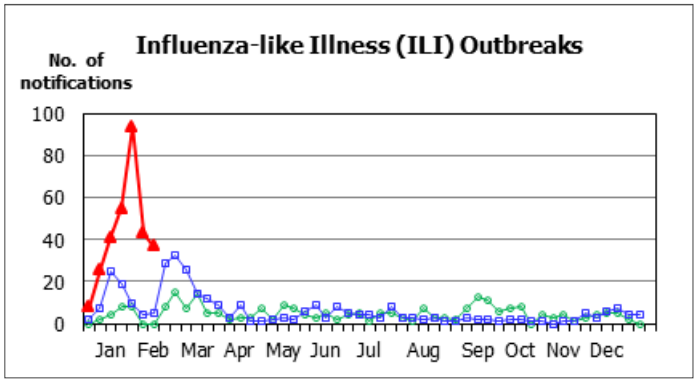
Scarlet fever activity in this reporting period icreased as compared with the previous four weeks. From January 18 – February 14, 2015, CHP recorded 140 cases of scarlet fever with a range of 26 to 51 cases per week as compared with 114 cases with a range of 19 to 44 cases per week in the previous reporting period (December 21, 2014 – January 17, 2015). The cases recorded in this reporting period included 88 males and 52 females aged between one and 14 years old (median = 6 years). Among them, there were three school clusters involving two primary schools and one kindergarten. While two clusters affected two persons each, there was one cluster affecting three persons in which a five-year-old girl developed severe pneumonia and septic shock requiring admission to paediatric intensive care unit for management. Her condition improved and was now in stable condition. No fatal cases were reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 6 - WEEK 7)

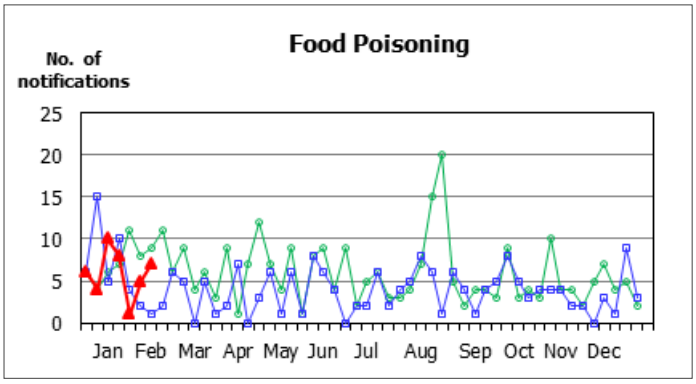




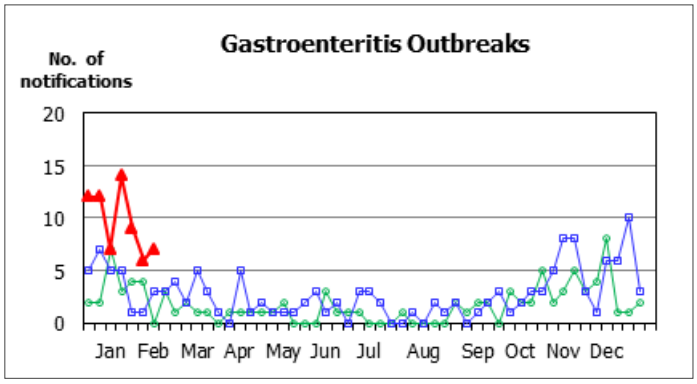
Week 4	1	Week 5	1
Week 6	**2**	**Week 7**	**1**

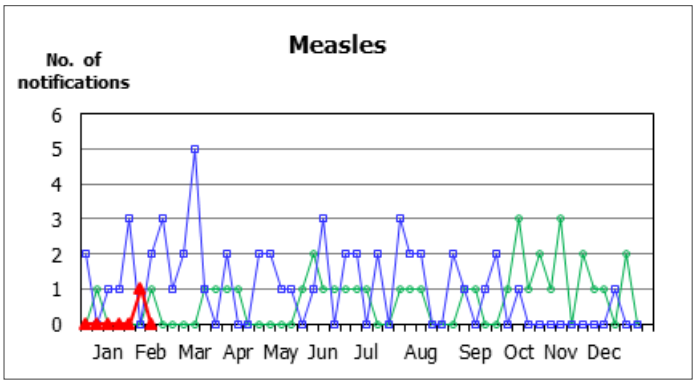


Week 4	55	Week 5	94
Week 6	**43**	**Week 7**	**37**

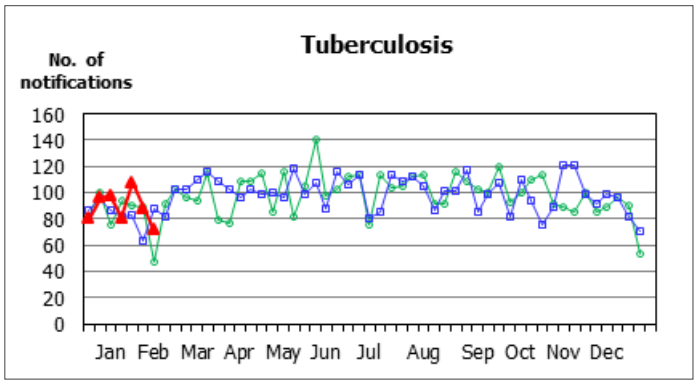


Week 4	8	Week 5	1
Week 6	**5**	**Week 7**	**7**

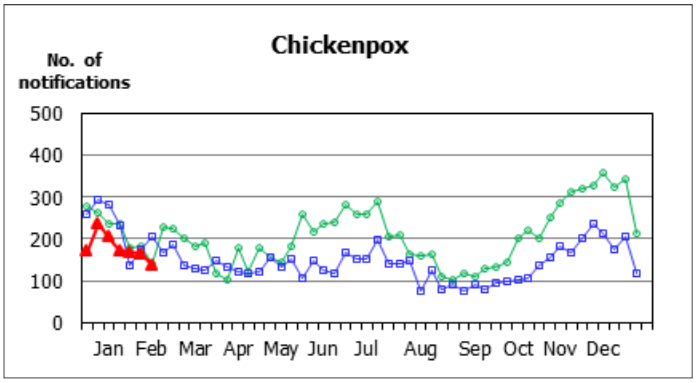




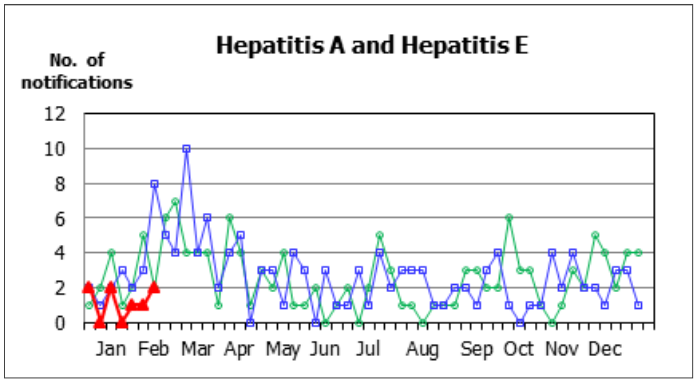
Week 4	0	Week 5	0
Week 6	**1**	**Week 7**	**0**



Week 4	81	Week 5	108
Week 6	**88**	**Week 7**	**72**



Week 4	172	Week 5	169
Week 6	**164**	**Week 7**	**138**



Week 4	0	Week 5	1
Week 6	**1**	**Week 7**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until February 14, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Feb 15 - Feb 28, 2015 WEEKS 8 - 9 VOL 12 ISSUE N⁰ 5

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Update of leprosy in Hong Kong in the public sector

Reported by Dr Ho Ching-kong, Senior Medical and Health Officer and Dr Ho King-man, Consultant i/c, Social Hygiene Service, Public Health Service Branch, CHP.

Leprosy is caused by *Mycobacterium leprae*, that affects mainly the skin and nerves. The incubation period can be long (in terms of years) and the clinical manifestations depend on the immunity of the individual. Contact with the bacilli is either spread by the air-borne route via the nasal mucosae, or via breaks in the skin.[1] However, contact with the bacilli does not mean that leprosy will develop. In most cases, the bacilli are cleared and true leprosy develops only in susceptible individuals after prolonged close contact, although occasionally, susceptible individuals may be infected by a brief exposure.[1] The rate of infection among contacts of patients is low: among the 1 574 leprosy cases recorded in the public sector in Hong Kong from 1970 to 2004, only 45 (2.9%) cases were detected through contact tracing.[2] Affected cases may either recover without treatment or develop indeterminate leprosy which consists of hypopigmented lesions.

The cell-mediated immunity (CMI) of the patient will determine whether true leprosy develops and if so, what subtype of leprosy. If the CMI is strong, bacilli are suppressed and a milder, less infectious form of leprosy, paucibacillary (PB) develops. As a result, no bacilli are seen on skin smear. Clinically, paucibacillary leprosy includes the tuberculoid, borderline tuberculoid and primary neuritic subtypes. In multibacillary (MB) cases, as CMI is weak, the bacilli are not suppressed and are seen on skin smear. Mid-borderline leprosy, borderline lepromatous leprosy and lepromatous leprosy are classified as multibacillary leprosy (Table 1). Clinically, the lesions of tuberculoid leprosy are often solitary, presenting as an anaesthetic, persistent patch with absence of sweating and dryness with or without enlargement of the peripheral nerves. In lepromatous leprosy, there are widespread, poorly defined nodules. In-between the two poles are the unstable borderline subtypes which are particularly associated with lepra reactions.

Table 1 - Classification of leprosy.

Paucibacillary (PB)	Multibacillary (MB)
Tuberculoid	Mid-borderline
Borderline tuberculoid	Borderline lepromatous
Primary neuritic leprosy	Lepromatous leprosy

In the 1950s, over 300 new cases were diagnosed yearly in Hong Kong.[3] During this period, treatment was with dapsone monotherapy and severely affected cases were isolated in a leprosarium on Hei Ling Chau.[4] With improved housing and general health care, the reported incidence of leprosy declined from 302 new cases (detection rate 13.5 per 100 000 population) in 1954 to six new cases in 2004 (detection rate 0.088 per 100 000 population),[2] and has remained at this level since (Figure 1). With the declining incidence, the leprosarium was closed in 1975. The World Health Organization (WHO) definition of disease elimination is a prevalence rate below one per 10 000 population. As the prevalence of leprosy fell below this level in the mid-1980s, leprosy was declared eliminated from Hong Kong, although it remains a notifiable disease.

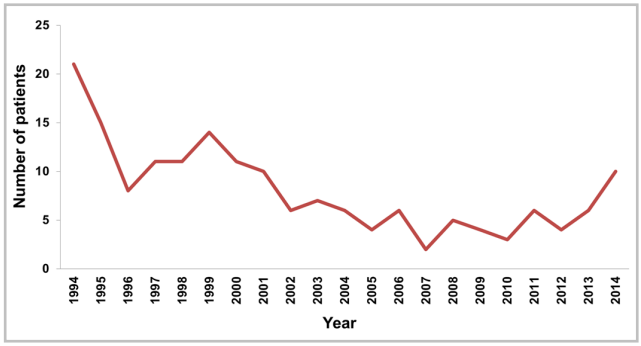


Figure 1 - Annual incidence of leprosy in the public sector in Hong Kong.

At present, new cases have originated mainly from Nepal, India, the Philippines, Indonesia, or Mainland China. Over the past 10 years, there was only one new case involving a local resident, a young man in his thirties diagnosed in 2014. He was born in Hong Kong and had lived in Hong Kong all along. He had travelled to Vietnam and Thailand, but there was no history of contact with leprosy cases. The source of infection in this case was unclear. His general health was otherwise good and he has responded well to treatment so far.

The ages of the new cases ranged between 20 and 50 years (average age 30 to 40 years) in past five years. Many had lived in Hong Kong for under 10 years as many of them were imported cases. With the lower age of new cases, the incidence of deformities in new cases was also low, ranging from one to two cases each year. The proportion of males to females in the new cases was approximately equal. Each year, only a few (under five) cases of leprosy relapse requiring re-treatment. Overall, the cure rate was high (90%) although some new cases had either defaulted or returned to their home country such that the treatment coverage was not 100%.

Since 2001, there have been no paediatric cases (under 15 years of age).[2] The proportion of the various subtypes of leprosy reported between 2008 and 2013 is as follows: lepromatous 57% ; borderline 39%; tuberculoid 4% (Figure 2).

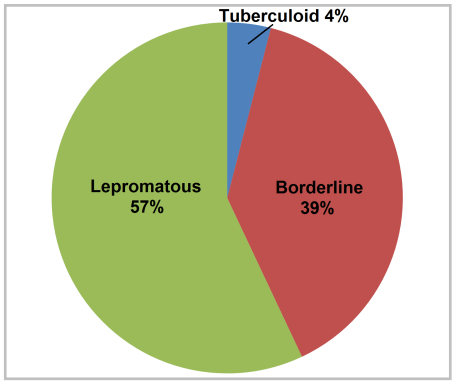


Figure 2 - Subtypes of leprosy new cases reported in the public sector in Hong Kong 2008-2013.

After the introduction of WHO-multidrug therapy (MDT), the outlook has improved and treatment now is mainly on an outpatient basis. The regimen used in the Social Hygiene Clinic is based on WHO MDT:

MB leprosy: Dapsone 100mg/day, Clofazimine 50 mg/day, Rifampicin 600 mg/month, Clofazimine 300 mg/month for two years or until smear negative, whichever the longest.

PB leprosy: Dapsone 100mg daily, Rifampicin 600mg/month for six months

Despite the improved outlook for leprosy patients, there is still a deeply ingrained fear in the public in Hong Kong. Many patients are reluctant to disclose their diagnosis due to fear of stigmatisation and rejection. With the decreased incidence, medical practitioners are less likely to encounter cases of leprosy and unfamiliarity may lead to delayed or misdiagnosis. Further education on the condition is therefore required.

References

[1]Yawalkar SJ. Leprosy for medical practitioners and paramedical workers. Basle, Switzerland. 6th ed. Ciba-Geigy Limited; 1994.
[2]Ho CK, Lo KK. Epidemiology of leprosy and response to treatment in Hong Kong. Hong Kong Med J. 2006;12:174-9.
[3]Honey, NR, Ho MY. Leprosy in Hong Kong. Hong Kong Department of Health Public and Epidemiology Bulletin 1996; 5:1-5.
[4]Chong LY. Honey NR. Leprosy Control Programme in Hong Kong. J Hong Kong Med Assoc. 1993; 45:70-3.

JOURNAL PUBLICATION HIGHLIGHTS

Infection control intervention on meticillin resistant *Staphylococcus aureus* transmission in residential care homes for the elderly

VWM Chuang, IHL Tsang, JPY Keung, JYY Leung, JMT Yuk, DKW Wong, SS Au, RKY Tam, WWY Lam, MCT Kwan, and ATY Wong. Infectious Disease Control Training Centre, Hospital Authority/Infection Control Branch, Centre for Health Protection, Department of Health, Hong Kong SAR, China

In this study, the authors conducted a two-arm cluster randomised controlled trial to evaluate the impact of implementing a multifaceted intervention bundle in residential care homes for the elderly (RCHEs) to prevent and control meticillin resistant *Staphylococcus aureus* (MRSA) transmission. Thirty-six RCHEs in Hong Kong were randomly allocated to an intervention arm and a control arm from July 2009 to October 2010. All intervention homes received an intervention bundle which comprised hand hygiene (HH) enhancement, environmental decontamination, and modified contact precautions for MRSA control whereas the usual care arm received standard care. MRSA prevalence and intra-facility MRSA transmission within RCHE; staff HH compliance and effectiveness; and environmental hygiene were used as outcome measures. Results showed that the overall MRSA prevalence was 20.4% (95% confidence interval, 18.9% - 21.9%) at the baseline and it was comparable in both arms. The intervention elicited an immediate effect of 2.4% absolute decrease in the prevalence and 3.7% decrease in the intra-facility transmission, though the difference between the two arms was insignificant. The staff HH compliance rate in the intervention arm increased substantially from 5.9% at baseline to 45.6% at post-intervention phase. Yet, only a slight increase in HH compliance rate from 5.9% to 7.2% was observed in the usual care arm. The MRSA rate of environmental samples remained at around 4% throughout the study period in the intervention arm, whereas there was a significant increase in the usual care arm (2.3% at baseline to 6.6% at post-intervention phase, $p<0.001$). However, no statistically significant difference was found between the two arms at post-intervention phase. These findings suggest that infection control bundle alone could not bring sustainable MRSA reduction and that administrative control for strengthening infection control infrastructure is crucial for continuous compliance and improvement.

Journal of Infection Prevention. 2014 October 27 (Epub ahead of print).
http://bji.sagepub.com/content/early/2014/10/23/1757177414556007.abstract

Smoking adversely affects treatment response, outcome and relapse in tuberculosis

CC Leung[1], WW Yew[2], CK Chan[1], KC Chang[1], WS Law[1], SN Lee[1], LB Tai[1], ECC Leung[1], RKF Au[1], SS Huang[1] and CM Tam[1].
[1]TB and Chest Service, Department of Health, Hong Kong SAR, China
[2]Stanley Ho Centre for Emerging Infectious Diseases, The Chinese University of Hong Kong, Hong Kong SAR, China

The objective of this study was to examine the impact of smoking on tuberculosis (TB) outcome in a territory-wide TB control programme. Consecutive patients who underwent chemotherapy for active TB at the eighteen clinics of the Hong Kong TB and Chest Service between 2001 and 2003 were followed up prospectively for two years for treatment outcome and subsequently tracked through the territory-wide tuberculosis notification registry for relapse until the end of 2012. A total 16 345 consecutive TB patients were included in the final analysis. Results showed that both current smokers and ex-smokers were significantly associated with more extensive lung disease, lung cavitation and positive sputum bacteriology at baseline and increased risks of persistently positive smear and culture after two months of treatment as compared with never-smokers. Multivariate regression analysis revealed that 16.7% (95% CI 10.4 – 22.5%) of unsuccessful treatment outcome was attributable to smoking with the key contributor being default in current smokers and death in ex-smokers and that both current smokers and ex-smokers were less likely to achieve cure or treatment completion within two years. In addition, among successful treatment completers, there was a clear gradient (hazard ratios of 1.00, 1.33, and 1.63) of relapse risk from never-smokers to

ex-smokers and current smokers, with an overall population attributable risk of 19.4% (current smokers: 12.2%; ex-smokers: 7.2%). As smoking adversely affects baseline disease severity, bacteriological response, treatment outcome and relapse in TB, which in turn significantly inhibits the effectiveness of TB treatment, the authors conclude that the incorporation of smoking cessation into TB treatment programmes likely reduces relapse and secondary transmission.

Eur Respir J. 2015; 45(3): 738-45.
http://erj.ersjournals.com/content/early/2014/10/30/09031936.00114214.abstract

Determinants of an effective antibiotic campaign: Lessons from Hong Kong

ML Ho[1], BJ Cowling [2], WH Seto [3], LC Wong [1], TY Wong [1]
[1]Centre for Health Protection, Hong Kong SAR, China
[2]The University of Hong Kong, Hong Kong SAR, China
[3]World Health Organization Collaborating Centre for Infection Control, Hong Kong SAR, China

This study evaluated the knowledge, attitude, and practice related to antibiotic use and antibiotic resistance among adults aged ≥18 before and after the launch of a communitywide antibiotic campaign in Hong Kong in April 2011. A total of 1 569 respondents were enrolled in two telephone surveys in November 2010 and June 2011 respectively. Results showed that information obtained from health professionals had the highest mean impact score before the campaign. Married persons and those aged ≥45 appear to be more receptive. There was a significant increase in the proportion of respondents knowing that antibiotics could not cure influenza (from 58.0% to 65.0%; P<0.001) or viral infections (from 24.9% to 29.0%, P=0.002). More than one quarter of the respondents were aware of the campaign, mostly (73.9%) through announcement of public interest (API) on television or radio. After regression, age, personal hygiene practice in daily life, and the attitude that everyone had a role to play in alleviating the problem of antibiotic resistance were found to be associated with campaign awareness. The authors concluded that an effective antibiotic campaign depended on utilisation of multiple channels of publicity, especially broadcasting on television at prime time; tailor-made messages for the public and health professionals; commitment and support of the government and stakeholders; and repeated annual campaigns with evaluation incorporated at the planning stage.

Journal of Global Antimicrobial Resistance, 2014, 2(4): 334-337.
http://www.sciencedirect.com/science/article/pii/S2213716514000964

NEWS IN BRIEF

A confirmed case of human myiasis

On February 16, 2015, the Centre for Health Protection (CHP) recorded a case of human myiasis affecting a 67-year-old woman who lived in a residential care home for the elderly (RCHE). She was bed bound with multiple medical illnesses and required tube feeding. She presented with increase in gum bleeding on February 15 and a worm was noted in the patient's oral cavity by the RCHE nurse. She was admitted to a public hospital on the same day and multiple maggots were removed from the oral cavity. The patient was in stable condition. Her contacts in the RCHE were asymptomatic. Health advice on personal care and environmental hygiene was given to the RCHE.

A sporadic case of necrotising fasciitis caused by *Vibrio vulnificus*

On February 25, 2015, CHP recorded a case of necrotising fasciitis caused by *Vibrio vulnificus* affecting a 60-year-old woman with unremarkable past health. She presented with left leg swelling and pain on February 23 and was admitted to a public hospital on the same day. The clinical diagnosis was left leg necrotising fasciitis and septic shock. She was treated with antibiotics and required excisional debridement. Her blood specimen and wound swab collected on February 23 both yielded *Vibrio vulnificus*. She was in a stable condition. She had been to wet market but could not recall any recent injuries. Her home contacts were asymptomatic.

Updated measles situation in overseas

Measles is a serious viral infection of significant public health concern. It is highly infectious, and spreads easily among partially immunised and unimmunised populations. With widespread use of effective measles vaccine, its incidence has been drastically reduced. However, in recent years, increasing number of measles incidence and outbreak have been reported around the world.

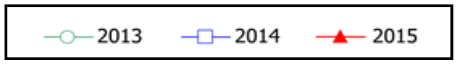
In the Americas, from January 1 to February 20, 2015, 154 people from 17 states and Washington DC were reported to have measles in the United States (US). Most of these cases (118 cases, 77%) are part of a large, ongoing multi-state outbreak linked to an amusement park in California since late December 2014. Moreover, the US also experienced 23 measles outbreaks involving 644 cases in 2014, and among them, there was one large outbreak involving 383 cases, occurring primarily among unvaccinated Amish communities in Ohio. In Canada, as of February 14, 2015, there were 13 confirmed cases, 13 confirmed cases and one imported case from India reported in the province of Quebec, Ontario and Manitoba respectively, with some cases linked to the current outbreak in California. In Brazil between 2013 and 2015 (as of February 7, 2015), a total of 971 confirmed measles cases were reported.

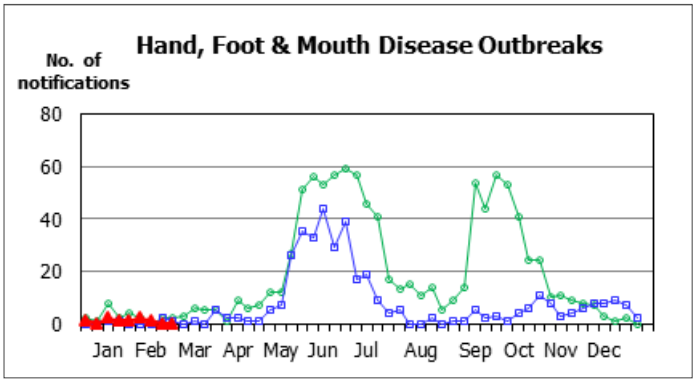
In Europe, more than 22 000 cases of measles have been reported in seven countries in the World Health Organization (WHO) European Region in 2014 and 2015. The largest number of cases has been reported by Kyrgyzstan with over 7 000 of the cases reported in the first seven weeks of 2015. Significant number of measles cases in 2014 and 2015 has also been reported by Bosnia and Herzegovina, Georgia, Germany, Italy, Kazakhstan and the Russian Federation.

In Asia, high measles activity has also been reported in countries such as the Philippines and Mainland China. According to WHO, there were 58 010 suspected cases of measles, including 21 420 confirmed cases in 2014 in the Philippines. According to National Health and Family Planning Commission (NHFPC) of the People's Republic of China, there were 52 628 and 3 341 confirmed cases of measles in Mainland China in 2014 and January 2015 respectively.

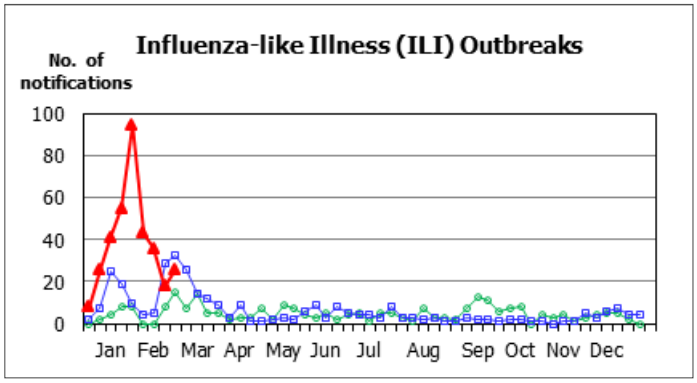
Locally, an increased number of measles cases was also recorded in 2014, with a total of 50 cases as compared with 38 cases in 2013. In 2015, as of February 28, one measles case was recorded. In view of the high measles activities worldwide, it is important to receive timely immunisation against measles.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 8 - WEEK 9)

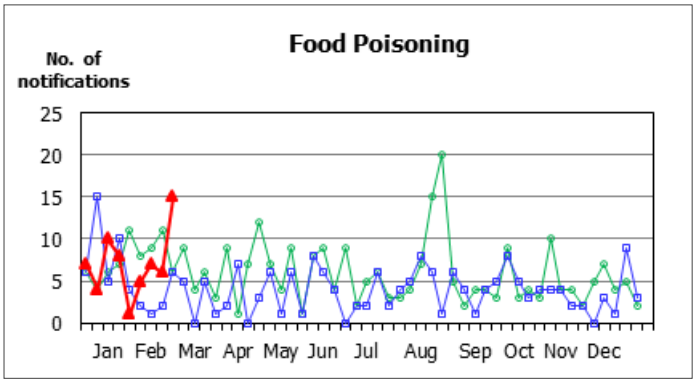




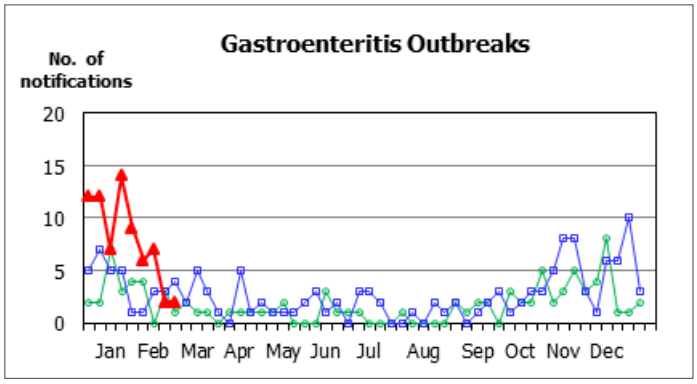
Week 6	2	Week 7	1
Week 8	**0**	**Week 9**	**0**



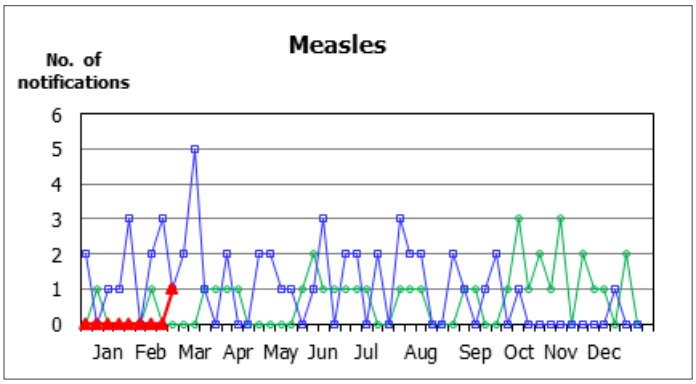
Week 6	43	Week 7	36
Week 8	**18**	**Week 9**	**26**



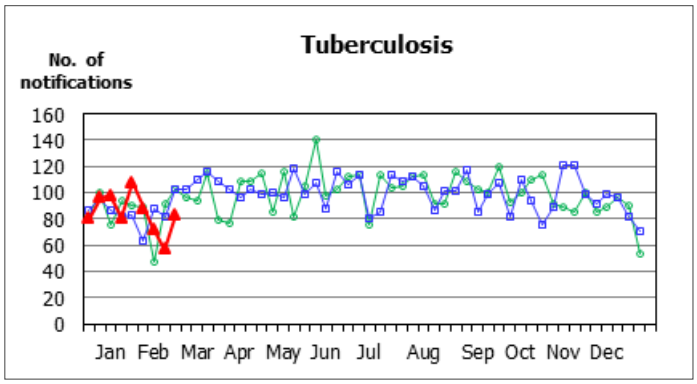
Week 6	5	Week 7	7
Week 8	**6**	**Week 9**	**15**



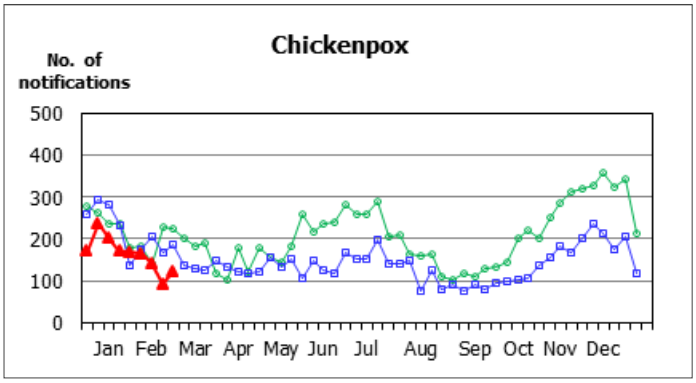
Week 6	6	Week 7	7
Week 8	**2**	**Week 9**	**2**



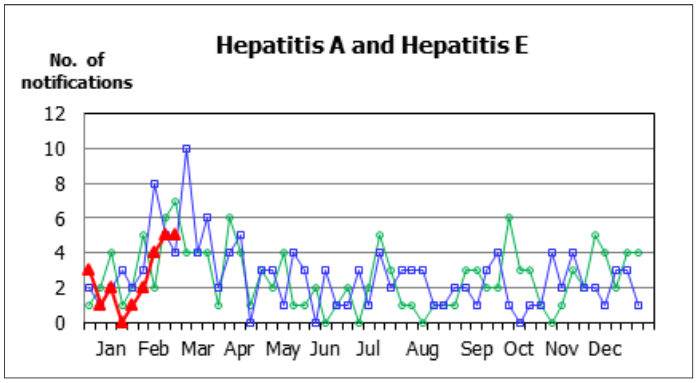
Week 6	0	Week 7	0
Week 8	**0**	**Week 9**	**1**



Week 6	88	Week 7	72
Week 8	**57**	**Week 9**	**83**



Week 6	164	Week 7	141
Week 8	**92**	**Week 9**	**122**



Week 6	2	Week 7	4
Week 8	**5**	**Week 9**	**5**

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Mar 1 - Mar 14, 2015 WEEKS 10 - 11 VOL 12 ISSUE Nº 6

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

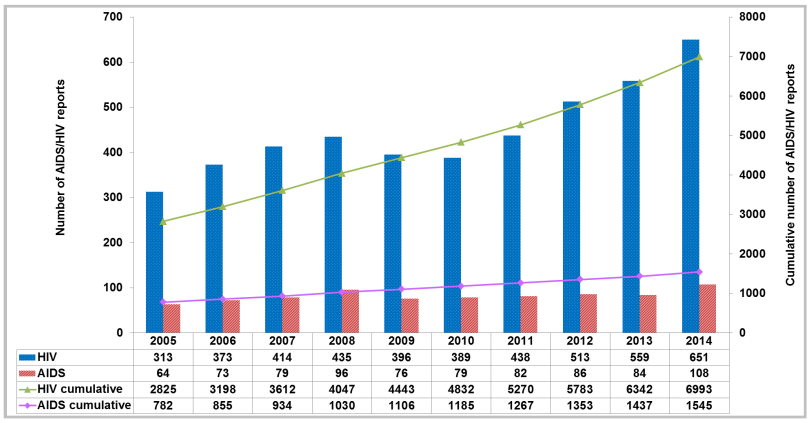
FEATURE IN FOCUS

Update on HIV epidemiology and risk behaviours among men who have sex with men in Hong Kong

Reported by Dr Philip Wong, Medical and Health Officer and Dr Wong Ka-hing, Consultant, Special Preventive Programme, Public Health Services Branch, CHP.

Since 1984, the Department of Health (DH) has implemented a voluntary anonymous case-based HIV and AIDS reporting system with input from both clinicians and laboratories.The cumulative number of HIV and AIDS reports in Hong Kong reached 6 993 and 1 545 cases at the end of 2014 (Figure 1).

The annual number of new HIV reports has continued to increase in the past few years and reached a new record high of 651 in 2014, which was a 16.5% increase as compared with the 559 cases in 2013.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
HIV	313	373	414	435	396	389	438	513	559	651
AIDS	64	73	79	96	76	79	82	86	84	108
HIV cumulative	2825	3198	3612	4047	4443	4832	5270	5783	6342	6993
AIDS cumulative	782	855	934	1030	1106	1185	1267	1353	1437	1545

Figure 1- HIV and AIDS reports in Hong Kong, 2005 - 2014.

Similar to previous few years, the HIV situation in Hong Kong was still dominated by infections in men who have sex with men (MSM). In 2014, a record high number of 378 MSM infected cases was newly reported, an 25.6% increase as compared with 301 cases in 2013. MSM was the commonest mode of transmission and accounted for 58.1% of all HIV reports, and 74% if excluding cases with yet undetermined mode due to inadequate information. MSM also accounted for a continually expanding proportion in the male infected cases, from 33.8% in 2005 to 56.6% in 2009 and 68.9% in 2014. (Figure 2)

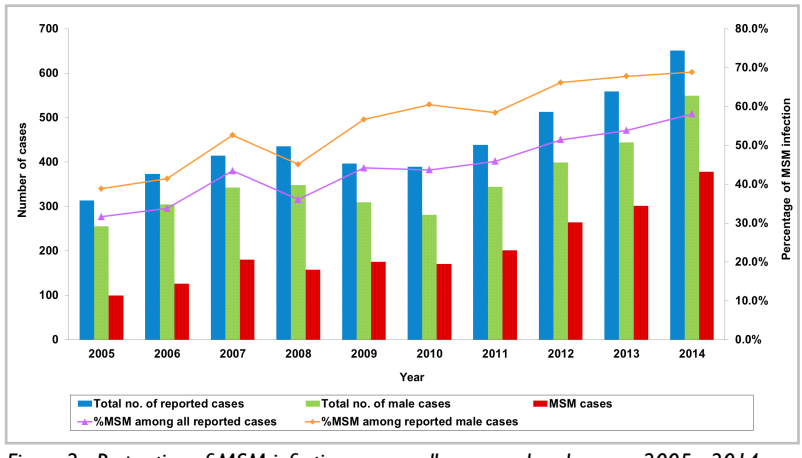


Figure 2 - Proportion of MSM infection among all cases and male cases, 2005 - 2014.

The majority of the MSM reported cases in 2014 were Chinese (87.8%) and diagnosed at the age between 20 and 29 (43.4%) and 30-39 (27.0%). The median age of MSM cases had continued to decrease in the past few years (from 37 years old in 2010 to 34 in 2012 and 31 in 2014), which suggested that more younger MSM population were affected.

In 2014, the three commonest sources of MSM infected cases notification were public hospitals/clinics (23.8%), DH's Social Hygiene Clinic (22.2%) and AIDS service organisations (21.7%). The proportions of referral from AIDS service organizations increased from 14.4% in 2011 to 21.7% in 2014.This showed an increasing importance of community organisations in detecting new infections among the MSM community.The majority (74.3%) of the reported MSM cases were assessed to have contracted the virus locally, 9.5% in Mainland China and 10.8% in other places respectively.

To monitor the HIV-related risk behaviours and HIV testing patterns among MSM, a community based HIV/AIDS Response Indicator Survey (HARiS) was conducted in 2014.

A total of 1 026 MSM were recruited in the survey from March to June 2014, 459 via non governmental organisations' (NGOs) centre-based HIV voluntary counselling and testing (VCT) services, 188 via their outreach sessions and 379 via internet. Any man who had ever had oral or anal sex with another man was eligible. All participants were invited to complete a self-administered questionnaire and provide a urine specimen for HIV testing.

The majority of the participants were Chinese (98.6%), aged between 20 and 39 (77.6%) and had stayed in Hong Kong for more than three months in the preceding six months (86.0%).

The condom use rates in the last anal sex with emotional relationship partners (ERP), regular sex partners (RSP) and non-regular sex partners (NRSP) in the preceding six months were found to be 65.0%, 70.3% and 80.6% respectively.

Eight hundred and five of the participants (78.5%) had ever received HIV test. However, only 639 (62.3%) had their last test in the preceding one year and 601 (58.6%) knew their last HIV test results. The most commonly reported venue for last HIV test was NGOs (71.1%), followed by public service sector (social hygiene clinics, public hospitals/clinics or DH Kowloon Bay Health Centre) (13.6%) and private sector (5.3%).

A total of 564 urine specimens were collected for HIV serology testing. Thirty-three (33) were found to be HIV positive, giving an overall HIV prevalence of 5.85% (95% CI: 4.2 - 8.1). It was higher than the findings from a previous MSM survey in 2011 which was around 4% and remained significantly higher than other at-risk populations including female sex worker and injecting drug users.

As gauged from the reporting system, MSM has continued to account for a significant proportion of newly acquired HIV infections in Hong Kong. Although the behavioural survey showed that there was an increase in the alertness to have HIV test and even regular HIV testing in the gay community as compared to previous similar surveys, the condom use rate was still unsatisfactory and have to be improved. Moreover, the increasing HIV prevalence among MSM is also of great concern.

Similar to the situation in many developed countries and neighbouring areas, MSM infection will likely dominate the HIV epidemic in Hong Kong in the near future. Of which, more young MSM infected cases in the recent years is particularly an alarm. Close monitoring of the HIV situation among the gay community, promoting safer sex, encouraging regular HIV testing and collaboration between the stakeholders are crucial for the control of HIV epidemic among MSM in Hong Kong.

Vigilance against hepatitis A

Reported by Dr Billy Ho, Senior Medical and Health Officer, Dr ML Wong, Medical and Health Officer and Dr Paul Poon, Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

As of March 13, 2015, the Centre for Health Protection (CHP) has recorded 41 cases of hepatitis A infection in 2015 (Figure 1). Monthly number of notifications increased from five in January to 20 in February, which was the highest monthly number since April 2004. Sixteen cases are recorded in March as of March 13. As compared with an average of 12 cases each in the first quarter of the previous three years, there has been a definite upsurge. Below we report the preliminary epidemiological investigation findings.

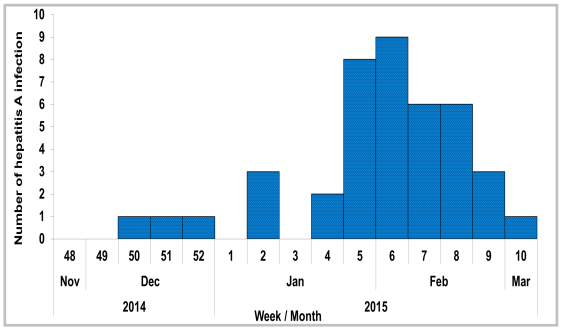


Figure 1- Number of hepatitis A infection by week of onset, week 1 to 10, 2015.

Seventeen males and 24 females were affected (male to female ratio =1:1.4) with age ranging from 11 to 66 years old (median age: 33 years old). All of the cases were symptomatic for hepatitis A infection, with jaundice and tea-coloured urine being most commonly presented symptoms. A significant proportion (29 cases, 71%) of cases had onset between week 5 and week 8 of 2015 (From February 1 to February 28). Thirty-five (85%) cases required hospitalisation. No case required intensive care and there were no fatalities. All cases were tested positive of hepatitis A IgM. None of the cases could provide definite history of hepatitis A vaccination.

So far, except two cases from the same family, all other cases were locally confirmed sporadic cases. Except for one case who spent whole incubation period outside Hong Kong and was classified as imported infection, the other cases likely acquired the infection in Hong Kong, although a proportion of them (15 cases) did spent short periods outside Hong Kong during the incubation period. The cases resided in different districts, including 11 in Hong Kong Island, nine in Kowloon and 21 in the New Territories.

We used a questionnaire to capture a wide range of exposures in order to explore possible risk factors of infection and 37 cases were successfully interviewed. During their incubation periods, 25 cases (68%) recalled having consumed shellfish and many (10/25) consumed during hotpot or barbecue (4/25). A proportion of cases reported having consumed ready-to-eat food items such as siu-mei (26 cases, 70%) or sushi/sashimi (23 cases, 62%).

Shellfish has been commonly documented in literature to cause transmission of hepatitis A. Some methods of food preparation such as hotpots and barbecues, have higher risk of inadequate cooking. Ready-to-eat food that require a lot of manual handling also have higher risk of contamination.

In addition, in view of a recent upsurge of hepatitis A cases associated with frozen mixed berries consumption reported in Australia[1], as well as reports of several berries-associated hepatitis A outbreaks in Europe and the United States, our preliminary investigations also tried to explore such kind of food histories. Fifteen cases (41%) have consumed various types of berries (e.g. blueberry, strawberry and raspberry) during their incubation periods. However, these berries were purchased from different outlets and were consumed in different forms, such as desserts / fresh fruit.

CHP has collected the hepatitis A virus (HAV) IgM-positive blood samples diagnosed in the different laboratories and performed molecular studies. The virus was shown to be genetically distinct in 29 cases. The majority of cases (26 cases, 90%) belonged to HAV genotype IA, and more than 10 genotypically distinct strains were identified among these cases. Among them, nine cases had identical sequences. Further investigations are ongoing with a view to study whether these nine cases were epidemiologically linked.

Protect yourselves against Hepatitis A

Viral hepatitis is a statutorily notifiable disease. The reported cases are currently classified by viral aetiology, namely hepatitis A, hepatitis B, hepatitis C, hepatitis E and hepatitis (not elsewhere classified). Hepatitis A is an infection caused by hepatitis A virus leading to inflammation of the liver cells. It is clinically characterised by poor appetite, tiredness, nausea, vomiting, diarrhoea, fever, upper abdominal discomfort, jaundice and tea-coloured urine. The illness may last for a few weeks but in rare cases may take months to resolve. Most patients have a complete recovery, but in a few cases, the damage to the liver may be prolonged.

Hepatitis A virus is usually transmitted by a faecal-oral route either through contaminated drinks or food such as shellfish, or directly from person to person.

CHP urged members of the public to take heed of the preventive measures below against hepatitis A:

- ☑ Avoid high-risk food like shellfish, raw food or undercooked food;
- ☑ Wash hands properly with liquid soap and water before eating or handling food, and after going to the toilet or changing diapers;
- ☑ Cook food thoroughly. Scrub and rinse shellfish in clean water. Remove the viscera if appropriate. All shellfish should be cooked at boiling temperature for not less than five minutes before eating;
- ☑ For food to be consumed without cooking, e.g. fruits, clean and wash thoroughly;
- ☑ Purchase fresh food from reliable sources and do not patronise illegal hawkers;
- ☑ Drinking water should be from the mains and preferably boiled;
- ☑ Keep the premises and kitchen utensils clean; and
- ☑ Dispose of rubbish properly.

ı Hepatitis A and frozen berry product recalls. Department of Health. The Australian Government.; available from: http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-hep-A-frozen-berry.htm ; accessed March 17, 2015.

NEWS IN BRIEF

Two probable cases of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded two probable cases of sporadic Creutzfeldt-Jakob disease (CJD). The first case was notified on March 12, 2015, affecting a 57-year-old female with good past health. She presented with unsteady gait, visual and auditory hallucination since mid-February and was admitted to a public hospital on March 2. Myoclonus, cerebellar and extrapyramidal signs, rigidity and akinetic mutism were detected during hospitalization. Electroencephalography (EEG) showed typical CJD pattern. She was classified as a probable case of sporadic CJD. Her condition was stable.

The second case was recorded on March 13, 2015, affecting a 78-year-old man with underlying illnesses. He presented with limb weakness, slurring of speech, facial asymmetry and decreased memory since January 12, 2015 and was admitted to a public hospital on January 26. Subsequently, he developed progressive dementia, myoclonus, pyramidal and extrapyramidal dysfunction, and akinetic mutism. EEG finding was compatible with CJD. He was classified as a probable case of sporadic CJD. His condition was serious.

Both cases had no known family history of CJD and no risk factors for iatrogenic or variant CJD were identified.

Scarlet fever update (February 15, 2015 - March 14, 2015)

Scarlet fever activity in this reporting period decreased as compared with the previous four weeks. From February 15 to March 14, 2015, CHP recorded 76 cases of scarlet fever with a range of 16 to 22 cases per week as compared with 139 cases with a range of 27 to 50 cases per week in the previous reporting period (January 18 – February 14, 2015). The cases recorded in this reporting period included 47 males and 29 females aged between one and 16 years old (median = 5 years). There was one primary school cluster, affecting two persons. No fatal cases were reported during this reporting period.

CA-MRSA cases in February 2015

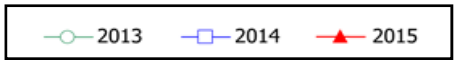
In February 2015, CHP recorded a total of 52 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 23 males and 29 females with ages ranging from 1 year to 77 years (median = 37 years). Among them, there were 35 Chinese, 4 Caucasian, 4 Filipinos, 4 Pakistani, 1 Indian, 1 Vietnamese, and 3 of unknown ethnicity. Isolates of all these 52 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (34) or V (18). All cases presented with skin or soft tissue infections and there was no severe infection recorded.

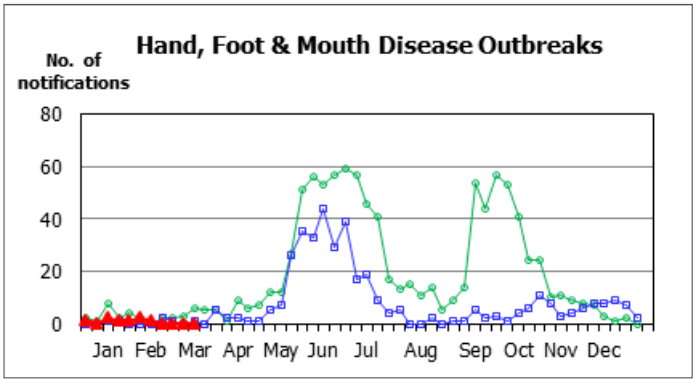
Among the 52 cases, two cases involved healthcare workers including an ambulanceman and a nurse working in a public hospital. Investigation did not reveal any epidemiological linkage to other cases.

Laboratory surveillance on multi-antimicrobial resistant bacteria (January 2015)

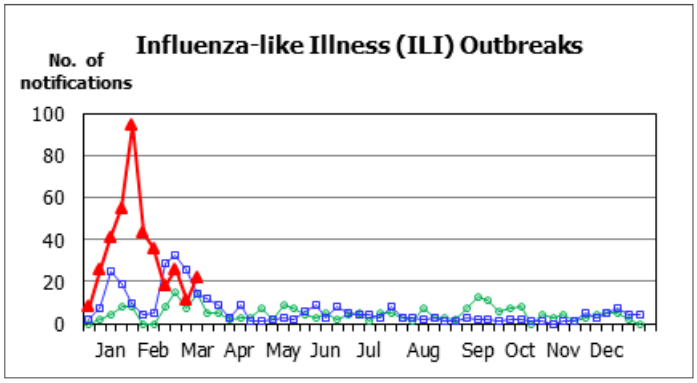
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website: http://www.chp.gov.hk/en/data/1/10/641/695/3910.html

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 10 - WEEK 11)

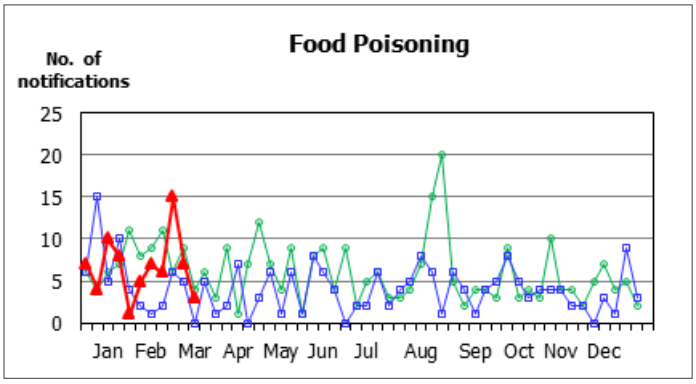




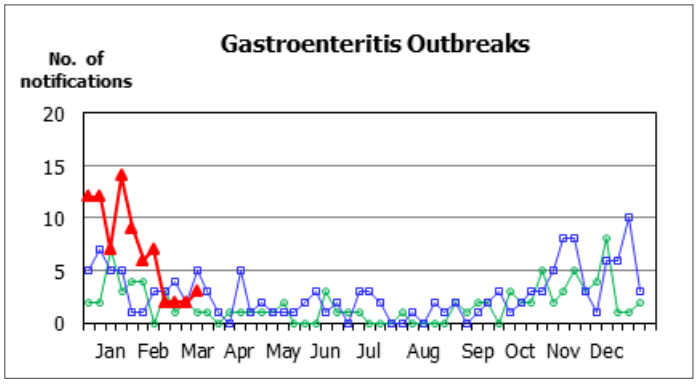
Week 8	0	Week 9	0
Week 10	**0**	**Week 11**	**0**



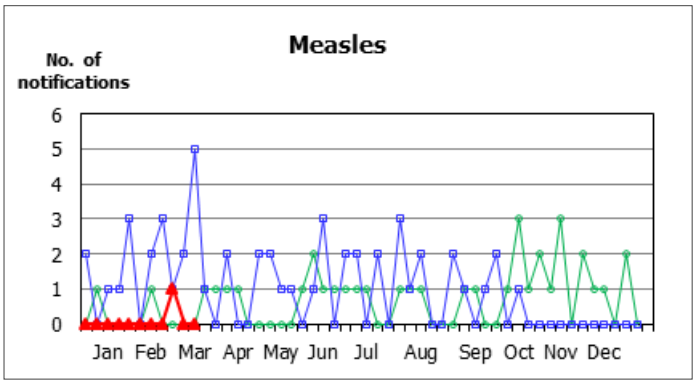
Week 8	18	Week 9	26
Week 10	**11**	**Week 11**	**22**



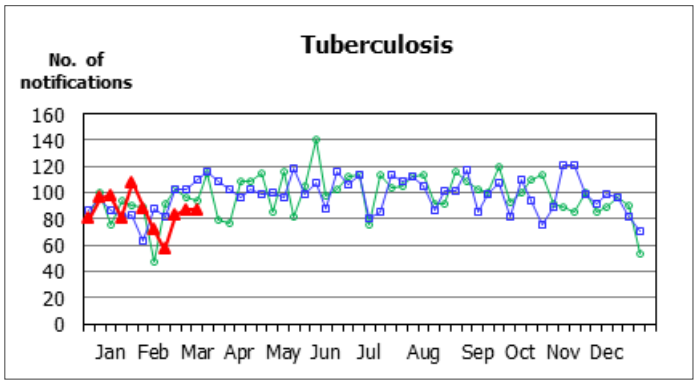
Week 8	6	Week 9	15
Week 10	**7**	**Week 11**	**3**



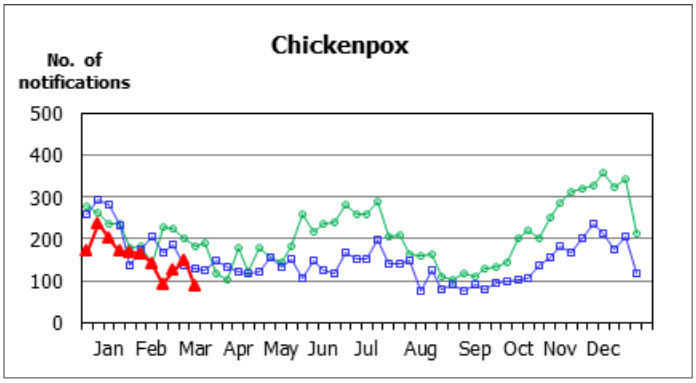
Week 8	2	Week 9	2
Week 10	**2**	**Week 11**	**3**



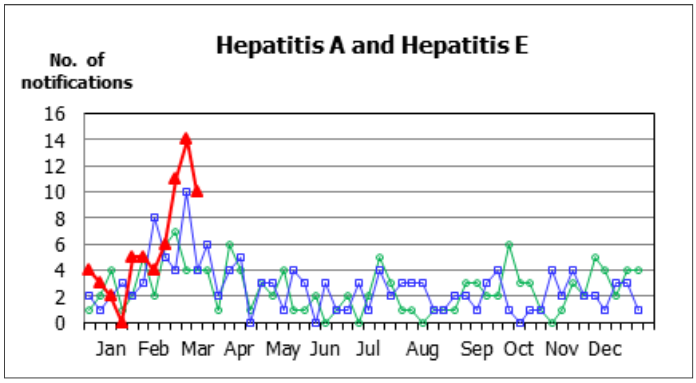
Week 8	0	Week 9	1
Week 10	**0**	**Week 11**	**0**



Week 8	57	Week 9	83
Week 10	**87**	**Week 11**	**87**



Week 8	92	Week 9	124
Week 10	**149**	**Week 11**	**88**



Week 8	6	Week 9	11
Week 10	**14**	**Week 11**	**10**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until March 14, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Mar 15 - Mar 28, 2015 WEEKS 12 - 13 VOL 12 ISSUE N⁰ 7

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

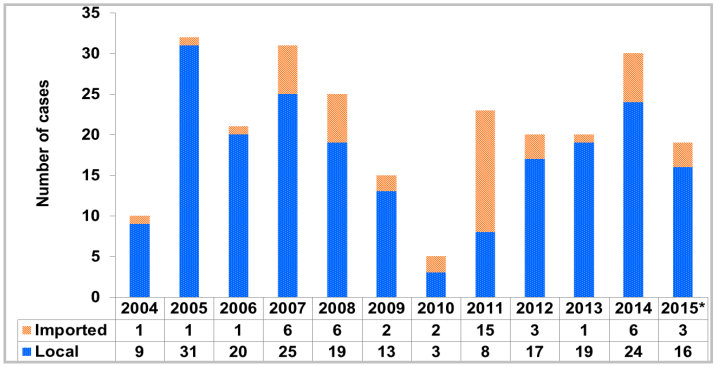
Local update on pertussis infection

Reported by Fanny WS HO, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Pertussis, also known as whooping cough, is an acute bacterial respiratory infection caused by *Bordetella pertussis*. It primarily affects all ages, especially infants who are too young to be vaccinated. The disease follows a cyclical pattern, with peaks in incidence every three to five years. Hong Kong observed an upsurge in pertussis infections in 2014, reaching a record high of 30 notifications since 2008 (Figure 1). This increase is continuing in the first quarter of this year, with 19 pertussis cases recorded as of March 31, 2015. Among the 117 pertussis cases reported to the Centre for Health Protection (CHP) since 2010 (as of March 31, 2015), 88 (75%) cases were locally acquired infection while the remaining 29 cases were imported cases from Mainland China. Cases were almost evenly distributed between the two sexes (59 females and 58 males), with ages ranged from 20 days to 92 years (median = 2 months).

All the cases were laboratory confirmed. Positive specimen types included pernasal swabs (56%), nasopharyngeal swabs (24%), nasopharyngeal aspirates (17%), sputum (2%) and bronchoalveolar lavage (1%). *Bordetella pertussis* was also detected in the nasopharyngeal/pernasal swabs from twelve asymptomatic household contacts of the cases during active case finding and contact tracing.

Clinically, the most common presenting symptom was persistent cough (117 cases, 100%), followed by post-tussive vomiting (29 cases, 25%), runny nose (25 cases, 21%), shortness of breath (16 cases, 14%) and fever (12 cases, 10%). Ninety-one (78%) cases required hospitalisation with a median length of hospital stay of six days (range = 1 – 17 days). Nine cases required treatment at the intensive care unit. Except one patient with pre-existing medical illness died from respiratory failure, no fatalities due to pertussis were recorded during the period of review.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Imported	1	1	1	6	6	2	2	15	3	1	6	3
Local	9	31	20	25	19	13	3	8	17	19	24	16

Figure 1- Pertussis cases by year, 2004 – 2015 (as of March 31, 2015).*

Infants aged less than one year, who are at greatest risk for severe disease and death, accounted for two-third of overall cases (79 cases, 68%)(Figure 2). Infection was most prevalent among infants under six months of age (76 cases, 65%) for whom the primary series of diphtheria, tetanus and pertussis (DTaP) vaccination was not completed. Among these cases, 36 (31%) of them were aged less than two months old and had not reached the recommended age for the first dose of DTaP vaccine under the Hong Kong Childhood Immunisation Programme (HKCIP). Two children aged one year completed the primary series, and six cases aged between two and six years received the primary series plus the first booster. For the 30 adult cases (aged 16 years or above), most of them were either unvaccinated or had unknown vaccination status.

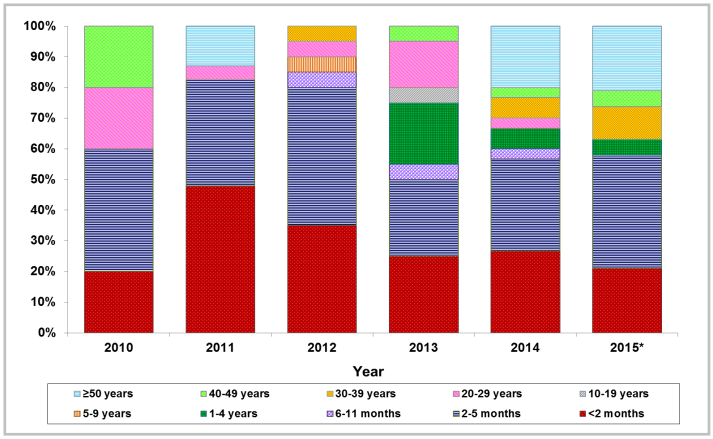


Figure 2 - Age distribution of pertussis cases by year, 2010 – 2015 (as of March 31, 2015).*

Outbreaks of pertussis were uncommon with approximately one to three clusters or domestic outbreaks reported annually. The outbreak size ranged from two to seven persons, affecting mainly infants, their family members and care takers.

Immunisation is the best way to prevent pertussis infection. Completion of the primary series with acellular pertussis vaccine is expected to confer 85% protective efficacy, and approximately 90% following booster vaccination[1]. Under the

current HKCIP, children in Hong Kong are recommended to receive a total of six doses of pertussis-containing vaccines. The vaccine is provided in the form of combined diphtheria, tetanus, acellular pertussis and inactivated poliovirus 4-in-1 (DTaP-IPV) vaccine in the Maternal and Child Health Centres for infants and young children and by the School Immunisation Team for primary school children. The three doses of primary series are administered to infants at two, four and six months of age, whilst the three boosters are given to children at 18 months of age, Primary One and Primary Six respectively. According to a territory-wide survey conducted in 2012, vaccination coverage for the three-dose primary series among children aged two to five years in Hong Kong has been maintained well over 95%.

Apart from active immunisation, maintaining personal and environmental hygiene is important in preventing infection and spread of pertussis. Physicians are also reminded to stay vigilant in the disease diagnosis and notification of any suspected pertussis cases. For more information on pertussis, please visit the CHP website:
http://www.chp.gov.hk/en/content/9/24/35.html

Reference

[1] Public Health Agency of Canada. Canadian Immunization Guide. Pertussis vaccine (February 2014)
http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pert-coqu-eng.php

Updated situation of listeriosis in Hong Kong

Reported by Dr William Chan, Medical and Health Officer, Enteric and Vector-bone Disease Office, Surveillance and Epidemiology Branch, CHP.

From January 2013 to March 2015, the Centre for Health Protection (CHP) recorded 49 cases of listeriosis. Twenty-six, 22 and one cases were recorded in 2013, 2014 and 2015 (as of March 31), respectively. The rising trend has levelled off in recent two years (Figure 1).

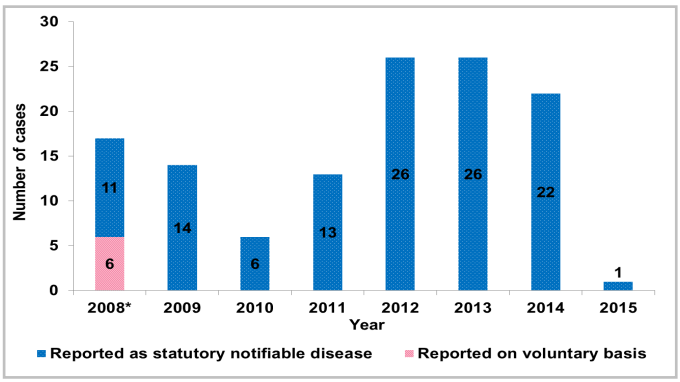


Figure 1- Number of listeriosis recorded from January 2008 to March 2015 (as of March 31).

**Listeriosis has been made notifiable since 14 July, 2008*

Among them, twelve (24.5%) were pregnancy related cases affecting 10 pregnant women and two neonates. The 10 pregnant patients, aged 26 to 42 all enjoyed good past health. Seven of them contracted the infection during the second trimester while three contracted the infection during the third trimester. The majority of them presented with fever (9 cases, 90%) and chills (2 cases, 20%). Other presenting features included vaginal bleeding (1 case, 10%), decreased foetal movements (1 case, 10%), and foetal distress (1 case, 10%). All of these pregnant women recovered after treatment. Concerning the pregnancy outcome, one case had spontaneous abortion at 23 weeks and one had stillbirth at 27 weeks. For the case with spontaneous abortion, pathological examination of the abortus showed multiple necrotic foci in liver, spleen and lungs that were consistent with *Listeria monocytogenes* infection. For the stillbirth case, post-mortem lung swab and splenic swab of the fetus grew *L. monocytogenes*. There were two affected neonates whose mothers contracted the infection and gave births at 23 and 27 weeks of pregnancy respectively. Both required neonatal intensive care for management of respiratory distress syndrome and septicaemia, respectively and died at 46 minutes and three days respectively due to listeriosis. Three neonates were found not to be infected by laboratory testing. One whose mother was infected during the 31 weeks of gestation was born preterm at 31 weeks. One whose mother was infected at week 39 was delivered at 39 weeks by emergency Caesarean section. These two neonates required monitoring in neonatal intensive care unit. Both were given empirical antibiotic therapy but were subsequently found not infected with listeriosis. Another neonate whose mother was infected during 29 weeks of gestation was delivered at full term uneventfully. The three remaining cases had otherwise uneventful antenatal course and had not yet delivered their babies by the end of case investigation.

For the remaining 37 non-pregnancy related cases, the male to female ratio was 1:1.18 (17 males and 20 females), with age range of three to 95 years old (median = 74 years). Almost all (35 cases, 94.6%) had one or more underlying illnesses and/or immunocompromising conditions such as malignancies, renal / liver diseases, heart diseases, hypertension, diabetes mellitus, autoimmune diseases or use of immunosuppressant therapy. The two cases with unremarkable past medical history were three years old and 90 years old respectively. Most of them presented with fever (34 cases, 91.9%), vomiting (8 cases, 21.6%), shortness of breath (8 cases, 21.6%) and headache (8 cases, 21.6%). *L. monocytogenes* was isolated from blood in 30 cases (81.1%), cerebrospinal fluid (CSF) in five cases (13.5%), and continuous ambulatory peritoneal dialysis (CAPD) fluid in one case (2.7%). The remaining one case (2.7%) had *L. monocytogenes* isolated from multiple sites (blood and ascitic fluid). Except one case on continuous ambulatory peritoneal dialysis (CAPD) who developed *L. monocytogenes* peritonitis and received treatment in out-patient setting, all cases required hospitalisation. Three cases (8.1%) died of listeriosis, and another 11 cases (29.7%) died from their pre-existing medical illnesses.

Except for the two pairs of pregnancy related cases in which both the mothers and neonates were affected, all cases were sporadic infections.

Epidemiological investigation of the listeriosis cases in 2013 and 2014 revealed that 66.7% of the patients reported consumption of milk and dairy products (e.g., ice-cream, cheese, yoghurt) during the incubation period. Besides, a proportion of the cases reported consumption of other high risk foods such as raw vegetables, salads or fruits (31.3%), deli meats (18.8%), sushi or sandwiches (14.6%). However, all food and environmental samples collected during investigation were negative for *L. monocytogenes*. The source of infection of these cases remained undetermined. For the case recorded in 2015, the patient consumed milk, cheese, sandwich, salad, and smoked salmon during the incubation period. Investigation on the possible source of infection for this case is still on-going.

L. monocytogenes can multiply in low temperature refrigerated foods that are contaminated. To prevent listeriosis, members of the public are reminded to take measures to ensure food safety. High-risk individuals such as pregnant women, the elderly and persons with weakened immunity should avoid high-risk foods, such as unpasteurised milk, soft cheese, prepared or stored salads, raw or smoked seafoods, cold meats, and pate, etc. More information on listeriosis and related health information are available in the following websites:

1. The Centre for Health Protection; available from: http://www.chp.gov.hk/en/content/9/24/14450.html
2. The Family Health Service; available from: http://www.fhs.gov.hk/english/health_info/woman/20036.html#3
3. The Centre for Food Safety. Listeriosis and Pregnancy. *Food Safety Focus*. October 2012, Issue 75; available from: http://www.cfs.gov.hk/english/multimedia/multimedia_pub/multimedia_pub_fsf_75_01.html
4. The Centre for Food Safety. Listeria and individuals at risk. *Food Safety Focus*. February 2007, Issue 7; available from: http://www.cfs.gov.hk/english/multimedia/multimedia_pub/multimedia_pub_fsf_07_04.html

NEWS IN BRIEF

Latest recommendations from SCEZD on management of close contacts of cases of human infection with avian influenza

The Scientific Committee on Emerging and Zoonotic Diseases (SCEZD) recently reviewed the recommendations on contact tracing for human H7N9 cases by the World Health Organization and experiences and practices of other health authorities. Given the transmissibility of the H7N9 virus among humans remains low and that the H7N9 virus is generally susceptible to the antiviral oseltamivir so far, the SCEZD recommends that antiviral prophylaxis with oseltamivir at treatment regimen should be given to the close contacts of confirmed human H7N9 cases (as determined by risk assessment) and medical surveillance is to be undertaken for 10 days after the last exposure. Moreover, close contacts should wear a face mask for 10 days since last exposure to a confirmed case while the case was infectious. For those close contacts who refuse antiviral prophylaxis with oseltamivir, or there are contraindications for them to receive such antiviral prophylaxis, they should be put under quarantine for 10 days since last exposure. The above recommendations also apply to human infections with other types of avian influenza viruses with low risk of human-to-human transmission, e.g., avian influenza A(H5N1). The Centre for Health Protection (CHP) will closely monitor the latest scientific development on avian influenza viruses and review the above recommendations if in future new scientific evidence suggests changes in the potential of human-to-human transmission and antiviral susceptibility.

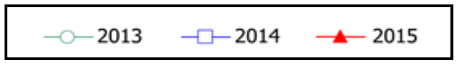
A confirmed local case of human myiasis

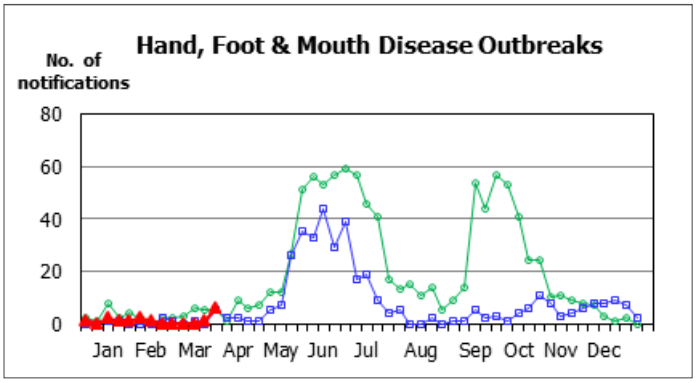
On March 19, 2015, CHP recorded a case of human myiasis affecting a 95-year-old woman who lived in a residential care home for the elderly (RCHE). She was bed bound with multiple medical illnesses and required tube feeding. She presented with left chin swelling and fever on March 17 and a worm was noted in the patient's oral cavity by the RCHE nurse. She was admitted to a public hospital on the same day and multiple maggots were removed from the oral cavity. The patient was in stable condition. Her contacts in the RCHE were asymptomatic. Health advice on personal care and environmental hygiene was given to the RCHE.

Field Epidemiology Training Courses

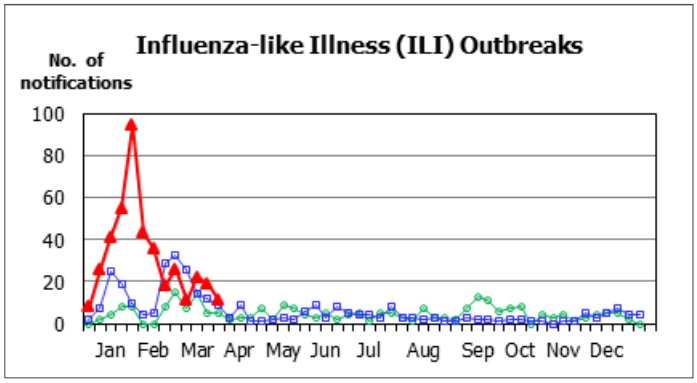
The Hong Kong Field Epidemiology Training Programme of CHP organised two training courses. A one-day course "Introduction to Field Epidemiology" on March 16, 2015 provided fundamentals on field epidemiology. During March 17 - 21, 2015, a 5-day course "Rapid Assessment on Complex Emergencies" equipped participants with knowledge and practical skills on conducting rapid population surveys, surveillance, investigation and epidemiological studies in the field during public health emergencies. There were presentations by facilitators as well as interactive practical case studies. A total of 33 participants attended the training courses and both courses were well-received.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 12 - WEEK 13)

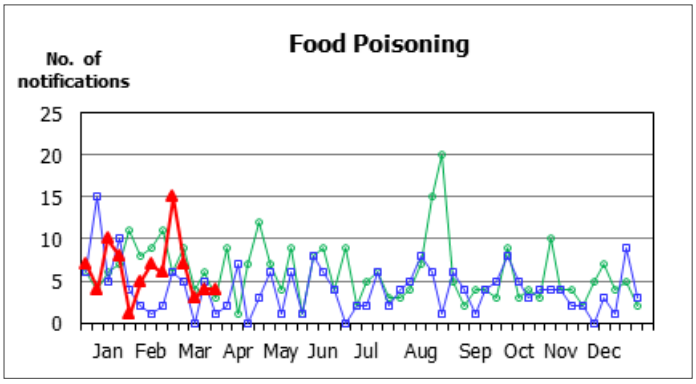




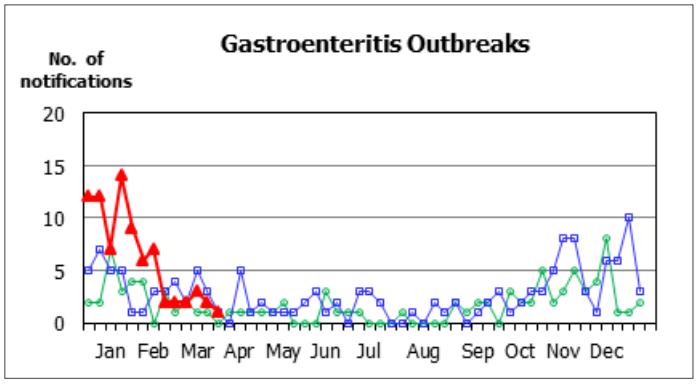
Week 10	0	Week 11	0
Week 12	**1**	**Week 13**	**6**



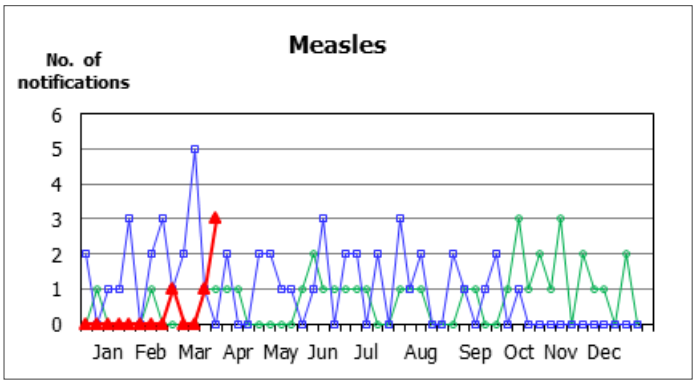
Week 10	11	Week 11	22
Week 12	**19**	**Week 13**	**11**



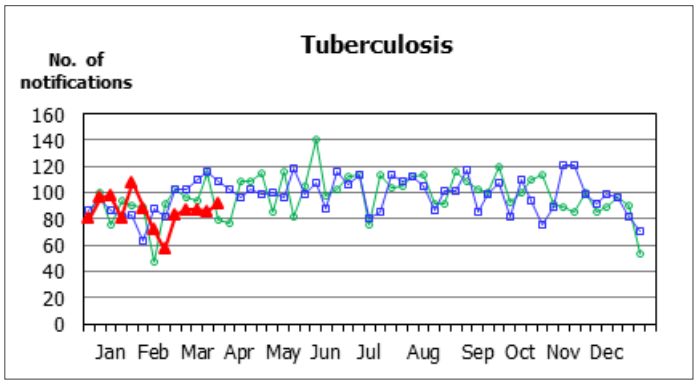
Week 10	7	Week 11	3
Week 12	**4**	**Week 13**	**4**



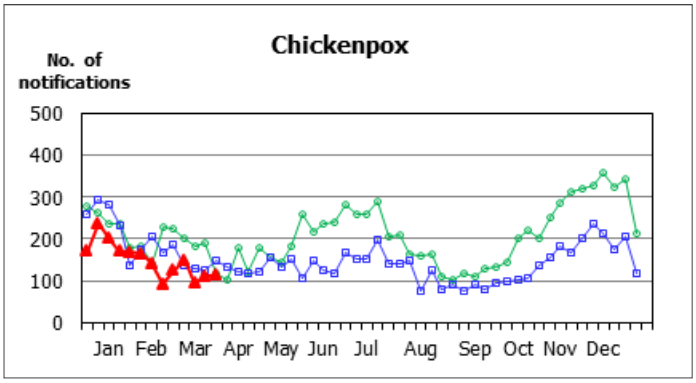
Week 10	2	Week 11	3
Week 12	**2**	**Week 13**	**1**



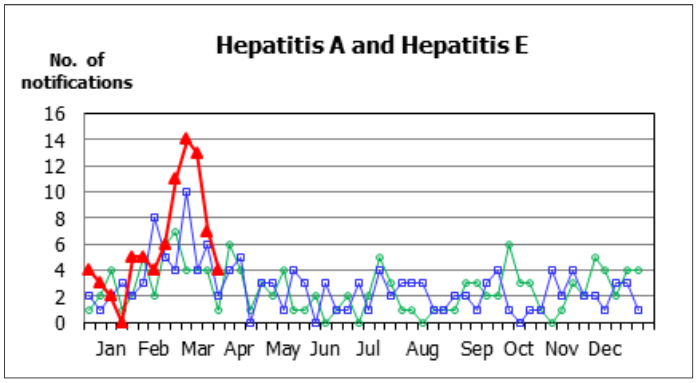
Week 10	0	Week 11	0
Week 12	**1**	**Week 13**	**3**



Week 10	87	Week 11	87
Week 12	**86**	**Week 13**	**92**



Week 10	149	Week 11	93
Week 12	**111**	**Week 13**	**113**



Week 10	14	Week 11	13
Week 12	**7**	**Week 13**	**4**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until March 28, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Mar 29 - Apr 11, 2015 WEEKS 14 - 15 VOL 12 ISSUE N⁰ 8

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

A case of yellow fever vaccine-associated viscerotropic disease

Reported by Dr YU Wing-Man, Port Health Officer, Port Health Office, Department of Health.

In February 2015, Drug Office of the Department of Health (DH) recorded a case of yellow fever vaccine-associated adverse event affecting a 65-year-old man residing in Hong Kong. The patient who had good past health presented with fever and delirium to the emergency room nine days after receiving a yellow fever vaccine in preparation for a trip to South America. This known but rare adverse event is the first case documented locally.

Yellow fever is an acute viral infection and is endemic in tropical regions of Africa and South America[1]. The World Health Organization (WHO) recommends immunisation for those aged nine months and older travelling to areas with risk of yellow fever transmission. It remains the only disease specifically designated under the International Health Regulation (2005) for which proof of vaccination may be required by certain countries as a condition of entry.

The only commercially available yellow fever vaccine is the live attenuated 17D strain of yellow fever virus which protects against all strains of yellow fever. The vaccination comprises a single subcutaneous (or intramuscular) injection administered from the age of nine months onwards. The vaccine takes 10 days to provide good protection and confers lifelong immunity[2]. In Hong Kong, the vaccine is available only in Travel Health Centres of DH. Around 4 000 vaccines are administered annually with no report of serious adverse event since the centres' establishment in 2000.

What is yellow fever?

Yellow fever is an acute infection caused by the yellow fever virus. It is endemic in tropical areas of Africa and South America. The virus mainly infects monkeys and humans and is transmitted via the bite of infected mosquitoes. Yellow fever virus infection can be asymptomatic while some people may develop sudden onset of fever, chills, headache, back pain, generalised muscle pain, weakness, fatigue, nausea and vomiting. Most patients improve and their symptoms disappear after three to four days. However, about 15% of the symptomatic cases will progress to a more severe form of the disease which can lead to liver failure, kidney failure, bleeding problems and shock. Fatality rate among severe cases is about 20-50%. There is no specific drug treatment for yellow fever, therefore it is important to take preventive measures against the disease. Preventive measures against yellow fever are avoidance of mosquito bites and vaccination.

The yellow fever vaccine has been reputed to be one of the safest vaccines produced. Reactions to yellow fever vaccine are generally mild and 10-30% of vaccine recipients experience mild systemic adverse events. Reported events typically include low-grade fever, headache and myalgia that begin within days after vaccination and last five to 10 days[3]. Rarely, serious adverse events including anaphylaxis, viscerotropic (multi-organ failure) or neurological (encephalitis) complications resembling wild-type yellow fever can occur after vaccination.

Yellow fever vaccine–associated viscerotropic disease (YEL-AVD) occurs on very rare occasions after the first immunisation with the yellow fever vaccine. Onset is within 10 days of vaccination and the pathological process is characterised by severe multi-organ failure and an overall case–fatality rate in excess of 60%. Known risk factors include a history of thymus disease such as thymoma or thymectomy and aged 60 years and older[4]. In the United States, the reported risk of viscerotropic disease is 1.0 per 100 000 doses in people aged 60–69 years and 2.3 per 100 000 doses in people aged 70 years and older[3].

Increased incidence of Yellow fever vaccine–associated neurological disease (YEL-AND) such as meningoencephalitis, acute disseminated encephalomyelitis and Guillain–Barré syndrome has been reported in infants under six months of age and in vaccine recipients aged 60 years and older. The onset of illness for documented cases is three to 28 days after vaccination and almost all cases were in first-time vaccine recipients. YEL-AND is rarely fatal. The reported rate of vaccine-associated neurological disease in travellers from the United States and Europe ranges between 0.13 and 0.8 per 100 000 doses[4]. The rate is higher in people aged 60 years and older, with a rate of 1.6 per 100 000 doses in people aged 60-69 years and 2.3 per 100 000 doses in people aged 70 years and older[3].

This first locally reported case of YEL-AVD affected a 65-year-old man who has otherwise enjoyed good health. He received a dose of yellow fever vaccine in preparation for a leisure trip to endemic regions in Peru and Brazil, after considering the risks

and benefits. He developed fever and malaise five days after vaccination and a short trip to Mainland China. His condition got worse in the next four days with high fever (up to 40°C) and delirium. On admission to the hospital, investigations showed deranged liver function. Imaging studies of the brain showed no abnormality. Other communicable diseases such as dengue fever, rickettsia, malaria and typhoid were excluded. His cerebrospinal fluid and blood specimens were later tested positive for yellow fever virus (vaccine strain) by nucleic acid testing. He was given supportive treatment for two weeks and discharged from hospital without long term sequelae. He continued his trip as planned to South America two months later. No similar case of yellow fever vaccine-associated adverse event was reported to date.

Travellers are advised to arrange a travel health consultation at least six weeks before planning or committing to travelling to popular tourist spots such as Argentina, Brazil, Ethiopia, Kenya and Peru where yellow fever are endemic. Discussion on the risk and benefit of receiving the vaccine is pertinent and can avoid unnecessary disruption of their travel plans. Doctors who attend to patients with recent history of yellow fever vaccination should take note of the symptoms and be aware of the possibility of yellow fever vaccine-associated adverse events. They should also notify Drug Office of the DH promptly in case of suspicion. Adverse Drug Reaction Online Reporting system is available at www.drugoffice.gov.hk.

References

[1] The World Health Organization. International travel and health. List of countries, territories and areas Yellow fever vaccination requirements and recommendations; malaria situation; and other vaccination requirements; available from: http://www.who.int/ith/ith_country_list.pdf?ua=1; accessed April 10, 2015.

[2] The World Health Organization. International travel and health. Latest Update; available from: http://www.who.int/ith/updates/20140605/en/; accessed April 10, 2015.

[3] US Centers for Disease Control and Prevention. Health Information for International Travel (the Yellow Book); available from: http://wwwnc.cdc.gov/travel/yellowbook/2014/chapter-3-infectious-diseases-related-to-travel/yellow-fever ; accessed April 10, 2015.

[4] The World Health Organization. International travel and health. Vaccines; available from: http://www.who.int/ith/vaccines/yf/en/ ; accessed April 10, 2015.

Update on hepatitis A

Reported by Dr Billy Ho, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Since the publication of the article in CD Watch (Volume 12, Number 6; http://www.chp.gov.hk/files/pdf/cdw_v12_6.pdf), the Centre for Health Protection (CHP) received additional 23 cases of hepatitis A. As of April 14, 2015, CHP has recorded 64 cases of hepatitis A infection in 2015. Monthly numbers of notifications increased from five in January to 20 in February and 24 in March. Fifteen cases are recorded in April as of April 14, 2015. Below we report the latest epidemiological update.

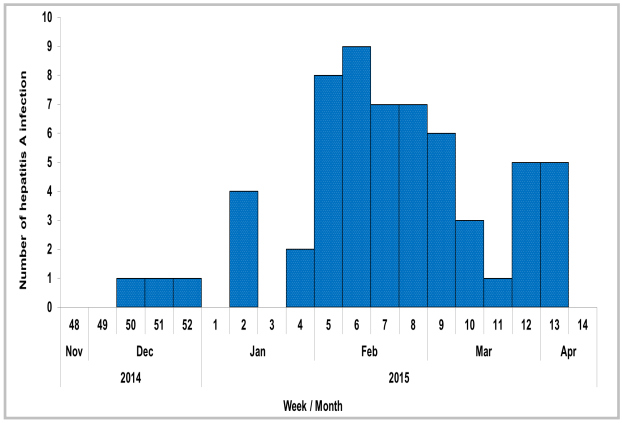


Figure 1 – Number of hepatitis A infection by week of onset, week 1-14, 2015.

Among these 64 cases, thirty-two males and thirty-two females were affected (male: female=1:1) with age ranging from 11 to 83 years old (median age: 33 years old). All of the cases were symptomatic for hepatitis A infection and most of them presented with jaundice and tea-coloured urine. Most of the cases had onset in February and early March (Figure 1). Fifty (78%) cases required hospitalisation. No case required intensive care and there were no fatalities. All cases were tested positive of hepatitis A IgM. None of the cases could recall any definite history of hepatitis A vaccination.

Except for one case who spent whole incubation period outside Hong Kong and was classified as imported infection, all other 63 cases likely acquired the infection in Hong Kong, although a proportion of them (17) did spent short periods outside Hong Kong during the incubation period. The cases resided in different districts, including 14 in Hong Kong Island, 14 in Kowloon and 36 in the New Territories.

We used questionnaire to capture a wide range of exposures in order to explore possible risk factors of infection and 56 cases were successfully interviewed. During their incubation periods, 34 cases (61%) recalled having consumed shellfish and many (14/34) consumed during hotpot or barbecue (5/34). A proportion of cases reported having consumed ready-to-eat food items such as siu-mei (34 cases, 61%), sushi/sashimi (27 cases, 48%), salad (20 cases, 36%) or various types of berries (19 cases, 34%). Epidemiological investigations so far cannot identify epidemiologically linkage.

Shellfish has been commonly documented in literature to cause transmission of hepatitis A. Some methods of food preparation such as hotpots and barbecues, have higher risk of inadequate cooking. Ready-to-eat food including salad and berries that require a lot of manual handling during food processing also have higher risk of contamination.

Public Health Laboratory Services Branch (PHLSB) of CHP has collected the hepatitis A virus (HAV) IgM-positive blood samples diagnosed in the different laboratories and performed molecular studies in 37 cases so far. Most of these cases (35/37, 95%) belonged to HAV genotype IA, and more than 10 genotypically distinct strains were identified among these cases. Among them, 13 cases had identical sequences. No common strain was found in the majority (24) of cases. The food items consumed and frequently patronized food stalls were found to be dispersed among the cases and so far there was insufficient evidence to attribute a single point source for the outbreak.

Protect yourself against Hepatitis A

Hepatitis A is an infection caused by hepatitis A virus leading to inflammation of the liver cells. It is clinically characterised by poor appetite, tiredness, nausea, vomiting, diarrhoea, fever, upper abdominal discomfort, jaundice and tea-coloured urine. The illness may last for a few weeks but in rare cases may take months to resolve. Most patients have a complete recovery, but in a few cases, the damage to the liver may be prolonged.

Hepatitis A virus is usually transmitted by a faecal-oral route either through contaminated drinks or food such as shellfish, or directly from person to person.

CHP urged members of the public again to take heed of the preventive measures below against hepatitis A:

- ☑ Avoid high-risk food like shellfish, raw food or undercooked food;
- ☑ Wash hands properly with liquid soap and water before eating or handling food, and after going to the toilet or changing diapers;
- ☑ Cook food thoroughly. Scrub and rinse shellfish in clean water. Remove the viscera if appropriate. All shellfish should be cooked at boiling temperature for not less than five minutes before eating;
- ☑ For food to be consumed without cooking, e.g. fruits, clean and wash thoroughly;
- ☑ Purchase fresh food from reliable sources and do not patronise illegal hawkers;
- ☑ Drinking water should be from the mains and preferably boiled;
- ☑ Keep the premises and kitchen utensils clean; and
- ☑ Dispose of rubbish properly.

NEWS IN BRIEF

Three sporadic cases of acute Q fever

The Centre for Health Protection (CHP) has recorded three sporadic cases of acute Q fever since late March 2015. The first case affected a 52-year-old man with good past health. He presented with fever, rigors, myalgia, malaise and epigastric pain since February 27 and was admitted to a public hospital on March 1. He was found to have thrombocytopenia, deranged liver and renal function. His fever subsided after antibiotic treatment. His condition was stable and he was discharged on March 17. His paired sera collected on March 1 and March 11 showed more than four-fold rise in antibody titre to *Coxiella burnetii* phase II antigen. He had no recent travel history. His family members were asymptomatic.

The second case was a 42-year-old man with good past health. He developed fever, myalgia, malaise and headache since March 3 and was admitted to a public hospital on March 16 for persistent fever. He was found to have deranged liver function. His fever subsided after antibiotic treatment and he was discharged on March 18. His blood specimens showed raised antibody titre to *Coxiella burnetii* phase II antigen. He worked in China and only came back to Hong Kong during weekends. His co-workers and family members were asymptomatic.

The third case was a 68-year-old woman. She presented with fever and right loin pain since March 5 and was admitted to a public hospital on March 10. She was found to have deranged liver function. Her symptoms improved after antibiotic treatment and she was discharged on March 15. Her paired sera collected on March 12 and March 26 showed more than four-fold rise in antibody titre to *Coxiella burnetii* phase II antigen. She had no recent travel history. Her home contacts were asymptomatic.

Except the first case who kept three dogs and one cat at home, the other two cases had no history of direct contact with animals. All three cases denied history of consumption of high risk food. So far, no epidemiological linkage has been identified among these three cases. Investigations are on-going.

A confirmed case of necrotizing fasciitis caused by *Vibrio vulnificus*

On April 10, 2015, CHP recorded a case of necrotizing fasciitis caused by *Vibrio vulnificus* affecting a 77-year-old man with underlying illnesses. He presented with left hand swelling and fever since April 4 and was admitted to a public hospital on the same day. Incision and drainage of hypothenar abscess was performed on April 5 and his left hand tissue specimen collected during the operation yielded *Vibrio vulnificus*. The operative diagnosis was necrotizing fasciitis. He was treated with antibiotics and his condition was stable. He had been to wet market and got injured by fish bone during food preparation on April 3. He lived alone and had no home contact.

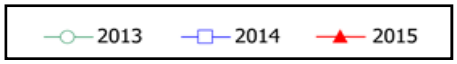
Scarlet fever update (March 15, 2015 - April 11, 2015)

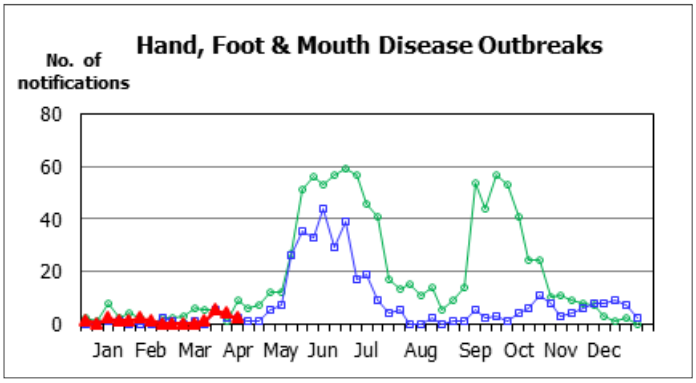
Scarlet fever activity in this reporting period decreased as compared with the previous 4 weeks. From March 15 – April 11, 2015, CHP recorded 64 cases of scarlet fever with a range of 9 to 25 cases per week as compared with 77 cases with a range of 16 to 23 cases per week in the previous reporting period (February 15 – March 14, 2015). The cases recorded in this reporting period included 33 males and 31 females aged between 1 and 12 years old (median: 5 years). There was one school cluster occurring in a kindergarten affecting 3 children. No fatal cases were reported during this reporting period.

Laboratory surveillance on multi-antimicrobial resistant bacteria (March 2015)

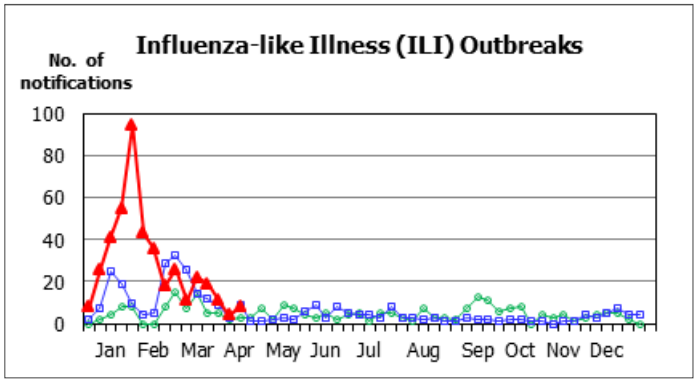
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website: http://www.chp.gov.hk/en/data/1/10/641/695/3910.html.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 14 - WEEK 15)

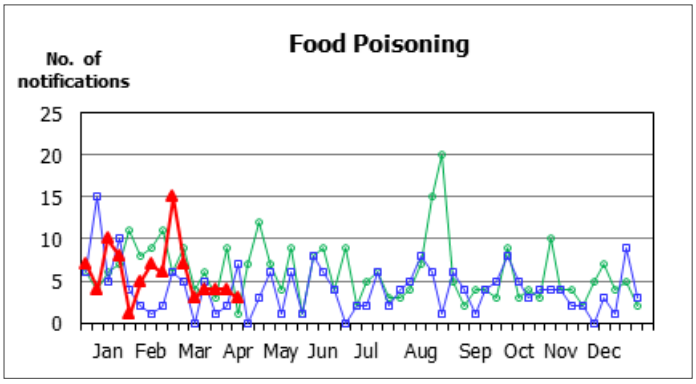




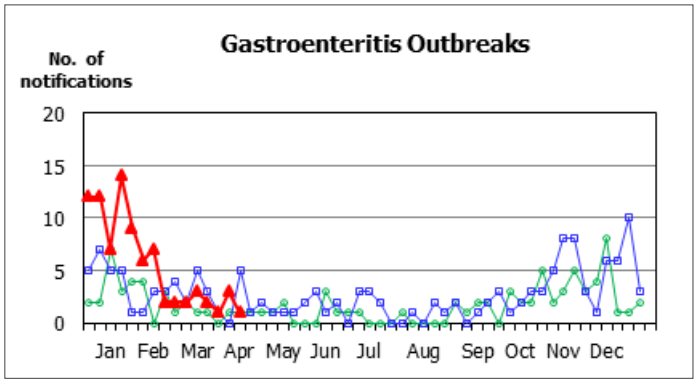
Week 12	1	Week 13	5
Week 14	**4**	**Week 15**	**2**



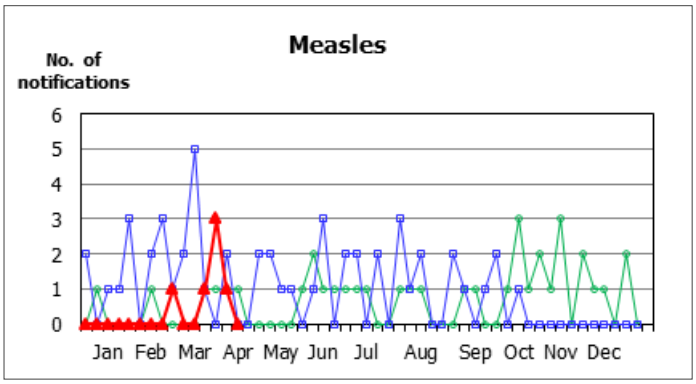
Week 12	19	Week 13	11
Week 14	**4**	**Week 15**	**8**



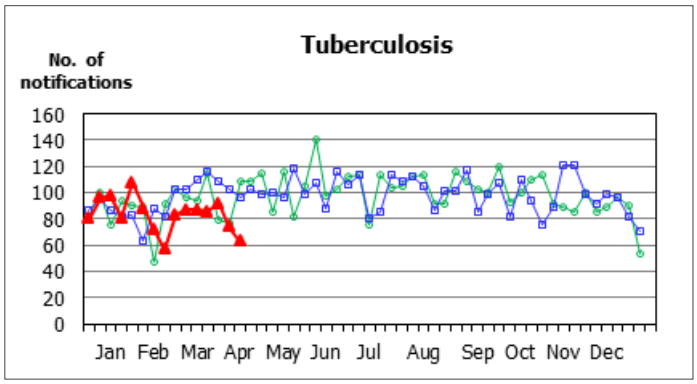
Week 12	4	Week 13	4
Week 14	**4**	**Week 15**	**3**



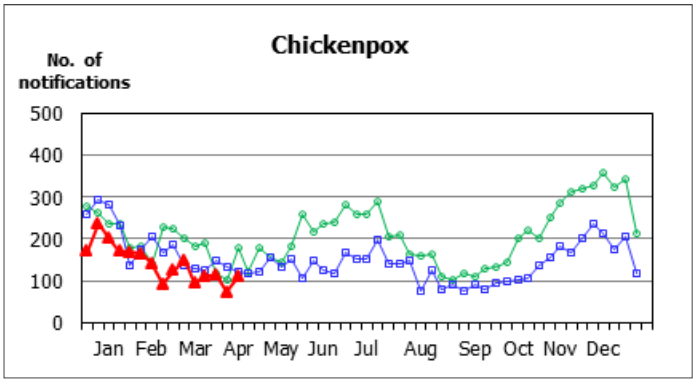
Week 12	2	Week 13	1
Week 14	**3**	**Week 15**	**1**



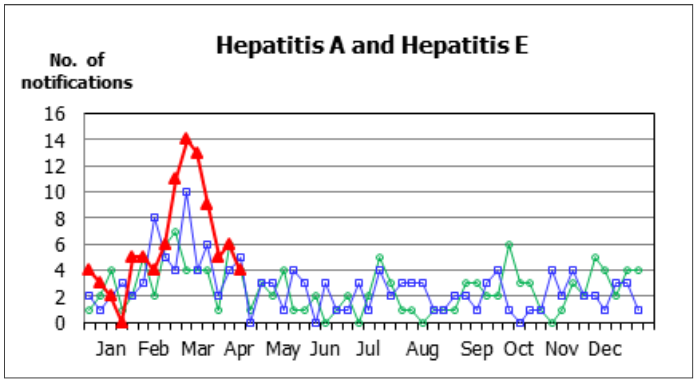
Week 12	1	Week 13	3
Week 14	**1**	**Week 15**	**0**



Week 12	86	Week 13	92
Week 14	**74**	**Week 15**	**63**



Week 12	111	Week 13	113
Week 14	**73**	**Week 15**	**109**



Week 12	9	Week 13	5
Week 14	**6**	**Week 15**	**4**

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Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

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FEATURE IN FOCUS

Hand Hygiene Awareness Day 2015 - Hand Hygiene is Your Entrance Door

Reported by Dr Kevin WONG, Medical and Health Officer; Ms LC WONG, Research Officer and Dr TY WONG, Head, Infection Control Branch, CHP.

Proper hand hygiene is the key element to infection control in health-care settings. It is also a good habit to maintain for the general public. The Department of Health (DH) all along has been actively promoting hand hygiene in both healthcare settings and in the community. Since 2005, Hong Kong has pledged support to the World Health Organization (WHO)'s First Global Patient Safety Challenge: Clean Care is Safer Care, and has committed to promoting good hand hygiene to control the spread of infectious diseases. From 2010 onwards, Hand Hygiene Awareness Day has been marked annually on May 5 in Hong Kong to raise the awareness. This year marks the 10th anniversary of the WHO's Clean is Safer Care Programme. The focus this year goes back on the role of hand hygiene in the day-to-day health care. Their newly launched theme is:

Strengthening healthcare systems and delivery – Hand hygiene is your entrance door

To orchestrate with the WHO and steer the future education focus, we first evaluated the existing knowledge of hand hygiene among healthcare workers. The Centre for Health Protection (CHP) of DH has launched a survey in 2014 among healthcare workers in both public and private sectors (n=7 296). The result revealed that most healthcare workers are proficient in hand hygiene knowledge. Overall, the mean knowledge scores of healthcare assistant (HCA) and healthcare professional (HCP) were 4.22 (out of the 7 questions) and 7.47 (out of the 13 questions) respectively. Among the DH staff, the scores were 4.22 for HCA and 7.74 for HCP. Some common misconceptions (revealed by the false statements listed below) among healthcare workers include:

1. Alcohol based hand rub is less effective against germs than hand washing (correct rate of 48.3% in HCA and 44.2% in HCP)

Answer: No. Research shows alcohol based hand rub is more effective in eradicating most pathogens than soap. Together with its convenience, the WHO currently recommends using alcohol based hand rub for hand hygiene when there is no obvious dirt or bodily fluid on hands.

2. Alcohol based hand rub causes skin dryness (correct rate of 45.9% in HCA)

Answer: No. Alcohol based hand rub mostly contains moisturisers such as glycerol. Research found alcohol based hand rub actually does not cause more skin irritation than soap.

3. Alcohol based hand rub is effective for all pathogens (correct rate of 41.5% on Spores of Clostridium difficile, 22.5% on norovirus and 20.1% on enterovirus among HCP)

Answer: No. Alcohol based hand rub is not effective against *C. difficile* spores and less effective against non-enveloped virus such as norovirus and enterovirus. It is advisable to use soap and water for hand hygiene after the care of patients with vomiting and diarrhoea.

In order to correct these common misconceptions, and to remind healthcare workers of making WHO Five Moments for Hand Hygiene a core practice to protect patients, CHP has developed a series of promotional materials to help sustain hand hygiene practice among healthcare workers. In healthcare institutions and in the community, we also encouraged patients, residents and the public to practice hand hygiene before taking medicine, before eating and after going to the toilet.

HKU medical students set up booth to promote hand hygiene.

Educational resources and workplace reminders are distributed to healthcare staff among hospitals and clinics. This year CHP has expanded the target audiences among healthcare professionals to also include general practitioners, dentists, veterinary surgeons and pharmacy staff.

Our Hand Hygiene Campaign partners, the hospitals from both public and private sectors are taking measures to promote proper hand hygiene, with no exception this year. In addition to hand hygiene compliance audit, various activities will be organised territory-wide. For example, the Queen Mary Hospital will set up a game booth for healthcare workers to remind them of proper hand hygiene techniques, the Hong Kong Sanatorium and Hospital, Precious Blood Hospital, Evangel Hospital will conduct education seminar on Hand Hygiene, some with on-site hand hygiene teaching to the patients and visitors and promotion of hand hygiene technique by UV hand gel.

TV Announcement in the Public Interest (API).

Besides healthcare staff, the resources are also distributed to other healthcare institution including long-term care facilities. Following the territory-wide Hand Hygiene Campaign in residential care homes for the elderly (RCHEs) since 2013, Infection Control Branch (ICB) of CHP had developed an educational DVD on Hand Hygiene for RCHE staff to refresh and consolidate their hand hygiene knowledge. This year ICB will conduct six sessions of seminars at various locations in Hong Kong for RCHE staff to update their infection control knowledge.

In addition, students of healthcare professionals are also taking an active role in promoting hand hygiene. For example, medical students from the University of Hong Kong set up a booth at Causeway Bay on March 22, 2015 to teach the public proper hand hygiene method and gave out hygiene promotional materials.

To keep pace with increasing use of social media and internet, CHP has also published the promotional materials on Facebook and YouTube pages for dissemination of these important messages.

Review of the happy moments in Hand Hygiene Awareness Day (HHD) 2014: (from left to right) Grantham Hospital, St John Hospital, Tsuen Wan Adventist Hospital.

Review of the happy moments in HHD 2014: (from left to right) Evangel Hospital and HH station in DH dental clinic.

Follow our YouTube channel

Like our Facebook page!

Celebrating World Immunisation Week 2015: Working towards measles elimination

Reported by Fanny WS HO, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

The Immunisation Week for the Western Pacific Region (WPR) of the World Health Organization (WHO) takes place annually in tandem with the World Immunisation Week (WIW) in the last week of April to highlight the importance of immunisation and promote the use of vaccines to protect people of all ages against diseases. Echoing the regional theme this year "Vaccination is everyone's job. Protect your community", the Centre for Health Protection (CHP) of the Department of Health (DH) is calling on public support to ensure everyone in the community get vaccinated against measles and other vaccine preventable diseases.

Increasing vaccination coverage is a key stepping stone towards achievement of measles elimination. In the Western Pacific Region, seven countries/areas were verified to have measles eliminated in 2013 and 2014[#]. Hong Kong, as with other WPR members, has made much progress towards elimination with its well-established epidemiological and laboratory surveillance, as well as consistent high vaccination coverage over the years. Yet many countries worldwide have experienced large measles outbreaks in recent years, posing greater challenges to achieve the target of eliminating measles. In 2013 and 2014, over 13 800 cases of measles have been reported across Europe[1]. The United States recorded 668 cases of measles in 2014, the highest count since measles elimination in 2000[2]. As of April 24, 2015, 166 cases from 19 states and the District of Columbia were reported this year, most of which were associated with an outbreak linked to an amusement park in California. Recent upsurge in measles cases has also been observed in neighbouring areas. In Mainland China, 52 628 cases were recorded in 2014[3]. In Southeast Asia, 53 803 were reported in the Philippines in 2014, 9 394 in Indonesia and 834 in Thailand[4].

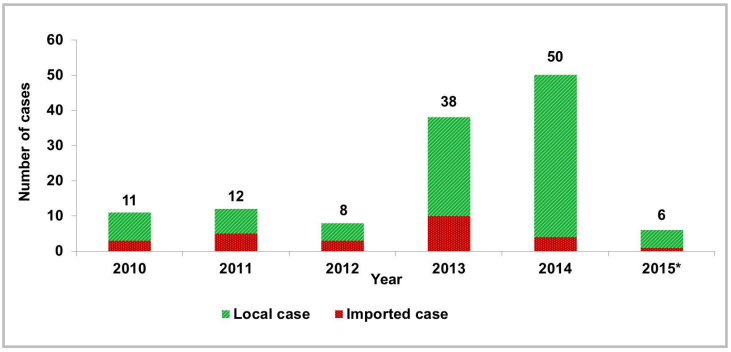


Figure 1 – Annual measles notifications in Hong Kong, 2010 – 2015 (as of April 25, 2015).*
Note: Since 2013, classification of "imported measles case" was based on the criteria set out in the WHO WPR Measles Elimination Field Guide.

Locally, the annual notification of measles had increased from eight to 12 cases during 2010 – 2012 to 38 and 50 in 2013 and 2014 respectively. As of April 25, 2015, six cases were recorded this year (Figure 1). Of these 125 cases reported from 2010 to 2015 so far, 63 (50%) were children aged under five. Thirty-seven cases (59%) were born in Hong Kong and 19 (30%) were born or lived in Mainland China of which 10 (16%) were infants below one year old. As for the 54 adult cases aged 20 or above, 19 cases (35%) were locals and the remaining (65%) were born outside Hong Kong including seven foreign domestic helpers (FDHs). Regarding vaccination history, 38 cases (30%) were infants aged under one who were yet due for vaccination, while among the adults, 41 cases (33%) were reported to have unknown vaccination status (Figure 2). Of the 125 cases, 26 (21%) were classified as imported infections. Nine small measles outbreaks, each affecting two to three persons, were recorded during the reporting period.

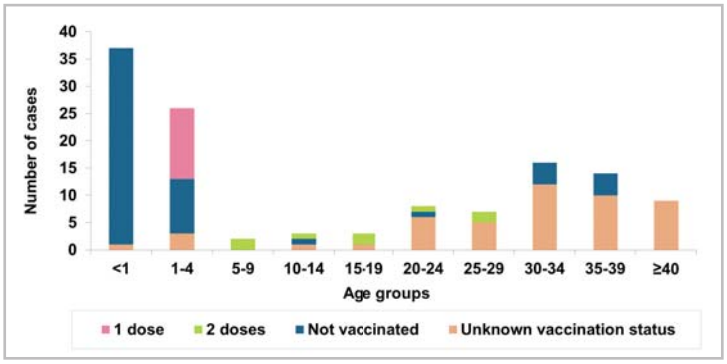


Figure 2 – Vaccination status and age distribution of measles cases, 2010 – 2015 (as of April 25, 2015) (n=125).*

Getting vaccinated is the best way to protect children, the family and the community from measles and other vaccine preventable diseases. The measles, mumps and rubella (MMR) vaccine is safe, and remains the most effective means to protect one from contracting measles, mumps and rubella infections. The WHO and other health authorities had repeatedly refuted the misconception about the MMR vaccine, and stressed that ongoing scientific evidence shows no links between the vaccine and autism. As measles is a highly contagious disease, the WHO suggested that a vaccination coverage of 95% or above is required to produce herd immunity against measles. In Hong Kong, over 95% of the locally born people are immune to measles. However, some adults especially for those who were not born in Hong Kong may not have had measles infection or have not received measles containing vaccines before in their home countries.

Photo - Echoing the theme of World Immunisation Week, a press conference was held on April 24, 2015 to promote the importance of immunisation against vaccine preventable diseases.

To raise awareness of the importance of vaccination, in a press conference kicking off the WIW on April 24, 2015, the CHP urged parents, travellers and other members of the public for immunisation to protect their children, family and the community.

[#] Australia, Macao (SAR), Korea (The Republic of Korea), Mongolia, Japan, Brunei Darussalam, and Cambodia.

Letters were also issued to all medical practitioners to seek their assistance to inform parents, potential employers and foreign domestic helpers (FDHs) of the risk of measles and provide vaccination if necessary, especially children aged under one who are staying in or frequently travelling to the Mainland, or adults never infected with measles or never been vaccinated, particularly those born outside Hong Kong. In addition, the CHP is maintaining close liaison with the Immigration Department in enhancing measles-related health information to FDHs and their employers. Letters to employment agencies of FDHs have also been issued to encourage the domestic helpers to receive measles vaccination. More information on the WIW and vaccination are available at the CHP website: http://www.chp.gov.hk/en/view_content/39340.html

References

[1] European Centre for Disease Prevention and Control (ECDC). Measles and rubella monitoring surveillance report (January 2015) ; available from: http://ecdc.europa.eu/en/publications/Publications/Measles-rubella-monitoring-first-quarter-2015.pdf/; accessed April 27, 2015.

[2] US Centers for Disease Control and Prevention (CDC). Measles Cases and Outbreaks. Last update: April 20, 2015; available from: http://www.cdc.gov/measles/cases-outbreaks.html; accessed April 27, 2015.

[3] National Health and Family Planning Commission of the People's Republic of China. 2014 National statistics on notifiable infectious diseases ; available from: http://www.nhfpc.gov.cn/jkj/s3578/201502/847c041a3bac4c3e844f17309be0cabd.shtml ; accessed April 27, 2015.

[4] World Health Organization (WHO). Reported measles cases of incidence rates by Member States; available from: http://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/active/measlesreportedcasesbycountry.xlsx ; accessed April 27, 2015.

NEWS IN BRIEF

A probable case of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on April 16, 2015, affecting a 74-year-old woman with underlying illnesses. She presented with confused speech, decreased general condition and malaise since February 1, 2015 and was admitted to a public hospital on February 14. Subsequently, she developed progressive dementia, myoclonus, visual and cerebellar disturbance, pyramidal and extrapyramidal dysfunction and akinetic mutism. Electroencephalography finding was compatible with CJD. She was classified as a probable case of sporadic CJD. She had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. Her condition was serious.

A sporadic case of listeriosis

On April 19, 2015, CHP recorded a case of listeriosis affecting a 92-year-old man with pre-existing medical condition. He presented with fever and chills since April 15, and was admitted to a public hospital on April 16. His blood culture yielded *Listeria monocytogenes*. His condition was stable. He had not travelled recently. He lived alone. He did not report consumption of high risk food during the incubation period. Investigations are on-going.

A confirmed local case of human myiasis

On April 23, 2015, CHP recorded a case of human myiasis affecting a 67-year-old woman who lived in a residential care home for the elderly (RCHE). She was bed bound with multiple medical illnesses and required tube feeding. A worm was noted during wound care of her sacral pressure sore by the RCHE nurse on April 21, 2015. The patient was admitted to a public hospital on the same day. A maggot was removed from the wound. She was in stable condition and was discharged on April 23. Her contacts in the RCHE were asymptomatic. Health advice on personal care and environmental hygiene was given to the RCHE.

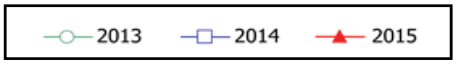
CA-MRSA cases in March 2015

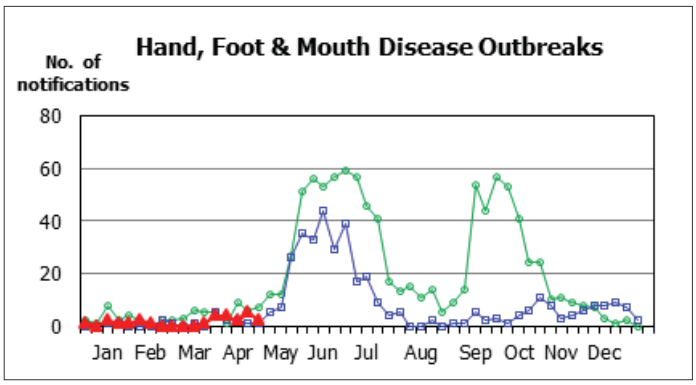
In March 2015, CHP recorded a total of 82 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 44 males and 38 females with ages ranging from 13 days to 90 years (median = 34.5 years). Among them, there were 52 Chinese, 14 Filipinos, 6 Caucasian, 4 Indian, 2 Pakistani, 1 Japanese, 1 Nepalese and 2 of unknown ethnicity. Isolates of all these 82 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (58) or V (24). Eighty cases presented with skin or soft tissue infections. The remaining two cases had invasive CA-MRSA infections. The first case was a 90-year-old man who presented with malaise, cough with sputum and shortness of breath and was admitted to a private hospital on February 27. His bronchial aspirate specimen collected on March 1 was cultured positive for CA-MRSA. He was diagnosed to have pneumonia. The second case was a 64-year-old man who presented with lower abdominal pain and weakness since March 4 and was admitted to a public hospital on March 5. His blood specimen collected on March 5 was cultured positive for CA-MRSA. He was diagnosed to have acute renal failure, urinary tract infection and septicemia. Both cases were in stable condition after antibiotic treatment and remained hospitalised.

Among the 82 cases, one was a private dentist. Investigation did not reveal any epidemiological linkage to other cases. Besides, four family clusters, with each affecting two persons, were identified. Screening and decolonization were offered to the close contacts of these eight cases.

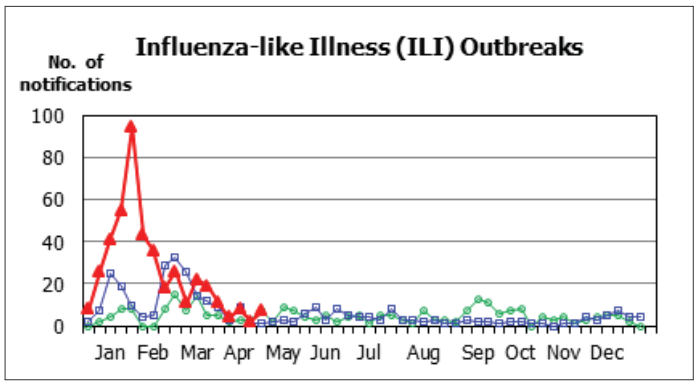
(Note: The number of cases in February 2015 was revised to 55).

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 16 - WEEK 17)

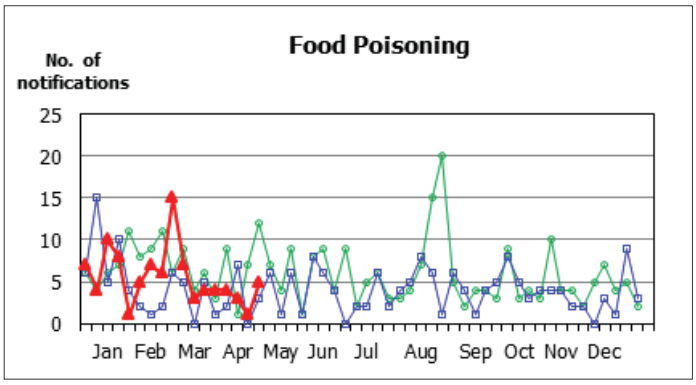




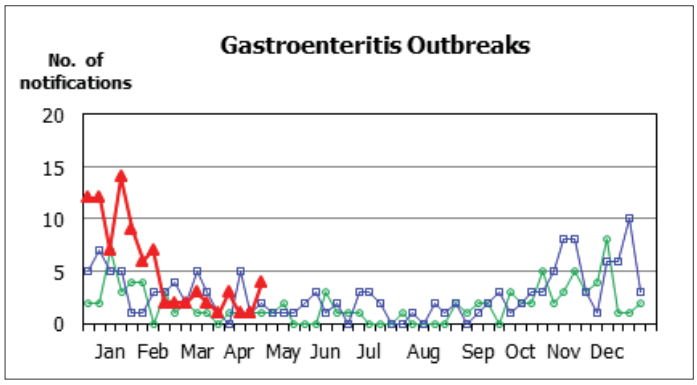
Week 14	4	Week 15	2
Week 16	**5**	**Week 17**	**2**



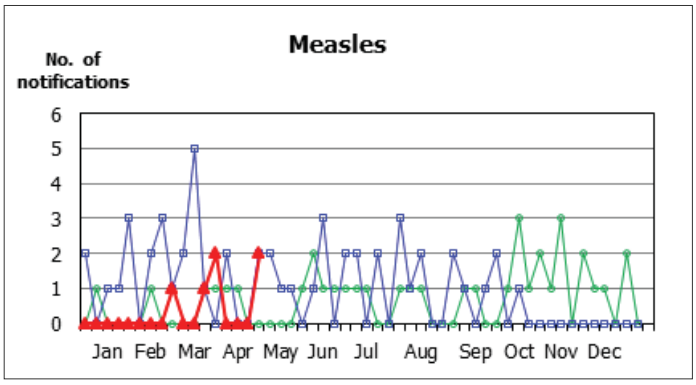
Week 14	4	Week 15	8
Week 16	**2**	**Week 17**	**7**



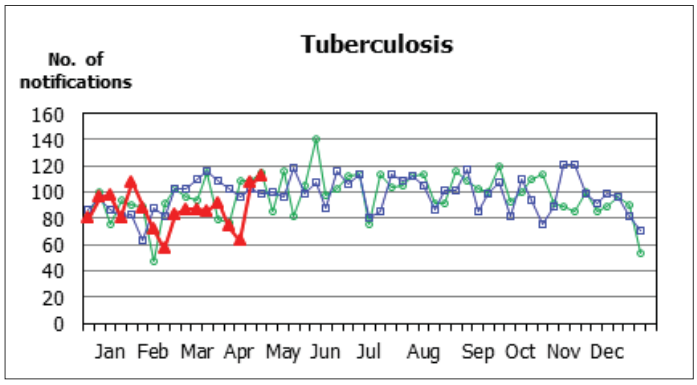
Week 14	4	Week 15	3
Week 16	**1**	**Week 17**	**5**



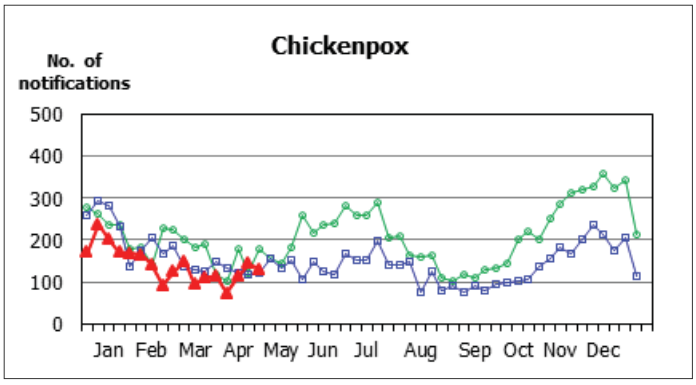
Week 14	3	Week 15	1
Week 16	**1**	**Week 17**	**4**



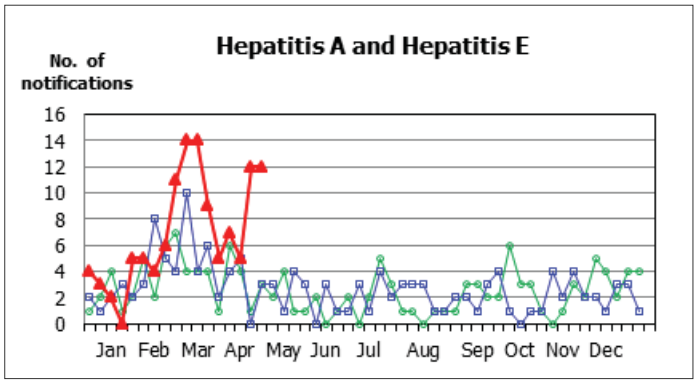
Week 14	0	Week 15	0
Week 16	**0**	**Week 17**	**2**



Week 14	74	Week 15	63
Week 16	**107**	**Week 17**	**112**



Week 14	73	Week 15	113
Week 16	**143**	**Week 17**	**130**



Week 14	7	Week 15	5
Week 16	**12**	**Week 17**	**12**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until April 25, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Apr 26 - May 9, 2015 WEEKS 18 - 19 VOL 12 ISSUE N⁰ 10

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Epidemiology of Mumps in Hong Kong, 2011 – May 9, 2015

Reported by Dr ML WONG, Medical and Health Officer, Field Epidemiology Training Programme, Epidemiology Section, Surveillance and Epidemiology Branch, CHP.

Mumps is an acute viral infection characterised by painful swelling of the salivary glands, typically the parotid. The illness is usually self-limiting but may also result in encephalitis, sensorineural deafness, pancreatitis, orchitis and oophoritis.

Since 1994, mumps has become a notifiable disease in Hong Kong. Hong Kong has adopted a two-dose regimen of mumps-containing vaccine since 1996. With an overall coverage of above 95%, mumps infection is uncommon in Hong Kong. This year, as of May 9, 2015, a total of 43 cases were recorded by the Centre for Health Protection (CHP) of the Department of Health. During 2011 to 2014, a total of 541 cases were recorded with annual number ranged from 111 to 153.

Since 2001, the monthly number of mumps cases ranged from five to 20 and there was no obvious seasonal variation (Figure 1). Most cases were clinically diagnosed without submission of clinical specimens for laboratory confirmation. The number of laboratory confirmed cases contributed only 4% (4/111 in 2014 & 6/150 in 2012) to 8% (10/127 in 2013) of the annual total from year 2011 to 2014.

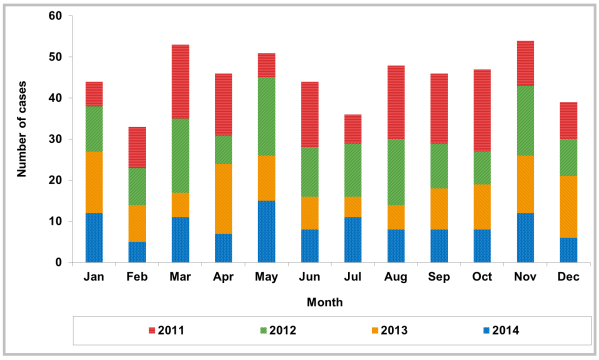


Figure 1 – Monthly number of mumps cases, 2011 – 2014.

Among the 541 cases recorded during 2011 to 2014, 326 were males (male-to-female ratio =1.5:1). The age range was one month to 89 years (median = 10 years). Older children (213/541, 39%) and adults (191/541, 35%) were more commonly affected.

Besides swelling of the salivary glands, clinical manifestations included fever (42%), cough (25%), runny nose (22%), headache (16%) and myalgia (7%). A small proportion (48/541, 9%) of the cases required hospital admission. Complications of mumps infection rarely occurred. During 2011 to 2014, there was one patient who suffered from multiple complications (meningoencephalitis, orchitis and hearing loss), five cases of orchitis and three cases of pancreatitis. Most of these patients with complications did not complete (1/9, 11%) or were uncertain (7/9, 78%) about their mumps vaccination. As of May 9, 2015, no fatal cases were recorded.

Only a small proportion of cases (29/541, 5%) had history of travel outside Hong Kong (including Mainland China, the United Kingdom, the United States, Canada, Thailand, Nepal, the Philippines and Indonesia) during the incubation period. 98% (532/541) of cases were sporadic. Many patients did not complete the recommended two-dose vaccinations (192/541, 35%) or were uncertain (189/541, 35%) about their vaccination history.

In 2011, two home clusters and one secondary school cluster occurred, affecting a total of seven persons (in which two persons were laboratory confirmed). In 2012, there was one home cluster affecting two members of a family. Over half of these persons involved in clusters (67%, 6/9) had not received the recommended vaccinations or were uncertain about their vaccination history.

Vaccination is the best way to prevent mumps infection. Vaccine effectiveness for mumps vaccine is known to be 88% (range: 66-95%) and 78% (range:49-92%) for two doses and one dose respectively.[1] Mumps vaccine is included in the combination measles-mumps-rubella (MMR) and measles-mumps-rubella-varicella (MMRV) vaccines, which are recommended in the Hong Kong Childhood Immunisation Programme (HKCIP). Mumps is spread by droplet and by direct contact with the saliva of an infected person, who may spread the disease to other non-immune persons from two days before overt swelling of salivary glands to five days after the swelling. Members of the public are reminded to receive up-to-date vaccination and maintain good personal and environmental hygiene for the prevention of mumps.

Reference

[1] US Centers for Disease Control and Prevention. Mumps Vaccination; available from: http://www.cdc.gov/mumps/vaccination.html; accessed April 10, 2015.

Update on global malaria risk 2014

Reported by Dr William CHAN, Medical and Health Officer, Enteric and Vector-bone Disease Office, Surveillance and Epidemiology Branch, CHP.

Facts on malaria

Malaria is caused by the parasites of the genus *Plasmodium*, and is transmitted by the female *Anopheles mosquitoes*. The incubation period usually ranges from seven to 30 days. It varies with species, e.g., *P. falciparum* infection usually presents at about 10 to 14 days after the mosquito bite while *P. malariae* tends have longer incubation periods up to 40 days. *P. vivax* and *P. ovale* can produce dormant liver stage parasites and the incubation period may be months or longer. They may even relapse months to years after the initial infection has been cleared. Symptoms of malaria include fever, chills, rigor, malaise, sweating, headache and myalgia, but the clinical presentation may be non-specific. Young children, pregnant women and travellers from non-endemic areas are most vulnerable to malaria infection. Treatment should be started promptly to avoid complications or fatality. If untreated, serious complications including jaundice, hemolytic anemia, liver and renal failure, confusion, coma and death may result.

Global situation of malaria

Malaria is one of the most important infectious diseases that have a devastating impact on people's health and livelihood around the world. It is endemic in areas across the sub-Saharan Africa, the Indian subcontinent, the South-East Asia, and some countries in South and Central America. According to the World Health Organization, 97 countries or territories had ongoing malaria transmission in 2013, with an estimated 198 million cases of malaria and 584 000 deaths globally. Children under five years old accounted for 78% of all malaria deaths, and 90% of malaria deaths occurred in Africa.

Local situation

From 2005 to 2014, the Centre for Health Protection (CHP) of Department of Health recorded a total of 297 cases with the annual numbers ranging from 20 to 41 (Figure 1). In 2015, there has been no malaria case recorded as of April 30, 2015. All cases, except one unclassified case, were imported cases as detailed in Table 1. The unclassified case was a patient who had reactivation of old infection due to immunosuppression. The male to female ratio was 2.9:1. The age range was 2 to 83 years with a median of 35 years. There were five fatal cases with a case fatality ratio of 1.7%. *P. vivax* was the most commonly identified parasite (154 cases, 51.8%), followed by *P. falciparum* (119 cases, 40.1%), *P. malariae* (11 cases, 3.7%), and *P. ovale* (6 cases, 2.0%). Another 1.7% (5 cases) had mixed infections of two or more parasites, while the Plasmodium species were unidentified in 0.7% of case (2 cases). As malaria has become primarily an imported disease in Hong Kong, travel health advice to travellers visiting malaria endemic countries is very important.

Global malaria risk summary 2014

In 2007, the Scientific Committee on Vector-borne Diseases of CHP developed the "Guidelines on Malaria Chemoprophylaxis for Travellers from Hong Kong" for reference by healthcare professionals available at: http://www.chp.gov.hk/en/sas7/101/110/107.html. In support of the Guidelines, the Committee has been updating the "Global Malaria Risk Summary" annually since 2010. The summary provides update of malaria risk worldwide to serve as reference for the healthcare professionals in the management of potential travellers to areas with malaria risk. The latest version of the risk summary was published on the CHP website on March 10, 2015, and can be accessed at: http://www.chp.gov.hk/files/pdf/global_malaria_risk_summary_october_2014.pdf. Healthcare professionals are encouraged to refer to the Guidelines and Global Malaria Risk Summary for giving travel health advice to clients.

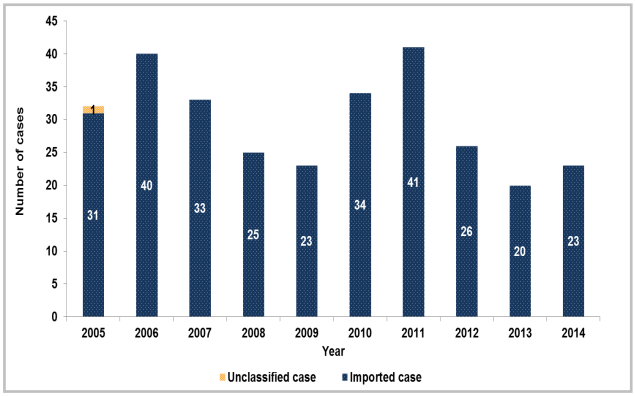


Figure 1 – Annual number of malaria cases from 2005 to 2014.

Table 1: Country / area of importation of malaria cases to Hong Kong, 2005 –2014.
**Nine cases had travelled to multiple endemic countries / areas during the incubation period; one case could not provide information on travel history.*

	Country / Area of importation	Number of cases
Asia	India	116
	Pakistan	23
	Indonesia	12
	Mainland China	8
	Myanmar	6
	Thailand	5
	Papua New Guinea	4
	Bangladesh	1
	Solomon Islands	1
	Sri Lanka	1
	Other Asian countries	9
Africa	Nigeria	24
	Ghana	16
	Congo	8
	Uganda	6
	Sierra Leone	6
	Kenya	5
	Guinea	5
	Cameroon	4
	Other African countries	25
The Americas	Panama	1
Undetermined*		10

How to prevent malaria?
There is currently no vaccine against malaria. Protection against mosquito bites and chemoprophylaxis remain the mainstay of prevention of malaria.

Protect yourselves against bites
- ☑ *Wear loose, light-coloured long-sleeved tops and trousers; and*
- ☑ *Use DEET-containing insect repellent on exposed parts of the body and clothing.*

When travelling abroad
- ☑ *Arrange a travel health consultation with your doctor or the Travel Health Centre of the Port Health Office at least six weeks before the journey for risk assessment and advice on vector preventive measure.*
- ☑ *Anti-malarial drugs may be needed if travelling to endemic area. The drugs need to be started before the trip, and continued throughout the trip until one to four weeks after leaving the endemic area.*
- ☑ *If travelling in endemic area, carry a portable bed net and apply suitable insecticide on it.*
- ☑ *Follow strictly doctor's advice on chemoprophylaxis including completion of the course after returning to Hong Kong.*
- ☑ *Seek medical attention as early as possible if feeling unwell. If feeling unwell after return from endemic areas, seek medical advice immediately and provide travel details to the attending doctor.*

NEWS IN BRIEF

A confirmed case of tetanus
On April 27, 2015, the Centre for Health Protection (CHP) recorded a case of tetanus affecting a 74-year-old woman with chronic illnesses. She presented with locked jaw, dysarthria and dysphagia on April 18, and was admitted to a public hospital on April 21. She was diagnosed to have tetanus clinically and was treated with tetanus toxoid, immunoglobulin and antibiotics. Her condition was stable. Her symptoms improved and was discharged on April 27. She had travelled to Kaiping, Mainland China with family members from April 3 to 15 and had right leg abrasion on April 9 in Kaiping but did not seek medical attention. Her family members remained asymptomatic. She had no known history of vaccination against tetanus.

A domestic outbreak of pertussis
On April 25 and April 29, 2015, CHP recorded a domestic outbreak of pertussis affecting a four-month-old girl and her 40-year-old mother. The baby girl presented with cough, runny nose and post-tussive vomiting since April 10. She was admitted to a public hospital on April 21 and was managed as upper respiratory tract infection. Her condition remained stable and was discharged on April 23. Her nasopharyngeal swab (NPS) was tested positive for *Bordetella pertussis* on April 25 and she was treated with azithromycin. Upon contact tracing, the mother who lived with the patient was found to have cough since April 20. The patient's mother was later referred to the Accident and Emergency Department of the same public hospital on April 25 and she was treated with azithromycin. Her condition was stable and did not require hospital admission. Her NPS was tested positive for *Bordetella pertussis*. The baby girl had received one dose of diphtheria, tetanus, acelluar pertussis and inactivated poliovirus vaccine according to the Hong Kong Childhood Immunisation Programme while the mother was unsure of her own vaccination status. Both patients had no travel history during the incubation period.

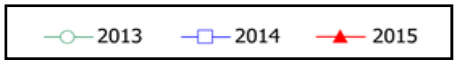
A probable case of sporadic Creutzfeldt-Jakob disease
CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on May 4, 2015, affecting a 75-year-old man with underlying illnesses. He presented with decreased general condition and double incontinence since January 21, 2015 and was admitted to a public hospital on January 28. Subsequently, he developed progressive dementia, dysphagia, seizures, rigidity, myoclonus and akinetic mutism. Electroencephalography finding was compatible with CJD. His condition was stable. He was classified as a probable case of sporadic CJD. He had no known family history of the disease. No risk factors for either iatrogenic or variant CJD were identified.

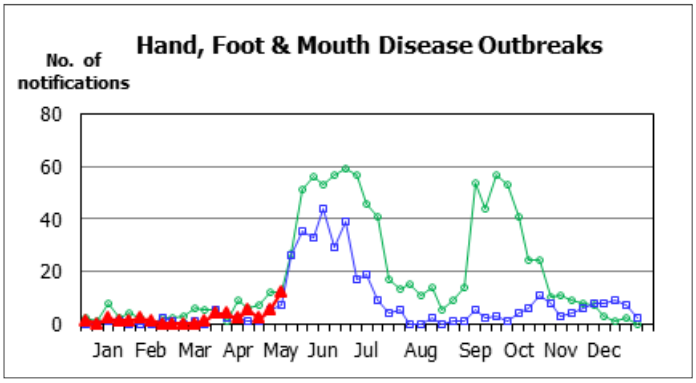
Scarlet fever update (April 12, 2015 - May 9, 2015)
Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From April 12 – May 9, 2015, CHP recorded 93 cases of scarlet fever with a range of 18 to 30 cases per week as compared with 63 cases with a range of nine to 26 cases per week in the previous reporting period (March 15 – April 11, 2015). The cases recorded in this reporting period included 63 males and 30 females aged between one and 19 years old (median = 5 years). There was one school cluster occurring in a kindergarten and affecting four children. No fatal cases were reported during this reporting period.

CA-MRSA cases in April 2015
In April 2015, CHP recorded a total of 85 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 45 males and 40 females with ages ranging from 6 months to 79 years (median = 33 years). Among them, there were 57 Chinese, 13 Filipinos, 5 Pakistani, 3 Indian, 2 Caucasian, 2 Nepalese, 1 Japanese, and 2 of unknown ethnicity. Isolates of all these 85 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (51) or V (34). All except one case presented with skin or soft tissue infections. The remaining case was a 47-year-old man who presented with malaise, cough and night sweating and was admitted to a public hospital on April 6. He was diagnosed to have pneumonia and right parapneumonic effusion and his sputum was positive for CA-MRSA. He was treated with antibiotics and his condition remained stable.

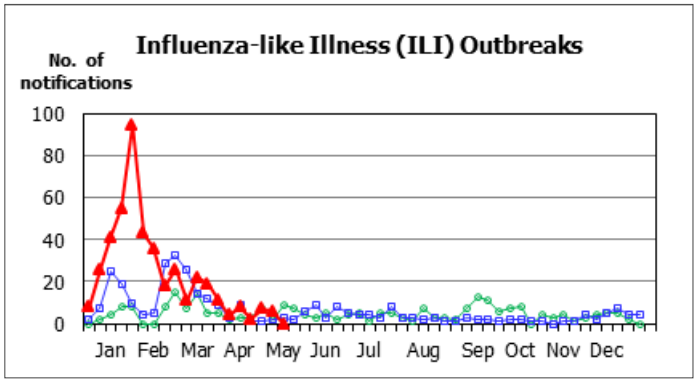
Among the 85 cases, one was a healthcare worker working in a residential care home for the elderly (RCHE). There was another case affecting a healthcare worker in the same RCHE recorded in October 2014. No other staff or residents were found to have CA-MRSA infections in this RCHE. Besides, five family clusters, with each affecting two persons, were identified. Screening and decolonization had already been carried out for the close contacts of these twelve cases.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 18 - WEEK 19)

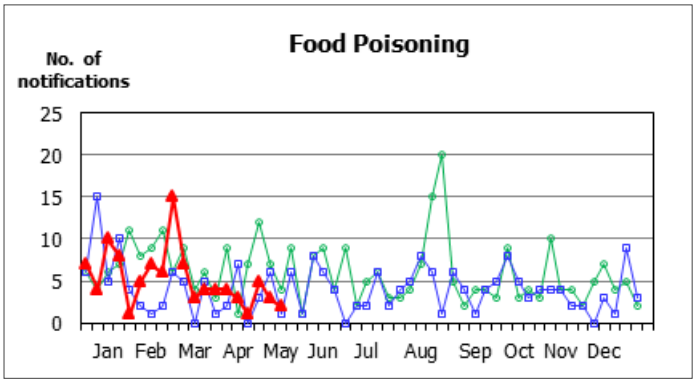




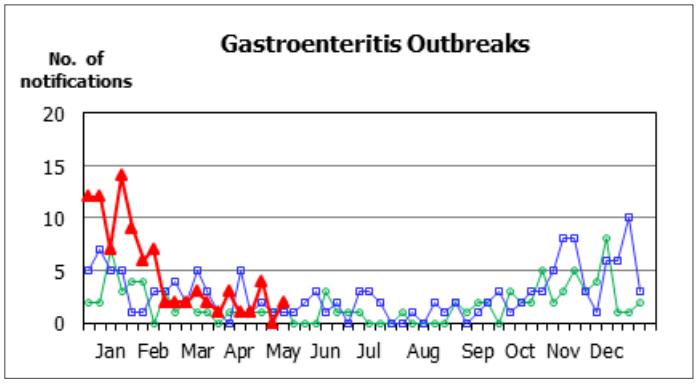
Week 16	5	Week 17	2
Week 18	**5**	**Week 19**	**12**



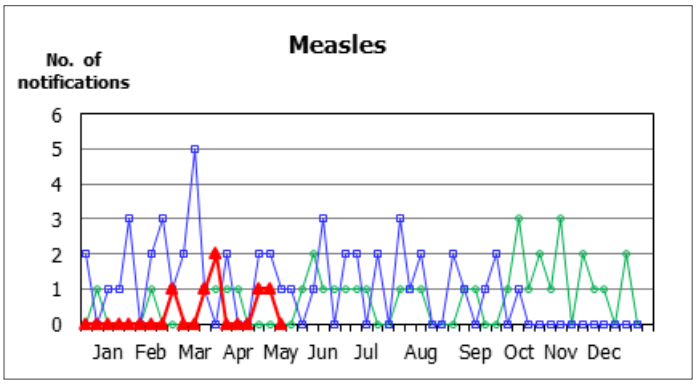
Week 16	2	Week 17	7
Week 18	**6**	**Week 19**	**0**



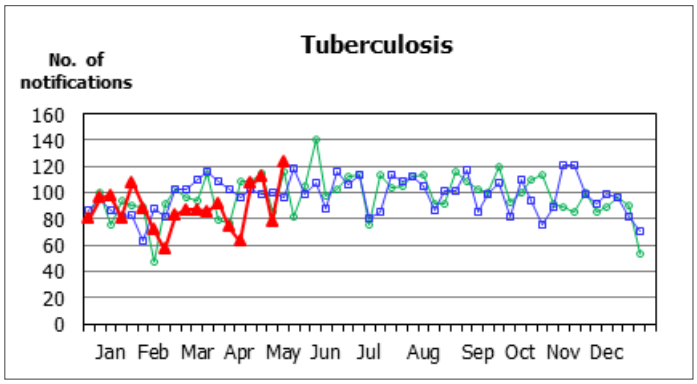
Week 16	1	Week 17	5
Week 18	**3**	**Week 19**	**2**



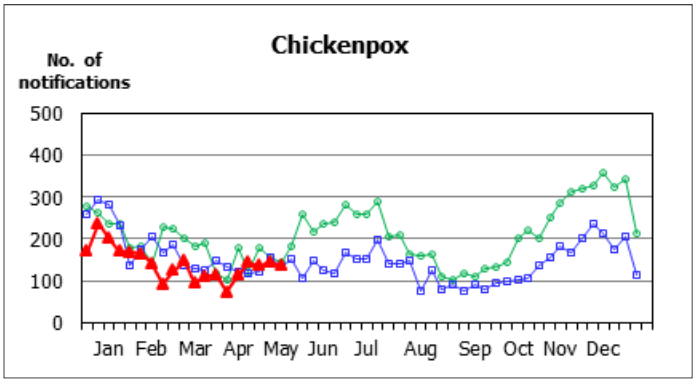
Week 16	1	Week 17	4
Week 18	**0**	**Week 19**	**2**



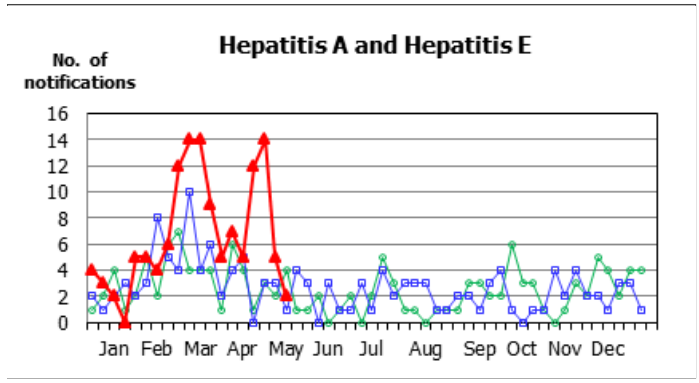
Week 16	0	Week 17	1
Week 18	**1**	**Week 19**	**0**



Week 16	107	Week 17	112
Week 18	**78**	**Week 19**	**123**



Week 16	143	Week 17	136
Week 18	**146**	**Week 19**	**136**



Week 16	12	Week 17	14
Week 18	**5**	**Week 19**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until May 9, 2015. This information may be updated over time and should therefore be regarded as provisional only.

May 10 - May 23, 2015 WEEKS 20 - 21 VOL 12 ISSUE Nº 11

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

2015 Southern Hemisphere Seasonal Influenza Vaccination Programme

Reported by Dr Josette CHOR, Medical and Health Officer, Vaccination Office, Programme Management and Professional Development Branch, CHP.

The 2014/15 winter influenza season was predominated by an antigenically drifted influenza A (H3N2) virus strain (A/Switzerland/9715293/2013). This strain was antigenically different from the H3N2 component contained in the 2014/15 Northern Hemisphere (NH) seasonal influenza vaccine (SIV). As such, the effectiveness of the 2014/15 NH SIV was decreased. On the other hand, the 2015 Southern Hemisphere (SH) trivalent SIV contains the above mentioned influenza virus, together with an A/California/7/2009 (H1N1)pdm09-like virus and a B/Phuket/3073/2013-like virus.

The Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the Centre for Health Protection (CHP) of the Department of Health (DH) convened two meetings in February and March 2015 respectively to examine the local, neighbouring and overseas epidemiology of seasonal influenza in the 2014/15 winter season, and assess the risk of various groups. The SCVPD also studied issues related to the use of the SH SIV, including vaccine composition, vaccine effectiveness, potential adverse effects and priority groups.

It was concluded that the elderly, particularly the very old elderly, were the most vulnerable group in the 2014/15 winter season as reflected by the high proportion of severe and fatal influenza cases affecting the elderly, the high influenza admission rate among the elderly and the high proportion of Residential Care Homes for the Elderly (RCHEs) having outbreaks of influenza-like illness.

Based on risk assessment, SCVPD recommended all residents of RCHEs and elders to receive the 2015 SH SIV for personal protection against possible occurrence of summer influenza season and prevention of influenza outbreaks in the RCHEs. Community living elders will receive the vaccine by phases, with elders aged 85 years or above being vaccinated first.

The Department of Health (DH) adopted the recommendation made by the SCVPD. Under the Residential Care Home Vaccination Programme (RVP), free 2015 SH SIV is provided to all residents of RCHEs (irrespective of age) at the homes by Visiting Medical Officers (VMOs) starting from May 8, 2015. A sum of HK$50 will be reimbursed to VMO for each injection given.

Under the Government Vaccination Programme (GVP), community living elders are provided free vaccination at the General Out-patient clinics (GOPCs), Specialist Out-patient clinics (SOPCs) (for patients with follow ups) and hospitals (for in-patients) of the Hospital Authority (HA) and designated Elderly Health Centres (EHCs) of DH starting from May 20, 2015. Elders aged 85 or above would be vaccinated first, followed by other elders depending on situations. For details of the programmes, please refer to Table 1.

Seasonal influenza vaccine is very safe and usually well tolerated apart from occasional soreness, redness or swelling at the injection site. Some recipients may experience fever, muscle and joint pains, and tiredness beginning six to 12 hours after vaccination and lasting up to two days. Immediate severe allergic reactions like hives, swelling of the lips or tongue, and difficulties in breathing are rare and require emergency consultation.

Influenza vaccination may be rarely followed by serious adverse events such as Guillain-Barré Syndrome (1 to 2 cases per million vaccinees), meningitis or encephalopathy (1 in 3 million doses distributed) and severe allergic reaction (anaphylaxis) (9 in 10 million doses distributed). However, influenza vaccination may not necessarily have causal relations with these adverse events. The risk of Guillain-Barré Syndrome after influenza infection (17.20 per million) is higher than after influenza vaccination (1.03 per million)[1]. There is currently no scientific evidence suggesting that influenza vaccination is related to myasthenia gravis.

Seasonal influenza vaccine is about 70 to 90% effective in preventing illness from seasonal influenza in healthy adults when the vaccine and circulating viruses are well-matched. For prevention against influenza, vaccinated individuals should also maintain good personal and environmental hygiene practices, balanced diet, regular exercise, adequate rest, and no smoking.

Reference

[1] Kwong JC et al. Risk of Guillain-Barré syndrome after seasonal influenza vaccination and influenza health-care encounters: a self-controlled study. Lancet Infect Dis. 2013 Sep;13(9):769-76. doi: 10.1016/S1473-3099(13)70104-X.

Table 1 - 2015 Southern Hemisphere Seasonal Influenza Vaccination Programme.

SCVPD recommended categories	Persons with free vaccination provided by the Government	Major service providers	Vaccination period	Remarks
Persons living in residential care homes for elders	**Residents of RCHEs**	Visiting Medical Officers	Starting from May 8, 2015	DH will approach RCHEs directly for logistic arrangement
Elderly persons living in the community	**Community living elderly persons: by phases, starting from the oldest age group (elders aged 85# or above will be vaccinated first, followed by other elders depending on situations)**	**HA** - GOPCs (excluding evenings, weekends and Public Holidays) - SOPCs (for follow-up patients) - Hospitals (for in-patients) **DH** (Weekdays, except public holidays) - 10 designated EHCs - 18 EHCs (for members)	Elders aged 85# or above: starting from May 20, 2015	

#*eligibility counted by year instead of date of birth*

For more information about the 2015 Southern Hemisphere Seasonal Influenza Vaccination, please visit the thematic webpage in the Centre for Health Protection (CHP)'s website: http://www.chp.gov.hk/en/view_content/39442.html
For the list of GOPCs under the HA, please visit: http://www.chp.gov.hk/files/pdf/list_of_gopc_2015_shsivp_eng.pdf
For the list of EHCs under DH, please visit: http://www.chp.gov.hk/files/pdf/list_of_ehc_2015_shsivp_eng.pdf
For enquiries relating to DH services, please call 2125 2125; for HA services, please call 2300 6555.

Review of food poisoning related to wild mushrooms, 2010-2015 (as of April 30, 2015)

Reported by Dr Gladys YEUNG, Medical and Health Officer, Enteric and Vector-bone Disease Office, Surveillance and Epidemiology Branch, CHP.

This is an update of the local epidemiology of food poisoning related to wild mushrooms since the last review published in August 2013. From January 2010 to April 30, 2015, the Centre for Health Protection (CHP) of the Department of Health recorded 13 cases of food poisoning related to wild mushrooms, affecting a total of 22 persons. The annual number of reported cases ranged from one to three, with each case affecting one to three persons (Figure 1). More cases occurred in spring (Figure 2).

Among the 22 affected persons, nine (41%) were males and 13 (59%) were females. Their ages ranged from nine to 86 years (median: 47.5 years). The most common presenting symptoms were gastrointestinal symptoms like diarrhoea (20, 91%), vomiting (19, 86%), abdominal pain (17, 77%) and nausea (3, 14%). Other systemic and neurological symptoms included dizziness (8, 36%), sweating (4, 18%), palpitation (3, 14%), headache (3, 14%), weakness (3, 14%), numbness (2, 9%), difficulty in urination (2, 9%), blurred vision (1, 5%), fever (1, 5%), muscle cramping (1, 5%), chest discomfort (1, 5%) and jaundice (1, 5%). Eleven (50%) affected persons required hospital admission, five received intensive care and among them two required liver transplantation. There was no death case from 2010 to 2015.

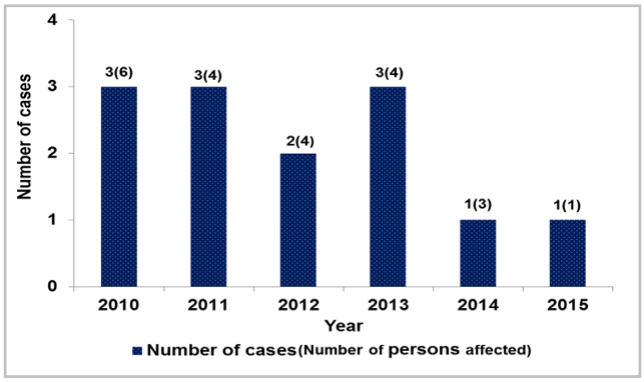


Figure 1 – Wild mushroom poisoning cases recorded from 2010 to 2015 (as of April 30, 2015).

Among the 13 cases of food poisoning related to wild mushrooms, 12 had the wild mushrooms picked in Hong Kong and one had the wild mushrooms picked from Mainland China. Among the 12 local cases, the sites where the wild mushrooms were picked included roadside, countryside, parks and country parks. The wild mushrooms were cooked before consumption in 12 cases, whereas in the other case, the victim ate the mushrooms raw.

Diagnosis of mushroom poisoning is based on consumption history, clinical symptoms, morphological species identification of the mushroom and if possible, laboratory confirmation for toxins in clinical specimen from the patient and/or in the mushroom remnant or sample. Among the 13 cases in the reporting period, four mushroom species were identified by mycologist based on available mushroom remnants and samples, or the detection of toxins produced by the species in remnant or clinical specimen of the patient (Table 1).

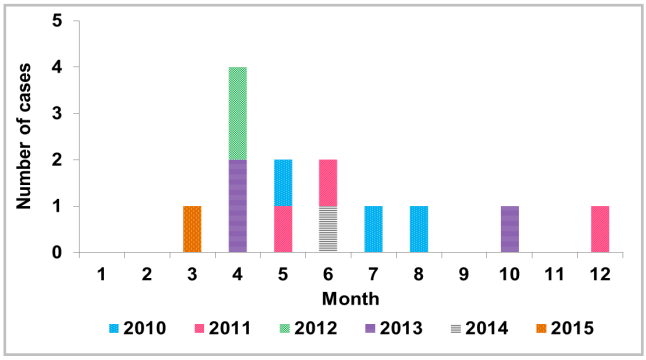


Figure 2 – Number of wild mushroom poisoning cases by month of notification recorded from 2010 to 2015 (as of April 30, 2015).

Table 1 – Mushroom species involved in wild mushroom poisoning cases recorded from 2010 to 2015 (as of April 30, 2015).

Mushroom species	Number of cases
Amanita	3
Chlorophyllum molybdites	2
Lepiota atrosquamulosa	1
Macrolepiota neomastoidea	1

During this reporting period, two patients required liver transplantation due to wild mushroom poisoning. One case occurred in 2013 affecting a couple who had consumed wild mushrooms harvested in Shing Mun Reservoir in Hong Kong. Both of them suffered from acute liver failure and were admitted to public hospitals. The wife, 47-year-old, received cadaveric liver transplant and then recovered, while her husband, 48-year-old, recovered after receiving intensive care treatment. The cooked mushroom sample was morphologically identified by mycologist to be *Amanita*. The other case occurred in March 2015 affecting a 29-year-old man who ate wild mushrooms picked from the countryside in Ma On Shan. He developed abdominal pain, vomiting and diarrhoea about 12 hours after eating the wild mushrooms, and developed jaundice three days later. He then developed confusion and was admitted to a public hospital through the Accident and Emergency Department for acute liver and renal failure, and was transferred to the intensive care unit for further management. He received cadaveric liver transplant one day after admission. As of April 30, 2015, he was still receiving treatment in hospital. No food remnant was available for identification in this case.

Mushroom poisoning is a biochemical food poisoning caused by consumption of raw or cooked inedible mushrooms that contain toxins. Symptoms of mushroom food poisoning depend on the species and amount of wild mushrooms consumed. Eating mushroom species, e.g. *Chlorophyllum molybdites*, which contain gastrointestinal irritants, may cause symptoms such as abdominal pain, nausea, vomiting and diarrhoea. Eating mushroom species which contain the toxin muscarine may cause neurological symptoms such as sweating, as well as gastrointestinal symptoms. There are also other mushroom toxins, e.g. psilocybin and psilocin, which may cause illusions and hallucinations.

The most toxic mushroom species, the *Amanita* species, can be found in Hong Kong. The *Amanita* species produces amatoxins which may result in severe liver and kidney failure. Patients who have ingested the *Amanita* species may have gastrointestinal symptoms and symptoms of liver failure such as jaundice and confusion. Severe cases may result in death. The main treatment for mushroom food poisoning is supportive. Liver transplantation may be performed for patients with liver failure.

The toxins involved in mushroom poisoning are produced naturally by the fungi themselves and cannot be rendered non-toxic through cooking, freezing or other means of food processing. It is difficult to distinguish edible mushroom species from inedible ones. As such, to avoid wild mushroom poisoning, the public are advised not to pick wild mushrooms for consumption. A number of cases were due to consumption of wild mushroom picked from parks, country parks or the countryside by the victims. In view of this, the Leisure and Cultural Services Department and the Agriculture, Fisheries and Conservation Department would take action to post up warning signs and notices in parks and country parks, respectively, to warn the public against picking and eating wild mushrooms.

NEWS IN BRIEF

A confirmed local case of human myiasis

On May 11, 2015, CHP recorded a case of human myiasis affecting a 94-year-old man, who lived alone in a village in Yuen Long. His activities of daily living were partially dependent on his neighbour. He had multiple medical illnesses and required tube feeding. He presented with bleeding of left foot ulcer and worsening left foot pain on May 9. He was admitted to a public hospital on the same day and multiple maggots were removed from the ulcer. They were later confirmed to be dipterous larvae belonging to the family *Sarcophagidae*. The patient was in stable condition. Health advice on personal care and environmental hygiene was given to the neighbour.

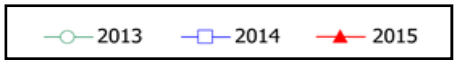
A sporadic case of brucellosis

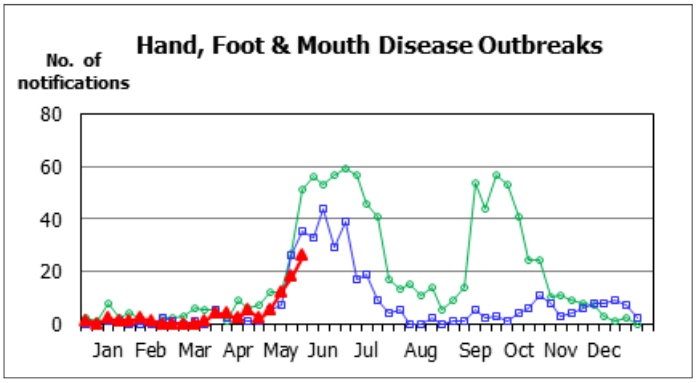
On May 8, 2015, CHP recorded a case of brucellosis affecting a 26-year-old man with good past health. He presented with fever, headache, weight loss and right hip pain since March 12. He sought medical advice from a private doctor in mid-March and was given symptomatic treatment. He attended the Accident and Emergency Department of a public hospital on April 30 due to persistent symptoms and was admitted on the same day. His blood specimen collected on April 30 yielded *Brucella melitensis*. He was treated with antibiotics and his condition was stable. His clinical diagnosis was brucellosis. He reported no contact with internal organs or carcasses of animals, and no history of consuming unpasteurised diary products, raw or undercooked animal products. His home contacts were asymptomatic. Investigation is on-going.

A sporadic case of *Streptococcus suis* infection

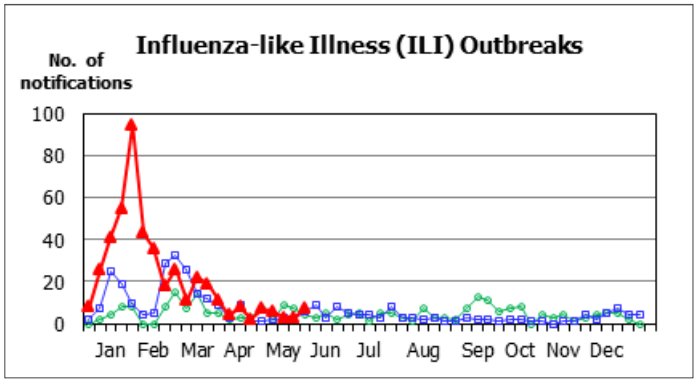
On May 14, 2015, CHP recorded a case of *Streptococcus suis* infection affecting a 66-year-old woman with good past health. She presented with fever, chills, rigors, malaise, vomiting, neck pain, headache and hearing loss since May 8 and was admitted to a public hospital on May 10. Her blood and cerebrospinal fluid specimens collected on May 12 and 13 respectively grew *Streptococcus suis*. She was treated with antibiotics and her condition was stable. She had handled raw pork when cooking at home during the incubation period. Her home contacts were asymptomatic.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 20 - WEEK 21)

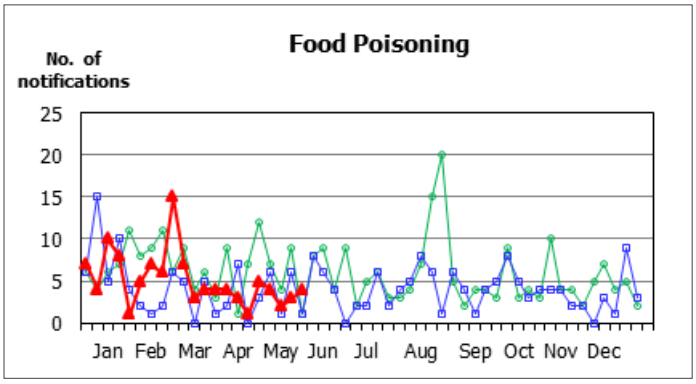




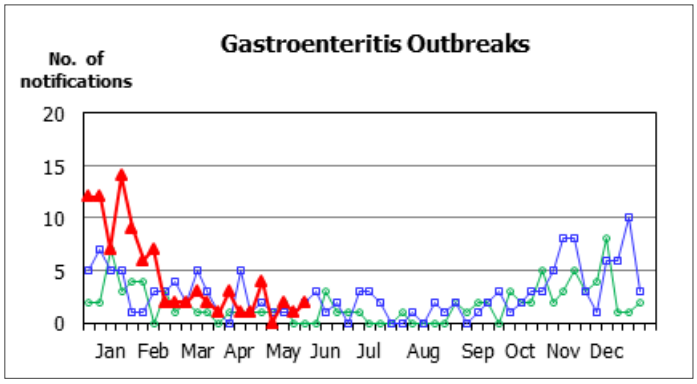
Week 18	5	Week 19	12
Week 20	**18**	**Week 21**	**26**



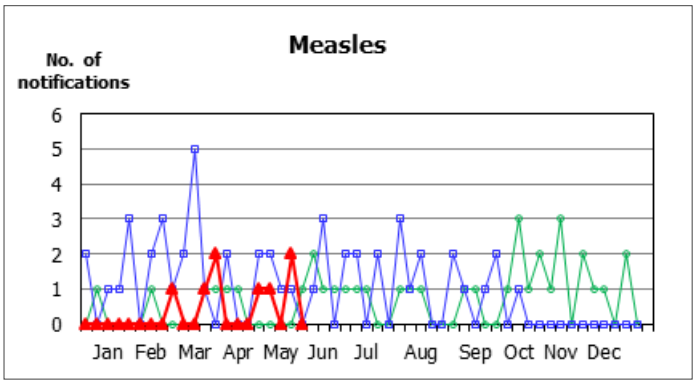
Week 18	6	Week 19	3
Week 20	**3**	**Week 21**	**7**



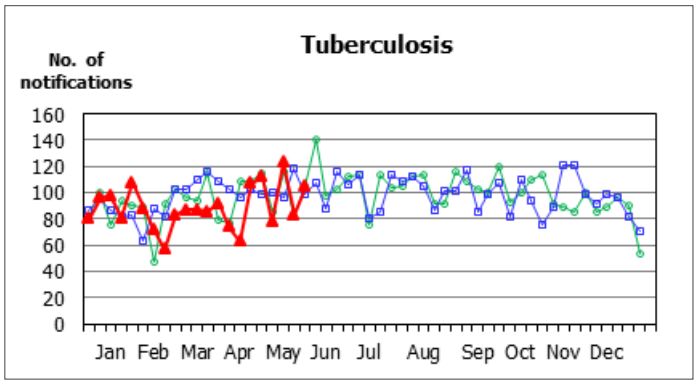
Week 18	4	Week 19	2
Week 20	**3**	**Week 21**	**4**



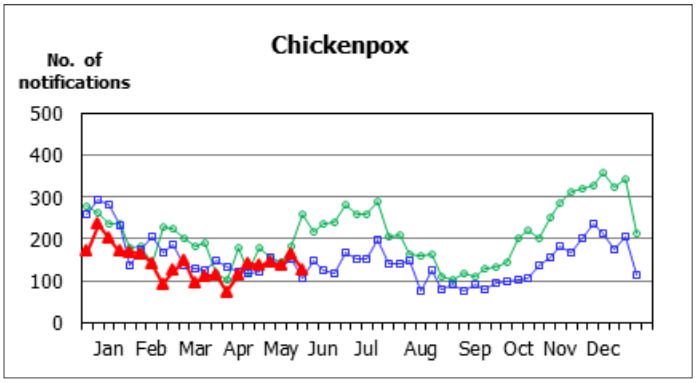
Week 18	0	Week 19	2
Week 20	**1**	**Week 21**	**2**



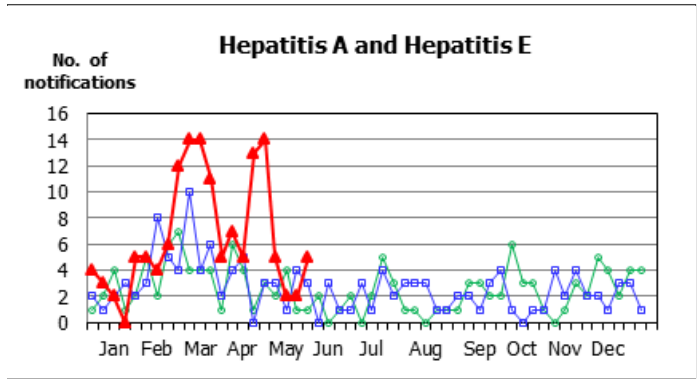
Week 18	1	Week 19	0
Week 20	**2**	**Week 21**	**0**



Week 18	78	Week 19	123
Week 20	**83**	**Week 21**	**105**



Week 18	146	Week 19	136
Week 20	**163**	**Week 21**	**125**



Week 18	5	Week 19	2
Week 20	**2**	**Week 21**	**5**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until May 23, 2015. This information may be updated over time and should therefore be regarded as provisional only.

May 24 - Jun 6, 2015 WEEKS 22 - 23 VOL 12 ISSUE N^{0} 12

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Updated situation of the Middle East Respiratory Syndrome (MERS) in Korea (as of 5pm on June 11, 2015)

Reported by Respiratory Disease Office and Dr YH LEUNG, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

The MERS outbreak in Korea

The MERS outbreak in Korea was sparked off by an imported case from the Middle East. On May 21, 2015, the Ministry of Health and Welfare of Korea reported the first three cases of MERS. The index was a 68-year-old man who had travelled to several Middle East countries (including Bahrain, United Arab Emirates (UAE), Kingdom of Saudi Arabia (KSA) and Qatar) within 14 days before he started to develop symptoms. He returned to Korea via Qatar on May 3 and remained asymptomatic when he arrived at Korea's Incheon International Airport on May 4. He subsequently developed fever and cough on May 11 and sought medical care at Asan Seoul Clinic at Dunpo-myeon, Asan-si, Chungcheongnam-do for several times from May 12 to 15. He was first admitted to Pyeongtaek St. Mary's Hospital at Segyo-dong, Pyeongtaek-si, Gyeonggi-do on May 15 and discharged on May 17. In the evening on the same day, he visited 365 Seoul Yeollin Clinic at Cheonho-dong, Seoul and was subsequently admitted to the Emergency Department of Samsung Medical Center at Irwondong, Seoul.

According to the information from the World Health Organization (WHO), MERS was not suspected initially and the index was not isolated, as he did not provide history of potential exposure to MERS-coronavirus (MERS-CoV). Until May 19, a specimen was finally taken from him for MERS-CoV test and the result was confirmed to be positive on May 20. He was then transferred to a nationally designated treatment facility for isolation. Efforts are under way to gather more information about exposures during his travel in the Middle East.

The patient's attendances in two clinics and two hospitals before isolation had created multiple opportunities for exposure among health care workers (HCWs), visitors and other patients. A large outbreak of MERS subsequently occurred in Pyeongtaek St. Mary's Hospital where he stayed from May 15 to 17. As of June 11, this hospital outbreak affected a total of 28 secondary cases who acquired the infection from this index (including a case exported to Mainland China via Hong Kong) and eight tertiary cases who acquired the infection from other secondary cases. The latest case was reported on June 7. Separately, two HCWs also acquired the infection from the index in Asan Seoul Clinic and 365 Seoul Yeollin Clinic respectively.

Subsequently, four secondary cases in Pyeongtaek St. Mary's Hospital caused further hospital outbreaks in six other hospitals. A 35-year-old male who had exposed to the index from May 15 to 17 in Pyeongtaek St. Mary's Hospital developed symptoms on May 21 and was admitted to the Emergency Department of Samsung Medical Center from May 27 to 29. This case triggered a large outbreak in this hospital with a total of 55 tertiary cases directly linked to him so far.

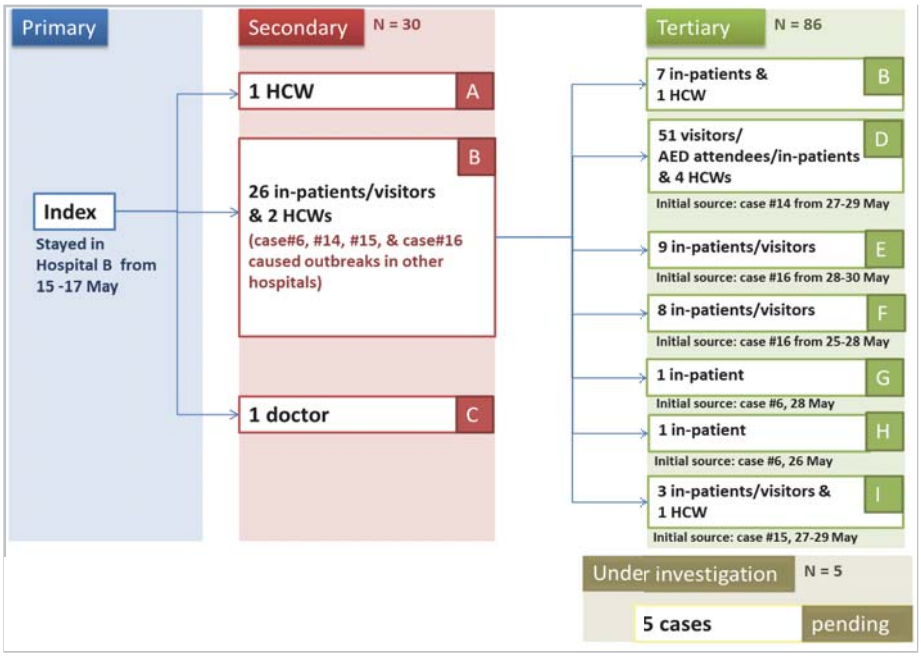


Figure 1 – Transmission pattern and distribution of cases in the MERS outbreak in Korea. (Case number refers to the number assigned by Korea)

Code:
A: Asan Seoul Clinic
B: Pyeongtaek St. Mary's Hospital
C: 365 Seoul Yeollin Clinic
D: Samsung Medical Center
E: Konyang University Hospital
F: Dae-Cheong Hospital
G: Yeouido St. Mary's Hospital
H: Asan Medical Center
I: Hallym University Medical Center

Another 40-year-old male case who also acquired the infection from the index in Pyeongtaek St. Mary's Hospital developed symptoms on May 20 and was hospitalised in Dae-Cheong Hospital at Seogu, Daejeon from May 25 to 27 and Konyang University Hospital at Seogu, Daejeon from May 28 to 30, causing eight tertiary cases in the first hospital and nine tertiary cases in the second hospital.

Apart from the four outbreaks above, there were nosocomial transmissions of MERS-CoV from a 71-year-old male secondary case to one case in Yeouido St. Mary's Hospital at Yeouido, Yeongdeungpo-gu, Seoul and one in Asan Medical Center at Songpa-gu, Seoul, and from a 35-year-old male secondary case to three cases in Hallym University Medical Center at Hwaseong-si, Gyeonggi-do.

As of June 11, there have been nine healthcare facilities (HCFs) documented to have nosocomial transmissions of MERS-CoV affecting a total of 116 persons (patients, visitors or HCWs). The remaining five cases reported on June 11 are still under epidemiological investigation. The updated list of hospitals in Korea with confirmed MERS cases reported or visited before isolation is available from the following link: http://www.chp.gov.hk/files/pdf/korean_hospital_list.pdf.

In summary, the MERS outbreak in Korea is the largest one occurring outside the Middle East, involving 122 cases (including 10 deaths) with ages arranged from 16 to 84 (median: 66 years). 71 (58%) were male. Among the 116 cases who acquired the infection in HCFs, at least 10 were HCWs. Although there is no evidence of sustained community transmission so far, over 70% of the cases were considered as tertiary cases (Figure 1 and 2).

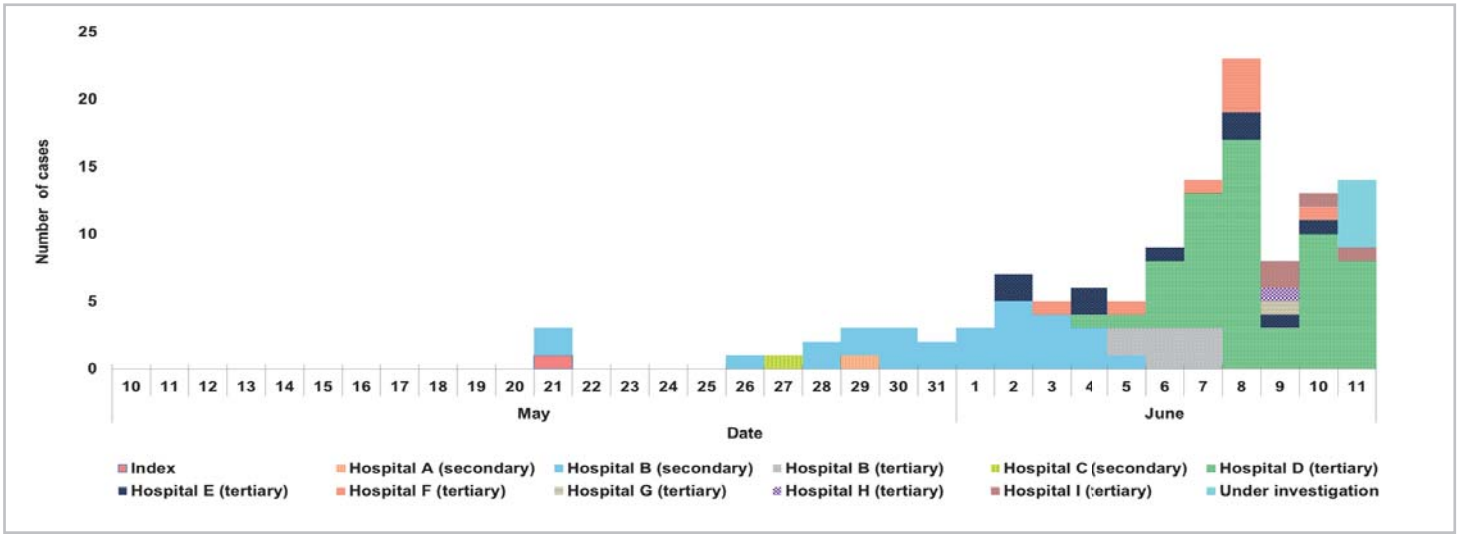


Figure 2 – Daily number of reported cases (N=122).

According to the WHO, preliminary data revealed that the exposure times that leading to infection may have been as short as five minutes to a few hours. A joint mission by the WHO and Korea's Ministry of Health and Welfare is assessing the epidemiological pattern of MERS-CoV in Korea as well as the characteristics of the virus and clinical features. It is also reviewing the public health measures implemented to date. According to the Mission, the evidence presented thus far suggests that the pattern of the outbreak in Korea may be similar to MERS outbreaks that have taken place in HCFs in the Middle East. However, the situation is rapidly evolving and investigations are ongoing. Whenever an emerging pathogen like the MERS virus appears in a new setting, for example, in a new country, a timely and thorough investigation is critical, particularly to assess whether the virus and its transmission are changing, and to ensure implementation of the most appropriate control strategies. The Mission also provided recommendations to Korea to enhance infection and control measures, surveillance measures to control the outbreak and prevent further spread. The Centre for Health Protection (CHP) will continue to liaise with the WHO and the Korean health authority to obtain additional information and closely monitor the MERS outbreak in Korea.

(Remark: The listed hospital names are English translation and may not be official English names.)

Investigation and contact tracing of a case exported from Korea to Mainland China via Hong Kong

One of the close contacts of the index case in Korea was a 44-year-old male who had stayed with the index in a ward in Pyeongtaek St. Mary's Hospital. His sister and father also acquired the infection in the same ward. He developed symptoms on May 21 and travelled from Korea to Huizhou, Guangdong via Hong Kong on May 26. He was sent to a hospital in Huizhou for isolation and clinical management on May 28 and was subsequently laboratory-confirmed by the Chinese Center for Disease Control and Prevention (China CDC) on May 30.

While awaiting China CDC's laboratory confirmation, as a precautionary measure, CHP had immediately liaised with the health authority of Guangdong to obtain further details of the patient and commenced epidemiological investigations and precautionary contact tracing on May 28. Investigation revealed that he arrived at the Hong Kong International Airport (HKIA) on May 26 at around 1:00pm by OZ723 of Asiana Airlines. He then took a coach from HKIA to Sha Tau Kok at about 3:00pm and another coach from Sha Tau Kok to Huizhou at 4:46pm.

We classify close contacts of a MERS patient as anyone who has provided care for a MERS patient, including HCWs or family members, or who had other similar close physical contacts; and anyone who had stayed with the confirmed case (such as who had lived with or visited the case) when the case was symptomatic. Other contacts refer to all other types of contacts who do not fulfill

the definition of close contact. In a flight setting, close contacts refer to passengers seated in the same row and those seated two rows in front or behind the index case, while those who stayed in the same cabin of the case are considered as other contacts.

CHP's contact tracing identified 157 other passengers onboard the flight OZ723 and 81 of them sat in the same cabin. Twenty-nine of these passengers sat within two rows of the patient and they were regarded as close contacts. CHP successfully located all the 29 flight close contacts. Nineteen of them were put under quarantine at Lady MacLehose Holiday Village. They were quarantined until June 9 (i.e. one maximum incubation period of MERS from their last exposure to the index patient (May 26)). All were asymptomatic during the whole period of quarantine. The remaining 10 close contacts were outside Hong Kong and were managed by relevant health authorities. Regarding other flight contacts, we located 23 out of the 52 other contacts on the flight. The remaining 29 other contacts were outside Hong Kong and we passed the list of these contacts to relevant health authorities for follow-up. We also located another 12 other contacts including the coach drivers, coach passengers and ticketing staff of the coach company, immigration officers and staff working at HKIA. Our contact tracing did not identify any cases within the first 14 days of medical surveillance of all the identified contacts.

Situation in other countries

In addition to the 122 cases involved in the outbreak in Korea, a total of 1155 laboratory-confirmed MERS cases have been cumulatively reported to the WHO globally since 2012, including at least 444 deaths (as of June 10, 2015) (Table). Among them, 1130 cases were confirmed in nine Middle East countries. The remaining 25 cases reported outside Middle East countries and Korea were all linked to the Middle East, either through recent travel to the region (imported cases, N=20) or exposure to a patient who acquired the infection in the region (import-related cases, N=5).

Table – Number of laboratory-confirmed MERS cases reported by WHO counted by the place of reporting (as of June 10, 2015) (excluding cases in Korea and China).

	Reporting country	Middle East cases (N=1130)	Cases reported *outside* Middle East, Korea and China (N=25)	
			Cases imported directly from the Middle East	Cases without travel history to Middle East but had exposure to a case acquired infection in the Middle East
Middle East	KSA	1,015		
	UAE	73		
	Qatar	13		
	Jordan	12		
	Iran	6		
	Oman	6		
	Kuwait	3		
	Lebanon	1		
	Yemen	1		
Non-Middle East	United Kingdom		2	2
	Tunisia		1	2
	France		1	1
	Germany		3	0
	Algeria		2	0
	Netherlands		2	0
	United States		2	0
	Austria		1	0
	Egypt		1	0
	Greece		1	0
	Italy		1	0
	Malaysia		1	0
	Philippines		1	0
	Turkey		1	0

Without known onward transmission from imported case(s).

With known onward transmission from imported case(s).

According to the WHO, overall, 66% of the cases are male and the median age is 49 years (range: 9 months – 99 years). Among the 623 confirmed cases with details provided by the WHO, 519 patients (83.3%) presented with relatively more severe illnesses such as pneumonia and 51 patients (8.5%) had mild illnesses such as influenza-like illness, while the remaining 53 patients (8.2%) were reported to be asymptomatic. Of note, 251 cases (21.7%) involved HCWs. About half were known to have chronic diseases. Patients with underlying co-morbidities had a high risk of severe disease due to MERS.

Health advice from CHP

In view of the increasing number of cases in Korea and the large number of persons potentially exposed to these cases, the frequent travel of people between Korea and Hong Kong, the dense population in Hong Kong, and the capacity of the local health care system, the Government decided to raise the response level under the Preparedness Plan for MERS from Alert to Serious on June 8.

The CHP has enhanced the surveillance of suspected cases of MERS by revising the reporting criteria. The new clinical criteria are either: (i) a person with fever not explained by any other aetiology; OR (ii) a person with clinical feature(s) of lower respiratory tract infection not explained by any other aetiology; OR (iii) an immunocompromised patient with diarrhoea not explained by any other aetiology. Besides, the epidemiological criteria have been expanded to include Korea as an affected area. Any person fulfilling both clinical AND epidemiological criteria is regarded as a suspected case and should be reported to the CHP for prompt investigation.

The lessons learnt from the outbreak in Korea are that HCWs must maintain a high level of vigilance for the possibility of MERS-CoV infection among travellers returning from affected areas and pay attention to infection control measures in healthcare settings. At the present moment, we advise all visitors and staff to wear surgical mask in clinical environments and during encounters with patients. The WHO has warned that failure in infection control and prevention measures in healthcare settings could result in a large number of secondary cases. Nosocomial transmission can be stopped by strict adherence to basic infection control and prevention measures. HCWs hence should apply standard precautions consistently with all patients, regardless of their diagnosis, in

all work practices at all times. Droplet precautions should be added to the standard precautions when providing care to any patient with symptoms of acute respiratory infection.

The management of HCFs that provide care for patients suspected or confirmed MERS cases should take appropriate measures to decrease the risk of transmission of MERS-CoV from an infected patient to other patients, HCWs and visitors. Regular training and education should be provided. According to the recommendations from CHP and the Hospital Authority, HCWs should wear N95 respirator, eye protection, gown and gloves when managing suspected or confirmed cases of MERS-CoV infection. Moreover, HCWs must pay attention to the high risk of spread of respiratory viruses through aerosol generating devices (such as nebulisers) in healthcare settings and compile with airborne precautions accordingly.

Since it is not always possible to identify patients with MERS-CoV early as some may have mild or unusual symptoms, patients should be managed as potentially infected when the clinical and epidemiological clues strongly suggest MERS-CoV infection, even if an initial test on a nasopharyngeal swab is negative. Laboratory testing should be repeated when the initial test is negative, preferably on specimens from the lower respiratory tract.

Members of the public are advised to avoid unnecessary travel to Korea, in particular, those with chronic illnesses such as diabetes, renal failure, chronic lung disease, and immunocompromised states. Travellers in Korea and the Middle East should avoid unnecessary visit to HCFs and contact with sick persons. As there has been scientific evidence supporting the premise that camels serve as the primary source of MERS-CoV infecting humans, travellers in the Middle East should avoid camel riding activities and going to farms, barns or markets with camels.

Summary of the 2014/15 winter influenza season and the arrival of the summer influenza season

Reported by Respiratory Disease Office, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Hong Kong experienced a severe winter influenza season in early 2015. The 2014/15 winter influenza season arrived in the last week of December 2014, which was several weeks behind those in North America, the United Kingdom and Japan. The influenza activity increased rapidly in January this year and peaked in early February. Since then, it decreased gradually and finally returned to a low level in the third week of April, indicating the season end. This winter season lasted for about 17 weeks. In comparison, local winter influenza seasons between 2005 and 2014 (excluding two atypical years 2010 and 2012) spanned for an approximate range of 7 to 19 weeks (median: 12.5 weeks).

Laboratory surveillance

The positive percentage of influenza virus detections among respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP) rose significantly from 3.5% in the second last week of 2014 to 9.2% in the following week. It subsequently increased rapidly to a peak of 38.7% in the last week of January 2015 (Figure 1). Since then, it has decreased gradually to a level below 10% since the week ending April 18. Historically, the positive percentage usually reached a peak level of around 30% - 40% during influenza seasons.

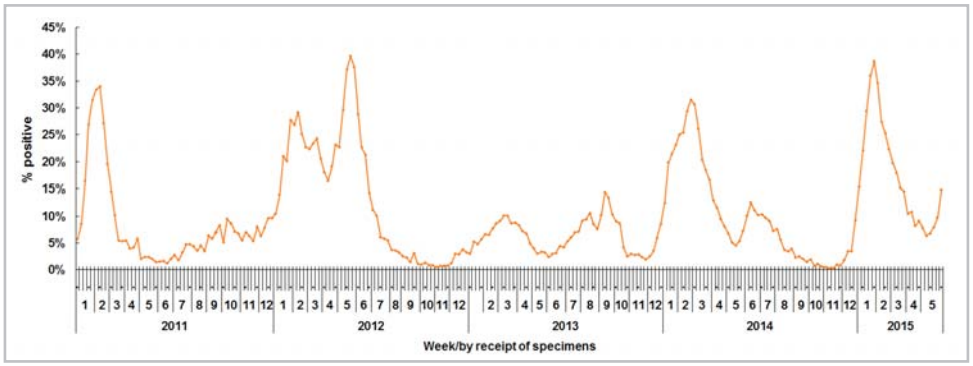


Figure 1 – Weekly percentage of respiratory specimens tested positive for influenza viruses by PHLSB, 2011-2015 (as of June 6).

Among the positive influenza virus detections between December 28, 2014 and April 25, 2015, the predominating virus was influenza A (H3N2)(90.1%), followed by influenza B (8.4%), influenza A(H1N1)pdm09 (1.1%) and influenza C (0.4%). Genetic characterization revealed that over 95% of the influenza A (H3N2) viruses detected in this season belong to the A/Switzerland/9715293/2013 strain which is antigenically different from the A/Texas/50/2012 (H3N2)-like virus recommended by the World Health Organization for the 2014/15 Northern Hemisphere seasonal influenza vaccine.

Influenza-like illness (ILI) outbreaks

There was an upsurge in institutional ILI outbreaks reported to the CHP in early January. The weekly number of reported ILI outbreaks peaked at 95 in the last week of January (Figure 2). Overall, CHP recorded 432 ILI outbreaks from December 28, 2014 to April 25, 2015, exceeding the numbers recorded during influenza seasons in the past few years. These outbreaks mainly occurred in residential care homes for the elderly (RCHE)(46%), followed by primary schools (PS)(25%), kindergartens/ child care centres (KG/CCC)(9%), secondary schools (SS)(8%), residential homes for the disabled (RCHD)(6%) and others (6%). Of note, about 27% of all RCHE in Hong Kong experienced an ILI outbreak in this season.

Influenza-associated admissions in public hospitals

In public hospitals, the hospital admission rates with principal discharge diagnosis of influenza among all age groups started to increase significantly in early January. The rate among children aged below 5 years reached a peak of 3.22 (admissions per 10 000 population in the age group) in the first week of February and that among elderly aged 65 years or above reached a peak of 5.54 in the last week of January (Figure 3). The rates among all age groups started to decrease in early February, and returned to low levels in late April.

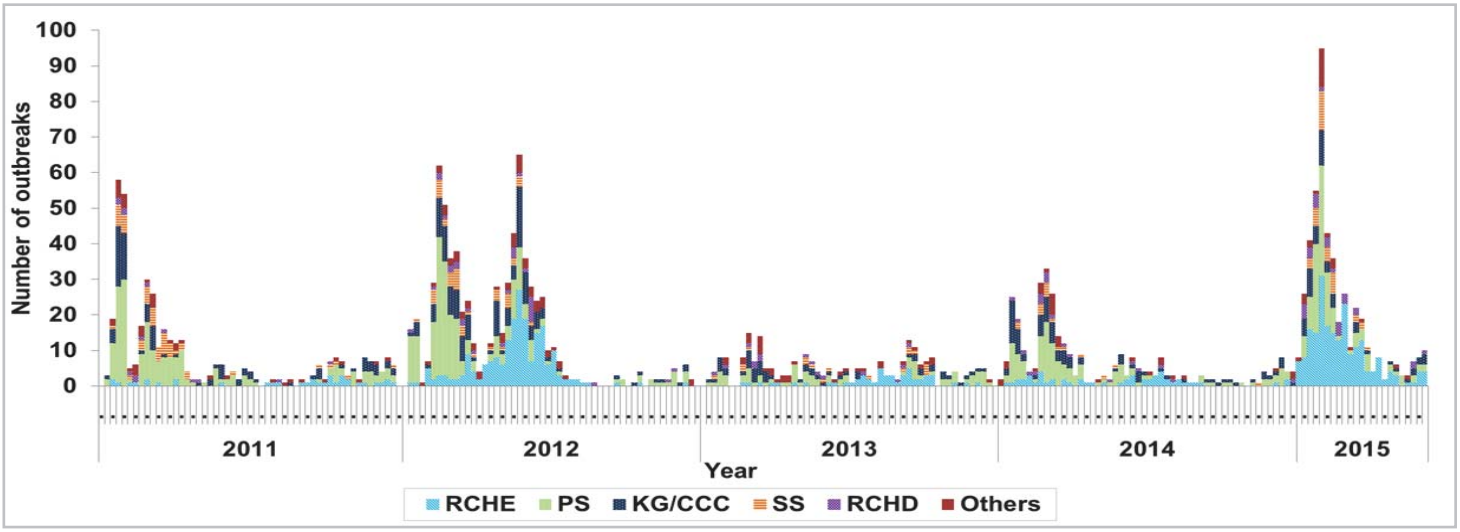


Figure 2 – Weekly number of institutional ILI outbreaks, 2011-2015 (as of June 6).

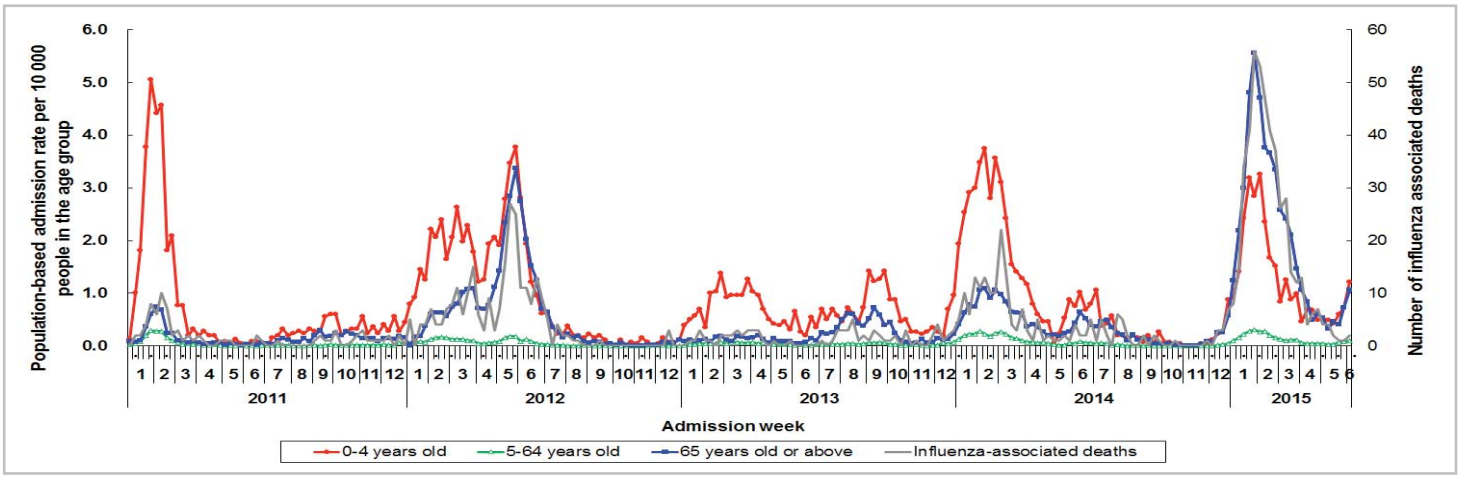


Figure 3 – Weekly influenza admission rates and weekly number of deaths with any diagnosis of influenza in the Hospital Authority, 2011-2015 (as of June 6).

In this winter season, the rate among elderly aged 65 years or above had reached a very high level and the peak rate was the highest recorded in this age group since CHP began tracking that data in 2005. Usually, the rate among children aged below 5 years is higher than that among elderly aged 65 years or above. The situation reversed in this season with higher influenza admission rate among elderly aged 65 years or above.

Severe influenza cases

To monitor the severity of admitted influenza cases among adult patients, CHP, in collaboration with the Hospital Authority and private hospitals, has operated an enhanced surveillance system during influenza seasons since 2011. Laboratory confirmed infections among adult (aged 18 years or above) who required intensive care unit (ICU) admissions or died will be reported to CHP. CHP reactivated this enhanced surveillance between January 2 and April 24, 2015. A total of 647 ICU admissions or deaths (including 501 deaths) were recorded. Besides, an ongoing system for reporting of influenza associated severe complications[1]/ death in the paediatric group of patients aged below 18 years is in place. Eighteen severe paediatric cases (including one death involving a one-year-old girl who developed encephalopathy) with laboratory confirmation of influenza infection were recorded in the same period.

In total, 665 severe cases (including 502 deaths) were recorded among all ages in this season. This number greatly exceeded that in previous winter seasons [123 (34 deaths) in 2011, 347 (227 deaths) in 2012 (a prolonged season lasting until July), 78 (29 deaths) in 2013 and 289 (136 deaths) in 2014]. The weekly number of severe cases counted by admission date peaked in the first week of February, and then gradually decreased to a low level in early April (Figure 4).

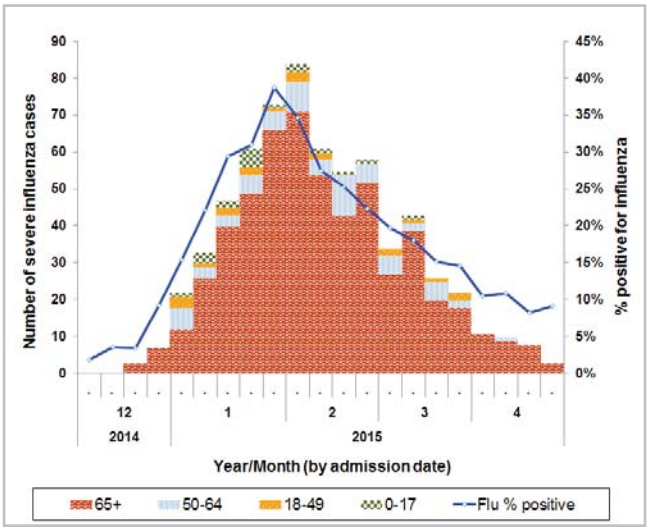


Figure 4 – Weekly number of severe influenza cases by date of admission and influenza positive percentage in the 2014/15 winter season.

Among the 665 severe cases, most of them (93%) contracted influenza A (H3N2) virus while the remaining were influenza B (5%) and influenza A(H1N1)pdm09 (1%) infections. 372 (56%) were male. Their ages ranged from 9 months to 107 years (median: 82 years).

[1] *Either severe pneumonia (requiring admission to intensive care unit or assisted ventilation), sepsis, shock, encephalopathy or myocarditis.*

Elderly aged 65 years or above constituted 84% of the severe cases and 93% among fatal cases (Table). In particular, 42% of the severe cases and 54% of the fatal cases affected very old elderly aged 85 years or above. It was observed that the cumulative incidence was increasing with increasing age (Figure 5).

For the 647 severe adult cases, 598 (92.4%) had at least one underlying chronic diseases. Among them, 22.7%, 25.6% and 51.7% had one, two and three or more chronic diseases respectively. Common conditions included cardiovascular diseases (221, 37.0%), neurological diseases including stroke (213, 35.6%), and diabetes mellitus (205, 34.3%). For the 18 severe paediatric cases, 6 (33.3%) had at least one underlying chronic disease.

Table – Tabulation of severe cases and deaths by age groups during 2014/15 winter influenza season.

Age (years)	All severe cases (including deaths)		Deaths	
	Cumulative number	Cumulative incidence rate*	Cumulative number	Cumulative mortality rate*
<18	18 (2.7%)	1.79	1 (0.2%)	0.10
18-64	86 (12.9%)	1.67	32 (6.4%)	0.62
65-74	86 (12.9%)	15.98	47 (9.4%)	8.73
75-84	196 (29.5%)	52.04	152 (30.3%)	40.36
≥85	279 (42.0%)	178.16	270 (53.8%)	172.41
Total	665	9.97	502	6.6

**per 100,000 population in the age group.*

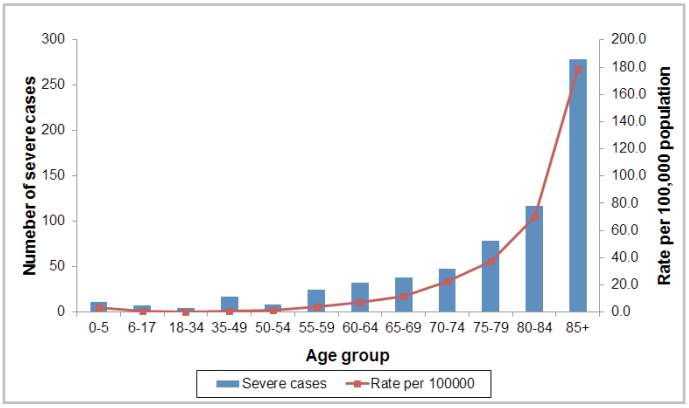


Figure 5 – Numbers and cumulative incidence rates of severe cases reported during 2014/15 winter influenza season by age.

Discussion

The 2014/15 winter season in Hong Kong arrived slightly earlier than previous seasons but later than that in some temperate regions like the United States and Japan. This season was apparently more severe than past seasons as reflected by the large number of ILI outbreaks, high hospitalisation rates and the large number of severe cases. Several overseas countries including the United States, the United Kingdom and Canada also experienced a severe winter influenza season in early 2015.

Several factors might account for the local situation. This season was predominated by influenza A (H3N2) virus, which is notoriously known to affect elderly more than the younger population (1). The aging population in Hong Kong has resulted in increasing number of frail elderly who are more prone to both influenza infection and the complications. There was a net increase of 167,300 persons aged 65 years or above between 2009 and 2014. The annual increase in population size of 65 years or above is more than 4% in the past three years in Hong Kong. Furthermore, there was mismatch between the predominating influenza A (H3N2) virus circulating in this season and the H3N2 component of the vaccine, leading to a decreased vaccine effectiveness. According to overseas reports, the vaccine effectiveness in the season ranged from 0% to 18% (2-5). As the vaccine coverage among persons aged 65 years or above was about 40%, the decreased vaccine effectiveness as compared with previous seasons would increase the susceptibility of a significant proportion of vaccinated elderly persons.

Latest influenza activity

Recent influenza surveillance data of CHP showed a continual increase in local influenza activity in the past few weeks, signaling the arrival of the summer influenza season in Hong Kong. Among the respiratory specimens received by PHLSB, the percentage tested positive for seasonal influenza viruses increased from 6.8% in the week ending May 16 to 14.8% last week (Figure 1). During this period, the major circulating viruses included influenza A(H3N2) (67.4%) and influenza B (29.4%).

Besides, recent increases in admission rates with principal diagnosis of influenza in public hospitals have also been observed (Figure 3). The rate among children aged below 5 years has increased from 0.42 (admissions per 10,000 population in the age group) in the week ending May 16 to 1.21 in the last week. The rate among elderly aged 65 years or above has increased from 0.47 to 1.06 in the corresponding period.

The number of institutional ILI outbreaks reported to CHP also showed a steady increase in the past few weeks (Figure 2). The weekly number of ILI outbreaks recorded in the past four weeks (May 10 - June 6) was 3, 7, 8 and 10 respectively. These outbreaks occurred in RCHE (36%), KG/CCC (29%), PS (21%), RCHD (11%) and others (3%). In the first four days of this week, 10 outbreaks have been recorded.

The influenza activity is expected to increase in coming weeks. CHP will continue to closely monitor the situation.

Reference

[1] US CDC. Estimates of Deaths Associated with Seasonal Influenza --- United States, 1976—2007. MMWR Weekly. 2010; 59(33); 1057-1062.

[2] McNeil S.A., et al. Interim estimates of 2014/15 influenza vaccine effectiveness in preventing laboratory-confirmed influenza-related hospitalisation from the Serious Outcomes Surveillance Network of the Canadian Immunization Research Network, January 2015. Euro Surveill. 2015; 20(5): 21024.

[3] Pebody R.G., et al. Low effectiveness of seasonal influenza vaccine in preventing laboratory-confirmed influenza in primary care in the United Kingdom: 2014/15 mid-season results. Euro Surveill. 2015; 20(5): 21025.

[4] Skowronskl D.M., et al. Interim estimates of 2014/15 vaccine effectiveness against influenza A(H3N2) from Canada's Sentinel Physician Surveillance Network, January 2015. Euro Surveill. 2015; 20(4): 21022.

[5] US CDC Presents Updated Estimates of Flu Vaccine Effectiveness for the 2014-2015 Season. http://www.cdc.gov/flu/news/updated-vaccine-effectiveness-2014-15.htm (updated date: March 2, 2015).

NEWS IN BRIEF

Five epidemiologically linked cases of measles infection

The Centre for Health Protection (CHP) recorded five epidemiologically linked cases of measles infection in May and June 2015. The first (index) case was a four-month-old boy living in Hong Kong. He presented with fever on May 8 and was admitted to a public hospital on the same day. He developed skin rash on May 12 and was transferred to isolation ward on May 13. The blood collected on May 12 was tested positive for measles IgM. His condition was stable all along and he was discharged on May 16.

A six-month-old baby who stayed in the same cubicle with the index case and a nurse who worked in the same ward before the index case was isolated were subsequently known to be affected. The baby boy developed fever, cough and rash on May 27 despite receiving a course of post-exposure prophylaxis on May 16. His condition was stable and he was discharged on May 29. The nurse developed fever and rash on May 25 and May 27 respectively despite having received two doses of measles containing vaccine when young. Both the baby boy and nurse were confirmed by positive measles RT-PCR in nasopharyngeal swabs.

Upon extension of contact tracing, two more patients (the fourth and the fifth cases) who had contact history with the infected nurse were later reported to have measles infection on June 8. They were two baby girls, aged 11 months and one month respectively. So far all cases were in stable condition.

CHP and the hospital have put all close contacts of the cases under medical surveillance. Post-exposure prophylaxis was given to the contacts if indicated and relevant health information was provided to the parents/exposed persons. Infection control measures of the concerned ward were tightened. Investigation is ongoing.

A sporadic local case of brucellosis

On May 29, 2015, CHP recorded a case of brucellosis affecting a 49-year-old man with underlying illnesses. He was chair-bound and lived in a residential care home for the disabled (RCHD). He developed fever on April 5 and was admitted to a public hospital on the same day. Computer tomography (CT) scan showed paraspinal abscess and septic spondylodiscitis. His blood specimens collected on April 16 and May 20 showed four-fold rise in antibody titre against *Brucella abortus*. In addition, aspiration of the abscess showed evidence of tuberculosis. His clinical diagnosis was brucellosis and spinal tuberculosis. He was treated with antibiotics and anti-tuberculosis therapy was commenced. His condition was stable. He had no exposure to animals, their carcasses or internal organs. He did not recall high risk food items during incubation period. His contacts in the RCHD were asymptomatic. Investigation is ongoing.

Field Epidemiology Training Courses

The Hong Kong Field Epidemiology Training Programme of CHP organised two training courses. A one-day course "Introduction to Field Epidemiology" on June 1, 2015 provided fundamentals on field epidemiology. During June 2 - 6, 2015, a 5-day course "Principles of Outbreak Investigation" provided participants with knowledge and skills on the methodological and organisational steps of an outbreak investigation. There were presentations by facilitators as well as interactive practical case studies. A total of 28 participants attended the training courses and both courses were well-received.

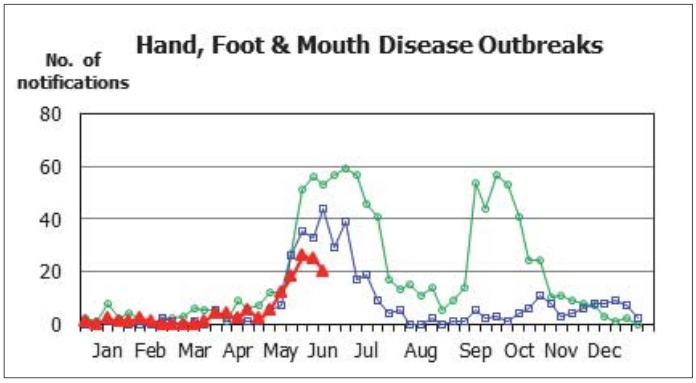
Symposium on Dengue Fever

To get Hong Kong better prepared for a potential local outbreak of dengue fever in the coming summer months, a Symposium on Dengue Fever was co-organised by the Infection Control Branch of the CHP, Infectious Disease Control Training Centre and the Chief Infection Controller Office of the Hospital Authority from May 26 to 27, 2015. Experts from Singapore, Thailand and Mainland China were invited to speak on various aspects of dengue fever, notably preparedness, control and clinical management. Moreover, local speakers were also invited to enlighten participants on various topics including the local epidemiology, surveillance, laboratory diagnosis and vector control. The symposium was attended by over one hundred doctors, nurses and related healthcare professionals. On the second day, a roundtable discussion chaired by the Controller of CHP was held where local stakeholders, overseas and Mainland experts gathered together to deliberate on the preparedness and response plans for a major outbreak in Hong Kong.

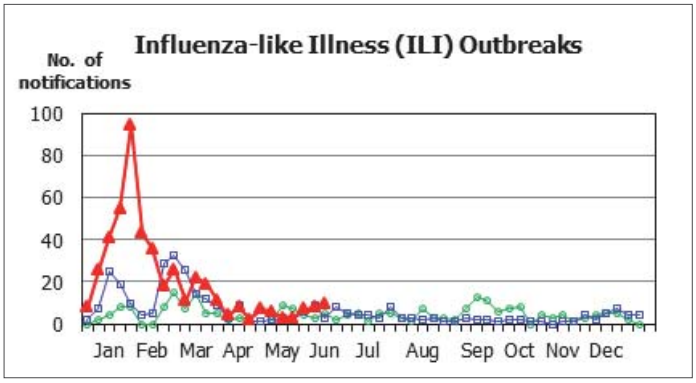
Scarlet fever update (May 10 - June 6, 2015)

Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From May 10 to June 6, 2015, CHP recorded 117 cases of scarlet fever with a range of 24 to 34 cases per week as compared with 92 cases with a range of 18 to 30 cases per week in the previous reporting period (April 12 – May 9, 2015). The cases recorded in this reporting period included 68 males and 49 females aged between eight months old and 36 years old (median = 5 years old). There were two school clusters in a kindergarten and a primary school respectively, with each affecting two children. No fatal cases were reported during this reporting period.

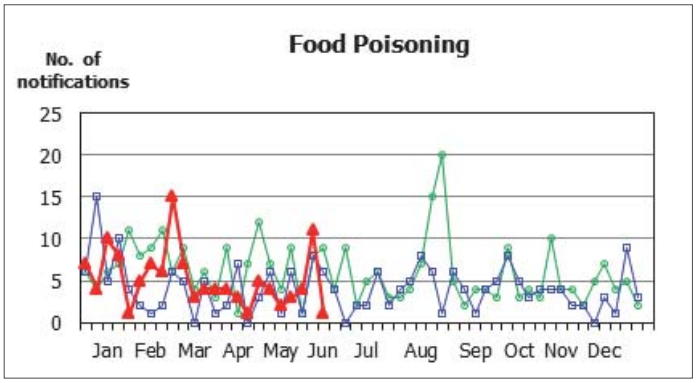
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 22 - WEEK 23)



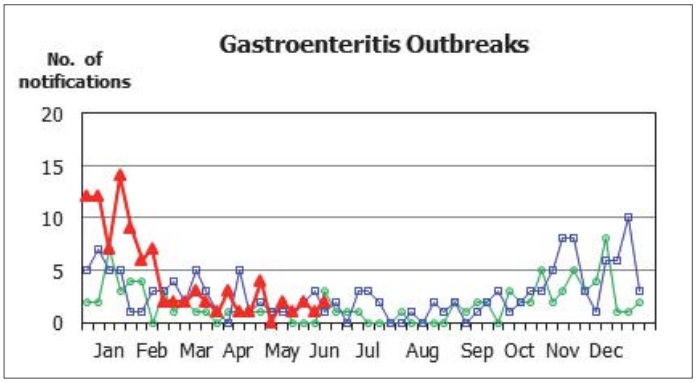
Week 20	18	Week 21	26
Week 22	**25**	**Week 23**	**20**



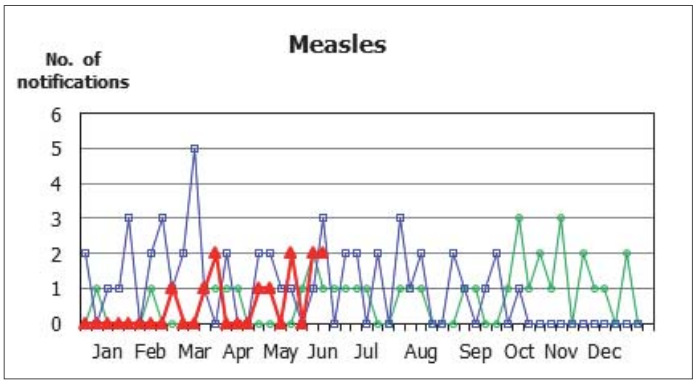
Week 20	3	Week 21	7
Week 22	**8**	**Week 23**	**10**



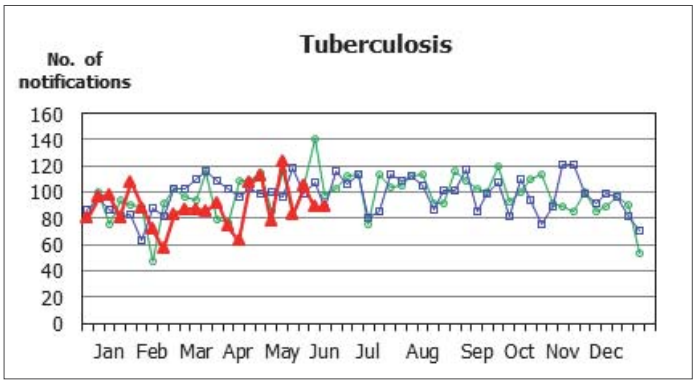
Week 20	3	Week 21	4
Week 22	**11**	**Week 23**	**1**



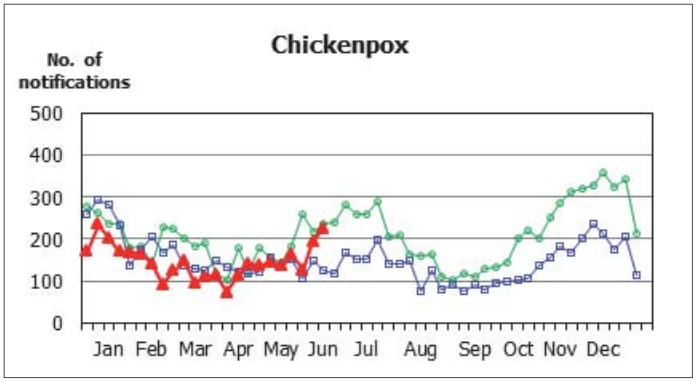
Week 20	1	Week 21	2
Week 22	**1**	**Week 23**	**2**



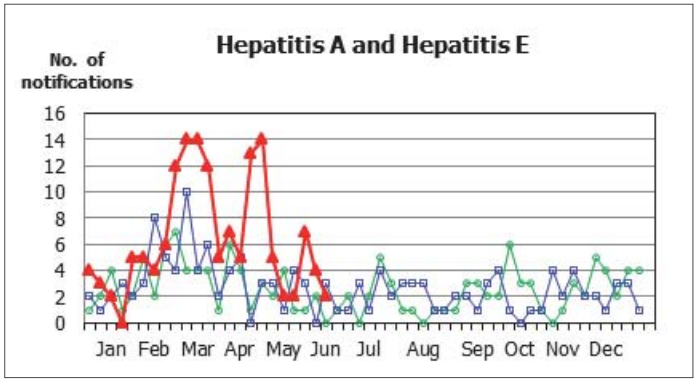
Week 20	2	Week 21	0
Week 22	**2**	**Week 23**	**2**



Week 20	83	Week 21	105
Week 22	**89**	**Week 23**	**89**



Week 20	163	Week 21	126
Week 22	**196**	**Week 23**	**226**



Week 20	2	Week 21	7
Week 22	**4**	**Week 23**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until June 6, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jun 7 - Jun 20, 2015 WEEKS 24 - 25 VOL 12 ISSUE N^{0} 13

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Update on the investigation of local dengue case in Hong Kong, 2015

Reported by Dr ML WONG, Senior Medical and Health Officer, Surveillance and Epidemiology Branch, CHP.

The Centre for Health Protection (CHP) of the Department of Health (DH) confirmed the first local case of dengue fever in 2015. We summarise below the epidemiological investigation and actions taken in response to the case.

The patient was a 58-year-old man with good past health. He presented with fever, headache, muscle pain, diarrhoea and rash since May 24, 2015. After onset of symptoms, he had multiple medical consultations (consulted a private doctor, attended general out-patient clinic and consulted a Chinese medicine practitioner) before consulting and admission to a private hospital on May 31, 2015. His blood specimen collected on June 1, 2015 at the private hospital was tested positive for dengue NS1 antigen and dengue virus IgM by the Public Health Laboratory Services Branch (PHLSB) on June 2, 2015. His fever subsided after admission and was discharged in stable condition on June 2, 2015.

The patient lived in an estate in Tai Wai, Sha Tin where he recalled mosquito bites. He did not travel outside Hong Kong during incubation period (14 days before onset of symptoms), thus his infection was locally acquired.

Upon laboratory confirmation, CHP immediately commenced epidemiological investigation as well as field investigations to the residence and workplace of the patient. CHP conducted active case finding for suspected cases through direct interview, questionnaire surveys, telephone hotline and blood tests. A total of 11 telephone calls were received and over 137 households with a total of 377 residents were reached by questionnaire surveys or interviews (as of June 21, 2015). Two persons who reported previous compatible symptoms had blood tests and were both tested negative for dengue fever. All other persons identified were asymptomatic and no additional cases have been detected so far.

Pest Control Advisory Section (PCAS) of the Food and Environmental Hygiene Department (FEHD) started mosquito control measures and vector investigations on June 2, 2015. PCAS also strengthened vector control and prevention measures within 500 metres of the residence and workplace of the patient, as well as the places visited by the patient during his incubation and infective periods. PCAS conducted entomological surveys and collected a total of 243 adult or larvae samples of *Aedes albopictus* (as of June 16, 2015). All were tested negative for dengue virus.

CHP delivered joint health talks with FEHD to the residents of the estate and the nearby buildings. Another joint health seminar was conducted on June 20, 2015 with health talks delivered by representatives from CHP, FEHD, Education Bureau, Hong Kong Housing Authority and Hong Kong Association of Property Management Companies (Figure 1). CHP issued letters to doctors and private hospitals to alert them of the latest situation of dengue fever in Hong Kong, as well as to promote early diagnosis, control and prevention of dengue fever. Letters to institutions including schools, kindergartens/child care centre/kindergarten-cum-child care centre, elderly homes and homes for the disabled were also issued to remind them to stay vigilant against dengue fever infection.

In response to the first local case of dengue in 2015, the Interdepartmental Coordinating Committee on Mosquito-borne Diseases (ICC) convened an urgent meeting on June 4, 2015. The meeting examined the latest situation of dengue fever and reaffirmed government's commitment in taking strengthened mosquito control actions and health education. The Scientific Committee on Vector Borne Diseases also convened a meeting on June 18, 2015 to discuss the strategies on the prevention and control of dengue fever. CHP, in collaboration with FEHD and other government departments are calling the community to cooperate with the government to enhance anti-mosquito work.

Figure 1 – Joint health talk for residents in Tai Wai on June 20, 2015.

To avoid mosquito bites and to eliminate potential breeding places of mosquitoes remain the best measures for the prevention and control of dengue fever. To date, there is no effective vaccine and no curative

treatment. Travellers should seek prompt medical advice if they feel unwell after returning from a trip and provide travel details to their doctors. Members of the public may visit the CHP's dengue fever page (http://www.chp.gov.hk/en/view_content/38847.html) or DH's Travel Health Service (http://www.travelhealth.gov.hk/eindex.html) for further information on dengue fever and outbreaks in other areas. Information regarding control and prevention of mosquito breeding can be found on FEHD's website (http://www.fehd.gov.hk/english/safefood/handbook_prev_mos_breeding.html).

Review of food poisoning cases in Hong Kong, 2005-2015 (as of February 28, 2015)

Reported by Dr Gladys YEUNG, Medical and Health Officer, Enteric and Vector-bone Disease Office, Surveillance and Epidemiology Branch, CHP.

World Health Day 2015

Every year, the World Health Organization (WHO) selects a priority area of global public health concern as the theme for World Health Day, which falls on 7 April. In 2015, the theme for World Health Day was "Food Safety". WHO recognised the global threats posed by unsafe foods, and the need for coordinated, cross-border action across the entire food supply chain. With the slogan "From farm to plate, make food safe", WHO highlighted the challenges and opportunities associated with food safety.[1]

From 2005 to 2015 (as of February 28, 2015), there were 5 335 food poisoning cases recorded by the Centre for Health Protection (CHP). A total of 20 118 persons were affected. The male to female ratio was 1:1.3. Most (73%) of those affected were in the age group of 20-64 years old (<20 years old, 21%; ≥65 years old, 3%). The vast majority (96%) of them did not require hospitalisation. The largest case affected 167 persons (mean number of persons per case = 4). There were overall decreasing trends for both annual number of cases and total number of persons affected over the past decade. However, there was a slight increasing trend for the mean number of persons affected per case (Figure 1).

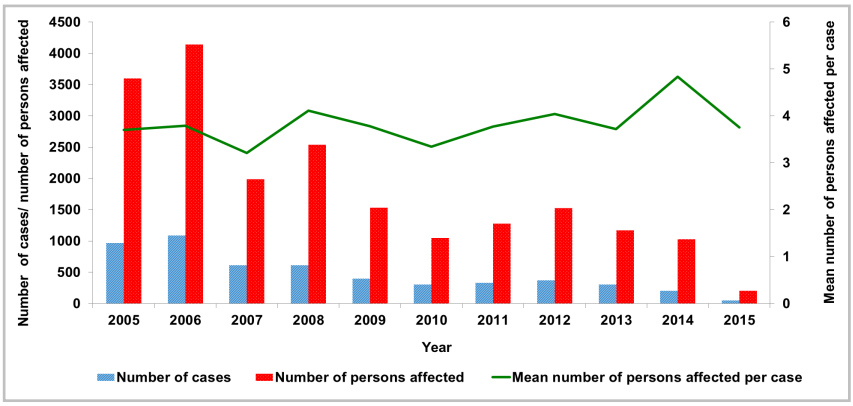


Figure 1 – Number of food poisoning cases and persons affected, 2005-2015 (as of February 28, 2015).

There was a seasonal pattern of food poisoning cases in Hong Kong with two peaks, one in February and another from June to September respectively (Figure 2).

For the majority of food poisoning cases, the causative agent could not be confirmed. Among the confirmed cases from 2005 to 2015 (up to February 28), bacteria remained the major cause of food poisoning cases (accounting for 77%), followed by viruses (12%), biochemicals (9%) and chemicals (2%).

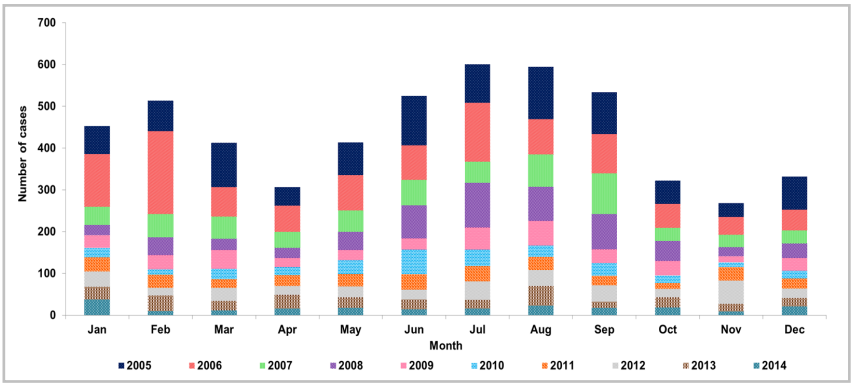


Figure 2 – Number of food poisoning cases by year and month, 2005-2014.

Among the confirmed cases of bacterial cause, the commonest causative agents were *Vibrio parahaemolyticus* (54%) and *Salmonella* (33%). Among the confirmed cases of viral cause, norovirus was the only agent that could be identified. The commonest causes of confirmed biochemical poisoning cases were ciguatoxin (69%), mushroom toxin (11%) and scombroid toxin (5%).

Seasonal patterns were observed for cases caused by *Vibrio parahaemolyticus* and *Salmonella* species with peaks in the summer (June to September). Among confirmed cases caused by *Vibrio parahaemolyticus* recorded from June to September, the most common primary food items were sashimi (18%) and sushi (13%). Among confirmed cases caused by *Salmonella* species recorded from June to September, the most common primary food items were dish with rice (24%) and cake (16%). On the other hand, cases caused by norovirus were more common in the cooler months (September to March) (Figure 3). Among confirmed cases caused by norovirus recorded from September to March, 69% had oyster as the primary food item.

Among the confirmed cases recorded during the reporting period, the commonest primary contributing factors were inadequate cooking (28%), contamination by raw food (26%) and contaminated raw food (18%). These three factors accounted for nearly three-fourths of the cases (Table 1).

Among the confirmed cases with inadequate cooking as the primary contributing factor, the most common primary food items were dishes containing inadequately cooked ingredients such as eggs and marine products (22%), oyster (12%) and dish with rice (11%). Among the confirmed cases with contamination by raw food as the primary contributing factor, the most common primary food items were chicken (14%), siu mei meat (11%) and sushi (9%). Among the confirmed cases with contaminated raw food as the primary contributing factor, the most common primary food items were oyster (31%), sashimi (22%) and cake (11%). Raw eggs were responsible for all cases with cake as identified contaminated food item. As such, the public are reminded to avoid eating raw or inadequately cooked eggs and egg products as eggs may be contaminated with *Salmonella*.

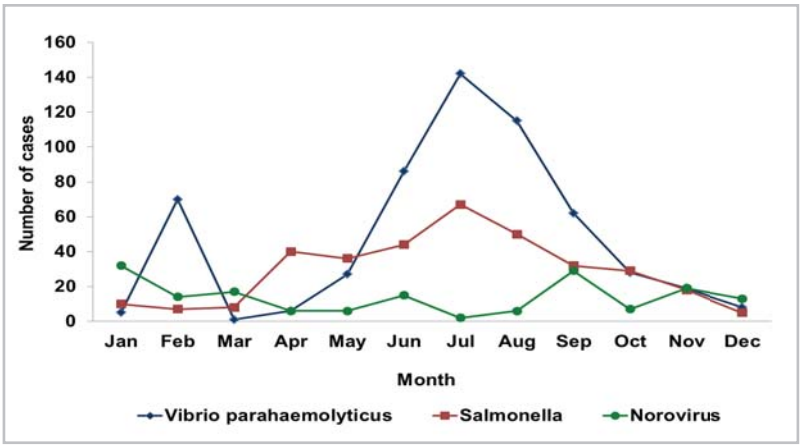


Figure 3 – Seasonality of confirmed food poisoning cases by causative agent, 2005-2015 (as of February 28, 2015).

Food poisoning can be prevented by practising food safety. The "5 Keys to Food Safety", advocated by the WHO and adopted by the Centre for Food Safety, are five simple and effective keys for people to follow when handling food to prevent foodborne diseases.[2] The core messages of the 5 Keys to Food Safety are:

1. Choose (Choose safe raw materials);
2. Clean (Keep hands and utensils clean);
3. Separate (Separate raw and cooked food);
4. Cook (Cook thoroughly); and
5. Safe Temperature (Keep food at safe temperature).

Table – Primary contributing factors in confirmed food poisoning cases, 2005-2015 (as of February 28, 2015) (percentages do not add up to 100% due to rounding).

Primary contributing factors	Percentage
Inadequate cooking	28%
Contamination by raw food	26%
Contaminated raw food	18%
Others/unknown	27%

Please refer to CHP and Centre for Food Safety websites via the links below for more practical tips:
http://www.chp.gov.hk/en/content/9/24/43.html
http://www.cfs.gov.hk/english/consumer_zone/consumer_zone_5_Keys_to_Food_Safety.html

Facts on food poisoning

Food poisoning is usually caused by the consumption of contaminated food containing pathogenic bacteria, viruses or toxins of biochemical or chemical nature. The World Health Organization (WHO) estimated that two million deaths occur every year from contaminated food or drinking water.[3] Transmitted through consumption of contaminated food, the incubation/latent period of food poisoning vary from hours to days depending on the nature of the causative agent. Common symptoms include vomiting, diarrhoea and abdominal pain, with or without fever. While most of the food poisoning cases are mild and self-limiting,[4] serious complications, such as dehydration and septicaemia leading to death may occur when appropriate treatment is delayed, though these are rare.

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[2] Centre for Food Safety (2014) 5 Keys to Food Safety. Available at: http://www.cfs.gov.hk/english/consumer_zone/consumer_zone_5_Keys_to_Food_Safety.html, accessed 18 June 2015
[3] World Health Organization (2015) World Health Day 2015: Food safety - the global view. Available at: http://www.who.int/campaigns/world-health-day/2015/en/, accessed 22 June 2015
[4] National Health Service (2015) Food Poisoning. Available at: http://www.nhs.uk/conditions/Food-poisoning/Pages/Introduction.aspx, accessed 22 June 2015

NEWS IN BRIEF

A probable case of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on June 10, 2015, affecting a 62-year-old man with unremarkable past health. He presented with limbs clumsiness since February 2015 and was admitted to a public hospital on April 3. He was diagnosed to have cerebrovascular accident and was discharged on April 4. He was admitted to another public hospital on April 13 for increased clumsiness. Subsequently, he developed progressive dementia, myoclonus, pyramidal dysfunction and akinetic mutism. Electroencephalography finding was compatible with CJD. His cerebrospinal fluid was tested positive for 14-3-3 protein. The patient died on June 10. He was classified as a probable case of sporadic CJD. No risk factors for either iatrogenic or variant CJD were identified.

Two confirmed cases of necrotising fasciitis caused by *Vibrio vulnificus*

CHP recorded two cases of necrotising fasciitis caused by *Vibrio vulnificus* in mid-June 2015. The first case was an 84-year-old man with underlying illnesses. He presented with fever, left lower limb pain and swelling since June 10 and was admitted to a public hospital on June 14. Excisional debridement was performed on June 15 and the operative diagnosis was necrotising fasciitis. Post-operatively, he was managed in the intensive care unit and was treated with antibiotics. His condition was critical. His blood specimen collected on June 14 yielded *Vibrio vulnificus*. He reported history of visiting wet market but recalled no history of injury. He had no recent travel history and his home contacts were asymptomatic.

The second case was a 63-year-old man with good past health. The patient sustained an injury to his left hand on June 17 and subsequently he developed progressive swelling and redness over his left hand. He was admitted to a public hospital and excision debridement was performed on the same day. The operative diagnosis was necrotising fasciitis. He was treated with antibiotics and was managed under intensive care after the operation. His condition was serious. His blood and left forearm tissue specimens collected on June 17 grew *Vibrio vulnificus*. He had no recent travel history and had no history of visiting wet market.

Sharing Session from Hong Kong Experts of MERS WHO Joint Mission to Korea

A sharing session was organised on June 17, 2015 after Prof Malik Peiris and Prof David SC Hui, delegates from Hong Kong in the World Health Organization mission to Korea returned from the week long visit, to share their observations and valuable perspectives. Salient points concerning epidemiology, diagnosis, infection control and clinical management were discussed. The session was well attended by chairmen and members of the scientific committees of CHP, healthcare workers and administrators in both public and private sectors and representatives from major medical associations in Hong Kong. The audience were reminded of the importance of implementing infection control measures to prevent outbreak in healthcare settings.

CA-MRSA cases in May 2015

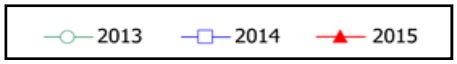
In May 2015, the Centre for Health Protection (CHP) recorded a total of 84 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 44 males and 40 females with ages ranging from 1 month to 77 years (median = 35 years). Among them, there were 57 Chinese, 8 Filipinos, 7 Caucasian, 3 Pakistani, 2 Nepalese, 1 Indian, 1 Japanese, 1 Sri Lankan and 4 of unknown ethnicity. Isolates of all these 84 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (66) or V (18). All except one case presented with skin or soft tissue infections. The remaining case was a 26-year-old man who presented with pleuritic chest pain, night sweating and cough with blood-stained sputum in early May. He attended Accident and Emergency Department of a public hospital on May 6 and was diagnosed to have pneumonia. He was referred to chest clinic for further management. His sputum specimen collected on May 6 was cultured positive for CA-MRSA. He has been in stable condition all along.

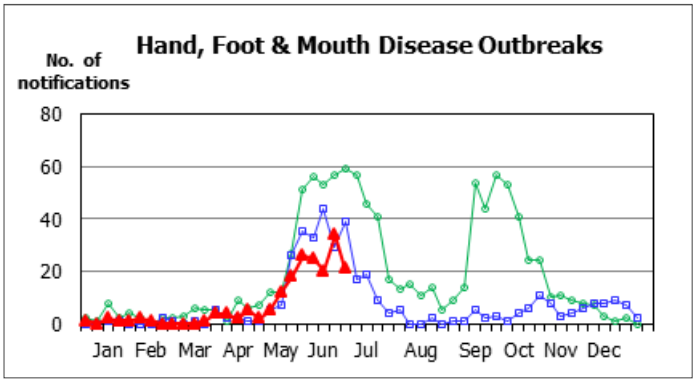
Among the 84 cases, one was a healthcare worker working in a public hospital. Investigation did not reveal any epidemiological linkage to other cases. Besides, three family clusters, with each affecting two to three persons, were identified during this reporting period. Screening and decolonisation would be provided for their close contacts.

Laboratory surveillance on multi-antimicrobial resistant bacteria (May 2015)

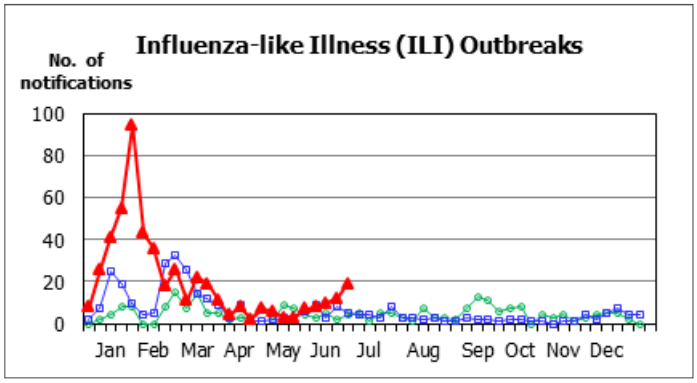
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website:
http://www.chp.gov.hk/en/data/1/10/641/695/3910.html

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 24 - WEEK 25)

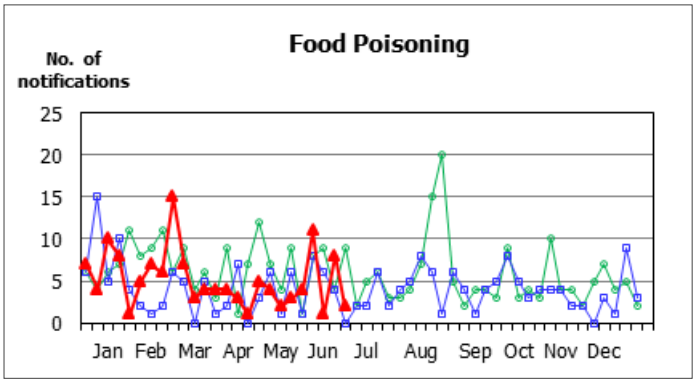




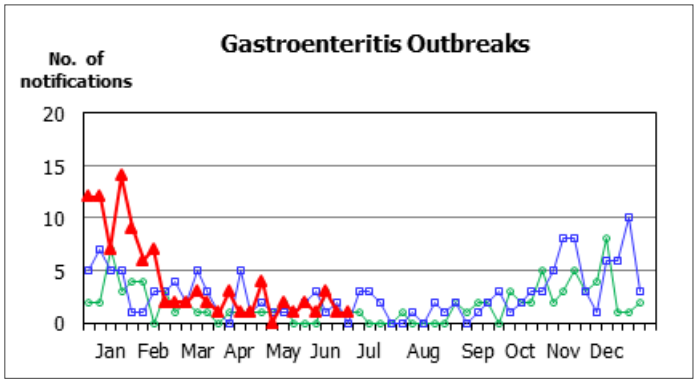
Week 22	25	Week 23	20
Week 24	**34**	**Week 25**	**21**



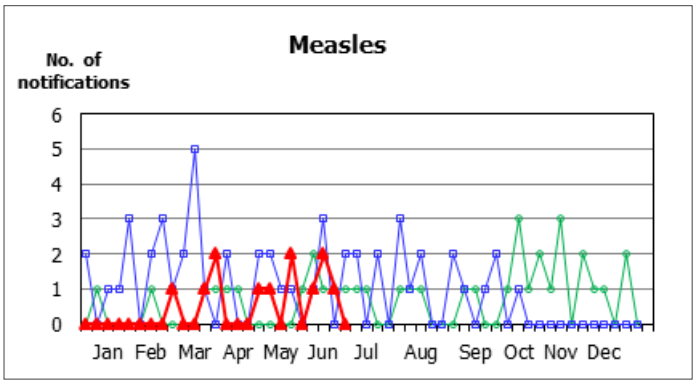
Week 22	8	Week 23	10
Week 24	**12**	**Week 25**	**19**



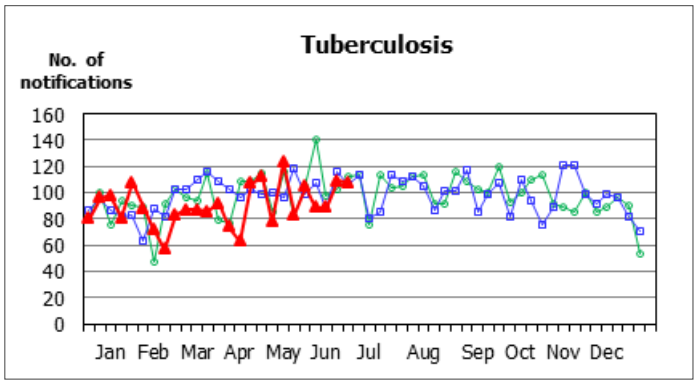
Week 22	11	Week 23	1
Week 24	**8**	**Week 25**	**2**



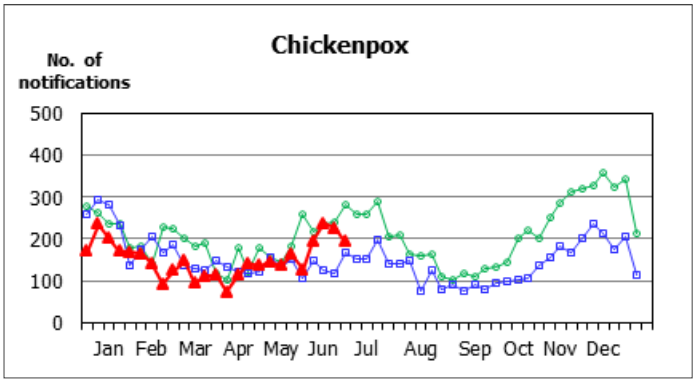
Week 22	1	Week 23	3
Week 24	**1**	**Week 25**	**1**



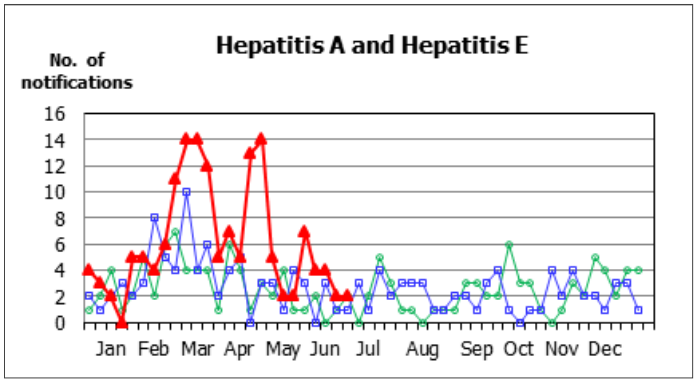
Week 22	1	Week 23	2
Week 24	**1**	**Week 25**	**0**



Week 22	89	Week 23	89
Week 24	**109**	**Week 25**	**108**



Week 22	196	Week 23	237
Week 24	**226**	**Week 25**	**193**



Week 22	4	Week 23	4
Week 24	**2**	**Week 25**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until June 20, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jun 21 - Jul 4, 2015 WEEKS 26 - 27 VOL 12 ISSUE Nº 14

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Review of Legionnaires' Disease in Hong Kong, 2012 - May 2015

Reported by Dr Francis WONG, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

In Hong Kong, Legionnaires' disease (LD) has been listed as a statutorily notifiable disease since March 1994. Between 1994 and 2004, the annual number of reported LD cases ranged from one to four cases. Since 2005, the number of reported cases has started to increase significantly. From 2010 to 2014, 17 to 41 cases were recorded annually by the Centre for Health Protection (CHP) of the Department of Health. (Figure 1)

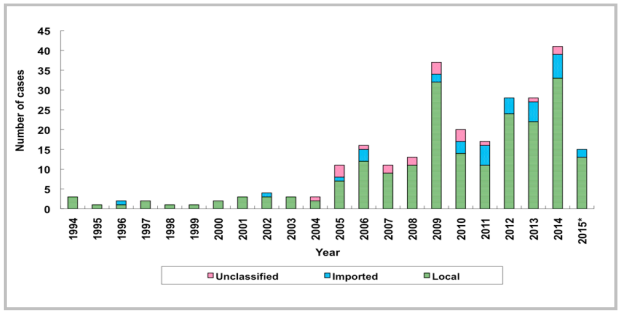


*Figure 1 – Number of LD cases recorded per year, 1994 – 2015 (*as of May 31, 2015).*

One of the reasons accounting for the increase is the availability and increasing use of new laboratory tests for diagnosis. In the past, confirmation of LD usually relied on either isolation of Legionella species from culture of respiratory specimens or detection of a four-fold or greater rise in antibody titre against *Legionella pneumophila* serogroup 1 (Lp1) between paired serum specimens. There are limitations in the above tests, e.g., the estimated sensitivities of sputum culture is highly variable, ranging from less than 10% to 80% [1], and a second serum sample may not be taken for paired antibody titre test. In the past decade, there has been wider use of new diagnostic tests including urine antigen test (UAT) and polymerase chain reaction (PCR), which enable LD to be diagnosed more timely with higher sensitivity and specificity.

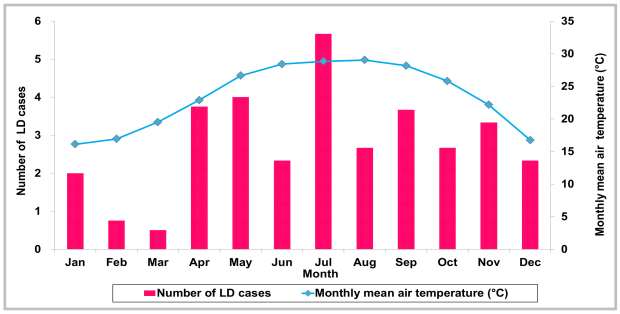


Figure 2 – Average monthly number of LD cases and monthly mean air temperature, 2012 – 2015 (as of May 31, 2015).

Below we summarise the characteristics of LD cases from 2012 through May 2015. From 2012 to May 2015, CHP recorded a total of 112 laboratory-confirmed LD cases (28 in 2012, 28 in 2013, 41 in 2014, and 15 in the first five months of 2015). Among them, males were predominately affected with a male to female ratio of 7:1. Their ages ranged between 33 and 90 years (median: 63 years). The majority (96%) (107/112) were Chinese. Ninety-two (82%) and 17 (15%) cases were classified as local cases and imported cases respectively, while the place of infection of the remaining three cases (3%) could not be ascertained because the patients had stayed both in Hong Kong and outside Hong Kong during the incubation period. So far, all the recorded cases were sporadic infection without identified epidemiological linkage or source of infection.

Relatively more cases were observed from April to September in which the ambient temperature was relatively higher (Figure 2). This observation was in line with overseas studies[2-4], which suggested that hot seasons provided the optimal temperature for growth of Legionella bacteria.

Regarding the clinical features, all patients presented with pneumonia requiring hospitalisation. Among them, 49 patients (43.8%) required intensive care. The duration of hospital stay ranged from two days to 96 days (median : 11 days). Common symptoms on presentation included fever (104, 93%), cough (88, 79%) and shortness of breath (72, 64%). Less common clinical presentations included gastrointestinal symptoms such as vomiting, diarrhoea and abdominal pain (18, 16%), headache (14, 13%) and confusion (3, 3%). Eighteen cases (16%) died due to LD.

Classical risk factors for LD include old age, smoking, chronic diseases leading to weakened immunity and immunosuppression. Among the cases, 66 (59%) were current or ever smokers, and 43 (38%) had at least one chronic medical condition such as diabetes mellitus, chronic lung disease, chronic kidney disease, malignancy and immunosuppressed states from steroid treatment.

Regarding the initial positive diagnostic test, 83 cases (74%) were diagnosed initially by UAT, 15 cases (13%) by PCR of respiratory specimens (such as sputum or tracheal aspirate), 12 cases (11%) by antibody titre test of sera and two cases (2%) by culture. Overall, respiratory specimens taken from 29 cases (26%) yielded positive culture for Lp1.

The CHP conducted epidemiological investigation for each reported LD case in collaboration with the Electrical and Mechanical Services Department in an attempt to identify the possible sources of infection and implement necessary prevention and control measures. During field investigations for the 112 cases, 1 544 environmental samples were collected from possible sources in the vicinity of the places where the cases had stayed during the incubation period, including 32 water samples from 20 fresh water cooling towers (FWCTs), 1 041 water samples from non-FWCT sources, as well as 471 swab specimens.

Thirty-three cases (29%) had a total of 89 environmental samples (including water samples and swabs) yielded positive culture for Lp1. Nine of them had environmental samples positive for Lp1 from two of the sample collection sources, namely FWCTs, non-FWCT sources and swab specimens.

- Lp1 (at or above 10 cfu/ml) was detected in water samples from FWCTs involving eight cases.
- Lp1 (above 0.1 cfu/ml) was detected in water samples from non-FWCT sources (including shower water, tap water, water from humidifier, drinking water from water dispenser and water from fountain) involving 20 cases.
- Fourteen cases had swab specimens (taken from tap aerator, tap filter, shower hose, shower head and humidifier) cultured positive for Lp1.

Among the 33 cases with related environmental samples tested positive for Lp1, only eight had any respiratory specimen cultured positive for Lp1. However, molecular studies (sequence-based typing) revealed that all the environmental isolates were different in sequence-based types from the respective isolate from the respiratory specimen of the patients, suggesting that the concerned environmental sites with Lp1 detected were probably incidental findings and they may not be the source of infection for these cases.

Man-made water systems such as FWCT and hot water system, electric water heater, whirlpool, spa or hot water spring spa are known to be possible environmental sources for spread of Legionella bacteria. In this regard, it is most important to operate and maintain properly designed man-made water systems to prevent LD. Good practices in design, operation and maintenance of man-made water systems are detailed in the Code of Practice for Prevention of LD (http://www.emsd.gov.hk/emsd/e_download/pps/others/COP-PLD_2012.pdf) and the Housekeeping Guidelines for Cold and Hot Water Systems for Building Management (http://www.emsd.gov.hk/emsd/e_download/pps/others/PLDC_CHWS.pdf) published by the Prevention of LD Committee.

Moreover, members of the public are advised to observe the following advice to reduce the risk of LD:

- ☑ Observe personal hygiene.
- ☑ Do not smoke and avoid alcohol consumption.
- ☑ Remove strainers in water taps and shower heads quarterly for cleaning.
- ☑ If fresh water plumbing system is properly maintained, it is not necessary to install domestic water filters. In case water filters are used, they should be cleaned or changed periodically.
- ☑ Drain or purge for at least one minute the infrequently used water outlets (e.g., water taps, shower heads, hot water outlets, etc.) and stagnant points of the pipework weekly or before use.
- ☑ Seek and follow doctor's advice regarding the use and maintenance of home respiratory devices.
- ☑ When handling garden soils, compost and potting mixes:
  - water gardens and compost gently using low pressure;
  - open composted potting mixes slowly and make sure the opening is directed away from the face;
  - wet the soil to reduce dust when potting plants; and
  - avoid working in poorly ventilated places such as enclosed greenhouses.
- ☑ In addition, persons with weakened immunity should:
  - use sterile, distilled, or boiled water (or water outlet fitted with appropriate filters) for drinking, tooth brushing and mouth rinsing; and
  - avoid using humidifiers, or other mist- or aerosol-generating devices. Shower may also generate small aerosols.

Legionella bacteria

Legionella bacteria are ubiquitous in natural aqueous environments such as ponds and rivers. The bacteria also live and grow in man-made water systems such as cold and hot water systems and FWCTs at temperatures of 20 to 50°C (optimal 35°C)[5]. At least 50 species and 70 serogroups have been identified so far and *Legionella pneumophila* serogroup 1 is most commonly associated with LD. People may get LD when they breathe in a mist or vapour that has been contaminated with Legionella bacteria. LD is characterised by fever, cough, shortness of breath and pneumonia, and typically presents with pneumonia.

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Update on hepatitis A in Hong Kong

Reported by Dr Cindy POON, Medical and Health Officer, and Dr Billy HO, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Hepatitis A is a statutorily notifiable disease in Hong Kong. Since 1988, except for a major outbreak in 1992 affecting more than 3 500 cases, the annual number of hepatitis A cases was observed to have declined from over 1 000 cases in 1988 to less than 100 cases in recent years (Figure 1). Such decline is possibly related to improved sanitation. The median ages of cases

recorded by the Department of Health has gradually increased from 23 years in 1989 to 33 years in 2015 (Figure 2). We have to bear in mind that only clinical cases are recorded by the notification system.

In the past decade, the number of hepatitis A cases remained relatively stable and the annual number of cases ranged from 43 to 76. However, an increase in the number of cases was noted since February this year, with 109 cases recorded in 2015 (as of June 30) (Figure 3). The number of cases recorded so far in 2015 was the highest compared with those of the corresponding period in the past 10 years (figures ranged from 21 to 43 cases from 2005 to 2014).

From 2005 to 2014, a total of 587 cases were recorded and the cases occurred throughout the year (Figure 4). The cases involved 321 males and 266 females (male to female ratio = 1.2 : 1), with almost 75% of them aged below 40 years (Figure 5). They commonly presented with tea-coloured urine (83%), jaundice (77%), fever (65%), loss of appetite (58%), vomiting (52%), nausea (47%), abdominal pain (42%), muscle pain (34%) and headache (27%). Seventy percent of the patients required hospitalisation, with a median stay of five days. Two fatal cases were recorded, one in 2006 affecting a 78-year-old lady and another one in 2011 affecting a 76-year-old man. Both patients had multiple medical comorbidities.

Majority (76%) of the patients acquired the disease locally. Most (92%) of the cases was sporadic infection, whereas 22 small clusters of hepatitis A cases involving two to four patients were also identified. At least 60% of these clusters affected members of same household. Since the incubation period of hepatitis A may range from 15 to 50 days, it is difficult to ascertain the exact source of infection of individual cases.

For the 109 cases recorded in 2015 (as of June 30), 60 males and 49 females were affected (male to female ratio = 1.2 : 1) with age ranging from 3 to 83 years old (median: 33 years old). Most of the cases presented with jaundice and tea-coloured urine. No case required intensive care and there was no fatality. None of the cases could recall any definite history of hepatitis A vaccination. The cases resided in different districts, including 15 in Hong Kong Island, 27 in Kowloon and 67 in the New Territories.

We used a questionnaire to capture a wide range of exposures in order to explore possible risk factors of infection. The food items consumed and the frequently patronised food stalls were found to be dispersed among the cases. The Public Health Laboratory Services Branch of the Centre for Health Protection has attempted molecular studies on specimens from the cases reported in 2015. In the majority of cases (92%, 55/60) the virus was identified to be of genotype IA and more than 10 genotypically distinct strains were identified among these cases. Forty-three percent of cases (26/60) were found to carry identical hepatitis A sequences. Except two cases from the same family and two cases studying in the same school, no epidemiological link was found among other cases and they were regarded as sporadic cases. So far, no single identifiable source can be found to explain the upsurge of cases in 2015.

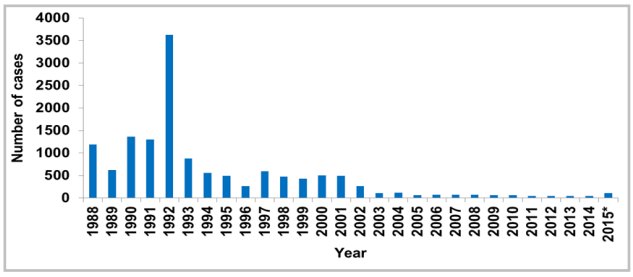


*Figure 1 – Number of hepatitis A cases by year, 1988 – 2015 (*as of June 30, 2015).*

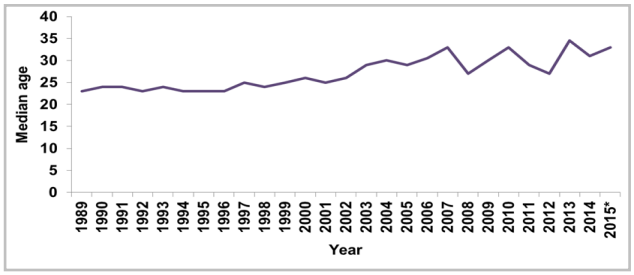


Figure 2 – Median ages of hepatitis A cases recorded by the Department of Health (1989 to June 30, 2015).

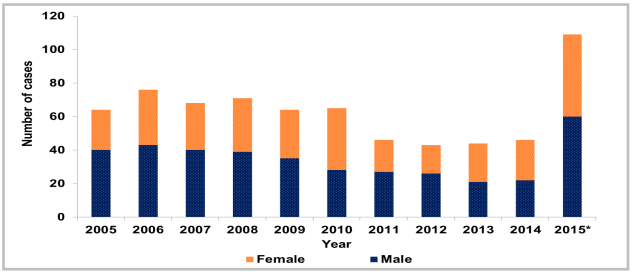


*Figure 3 – Number of hepatitis A cases by year and sex, 2005 – 2015 (*as of June 30, 2015).*

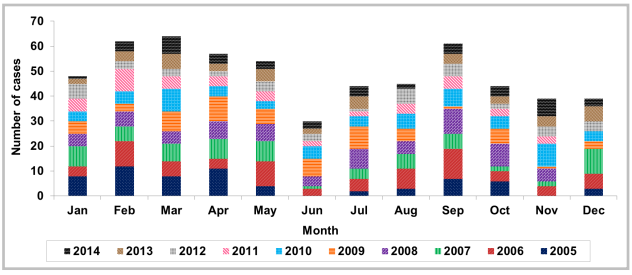


Figure 4 – Number of hepatitis A cases by month, 2005 – 2014.

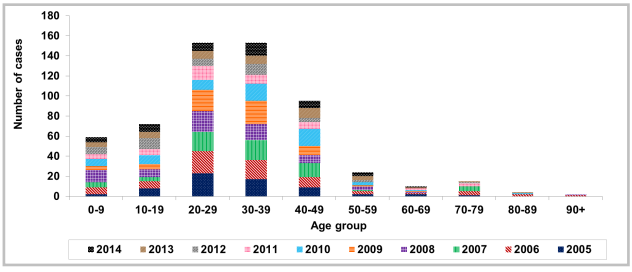


Figure 5 – Age distribution of hepatitis A cases, 2005 – 2014.

Facts on hepatitis A

Hepatitis A is a liver disease caused by the hepatitis A virus. It is one of the most frequent causes of foodborne infection and is closely associated with unsafe water, inadequate sanitation and poor personal hygiene.

The virus is usually transmitted by faecal-oral route either through contaminated drinks or food such as undercooked shellfish, or directly from person to person. Undercooked shellfish has been commonly documented in literature to cause transmission of hepatitis A. Some methods of food preparation such as hotpots and barbecues have higher risk of inadequate cooking. Ready-to-eat food including salad and berries may also have higher risk of contamination.

Affected persons may be asymptomatic. Those who have symptoms may have poor appetite, tiredness, nausea, vomiting, diarrhoea, fever, upper abdominal discomfort, jaundice (yellowing of skin and the whites of eyes) and tea-coloured urine. The illness may last for a few weeks but may rarely take months to resolve. Most patients have a complete recovery but in a few cases, damage to the liver may be prolonged.

Protect yourself against hepatitis A

To protect yourself against hepatitis A, members of the public should:

- Avoid high-risk food like undercooked shellfish, raw food or undercooked food;
- Wash hands properly with liquid soap and water before eating or handling food, and after going to the toilet or changing diapers;
- Clean and cook food thoroughly. Scrub and rinse shellfish in clean water. Remove the viscera if appropriate. All shellfish should be cooked at boiling temperature for not less than five minutes before eating;
- For food to be consumed without cooking, e.g. fruits, clean and wash thoroughly;
- Purchase fresh food from reliable sources and do not patronise illegal hawkers;
- Drinking water should be from the mains and preferably boiled;
- Keep the premises and kitchen utensils clean; and
- Dispose of rubbish properly.

NEWS IN BRIEF

Three sporadic cases of *Streptococcus suis* infection

The Centre for Health Protection (CHP) recorded three cases of *Streptococcus suis* infection in June 2015. The first case was a 52-year-old woman with good past health. She presented with fever and right knee pain since June 18 and was admitted to a public hospital on the same day. Her right knee joint aspirate and blood specimen collected on June 18 grew *Streptococcus suis*. Clinical diagnosis was right knee septic arthritis with sepsis. She underwent arthroscopic surgery and was treated with antibiotics. Her current condition was stable.

The second case was an 80-year-old man with underlying illness. He presented with fever and left knee pain and swelling on June 23 and was admitted to a public hospital on June 24. His blood specimen taken on June 24 grew *Streptococcus suis*. He was treated as left knee septic arthritis. He underwent arthroscopic surgery and was treated with antibiotics. His condition remained stable.

The third case was a 46-year-old man with good past health. He presented with fever, headache, dizziness, sore throat and abdominal pain since June 23 and was admitted to a public hospital on June 26. His blood specimen taken on June 26 grew *Streptococcus suis*. He was treated as sepsis with antibiotics. His condition was stable.

All three patients recalled having handled raw pork but denied any previous skin wound or contact with pigs. Their home contacts were asymptomatic. Investigations are on-going.

A case of listeriosis

On June 20, 2015, CHP recorded a case of listeriosis affecting a 71-year-old man with pre-existing medical condition and was on immunosuppressants. He presented with fever, abdominal discomfort and malaise since June 15, 2015, and was admitted to a public hospital on June 17, 2015. His blood specimen collected on 17 June grew *Listeria monocytogenes*. He was treated with antibiotics and was in stable condition. He lived with his wife, daughter, son-in-law and two grandsons. His household contacts were asymptomatic. He had not travelled recently. He did not report consumption of high risk food during the incubation period. Investigations are on-going.

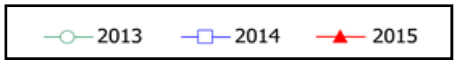
A case of human myiasis

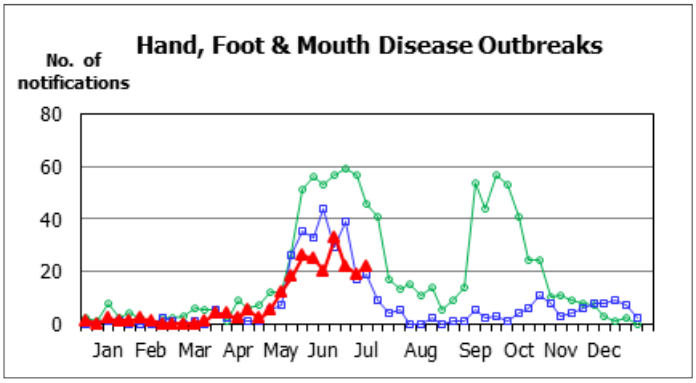
On June 25, 2015, CHP recorded a case of human myiasis affecting a 67-year-old man, who lived in a residential care home for the elderly (RCHE) in Kwun Tong. The patient was bed-ridden with multiple medical illnesses. He was noted by visiting doctor to have right upper lip erosion and bleeding on June 22. He attended the dental unit of a public hospital on June 25 and was found to have upper palatal ulcer with worms. The worms were removed and were identified to be *Chrysomya bezziana*. He was referred to the Accident and Emergency Department of the same hospital and was admitted on the same day. His condition remained stable. Advice on wound care and environmental hygiene was given to the RCHE.

Scarlet fever update (June 7 - July 4, 2015)

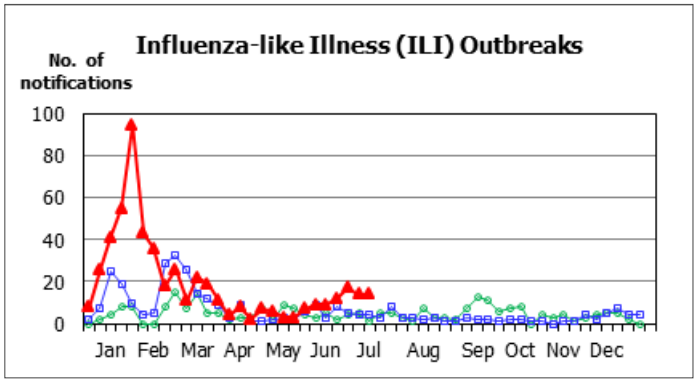
Scarlet fever activity in this reporting period increased as compared with the previous 4 weeks. From June 7 - July 4, 2015, CHP recorded 130 cases of scarlet fever with a range of 26 to 36 cases per week as compared with 117 cases with a range of 24 to 34 cases per week in the previous reporting period (May 10 – June 6, 2015). The cases recorded in this reporting period included 82 males and 48 females. Their ages ranged between one and 39 years old (median: 5 years). There were four school clusters with each affecting two children. Among them, three occurred in kindergartens and one in a primary school. No fatal cases were reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 26 - WEEK 27)

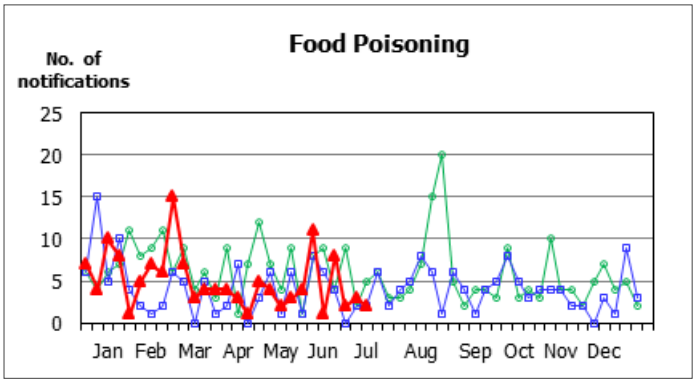




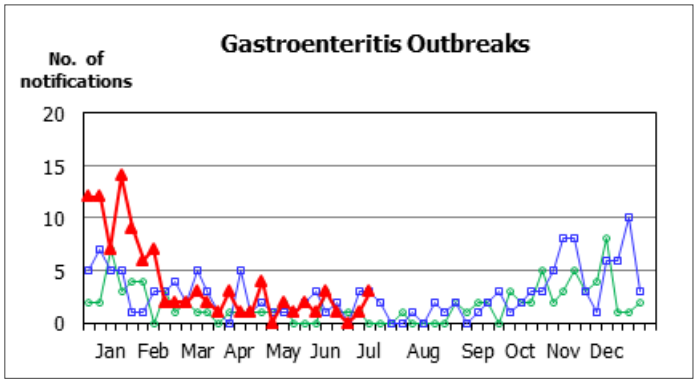
Week 24	33	Week 25	22
Week 26	**19**	**Week 27**	**22**



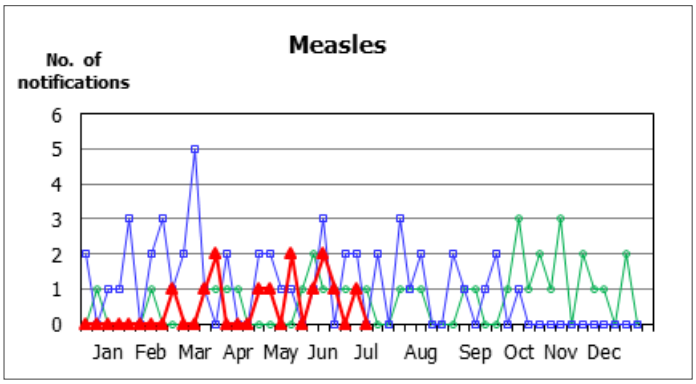
Week 24	12	Week 25	17
Week 26	**14**	**Week 27**	**14**



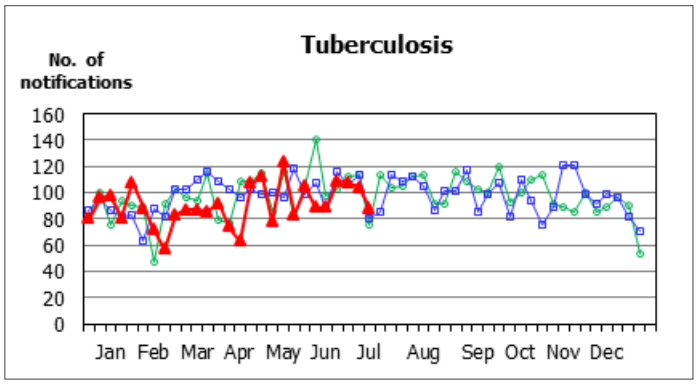
Week 24	8	Week 25	2
Week 26	**3**	**Week 27**	**2**



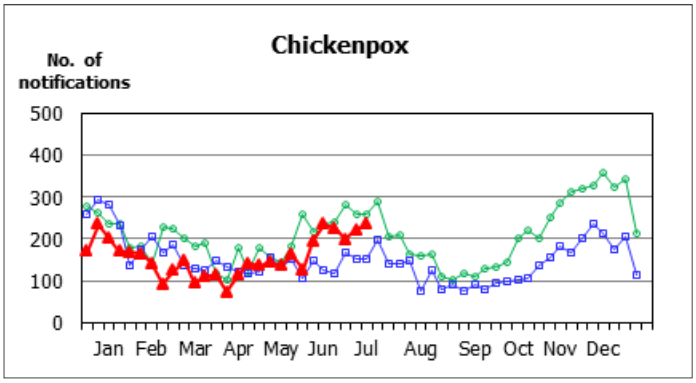
Week 24	1	Week 25	0
Week 26	**1**	**Week 27**	**3**



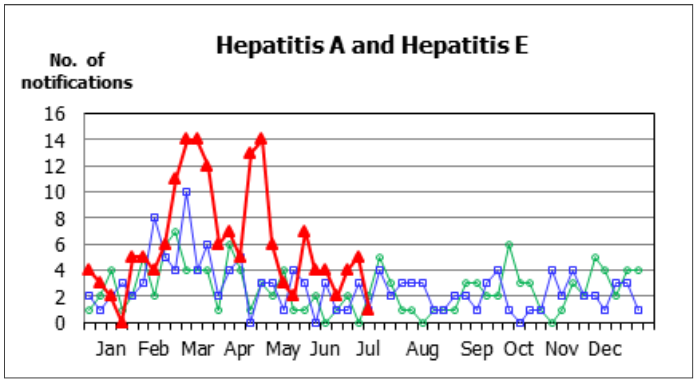
Week 24	1	Week 25	0
Week 26	**1**	**Week 27**	**0**



Week 24	109	Week 25	108
Week 26	**104**	**Week 27**	**88**



Week 24	226	Week 25	199
Week 26	**221**	**Week 27**	**235**



Week 24	2	Week 25	4
Week 26	**5**	**Week 27**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until July 4, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jul 5 - Jul 18, 2015 WEEKS 28 - 29 VOL 12 ISSUE N⁰ 15

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

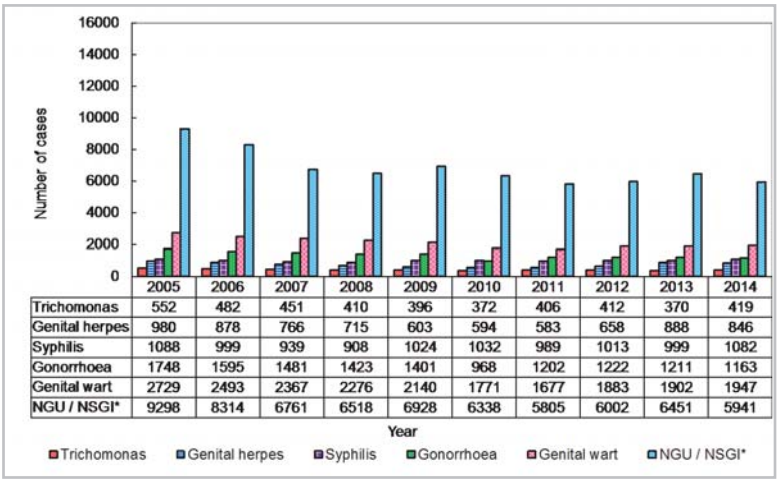
Syphilis in Hong Kong

Reported by Dr KM HO, Consultant Dermatologist, Social Hygiene Service, Public Health Services Branch, CHP.

Syphilis is a sexually transmitted infection (STI) caused by the spirochaete *Treponema pallidum*. It is an obligate human pathogen. Nearly all cases of syphilis are acquired by direct sexual contact with early syphilis. Besides, syphilis can also be transmitted from mother to child causing congenital syphilis.

After an incubation period ranged from 9 to 90 days, a local sore (chancre) usually develops at the sites of entry of the treponeme (usually the genital region). There may also be painless enlargement of the regional lymph nodes. It is called the primary syphilis. After further one to six months, generalised signs of secondary syphilis may appear. These include a variety of skin and mucosal lesions, generalised lymphadenopathy, fever, and visceral involvement including the central nervous system. It is called the secondary syphilis. Left untreated, spontaneous resolution of the physical findings is almost the rule. Early studies showed that about 40% of untreated cases would develop tertiary syphilis including cardiovascular syphilis, neurosyphilis and gummatous syphilis that might affect most of the organs in the body. Genital ulcer in primary syphilis also facilitates HIV transmission.

Syphilis is not a notifiable disease in Hong Kong, though the World Health Organization (WHO) recommends the monitoring of syphilis together with gonorrhoea, genital chlamydial trachomatis infection and trichomoniasis, the four treatable STI, as surveillance indicators of STI burden in a population. For epidemiological convenience, it has been further divided into early and late syphilis with an arbitrary dividing line of one year. In early syphilis (primary, secondary, early latent), the disease is infectious and it is important to seek the recent sexual contact. From the perspective of epidemiology, the number of early syphilis can also be regarded as a surrogate indicator for disease incidence.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Trichomonas	552	482	451	410	396	372	406	412	370	419
Genital herpes	980	878	766	715	603	594	583	658	888	846
Syphilis	1088	999	939	908	1024	1032	989	1013	999	1082
Gonorrhoea	1748	1595	1481	1423	1401	968	1202	1222	1211	1163
Genital wart	2729	2493	2367	2276	2140	1771	1677	1883	1902	1947
NGU / NSGI*	9298	8314	6761	6518	6928	6338	5805	6002	6451	5941

*Figure 1 – Ten-year trend of major STI and RTI recorded by SHS. (Note: *NGU - Non Gonococcal Urethritis; NSGI - Non Specific Genital Infection)*

Epidemiology of syphilis in Hong Kong

Information concerned to the local epidemiology of syphilis relies on data derived from three sources: 1) clinic based data collected by the Government Social Hygiene Service (SHS); 2) seroprevalence data collected by the Family Health Service (FHS) on attendees of antenatal services in Hong Kong; and 3) seroprevalence data collected by the Hong Kong Red Cross Blood Transfusion Services (HKRCBTS) under the Hospital Authority.

Clinic based data collected by the Government Social Hygiene Service (SHS)

The total number of attendances for year 2014 at SHS was 85 782 (88 066 in 2013). The total number of new cases of sexually transmitted infections (STI) and reproductive tract infections (RTI) in SHS was 12 616 (12 912 in 2013). The annual trend of major STI/RTI and distribution of syphilis is shown in Figure 1 to 4.

Figure 1 shows the major STI and RTI seen in SHS in the last ten years. The overall new cases seen in SHS are on the decreasing trend. (In fact it had started to decrease since 2002, data from 2002 to 2004 are not shown in this figure). Syphilis was the 4th common STI/RTI recorded in SHS.

Figure 2 shows the distribution of major STI and RTI. Syphilis ranked the 4th among all new cases.

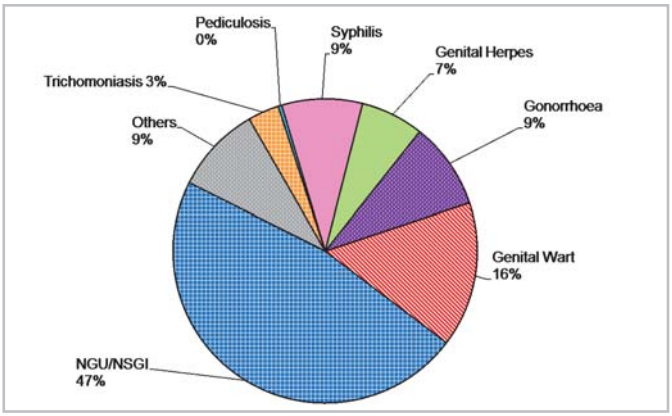
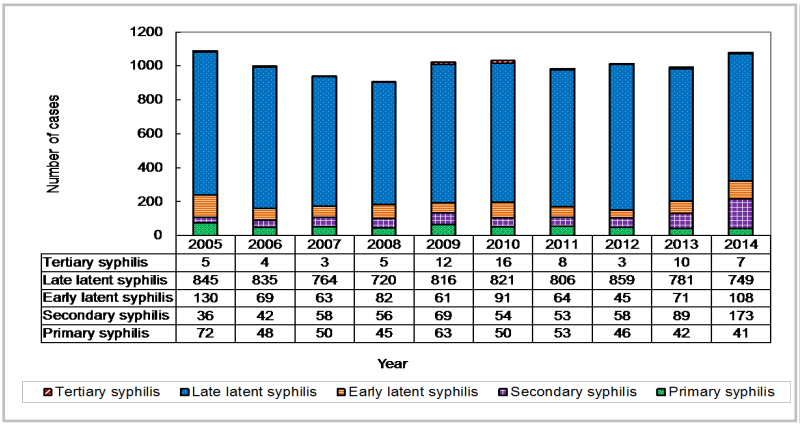
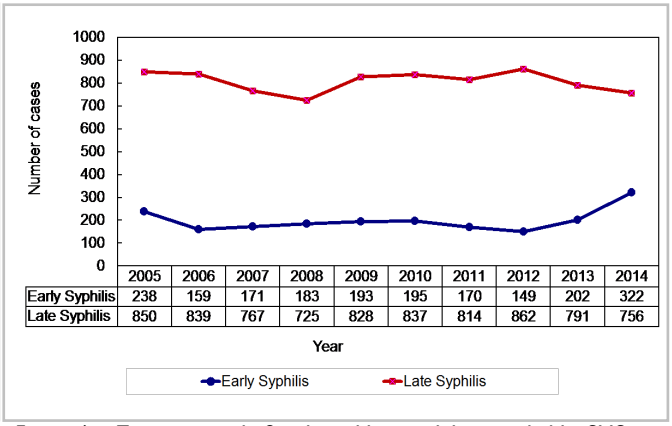


Figure 2 – Distribution of major STI and RTI recorded by SHS in 2014.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tertiary syphilis	5	4	3	5	12	16	8	3	10	7
Late latent syphilis	845	835	764	720	816	821	806	859	781	749
Early latent syphilis	130	69	63	82	61	91	64	45	71	108
Secondary syphilis	36	42	58	56	69	54	53	58	89	173
Primary syphilis	72	48	50	45	63	50	53	46	42	41

Figure 3 – Distribution of major STI and RTI recorded by SHS in 2014.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Early Syphilis	238	159	171	183	193	195	170	149	202	322
Late Syphilis	850	839	767	725	828	837	814	862	791	756

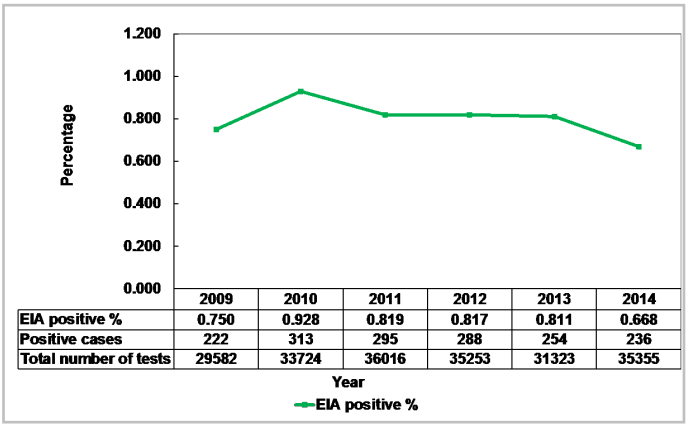
Figure 4 – Ten-year trend of early and late syphilis recorded by SHS.

Figure 3 shows the total number of cases in different stages of syphilis seen in SHS in the past 10 years. In 2014, there were 1 078 cases of syphilis newly diagnosed.

Figure 4 shows the number of cases of early and late syphilis in the past 10 years. Data on number of cases of syphilis in the early stage was important because these cases best represented the incidence of syphilis. The number of early syphilis in 2014 has increased by 116% and 59% when compared with the year of 2012 and 2013 respectively.

Seroprevalence data collected by the Family Health Service (FHS) on attendees of antenatal services in Hong Kong

Figure 5 shows the seroprevalence rate of syphilis in pregnant women at the major hospitals*#. Positivity is defined by positive initial EIA that is confirmed with a second stage confirmation syphilitic serological test.

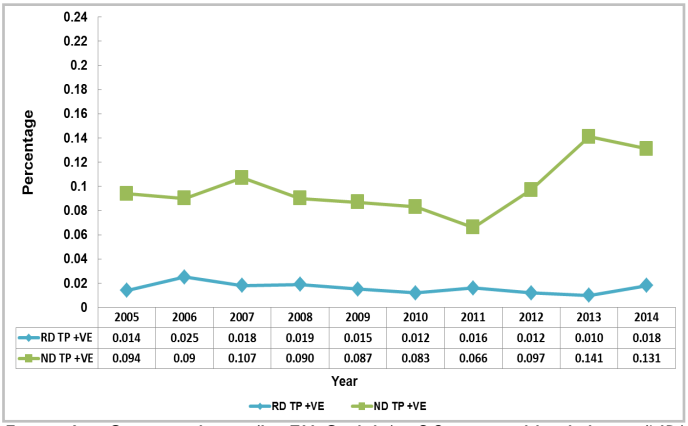


	2009	2010	2011	2012	2013	2014
EIA positive %	0.750	0.928	0.819	0.817	0.811	0.668
Positive cases	222	313	295	288	254	236
Total number of tests	29582	33724	36016	35253	31323	35355

Figure 5 – Seroprevalence of syphilis (by EIA-Syphilis) in women attending antenatal services in the major hospitals from 2009 to 2014.

Seroprevalence data collected by the Hong Kong Red Cross Blood Transfusion Services (HKRCBTS) under the Hospital Authority

Figure 6 shows the seroprevalence of syphilis in first time blood donor (ND) and repeated donor (PD) of the HKRCBTS in Hong Kong from 2007 to 2014. The figure shows that data from the HKRCBTS for the number of cases with positive serological test (EIA has been used as the screening test followed by confirmation with *Treponemal pallidum* Haemagglutination assay for those EIA positive cases). Serologic test reactivity was calculated by dividing the number of persons with reactive serologic tests for syphilis by the total number of samples tested for syphilis and is expressed as a percentage.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
RD TP +VE	0.014	0.025	0.018	0.019	0.015	0.012	0.016	0.012	0.010	0.018
ND TP +VE	0.094	0.09	0.107	0.090	0.087	0.083	0.066	0.097	0.141	0.131

Figure 6 – Seroprevalence (by EIA-Syphilis) of first time blood donor (ND) and repeated donor (PD) of the Hong Kong Red Cross Blood Transfusion Services.

Distribution of syphilis in male according to age and sexual orientation in 2014

Given the recent attention to the HIV scenario among local men who have sex with men (MSM), the respective data on syphilis is extracted from the "partner notification" data base of SHS and is summarised in Table 1. Table 1 shows the distribution of syphilis among those MSM attended SHS in 2014. Among all SHC attendees who had STI/RTI in 2014, the odds ratios of those with syphilis being MSM was 6.00. If only early syphilis was concerned, the odds ratio of having early syphilis being MSM was 24.24. Among all MSM who had syphilis, the odds ratio of having early syphilis being less than 40 year old was 2.44. This may indicate that those younger MSM were at the highest risk of acquiring recent infection with syphilis.

*Public hospitals include Pamela Youde Nethersole Eastern Hospital, Kwong Wah Hospital, Queen Elizabeth Hospital, United Christian Hospital, Princess Margaret Hospital, Tuen Mun Hospital, and Prince of Wales Hospital. Private hospitals include Hong Kong Sanatorium & Hospital, Hong Kong Baptist Hospital, Union Hospital, Precious Blood Hospital (Caritas) and Hong Kong Adventist Hospital - Tsuen Wan.

#The Enzyme Immunoassay (EIA) tests done at the maternal and child health centres of Family Health Service are included in the figures for the respective birthing hospital.

Summary and Discussion

Despite the overall decreasing trend of all cases of STI and RTI, the total number of new cases of syphilis has remained quite stable among SHS attendees at around 1000 per annum in recent years. Syphilis is the 4th common STI/RTI recorded in SHS. Seroprevalence among antenatal women and first time blood donors have remained low about less than 1% and less than 0.15% respectively. MSM was found to have a higher odds of having syphilis, this was particular the case when only early syphilis was considered. The epidemiological data of syphilis concurs with those of HIV among local MSM. The local AIDS strategy 2012-2016 calls for enhancing STI/HIV prevention in this community group. The Council for the AIDS Trust Fund (ATF) has accorded funding priorities according to latest recommendations of the Hong Kong Advisory Council on AIDS (ACA). From April 2007 to March 2014, MSM was the largest funded key population. The CHP appeals to all sexually-active people, irrespective of sexual orientation, should practise safer sex by proper and consistent use of condom to prevent HIV/STI. People with history of unsafe sex or suspect to have been infected should come forth to have STI assessment and testing.

Acknowledgement: Dr. Rita Ho of Family Health Service, DH and Dr. CK Lee of Hong Kong Red Cross Blood Transfusion Service of the Hospital Authority to provide data of their affiliated services; Dr KH Wong of Special Preventive Programme for his input.

Table 1 – Distribution of syphilis in male according to age and sexual practice in 2014.

Age Group	Non-MSM		MSM		Total	
	No.	%share	No.	%share	No.	%share
Number with STI						
15 - 19	189	85.9	31	14.1	220	100.0
20 - 29	1953	79.7	498	20.3	2451	100.0
30 - 39	1552	86.3	246	13.7	1798	100.0
Subtotal: < 40	3694	82.7	775	17.3	4469	100.0
≥40	2596	93.5	181	6.5	2777	100.0
Total	6290	86.8	956	13.2	7246	100.0
Of which: number with Syphilis (all stages)						
15 - 19	2	18.2	9	81.8	11	100.0
20 - 29	32	20.9	121	79.1	153	100.0
30 - 39	63	43.2	83	56.8	146	100.0
Subtotal: < 40	97	31.3	213	68.7	310	100.0
≥ 40	323	81.4	74	18.6	397	100.0
Total	420	59.4	287	40.6	707	100.0
Of which: number with Early Syphilis (Primary, Secondary and Early Latent)						
15 - 19	1	11.1	8	88.9	9	100.0
20 - 29	16	13.4	103	86.6	119	100.0
30 - 39	27	27.8	70	72.2	97	100.0
Subtotal: < 40	44	19.6	181	80.4	225	100.0
≥ 40	39	42.4	53	57.6	92	100.0
Total	83	26.2	234	73.8	317	100.0

Notes:
1) Number with STI = Total number of registry with STI diagnosis (each person may have ≥ 1 diagnosis)
2) MSM = Male homosexual + Male bisexual
3) Syphilis (all stages) = (Primary Syphilis, Secondary Syphilis, Early Latent Syphilis, and Late Latent Syphilis)
4) No case is found below the age of 15.

Update on the overseas outbreak of Ebola Virus Disease (EVD)

Reported by Dr Grace TSOI, Medical and Health Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

The current EVD outbreak caused by the *Zaire* species, began in Guinea in December 2013, was first notified to the World Health Organization (WHO) on March 23, 2014. This severe outbreak stemmed[1] from a single zoonotic transmission event involving a two-year-old boy in Guinea, who might have been infected by playing around a hollow tree housing a colony of insectivorous free-tailed bats (*Mops condylurus*).

Since then, the number of cases and deaths continue to escalate. As reported by the WHO on July 22, 2015[2] this outbreak originated in West Africa involved 27 741 cases and 11 284 deaths (Figure 1). A total of ten countries were affected, including three countries with widespread and intense transmission (Guinea, Liberia and Sierra Leone); and seven other affected and previously affected countries (Italy, Mali, Nigeria, Senegal, Spain, the United Kingdom (UK) and the United States (US)).

Countries with widespread and intense transmission

As reported by the WHO[2] on July 22, 2015, 27 705 cases and 11 269 deaths have been reported in Guinea, Liberia and Sierra Leone. The overall case fatality rate is 41% (Table 1). The case fatality rate among hospitalized confirmed patients[4] in Guinea (April 2015) is 46%, in Liberia (December 2014) is 49%, whereas in Sierra Leone (April 2015) is 50%.

While the outbreak in Guinea and Sierra Leone has continued since the start of this epidemic, the outbreak in Liberia was previously declared over on May 9, 2015[3] (Box).

However, a post-mortem swab taken from a 17-year-old male, who died on June 28 from a febrile illness managed as malaria, was tested positive for EVD on June 29 during routine surveillance. Liberia's authorities[5] had immediately quarantined the area after the first case's death and assured that his funeral was carried out safely. A total of five more contacts were subsequently confirmed as EVD-positive. The origin of the

Criteria for declaring the end of Ebola outbreak[4]

According to WHO, to declare an EVD outbreak in a country is over, the country must pass through twice the maximum incubation period i.e., 42 days since the last confirmed case has tested negative twice for the virus on blood samples. Active surveillance must be in place to detect chains of transmission. Concerning countries with widespread and intense transmission, heightened surveillance should be sustained for additional 90 days.

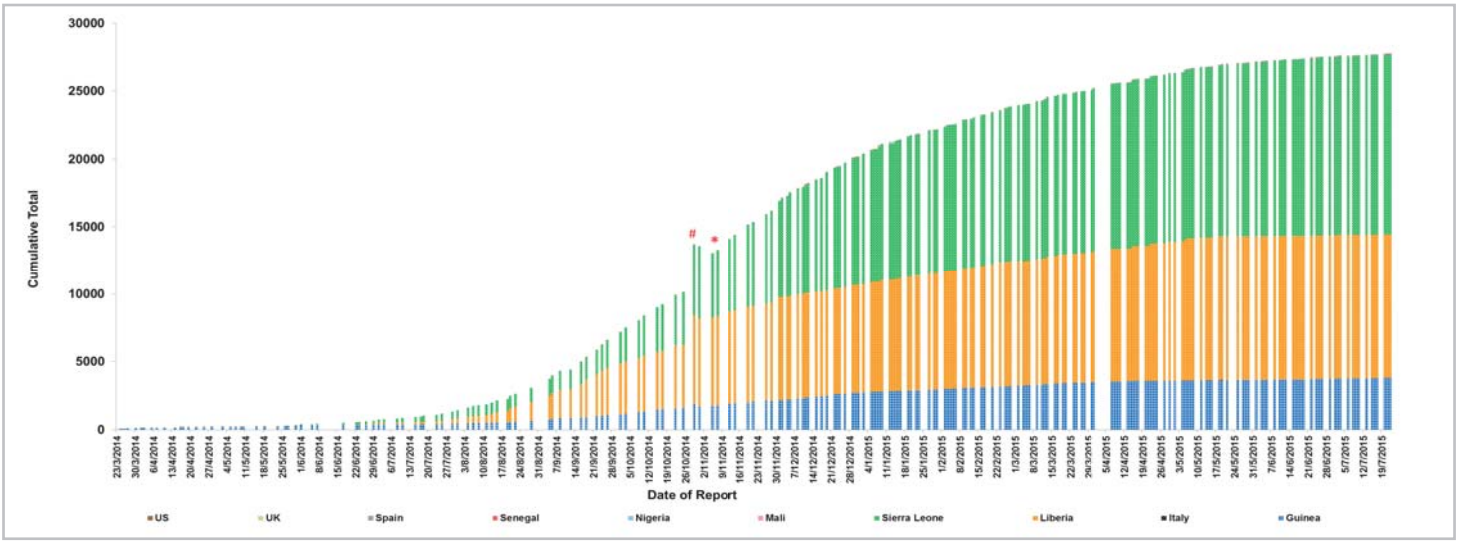


*Figure 1 – Cumulative number of EVD cases, as reported by WHO on July 22, 2015. (#The marked increase is due to a more comprehensive assessment of patient databases. *Negative value is due to retrospective correction of data.)*

cluster of cases remains under investigation. Preliminary evidence from genomic sequencing[8] suggests that the origin of transmission is most likely a re-emergence of the virus from a survivor within Liberia, rather than an importation from Guinea or Sierra Leone.

Stratified analysis[2] showed that when compared with children (aged 14 years and below), adults aged 15 to 44 are approximately four times more likely to be affected in Guinea and Liberia, and three times more likely to be affected in Sierra Leone. There is no marked gender difference in case incidence (Table 2).

Although children are less likely to be infected, EVD has affected young children most severely[6], killing around 90% of children aged under one year and around 80% of children aged one to four years who are infected. Older children are much more likely to survive the disease, it has killed 52% of children infected aged 10 to 15, whereas in adults aged 16 to 44, the case fatality rate is 65%. Younger children also had shorter incubation period and times from the onset of symptoms to hospitalisation and death.

Other affected and previously affected countries

As reported by WHO[2] on July 22, 2015, a total of 36 cases and 15 deaths have been reported in this category. The overall case fatality rate is 42%. (Table 3)

On 20 July, Italy was declared free of EVD transmission after the completion of 42 days without a case since the country's only case was confirmed EVD-negative and discharged from hospital. As such, all countries in this category are now EVD free.

Infection among healthcare workers (HCW)

Infection among HCWs is a particularly alarming feature of this outbreak. As reported by the WHO[2] on July 22, 2015, there have been a total of 898 confirmed health worker infections, with 517 (58%) deaths (Table 4).

HCWs are between 21 and 32 times more likely to be infected than people in the general adult population[7]. Nursing workers accounted for over 50% of all HCW infections, followed by medical doctors (12%), laboratory workers (7%) and other supporting staff (7%). Apart from the inappropriate use or lack of personal protective equipment (PPE) and inadequacies of hand hygiene practices, other risk factors included ineffective triage system of health care facilities, lack of isolation facilities and cleaning equipment, and inadequate staff training.

Table 1 – Number of cases and deaths of EVD in countries with widespread and intense transmission, as reported by WHO on July 22, 2015.

Country	Case definition	Cases	Deaths	Case fatality rate
Guinea	Confirmed	3322	2062	62%
	Probable	450	450	100%
	Suspected	11	*	*
	All	**3783**	**2512**	**66%**
Liberia#	Confirmed	3151 (6)	* (2)	* (33%)
	Probable	1879 (0)	* (*)	* (*)
	Suspected	5636 (*)	* (*)	* (*)
	Sub-total	10666 (6)	4806 (2)	45% (33%)
	All	**10672**	**4808**	**45%**
Sierra Leone	Confirmed	8692	3583	41%
	Probable	287	208	72%
	Suspected	4271	158	4%
	All	**13250**	**3949**	**30%**
Total		**27705**	**11269**	**41%**

Notes:
**No data*
#Figures of Liberia are the sum of those when the country declared EVD-free on May 9 and after re-emergence of disease (in brackets).

Table 2 – Cumulative number of confirmed cases by sex and age group in countries with widespread and intense transmission.

Country	Cumulative cases				
	By sex* (per 100 000 population)		By age group‡ (per 100 000 population)		
	Male	Female	0-14 years	15-44 years	45+ years
Guinea	1587 (29)	1730 (32)	516 (11)	1889 (41)	857 (55)
Liberia	1911 (96)	1838 (93)	561 (33)	2060 (121)	703 (132)
Sierra Leone	4792 (168)	5081 (175)	1978 (82)	5592 (216)	2129 (288)

Notes:
**Excludes cases for which data on sex are not available.*
‡Excludes cases for which data on age are not available.

Response of the WHO

WHO[8] has worked alongside governments and the international health community to mobilise a large scale response effort. Hundreds of experts had been deployed, including epidemiologists, laboratory experts, coordinators, data managers, logisticians, infection prevention and control specialists, and clinical experts. Other works included deployment of specialised laboratories, construction of treatment centres, trainings for clinicians, delivery of personal protective equipment, supporting preparedness of other countries, and rapid development of vaccines, treatments, and diagnostics.

WHO had declared this outbreak a Public Health Emergency of International Concern (PHEIC)[9] on August 8, 2014 after the first meeting of the International Health Regulations [IHR (2005)] Emergency Committee on the 2014 Ebola outbreak in West Africa. Since then, six meetings have been held and the outbreak still continues to constitute a PHEIC at the moment. WHO reinforced the importance of EVD prevention and control measures, and reaffirmed the need to avoid unnecessary interference with international travel and transport.

Although no formal evidence of sexual transmission exists, the possibility of sexual transmission from convalescent patients cannot be ruled out. WHO[10] advised that all EVD survivors and their sexual partners should either abstain from all types of sex, or observe safe sex through correct and consistent condom use until their semen has tested negative twice or for at least six months after the onset of symptoms.

Table 3 – Number of cases and deaths of EVD in countries with an initial case or cases, or with localised transmission, as reported on July 22, 2015.

	Cases	Deaths	Case fatality rate
Italy	1	0	0%
Mali	8	6	75%
Nigeria	20	8	40%
Senegal	1	0	0%
Spain	1	0	0%
UK	1	0	0%
US	4	1	25%
Total	**36**	**15**	**42%**

Table 4 – Number of EVD cases and deaths in HCWs, as reported on July 22, 2015.

	Cases	Deaths	Case fatality rate
Guinea	194	97	50%
Italy	1	0	0%
Liberia	378	192	51%
Mali	2	2	100%
Nigeria	11	5	45%
Sierra Leone	307	221	72%
Spain	1	0	0%
UK	1	0	0%
US	3	0	0%
Total	**898**	**517**	**58%**

Local situation and control measures

In Hong Kong, EVD is a notifiable disease under Viral Haemorrhagic Fever since July 2008. The Centre for Health Protection (CHP) of the Department of Health (DH) has been staying vigilant against the disease all along and has adopted preventive strategies which are in line with those recommended by the WHO.

The Government's Preparedness and Response Plan for EVD (http://www.chp.gov.hk/files/pdf/erib_preparedness_and_response_plan_for_ebola_virus_disease_2014_eng.pdf) has been launched on August 20, 2014 and the Alert Response Level has been activated in parallel. Interdepartmental meetings have been held to brief relevant government departments on the preventive and control measures. A series of exercises codenamed TOPAZ covering 5 phases were conducted to test the concerted interdepartmental actions. The exercises covered both 'Table-top' and 'Ground-movement' natures. The table top exercise tested the overall inter-departmental response on EVD outbreak, while the ground movement exercises were conducted at various settings, including 'Village house', 'Guesthouse', 'Designated Quarantine Centre' and 'Airport'.

Doctors and hospitals have been provided with the latest reporting criteria (https://ceno.chp.gov.hk/casedef/casedef.pdf) and reminded to notify CHP of any suspected cases promptly. The dissemination of information on suspected cases of EVD is prompt and transparent. Whenever there is a suspected case, the CHP will release information to the public as soon as possible. As of July 22, 2015, CHP has received notifications of two suspected cases and were all tested negative subsequently.

CHP has also setup a thematic webpage for EVD (http://www.chp.gov.hk/en/view_content/34199.html) where useful resources targeted to different groups could be found (Table 5).

To minimise the chance of importation of EVD cases, temperature screening of all incoming travellers using thermal imaging scanners is in place at all boundary control points in Hong Kong. Health Surveillance Questionnaire was launched at Hong Kong International Airport, Hung Hom Intercity Train Station and Lo Wu Control Point in 2014, to enhance health surveillance of arriving passengers from the EVD-affected countries (Table 6). Any passenger travelled to these countries in the past 21 days or holds a travel document issued by these countries is requested to fill in their personal information, travel history, health status and contact history with EVD patients. Education materials and regular updates are also provided to travellers, airlines, tourism industry and other stakeholders at the Airport and other boundary control points. All suspected cases would be referred to the Hospital Authority Infectious Disease Centre (HAIDC) in Princess Margaret Hospital for isolation, diagnosis and treatment.

CHP has been working closely with various stakeholders to regularly update on the latest disease situation and to solicit their collaboration in

Table 5 – EVD related resources uploaded in the thematic webpage.

- Preparedness and Response Plan
- Disease updates
- Press release
- Letters
- Guidelines and Training
- Health Education Materials
- Related links and Issues

Table 6 – List of affected areas with active transmission of EVD (as of July 22, 2015).

- Guinea
- Liberia
- Sierra Leone

delivering health information. Besides government bureaux/departments, they included District Councils, Healthy Cities Projects, community non-governmental organisations, property management sector and transport operators. Regarding targeted measures for specific population groups, including the local African community, the CHP visited guesthouses in relevant buildings to deliver health advice, pamphlets and posters, followed by health talks for representatives of guesthouses as well as license holders of guest houses and owners' corporations.

The DH will continue to monitor closely the latest developments of overseas situation and communicate with the WHO as well as Mainland China and neighbouring health authorities to exchange information and updates on preventive and control measures, and will modify the local response and health surveillance if necessary.

To prevent EVD, members of the public are strongly advised to remain vigilant against the disease and observe the following measures:

- ✓ Avoid unnecessary travel to affected areas;
- ✓ Observe good personal and environmental hygiene, always remember to use liquid soap or alcohol-based hand rub to clean your hands before touching the eyes, nose and mouth;
- ✓ Avoid close contact with feverish or ill persons, and avoid contact with blood or bodily fluids of patients, including items which may have come in contact with an infected person's blood or bodily fluids;
- ✓ Avoid contact with animals;
- ✓ Cook food thoroughly before consumption; and
- ✓ Upon returning from affected area, observe closely the health conditions for 21 days. If you develop symptoms of EVD, you should call 999 and inform the staff about your condition to arrange consultation in Accident and Emergency Department.

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[4]WHO Information note. "Criteria for declaring the end of the Ebola outbreak in Guinea, Liberia or Sierra Leone." (Updated May 2015). Available at http://www.who.int/csr/disease/ebola/declaration-ebola-end/en/.
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NEWS IN BRIEF

A cluster of three local cases of spotted fever

The Centre for Health Protection (CHP) recorded 3 cases of spotted fever in June and July 2015. The first case was an 88-year-old man with good past health. He presented with fever, dizziness, headache and cough since May 15 and was admitted to a public hospital on May 17. Paired sera were taken on May 22 and 29 revealed four-fold rise in antibody titre against the "spotted fever group" of rickettsiae. His condition was stable and was discharged on May 30.

The second case was an 80-year-old man with underlying illness. He presented with fever, cough and sputum since May 18 and was admitted to a public hospital on May 23. Blood sample collected on May 29 showed raised antibody titre against the "spotted fever group" of rickettsiae. His condition was stable and was discharged on May 29.

The third case was a 72-year-old man with underlying illness. He presented with fever, headache and myalgia since May 10 and was admitted to a public hospital on May 13. Paired sera taken on May 14 and June 15 revealed four-fold rise in antibody titre against the "spotted fever group" of rickettsiae. His condition was stable and was discharged on May 22.

Epidemiological investigations found that all three cases had no travel history outside Hong Kong during incubation period. They lived in the same public housing estate. All cases' home contacts were asymptomatic. The Food and Environmental Hygiene Department has conducted vector surveys on the areas visited by the cases during the incubation period and has carried out necessary control measures. Investigations are on-going.

A sporadic confirmed case of *Streptococcus suis* infection

On July 8, 2015, CHP recorded a case of *Streptococcus suis* infection affecting an 85-year-old man with underlying illnesses. He presented with fever and dizziness since July 3 and was admitted to a public hospital on Jul 4. He developed confusion on July 5. His blood specimen collected on July 5 grew *Streptococcus suis*. He was treated with antibiotics and his condition was stable. He did not handle raw pork and denied any previous skin wound or contact with pigs. Investigations are on-going.

A case of human myiasis

On July 13, 2015, CHP recorded a local case of human myiasis affecting a 74-year-old man with underlying illnesses. He was admitted to a public hospital on July 12 for left toes gangrene. Inspection of toes wound revealed worms which were identified to be *Chrysomya* species. His condition remained stable. He lived alone and had no recent travel history. Advice on wound care and environmental hygiene would be given to the patient.

Three sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus*

CHP recorded three cases of necrotising fasciitis caused by *Vibrio vulnificus* in early July 2015. The first case was an 82-year-old man with underlying chronic illnesses. He presented with fever, right leg pain and swelling on July 1 and was admitted to a public hospital on the same day. The clinical diagnosis was necrotising fasciitis. He was treated with antibiotics and excisional debridement operations were performed. His blood specimen on July 2 yielded *Vibrio vulnificus*. His condition was stable. He recalled injury to his left index finger by fish fins during food preparation on July 1. His home contacts were asymptomatic.

The second case was a 78-year-old woman with underlying chronic illnesses who lived alone. She developed left foot swelling after sustaining an injury over her left shin in a wet market on July 1. She was admitted to a public hospital on July 2 and above knee amputation of left lower limb was performed on the same day. Her diagnosis was necrotizing fasciitis. She was transferred to the intensive care unit after operation. Her left leg tissue taken on July 2 yielded *Vibrio vulnificus*. She was treated with antibiotics and her condition was serious.

The third case was a 59-year-old man with good past health. He had left ankle pain and swelling since July 3 and was admitted to a public hospital on July 4. After admission, he developed fever and increasing swelling of left leg with blister formation. The clinical diagnosis was necrotizing fasciitis. He was treated with antibiotics and excisional debridement was performed. Blood culture and left foot necrotic tissue taken on July 4 and 5 respectively grew *Vibrio vulnificus*. His condition was stable. He recalled injury over his left leg around ten days before onset of symptoms. He had also been to beach and wet market during incubation period. His home contacts were asymptomatic.

So far, no epidemiological linkage has been identified among these three cases. Investigations are on-going.

Two sporadic cases of listeriosis

CHP recorded two cases of listeriosis in July 2015. The first case was recorded on July 7, affecting an 87-year-old woman. She had multiple pre-existing conditions. She presented with decreased general condition on June 21 and was admitted to a public hospital on June 24. Her blood culture yielded *Listeria monocytogenes* and she was treated with antibiotics. Her condition deteriorated and she passed away on June 27. Investigation did not reveal consumption of any high risk food. She was a resident at a residential care home for the elderly. Epidemiological investigation found no other cases from the institution. Investigation is on-going.

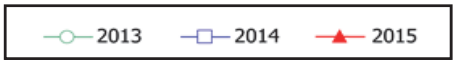
The second case was recorded on July 14, affecting a 61-year-old man with pre-existing condition. He presented with fever, chills and rigors on July 8 and was admitted to a private hospital on July 10. His blood culture yielded *Listeria monocytogenes* and he was treated with antibiotics. His condition was stable and he was discharged on July 14, 2015. His family members were asymptomatic. Investigation is on-going. No epidemiological linkage has been identified for these two cases so far.

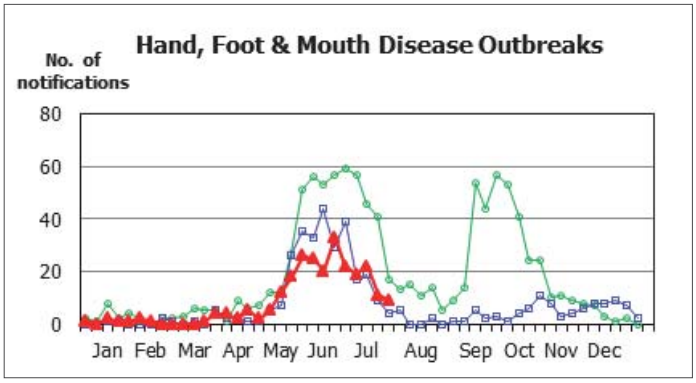
CA-MRSA cases in June 2015

In June 2015, CHP recorded a total of 106 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 54 males and 52 females with ages ranging from 2 months to 84 years (median = 34.5 years). Among them, there were 63 Chinese, 15 Filipinos, 10 Pakistani, 3 Caucasian, 3 Indonesian, 2 Indian, 1 Japanese, 1 Nepalese, 1 Sri Lankan and 7 of unknown ethnicity. Isolates of all these 106 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (68) or V (38). All except two cases presented with uncomplicated skin or soft tissue infections. The remaining two patients had severe infections. The first case was a 60-year-old man who presented with fever and wound infection of his left forearm after sustained a fall on May 17. He was admitted to a public hospital on May 20 and was diagnosed to have left forearm wound carbuncle complicated by sepsis. His blood specimen was cultured positive for CA-MRSA. His condition was stable and was discharged on July 15. The second case was a 60-year-old man with pre-existing medical condition. He presented with right foot ulcer on June 7 and was admitted to a private hospital on June 9. He was diagnosed to have right foot neuropathic ulcer with necrotizing fasciitis and osteomyelitis. He subsequently developed sepsis and pleural effusion. His blood specimen taken on June 24 was cultured positive for CA-MRSA. He was in stable condition after antibiotic treatment and remained hospitalised.

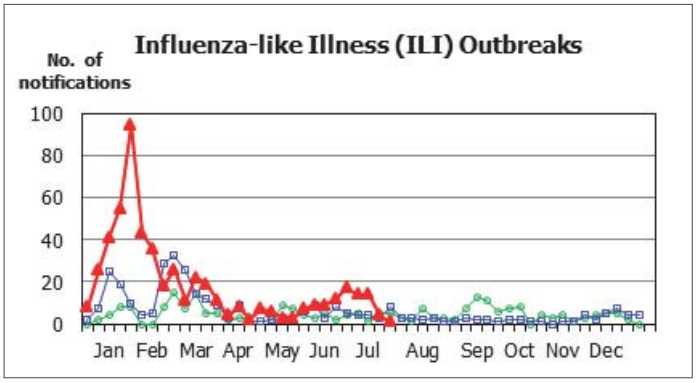
Four household clusters, with each affecting two to three persons, were identified during this reporting period. Screening and decolonization would be provided for their close contacts. No cases involving healthcare worker were reported in June.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 28 - WEEK 29)

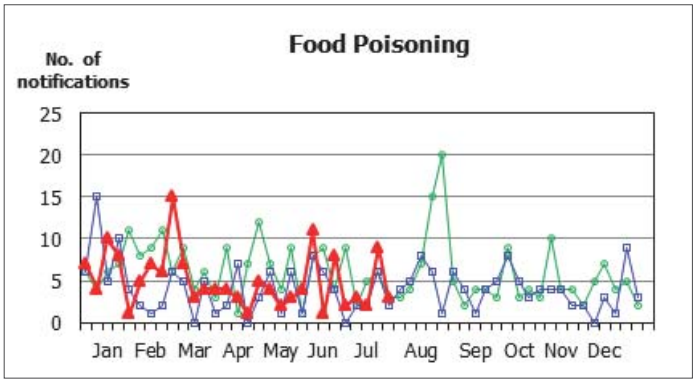




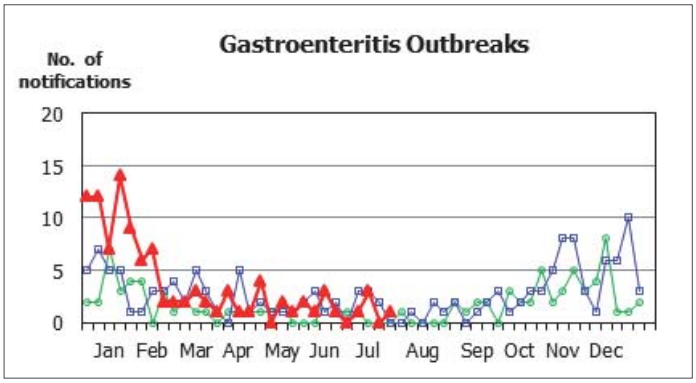
Week 26	19	Week 27	22
Week 28	**11**	**Week 29**	**9**



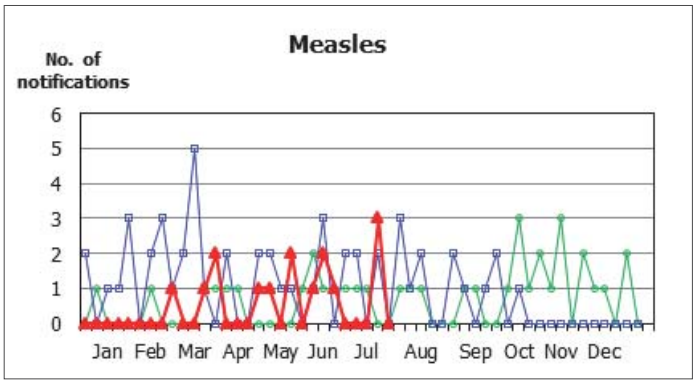
Week 26	14	Week 27	14
Week 28	**4**	**Week 29**	**1**



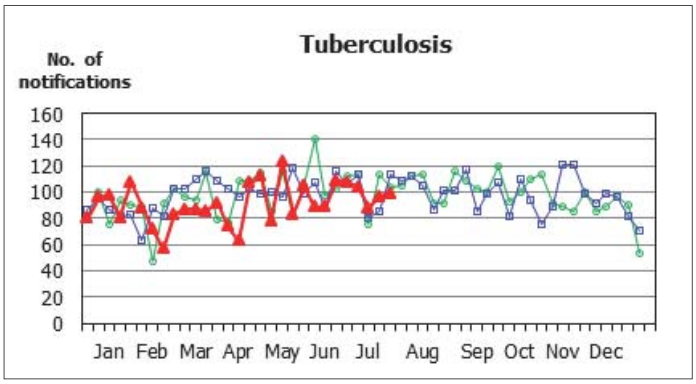
Week 26	3	Week 27	2
Week 28	**9**	**Week 29**	**3**



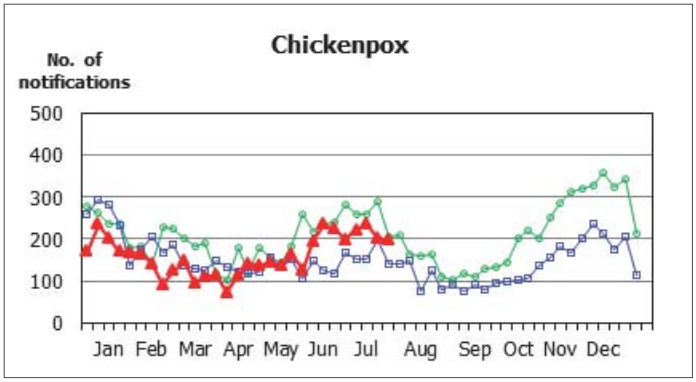
Week 26	1	Week 27	3
Week 28	**0**	**Week 29**	**1**



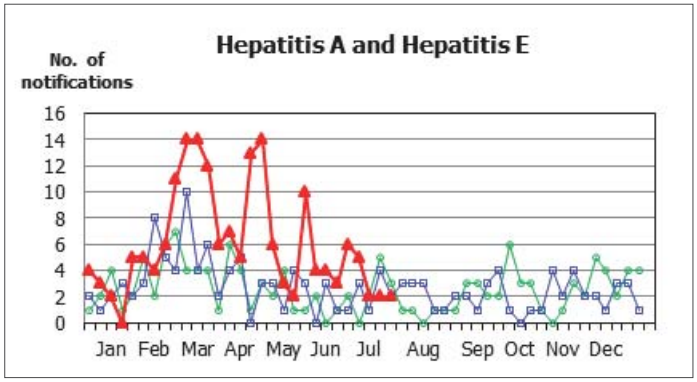
Week 26	0	Week 27	0
Week 28	**3**	**Week 29**	**0**



Week 26	104	Week 27	88
Week 28	**97**	**Week 29**	**99**



Week 26	221	Week 27	235
Week 28	**201**	**Week 29**	**199**



Week 26	5	Week 27	2
Week 28	**2**	**Week 29**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until July 18, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Jul 19 - Aug 1, 2015 WEEKS 30 - 31 VOL 12 ISSUE N⁰ 16

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Tuberculosis among high risk populations

Reported by Dr LB TAI and Dr CK Chan, Senior Medical Officers, Tuberculosis and Chest Service, Public Health Services Branch, CHP.

Tuberculosis (TB) is still a major infectious disease globally and locally. In Hong Kong (HK), the TB notification rates decreased from a peak of 697.2 per 100 000 in 1952 to around 100.9 in 1995 and further decreased to 66.1 per 100 000 in 2014 (provisional figure). Some population groups have been identified to be more susceptible to TB infection. We will discuss some of these high risk groups with reference to our local data in this paper.

TB close contacts

Contact screening is a key element for successful TB control. Chest X-ray (CXR) and tuberculin skin testing (TST) are the chief screening tools for asymptomatic close contacts in HK. In 2013, a total of 10 684 close contacts of 4 588 TB patients underwent chest x-ray screening in Tuberculosis and Chest Service[1]. Forty-two (0.39%) of the screened contacts were diagnosed to have active TB. A previous local study involving 1 537 index TB cases and 4 661 of their close contacts showed that the rate of TB in contacts remained high in the first three years, but started to plateau off in the fourth year and became usual background TB notification rate in the fifth year[2]. Close contacts with diabetes mellitus was an independent risk factor of early TB development. For those with late TB development, risk factors including positive sputum smear, family history of TB, institutionalisation and diabetes were observed. Identification of these risk factors may be helpful in the formulation of screening procedure. TST remains the main tool for targeted screening of latent TB infection in close contacts of a smear-positive source.

Tuberculosis in patients with silicosis

Patients with silicosis are one of the high risk populations for TB[3]. In a local study analyzing the TB risk factors among a local silicotic cohort[4], the incidence of TB was approximately nine times that of the local population. Four TB risk factors were identified: 1) no anti-tuberculosis treatment before the date of diagnosis of silicosis, 2) progressive massive fibrosis, 3) small opacities exceeding 1.5 mm, and 4) caisson work. Silicotics who have no previous history of anti-TB treatment should be screened for latent TB infection (LTBI) by tuberculin skin test or interferon-γ release assay, followed by treatment for LTBI if necessary[5].

Tuberculosis reported in correctional institutions

Annual TB notification rate in correctional institutions in Hong Kong remains static at about 0.3% in 2012-2014. The incidence and prevalence of TB was found to be higher in prisons than in the corresponding general populations in many countries[6]. According to a local study which assessed the situation of TB inside the prison system of Hong Kong[7], drug addicts was one of the major risk groups for TB in this setting. After exclusion of the high risk factors, the prison TB incidence was not significantly different from that of the general population. Public health measures including admission and contact screening for TB, active and passive case finding, isolation of infectious cases are helpful in the TB control in prisons.

Elderly

Hong Kong's ageing population is considered to be one of the reasons accounting for the persistent high rate of TB in the past decades (Figure 1). According to a local study reviewing the trend of TB in HK from 1989 to 1998 and the clinical characteristics of TB in patients ≥ 60 years of age, TB in the elderly is more likely to have advanced disease at the time of diagnosis and had significantly higher mortality compared with the younger age groups[8]. However, the clinical presentation of TB in elderly is more subtle and can be different from that of the younger people[9]. This makes early diagnosis difficult. It is important that medical professionals should maintain a high level of suspicion especially in the elderly to avoid delayed diagnosis.

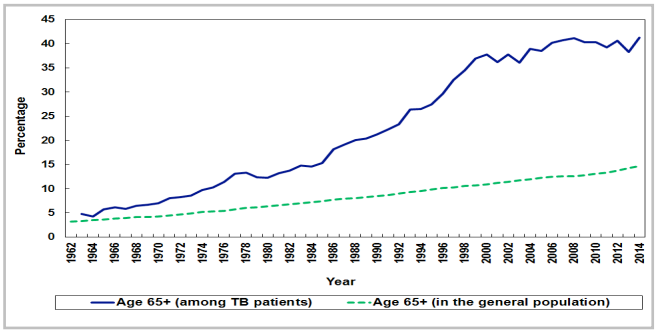


Figure 1 – Percentage of elderly among TB patients and the general population (1962 - 2014).

Smokers

Smokers are more likely to suffer from TB and have more aggressive lung involvement. According to a local study involving 851 patients in HK from the 1996 TB notification registry[10], a strong association between smoking and TB was demonstrated. No dose-response relationship, however, had been evaluated. Another local study showed that smoking also affects the treatment outcome and relapse[11]. Smoking cessation should be encouraged among all TB patients.

Diabetes mellitus

The association between diabetes mellitus (DM) and TB has been well reported in a number of studies[12,13]. In Hong Kong, 12.6% of all TB notified cases in 2010 had concomitant DM[1]. This rate was even higher, about 16%, among those over 40 years old. The global burden of DM was predicted by the World Health Organization (WHO) to increase by 50% by 2030[14]. Its impact on TB risk should be addressed seriously. In 2011, The International Union Against Tuberculosis and Lung Disease (The Union) and WHO released the Collaborative Framework for Care and Control of Tuberculosis and Diabetes[14]. The framework identified the key features of action areas to face the challenges: to provide bi-directional screening for TB and DM, ensure high quality treatment of both diseases and prevent TB in DM patients. A recent report was released in the 45th Union World Conference of Lung Health in Barcelona, Spain in 2014 to further address the issue and to promote the international policy framework for actions[15].

HIV infection

In Hong Kong, TB is a common AIDS-defining illness, second to Pneumocystis jiroveci pneumonia[16]. Nevertheless, human immunodeficiency virus (HIV)-related TB cases represented only a minority of the annual TB notifications with only around 30 cases reported annually in the past five years. Extra-pulmonary involvement is common, with over half of patients having TB involving one or more extra-pulmonary sites. Provider-initiated blood testing has shown that HIV prevalence among TB patients in the chest clinics was less than 1%[1,16].

Conclusion

The list of high risk populations for TB discussed above is not exhaustive. Immunosuppressed patients like those suffering from malignancy[17], chronic renal failure[18] and those receiving anti-tumor necrosis factor agents[19] have also been recognised as high risk population for TB infection. While no one can be said to be free from risk in a TB endemic area, clinicians should always maintain an added level of vigilance in managing high risk patients, often with atypical presentations of TB, to ensure timely diagnosis and prompt initiation of treatment.

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Summary of the Middle East Respiratory Syndrome (MERS) Outbreak in Korea

Reported by Dr Phillippa TSUI, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Overview of the outbreak

The outbreak of MERS in Korea starting in late May 2015 has been the largest one occurring outside the Middle East since the emergence of the MERS-coronavirus (MERS-CoV) causing human infections in 2012. The index patient was a 68-year-old man who had history of travel to several Middle East countries within 14 days before his onset of symptoms on May 11. He sought medical treatment from several healthcare facilities (HCFs) but was not isolated in the first week. A specimen was taken from him for MERS-CoV test on May 19 and confirmed positive on May 20. Subsequently, 27 persons including healthcare workers (HCWs), other patients, and visitors exposed to him before his isolation were confirmed to have MERS (including one case exported to Mainland China via Hong Kong). A large MERS outbreak occurred in Pyeongtaek St. Mary's Hospital where he had

stayed from May 15 to 17. There were two levels of transmission in this hospital outbreak, involving a total of 25 secondary cases who acquired the infection from him and 11 tertiary cases who acquired the infection from other secondary cases.

Apart from Pyeongtaek St. Mary's Hospital, the secondary cases subsequently caused further transmissions in seven other HCFs resulting in propagation of the outbreak. The largest outbreak occurred in Samsung Medical Center (SMC) in which a super spreading event was traced to a 35-year-old male case who had stayed in the Emergency Department from May 27 to May 29. He had acquired the infection in Pyeongtaek St. Mary's Hospital and then triggered this large outbreak in SMC involving about 90 cases. Some of the cases acquiring the infection in SMC and various other HCFs caused further nosocomial transmissions in eight other HCFs.

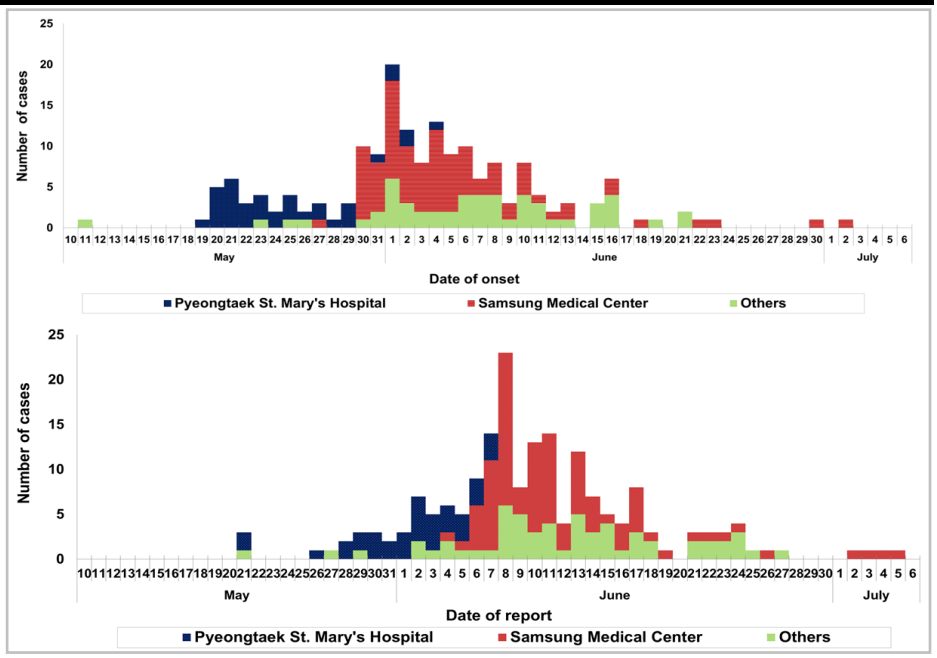

Figure 1 – Daily number of confirmed MERS cases by onset date (N=177, onset dates not available for 9 cases) and report date (N=186).

As of July 31, the outbreak in Korea affected 186 cases (including 36 deaths) with involvement of 18 HCFs. The number of confirmed cases continued to rise in late May and reached the peak in early June (Figure 1). The daily number of new cases started to decrease gradually in mid-June. The last case in this outbreak was reported by Korea on 5 July and the patient was isolated on July 3. The last contact was released from quarantine on July 27.

Features of the MERS cases in the outbreak in Korea

Among the 186 MERS cases, 111 cases (60%) were male and their ages ranged from 16 to 87 years old (median: 55 years) (Figure 2). In comparison, about 65% of cases in the Middle East were male and the median age was 49 years (range: 9 months–99 years). As of August 4, there were 36 deaths in Korea with a case fatality rate of 19.4%. This was lower than the overall case fatality rate of 38.2% among cases in other places. The 36 fatal cases in Korea aged from 40 to 80 years with a median of 65 years. Patients with underlying co-morbidities had a high risk of severe disease when having MERS-CoV infection. Thirty-three (91.7%) of the fatal cases were known to have chronic diseases.

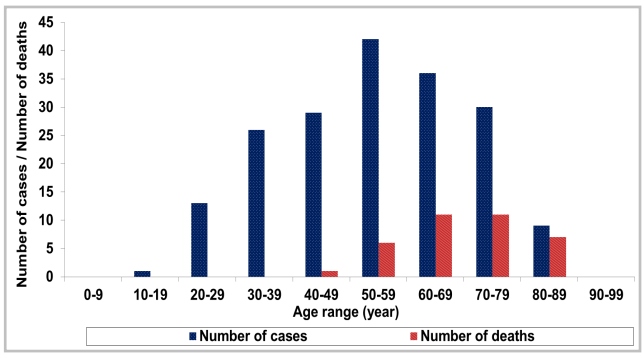

Figure 2 – Age distribution of laboratory-confirmed MERS cases (N=186) and fatal cases (N=36).

Among the 185 cases who had acquired the infection in Korea, 81 (43.8%) were patients, 65 (35.1%) were visitors or family members who cared for patients in hospitals and 39 (21.1%) were healthcare workers or staff in HCFs (including 15 nurses, 8 doctors, 8 caregivers, 2 radiographers, 2 ambulance staff, 2 security staff, 1 staff transporting patients and 1 information technology staff). Among 171 cases with known information from the WHO, the numbers of days from onset of symptoms to laboratory confirmation ranged from 0 to 17 days (median 4 days). In a recent study, the median and mean incubation periods were estimated to be 6.3 days (95% confidence interval [CI]: 5.7–6.8), and 6.7 days (95% CI: 6.1–7.3) respectively, whereas the 95th percentile was 12.1 days (95% CI: 10.9–13.3)[1].

World Health Organization (WHO)'s assessment of the MERS situation in Korea

A joint mission by the WHO and the Ministry of Health and Welfare of Korea reviewed this outbreak in June. The mission concluded that identification and isolation of symptomatic cases and infection prevention and control measures in hospitals early in the outbreak were not optimal, which allowed the infection to spread. The mission identified several reasons why the virus was able to infect large number of people in a relatively short time. These included:

- The appearance of MERS-CoV was unexpected and unfamiliar to most physicians;
- Infection prevention and control measures in hospitals were not optimal;
- Extremely crowded emergency rooms and multi-bed hospital rooms contributed significantly to nosocomial infection in some hospitals;
- The practice of seeking care at a number of medical facilities ("doctor shopping") may have been a contributing factor; and
- The custom of having many friends and family members accompanying or visiting patients during their hospital stays may have contributed to secondary spread of infection among contacts within HCFs.

While the outbreak that began in May had been large and complex, it showed a similar epidemiological pattern to previous hospital-associated MERS outbreaks in the Middle East. The transmission of MERS-CoV was clustered around HCFs and there was no evidence that the virus was widely circulating in the community. Besides, there was no evidence so far that the virus had

changed. Analysis of genome sequencing suggested that the MERS-CoV viruses isolated in Korea were similar to those isolated in the Middle East.

Lessons learnt

The MERS outbreak in Korea is a wake-up call for us to remain vigilant against MERS at all times. This extraordinary outbreak in Korea was sparked off by a single imported case and amplified by subsequent widespread nosocomial transmissions in HCFs. The possibility of importation of a MERS case into Hong Kong is not remote as Hong Kong is an international city with a large amount of travellers coming from every part of the world every day.

Firstly, according to the WHO, the index patient did not report his recent travel history to the Middle East when he first sought treatment. Since MERS is still a relatively rare disease that mainly occurs in the Middle East and patients may initially present with common influenza-like illness, cases can be missed easily if clinical suspicion is not raised. Therefore, HCWs must maintain a high level of vigilance for the possibility of MERS-CoV infection among travellers returning from affected areas, and travel and exposure history should be obtained from all patients with fever or respiratory symptoms for early detection of any imported case. All HCFs should establish and implement clear triage policies for rapid screening and assessment of potential MERS cases and all cases with acute respiratory symptoms. Besides, HCWs should also be aware that risky exposure among cases may not be obvious. According to the WHO, the index case in Korea had no contact with camels or HCFs in the Middle East. Thus, travel history per se is the most important clue. For the general public, if they develop fever or respiratory symptoms after visiting affected areas, they should wear a mask, seek medical consultation early and inform HCWs of their travel history for proper investigation and management.

Secondly, the outbreak in Korea also reminded us that failure in infection prevention and control measures in healthcare settings could result in large nosocomial outbreaks. According to the WHO, much of the transmission in Korea had occurred before adequate infection prevention and control measures were applied and cases were isolated and managed. Strict adherence to good infection prevention and control measures in healthcare settings is vital to stop nosocomial transmission. HCWs should apply standard precautions consistently with all patients, regardless of their diagnosis in all work practices at all times. Droplet precautions should be added to standard precautions when providing care to patients with symptoms of acute respiratory infection.

Thirdly, early detection of suspected cases and implementation of public health control measures like contact tracing, quarantine and port health measures can contain any outbreak effectively. Since early June, the health authority in Korea has greatly intensified public health measures to combat the MERS outbreak, including contact tracing, quarantine and isolation of all contacts and suspected cases, and infection prevention and control. The subsequent decrease in the number of cases confirmed that the disease control measures in Korea were effective. More than 16 500 contacts were identified for medical surveillance and quarantine in Korea in this outbreak. All these efforts have brought the outbreaks under control in Korea. On the other hand, timely contact tracing by the health authorities in Mainland China and Hong Kong also prevented the occurrence of secondary cases from the case exported to Mainland China via Hong Kong.

Responses by the Government

The Centre for Health Protection (CHP) of Department of Health (DH) had been closely monitoring the Korean outbreak since its occurrence in late May through on-going liaison with the WHO and the health authority of Korea to obtain updated information for risk assessment. Since June 1, the MERS surveillance mechanism with public and private hospitals, practicing doctors and at boundary control points had been enhanced. The CHP had enhanced the surveillance of suspected cases of MERS by revising the reporting criteria several times since June 1. The epidemiological criteria for suspected cases had been expanded to include Korea as an affected area. Moreover, due to the widespread outbreaks of MERS in healthcare institutions in Korea and the imminent risk posed to Hong Kong, the Government raised the response level under the Preparedness Plan for MERS from "Alert" to "Serious" on June 8, 2015 and issued the travel health advice of avoiding non-essential travel to Korea to Hong Kong residents on the same day. The CHP had also collaborated with the Hospital Authority since June 9 to launch an electronic platform for real-time exchange of information of suspected MERS cases.

Regarding risk communication, daily press releases were issued to announce the laboratory results of suspected MERS cases reported to the CHP. The CHP also issued letters to doctors, hospitals, schools and institutions to provide update of the latest situation and health advice. Besides, the DH had stepped up control measures at boundary control points. Since June 5, all incoming flights from Korea had been directed to designated areas to facilitate health assessment of inbound travellers by port health officers.

The last confirmed case in Korea was isolated on July 3. According to the current practice, transmission could be considered as interrupted if there were no further cases reported within two maximum incubation periods (i.e., 28 days in total) after isolation of the last case. Based on the latest risk assessment of the MERS situation in Korea, the Government lowered the response level for MERS and lifted the travel alert against Korea on August 1, 2015. During the period when the Serious Response Level was activated, 403 suspected MERS cases were reported to the CHP and all were tested negative for MERS-CoV.

The CHP will continue to closely monitor the global MERS situation and maintain necessary prevention and control measures.

Note: All information related to the MERS cases in Korea in this article was solely based on official information (including press releases) released by the Korea Ministry of Health and Welfare and the WHO on their websites.

More about MERS[2]

MERS-CoV is a zoonotic virus and has entered the human populations in the Arabian Peninsula on multiple occasions from direct or indirect contact with camels or camel-related products. The epidemiologic patterns of MERS-CoV are compatible with multiple introductions from animals to humans and secondary human-to-human transmission in health care settings. Human-to-human transmission has also been observed to a limited extent in households.

Several studies have shown that MERS-CoV antibodies are widespread in dromedary camel populations in the Middle East and Africa. Camels infected with MERS-CoV may not show any signs of infection. It is therefore not possible to know whether an animal is excreting MERS-CoV. Infected animals may shed MERS-CoV through nasal and eye discharge, faeces, and potentially in their milk and urine. The virus may also be found in the raw organs and meat of an infected animal. Therefore, the best prevention is to practice good hygiene and avoid direct contact with animals especially camels.

MERS usually presents with fever, cough, and shortness of breath. Pneumonia is a common presentation. Gastrointestinal symptoms, including diarrhoea, have also been reported. Severe illness can cause respiratory failure, renal failure or septic shock. The virus appears to cause more severe disease in people with weakened immune systems, elderly, and those with chronic diseases such as diabetes, cancer, and chronic lung disease.

Currently, Middle East is the main affected area for MERS. As of August 5, 2015, 1 169 confirmed MERS cases (including at least 452 deaths) have been reported by Middle East countries to the WHO with 1 051 cases reported by the Kingdom of Saudi Arabia (KSA). For further information, please visit the CHP website on MERS: http://www.chp.gov.hk/en/view_content/26511.html

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NEWS IN BRIEF

Two sporadic cases of listeriosis

The Centre for Health Protection (CHP) recorded two cases of listeriosis in late July and early August 2015. The first case was recorded on July 21. The patient was a 49-year-old man with pre-existing medical condition. He was admitted to a public hospital for treatment of his medical condition on July 14. He presented with fever and diarrhea on July 16 and his blood culture yielded *Listeria monocytogenes*. His condition was stable. He had recent travel history to multiple Southeast Asian countries. Investigation revealed that he had frequent consumption of homemade salad during the incubation period.

The second case was recorded on August 3. The patient was a 30-year-old pregnant woman at 25 weeks of gestation with good past health. She presented with fever, chills, headache and muscle ache since July 25, and was admitted to a public hospital on July 29. Her blood culture yielded *Listeria monocytogenes*. The condition of the patient and her fetus were stable. She had no recent travel history. She had consumed pre-packed milk and sandwiches containing cheese during the incubation period. She lived with her husband who remained asymptomatic. Investigations for the two cases are on-going. So far, no epidemiological linkage has been identified among them.

A domestic cluster of pertussis

CHP recorded a domestic cluster of pertussis in July 2015, affecting a baby and her mother. The baby was a 2.5-month-old baby girl who lived with parents and grandparents. She presented with cough and vomiting on July 12 and attended two general practitioners and was admitted to a public hospital on July 19. Her pernasal swab taken on July 19 was tested positive for *Bordetella pertussis*.

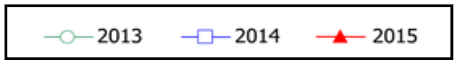
Contact tracing identified two symptomatic household contacts. The baby's 28-year-old mother started to have cough, sore throat and running nose since July 12. She was referred to a public hospital on 20 July and admission was not required. Her pernasal swab taken on the same day was subsequently tested positive for *Bordetella pertussis*. The baby's grandmother had developed cough for a few months. Her pernasal swab collected on July 22 was tested negative for pertussis. Both affected cases were treated with a course of antibiotics and their condition was all along stable. The baby was discharged on July 27.

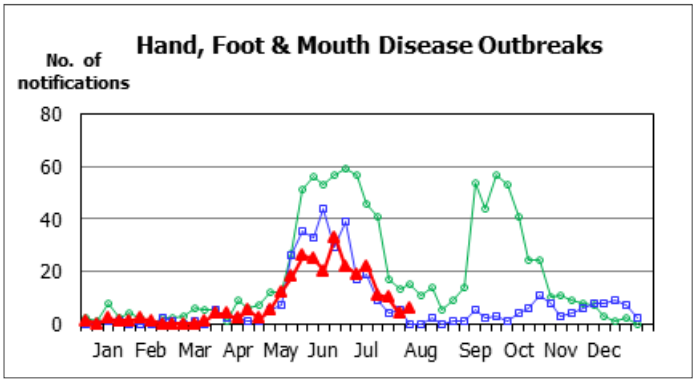
Epidemiological investigation revealed that the whole family did not travel outside Hong Kong recently. The baby was born in Hong Kong and had received the first dose of combined diphtheria, tetanus, acellular pertussis and inactivated poliovirus (DTaP/IPV) vaccine according to the local Childhood Immunisation Programme, while her mother could not recall her own vaccination history. Other asymptomatic household contacts (baby's father and grandfather) were given chemoprophylaxis. Investigation is ongoing.

Scarlet fever update (July 5 – August 1, 2015)

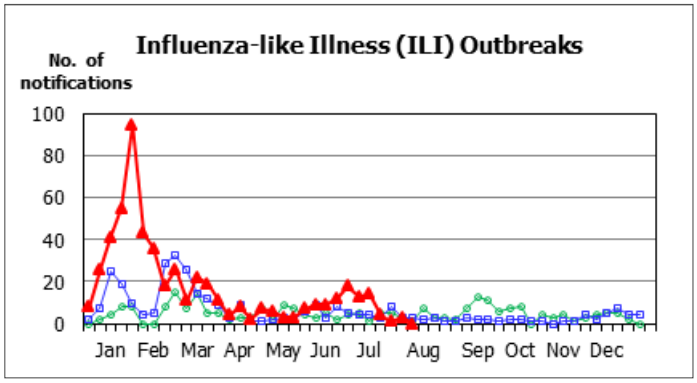
Scarlet fever activity in this reporting period decreased as compared with the previous 4 weeks. From July 5 – August 1, 2015, CHP recorded 70 cases of scarlet fever with a range of 14 to 22 cases per week as compared with 130 cases with a range of 26 to 36 cases per week in the previous reporting period (June 7 - July 4, 2015). The cases recorded in this reporting period included 44 males and 26 females aged between one and 45 years old (median: 5 years). There were no school or institutional scarlet fever clusters and no fatal cases reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 30 - WEEK 31)

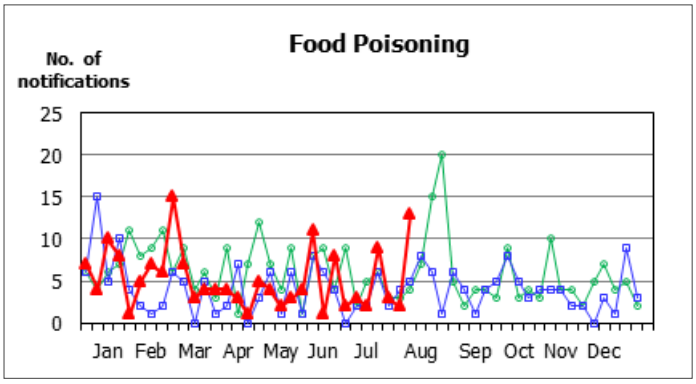




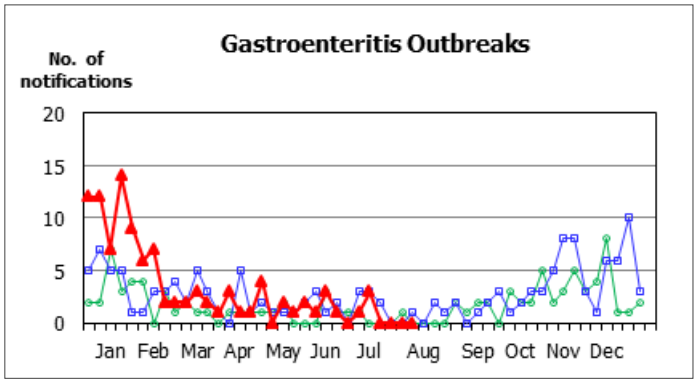
Week 28	11	Week 29	10
Week 30	**4**	**Week 31**	**6**



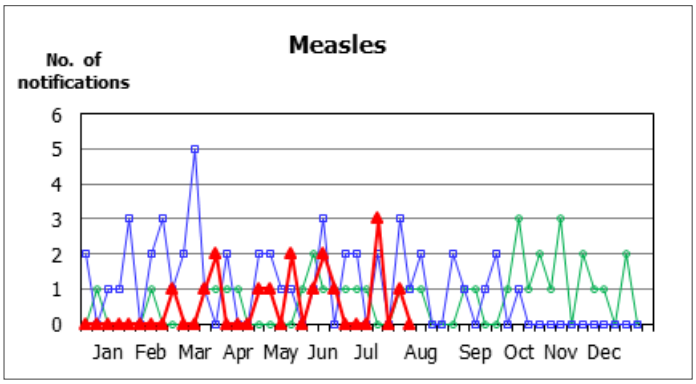
Week 28	4	Week 29	1
Week 30	**3**	**Week 31**	**0**



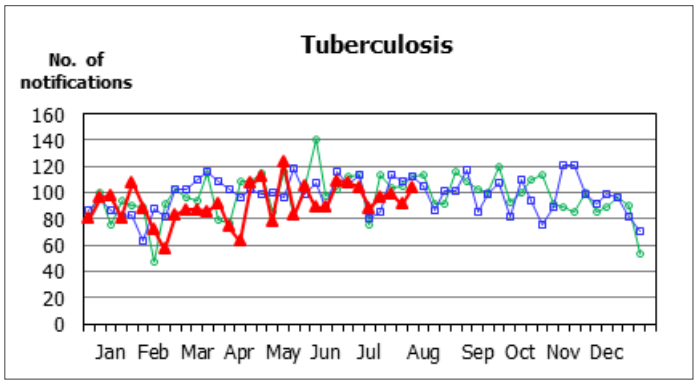
Week 28	9	Week 29	3
Week 30	**2**	**Week 31**	**13**



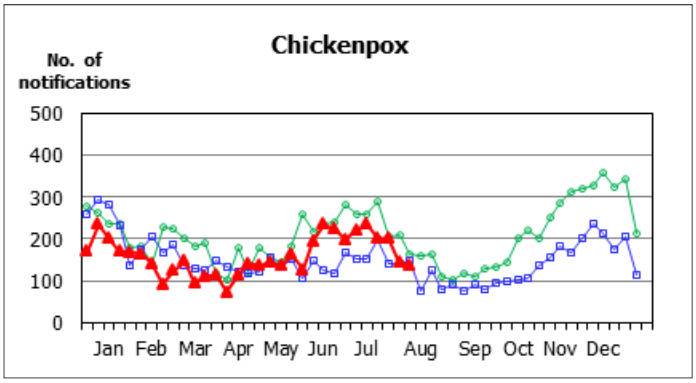
Week 28	0	Week 29	0
Week 30	**0**	**Week 31**	**0**



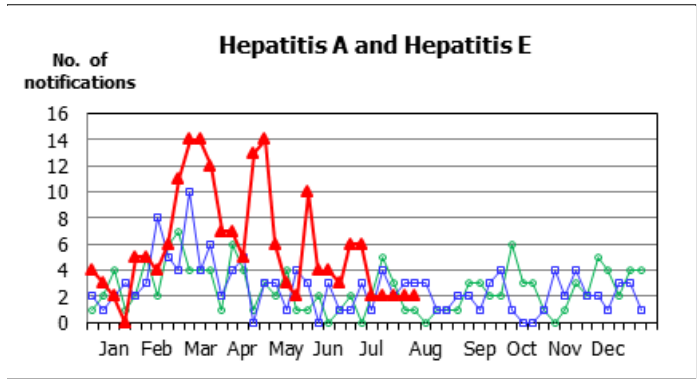
Week 28	3	Week 29	0
Week 30	**1**	**Week 31**	**0**



Week 28	97	Week 29	99
Week 30	**91**	**Week 31**	**104**



Week 28	201	Week 29	202
Week 30	**144**	**Week 31**	**138**



Week 28	2	Week 29	2
Week 30	**2**	**Week 31**	**2**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until Aug 1, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Aug 2 - Aug 15, 2015 WEEKS 32 - 33 VOL 12 ISSUE N⁰ 17

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Scientific Committee's recommendations on influenza vaccination for 2015/16 season

Reported by Dr Alex LEUNG, Medical and Health Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

The Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the Centre for Health Protection (CHP) of the Department of Health (DH) has recently reviewed and updated the recommendations on the use of seasonal influenza vaccine for the coming influenza season (2015/16).

Given that influenza vaccines are safe and effective and severe cases do occur in previously healthy persons, the SCVPD recommends that **all persons** except those with known contraindications should receive seasonal influenza vaccine for personal protection. In addition, taking into consideration the local disease burden, scientific evidence and international experiences, the SCVPD recommends certain groups in the community to have higher priority for influenza vaccination in the 2015/16 season:

Priority groups for influenza vaccination in 2015/16 season

- ☑ Pregnant Women
- ☑ Elderly Persons Living in Residential Care Homes
- ☑ Long-stay Residents of Institutions for Persons with Disabilities
- ☑ Persons Aged 50 Years or Above
- ☑ Persons with Chronic Medical Problems*
- ☑ Health Care Workers
- ☑ Children Aged Six Months to Five Years
- ☑ Poultry Workers
- ☑ Pig Farmers and Pig-slaughtering Industry Personnel

*People with chronic medical problems mainly refer to those who have chronic cardiovascular (except hypertension without complication), lung, metabolic or kidney disease, obesity# (BMI 30 or above), who are immunocompromised^, children and adolescents (aged six months to 18 years) on long-term aspirin therapy, and those with chronic neurological condition that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration or those who lack the ability to take care for themselves. Seasonal influenza vaccination is recommended for their increased risk of complications and death associated with influenza infection.

#Obesity is considered as an independent risk factor for influenza complication and thus people with BMI 30 or above are included for seasonal influenza vaccination.

^People who are immunocompromised refer to those with a weakened immune system due to disease (such as HIV/AIDS) or treatment (such as cancer treatment).

The 2015/16 seasonal influenza vaccine (northern hemisphere winter) comprises an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013 (H3N2)-like virus and a B/Phuket/3073/2013-like virus. If quadrivalent influenza vaccine is being used, it should contain the above three viruses and a B/Brisbane/60/2008-like virus. Based on local laboratory data on seasonal influenza and surveillance data on severe cases in recent years, it is expected trivalent influenza vaccine may potentially prevent majority of influenza burden in Hong Kong, while quadrivalent influenza vaccine may potentially offer additional protection against influenza B.

Currently registered seasonal influenza vaccines in Hong Kong are inactivated influenza vaccines (IIV). Both trivalent and quadrivalent inactivated influenza vaccines are recommended for local use. Depending on individual brand, IIVs are recommended for use among people six months of age or older, including healthy people and those with chronic medical problems. A single intramuscular dose is the standard regimen for IIV in persons aged nine years or above. Children below nine years old, who have received one or more doses of seasonal influenza vaccine in or before 2014/15 season are recommended

to receive one dose in the 2015/16 season. For vaccine-naïve children aged below nine years, two doses with an interval of at least four weeks are required. Half the adult dose is recommended for children below three years of age. Persons who have already been vaccinated with the 2015 Southern hemisphere seasonal influenza vaccine are recommended to receive the 2015/16 seasonal influenza vaccine, preferably with an interval of at least four weeks.

In addition to receiving influenza vaccination, members of the public are encouraged to observe good personal and environmental hygiene and maintain a healthy lifestyle, in order to prevent influenza:

- Wash hands thoroughly after sneezing or coughing;
- Put on a surgical mask when having respiratory symptoms;
- Maintain good indoor ventilation;
- Avoid visiting crowded or poorly ventilated public places; and
- Maintain balanced diet, exercise regularly, take adequate rest, avoid smoking and overstress.

More information on SCVPD's 2015/16 seasonal influenza vaccination recommendations can be found in the CHP website:
http://www.chp.gov.hk/files/pdf/short_version_of_recommendations_on_seasonal_influenza_vaccination_for_the_2015_16_final.pdf

Food poisoning clusters related to consumption of the same Taiwan brand sandwiches

Reported by Dr LEUNG Yiu Hong, Senior Medical and Health Officer, and Dr Carol YAU, Senior Medical and Health Officer, Epidemiology Section, Surveillance and Epidemiology Branch, CHP.

From July 28 to August 11, 2015, the Centre for Health Protection (CHP) recorded a total of 34 clusters of food poisoning outbreaks related to consumption of the same Taiwan brand of prepackaged sandwiches. We summarise the epidemiological and microbiological findings and actions taken.

The 34 clusters were reported to CHP via various channels, including referrals from the Centre for Food Safety (CFS) of the Food and Environmental Hygiene Department (14 clusters), notifications from public hospitals (8 clusters), private hospitals (7 clusters) and private practitioner (1 cluster), and enquiries to CHP (4 clusters).

We defined a case as **any person who had consumed the incriminated brand of Taiwan sandwiches and developed diarrhoea and/or vomiting within 72 hours of consumption**. Over 133 persons were exposed in the 34 clusters and CHP had successfully interviewed 104 persons. A total of 96 cases were identified with an overall attack rate of 92%. The cluster size ranged from 2 to 7 cases with a median of 2 cases.

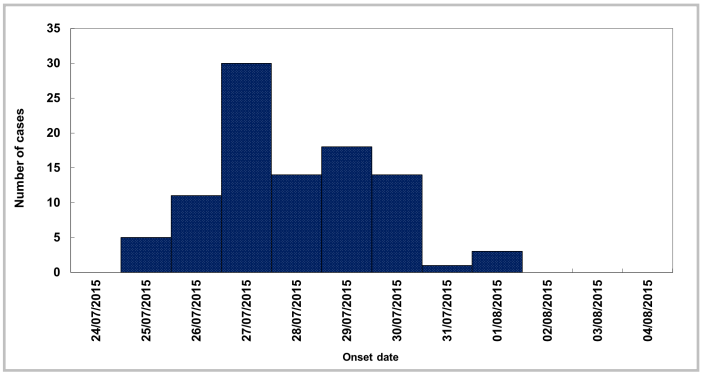


Figure 1 – Epidemic curve of the outbreak (total 96 cases).

The 96 cases comprised of 36 males and 60 females whose age ranged from one to 79 years (median = 35 years). They presented with diarrhoea (95 cases, 99%), abdominal pain (89 cases, 93%), fever (61 cases, 64%) and vomiting (35 cases, 36%). They had consumed the incriminated sandwiches from July 24 to 30. The onset dates of symptoms ranged from July 25 to August 1 (Figure 1). The median incubation period was 18.5 hours, with a range of three to 71 hours. The clinical presentation and incubation period were compatible with gastroenteritis caused by *Salmonella* species.

The 96 cases reported having consumed different types of sandwiches of the concerned brand, with ingredients including various combinations of cheese, egg, ham, beef with white bread or wheat bread and dressing / jam.

Fifteen cases required hospitalisation, with a median duration of hospital stay of four days (range: 2 to 11 days). Fourteen cases attended Accident and Emergency Departments and did not require hospitalisation. Forty-five sought treatment from private practitioners, out-patient clinics or Chinese medicine practitioners while 22 cases did not need to seek medical attention.

The cases reported purchase of the sandwiches through various channels from July 24 to 29 (Table 1). The information, once available, was passed to the CFS for further investigations and follow up actions, including inspection of the retail outlets related to the food poisoning cases (8 retail outlets and 2 collection points for online purchases), tracing to importers and distribution network of

Table 1 – The place of purchase of the concerned sandwiches among the 34 clusters.

Place of purchase	Number of clusters
Exhibition booth A	11*
Supermarket B	6
Ordered through the website C	5
Supermarket D	3
Taiwan Taoyuan International Airport	2
Restaurant E	2
Supermarket F	2
Exhibition booth G	1
Exhibition booth H	1
Shop I	1*
Ordered through an instant mobile messaging application	1

** One cluster purchased the sandwiches from both sources.*

the affected food, enhanced surveillance on online shops selling similar products and inspection of local Taiwan food retail outlets. On August 2, the CFS urged members of the public and the trade to stop consuming and selling all sandwiches of the Taiwan brand and further imposed a ban on their import into and sale within Hong Kong on August 3. All the 34 clusters purchased and consumed the sandwiches before the control measures instituted by CFS and there was no additional cluster reported with date of purchase or consumption thereafter.

Among the 96 cases, a total of 17 stool specimens were available, of which 12 were tested positive for *Salmonella* Enteritidis, one was positive for Group D *Salmonella* and four were negative. Further laboratory investigation on eleven of the *Salmonella* Enteritidis isolates (including the one who purchased the sandwich from Taiwan Taoyuan International Airport) by the CHP's Public Health Laboratory Services Branch (PHLSB) showed that they were of identical genotyping pattern.

Two sandwich samples collected from the cases of one cluster were also tested positive for *Salmonella* Enteritidis. Further laboratory testing by PHLSB also showed that they were of the same genotyping pattern as the isolates from stool specimens of the cases.

The eleven cases with an identical strain of *Salmonella* Enteritidis isolated were from ten clusters that had purchased sandwiches from six retailers. Investigation by CFS showed that the six retailers purchased the concerned brand of sandwiches from three different importers (Table 2).

Table 2 – Place of purchase and the concerned importers of the 11 cases with identical strain of Salmonella Enteritidis.

Patient	Place of purchase	Importer
1	Supermarket F	Importer J
2	Supermarket B	Importer J
3	Ordered online from the website C	Importer K
4	Exhibition booth A	Importer J
5	Supermarket B	Importer J
6	Supermarket B	Importer J
7	Exhibition booth A	Importer J
8	Restaurant E	Importer L
9	Supermarket B	Importer J
10	Exhibition booth G	Importer J
11	Taiwan Taoyuan International Airport	Not applicable

Epidemiological and microbiological findings so far point to a common source of *Salmonella* food poisoning caused by consumption of the same brand of sandwiches, as demonstrated by isolation of identical *Salmonella* Enteritidis strain from cases of 10 clusters and unconsumed sandwiches collected from the cases of one cluster.

The incriminated sandwiches were purchased via a broad spectrum of channels. Investigations revealed that the sandwiches were prepackaged food imported by different importers. The outbreak strain was also isolated from stool of one case who purchased the sandwich directly from Taiwan airport.

Based on the above findings, the site of *Salmonella* contamination was most likely to have occurred outside Hong Kong before the sandwiches were packaged. Nevertheless, subsequent prolonged and improper storage of the sandwiches may have provided favourable conditions for *Salmonella* proliferation and aggravated the size of the outbreak.

Undercooked eggs have been the most common food source linked to *Salmonella* Enteritidis infection. About 74% of egg-related foodborne outbreaks were caused by *Salmonella* Enteritidis[1]. In fact, there was a large salmonellosis outbreak affecting more than 300 persons in July 2010 in Taiwan which was associated with sandwiches purchased from an online shop[2]. The authors had speculated that mayonnaise was the most probable ingredient carrying *Salmonella* because it was the only ingredient containing raw egg.

In response to the incident, CHP has issued a total of ten press releases on July 31, August 2 to 8 and August 10 to 11, to update the public about the investigation findings of the incident and to remind the public of the importance of proper storage and handling of cooked or ready-to-eat food. CFS has also passed information gathered during investigation to the Taiwan authority for follow-up.

For more information on microbiological risks of sandwiches, members of the public may visit the thematic website of the CFS (www.cfs.gov.hk/english/whatsnew/whatsnew_fst/whatsnew_fst_Mirco_Sandwichs.html).

Advice to the public on purchasing high-risk food online or bring them from other places into Hong Kong

- Patronise reliable food premises especially for high-risk foods.
- When bringing or order high-risk foods from other places into Hong Kong, keep them within the temperatures stated on the instruction, check and observe the use-by dates on food products.
- Throw out any high-risk foods that have been left in the temperature danger zone (4°C to 60°C) for more than four hours.

References

[1] Greig et al. Analysis of foodborne outbreak data reported internationally for source attribution. *Int J Food Microbiol.* 2009;130:77-87.
[2] Wei et al. A large outbreak of salmonellosis associated with sandwiches contaminated with multiple bacterial pathogens purchased via an online shopping service. *Foodborne Pathog Dis.* 2014;11:230-3.

NEWS IN BRIEF

Two sporadic cases of necrotizing fasciitis caused by *Vibrio vulnificus*

The Centre for Health Protection (CHP) recorded two cases of necrotizing fasciitis caused by *Vibrio vulnificus* in early August 2015. The first case was recorded on August 3 involving an 85-year-old man with underlying illness. He was noted to have fever during a routine follow-up for his underlying illness at a public hospital on July 30 and was admitted on the same day. He was found to have left middle finger swelling upon admission. Excisional debridement was performed on August 1 and 2. The operative diagnosis was necrotizing fasciitis. He was treated with antibiotics and his condition was serious. His blood specimen collected on July 30 grew *Vibrio vulnificus*. He had history of fish sting to his left middle finger while visiting a wet market on July 27. His home contact was asymptomatic.

The second case was recorded on August 7. The patient was a 68-year-old man with underlying illnesses. He presented with fever and left ankle painful swelling on July 31 and was admitted to a public hospital on the same day. Excisional debridement was performed on July 31 with an operative diagnosis of necrotizing fasciitis. The fascial tissue and wound swab taken during operation on July 31 grew *Vibrio vulnificus*. He was treated with antibiotics and his condition was stable. Investigations revealed that he had visited wet market daily before onset and he did not recall any previous injury. His home contacts were asymptomatic.

Two sporadic cases of leptospirosis

CHP recorded two cases of leptospirosis in August 2015. The first case was recorded on August 13. The patient was a 19-year-old woman with good past health. She presented with fever, headache, nausea and vomiting since June 24 and was admitted to a public hospital on July 7. Her condition was stable. She was treated with antibiotics and was discharged on July 20. Paired sera on July 8 and 19 showed more than four-fold increase in antibody titre against *Leptospira* by microscopic agglutination test (MAT). She had travelled to Sabah during the incubation period where she had participated in water activities. Her travel collaterals remained asymptomatic.

The second case was recorded on August 14. The patient was a 57-year-old man with pre-existing medical condition. He presented with lower limb edema, headache, malaise, diarrhoea and weakness since June 25 and was admitted to a public hospital on July 5. Blood tests showed renal and liver impairment. His condition was stable. He was treated with antibiotics and was discharged on July 14. Paired sera on July 6 and 31 showed more than four-fold increase in antibody titre against *Leptospira* by MAT. He had no recent travel history during the incubation period and had no contact history with animals or their excreta.

All household contacts of the two cases were asymptomatic. Health advice was given. So far, no epidemiological linkage has been identified among the two cases.

A possible case of sporadic Creutzfeldt-Jakob disease

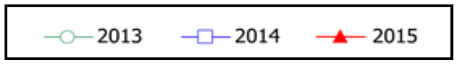
CHP recorded a possible case of sporadic Creutzfeldt-Jakob disease (CJD) on August 10, 2015, affecting a 77-year-old man with underlying illnesses. He presented with memory loss and weakness since June 2015; and had dizziness for two weeks before he was admitted to a public hospital on August 3. Subsequently, he developed progressive dementia, cerebellar disturbance and extrapyramidal dysfunction. Electroencephalography finding was atypical for CJD. He was classified as a possible case of sporadic CJD. His condition was stable. No risk factors for either iatrogenic or variant CJD were identified.

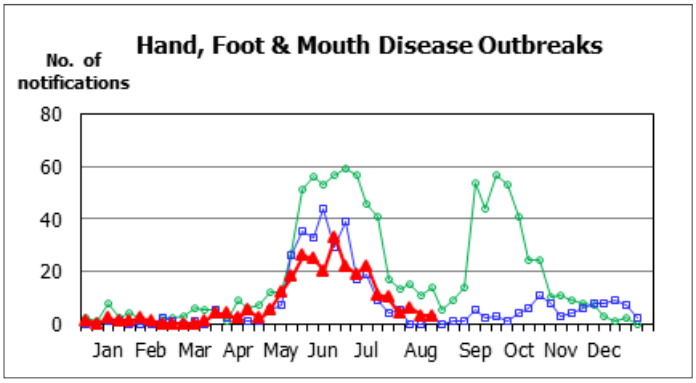
CA-MRSA cases in July 2015

In July 2015, the CHP recorded a total of 102 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 56 males and 46 females with ages ranging from 1 year to 84 years (median = 34 years). Among them, there were 64 Chinese, 12 Filipinos, 8 Pakistani, 4 Nepalese, 3 Caucasian, 2 Indian, and 9 of unknown ethnicity. Isolates of all these 102 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (67) or V (35). All cases presented with uncomplicated skin or soft tissue infections.

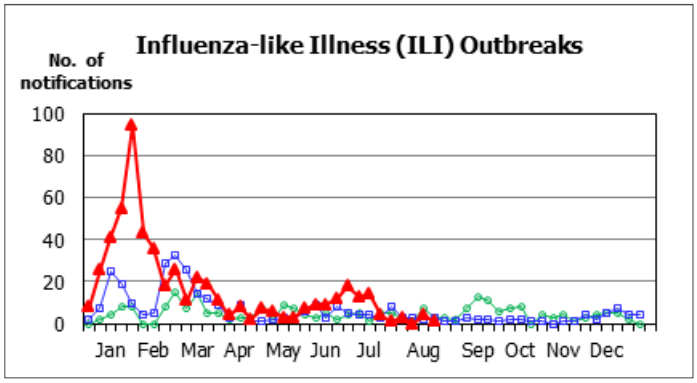
Among the 102 cases, two cases were healthcare workers working in two different public hospitals and no epidemiological linked cases to these two healthcare workers were identified. In addition, two family clusters were identified during this reporting period. The first cluster involved a 10-year-old boy who presented with right leg carbuncle. He did not require hospitalisation and was treated with antibiotics. His CA-MRSA isolate was resistant to mupirocin and his father was also suffered from CA-MRSA infection and was reported in June. Another cluster involved a 14-year-old boy who was the younger brother of a previously confirmed case reported in May. Screening and decolonization would be provided for their close contacts.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 32 - WEEK 33)

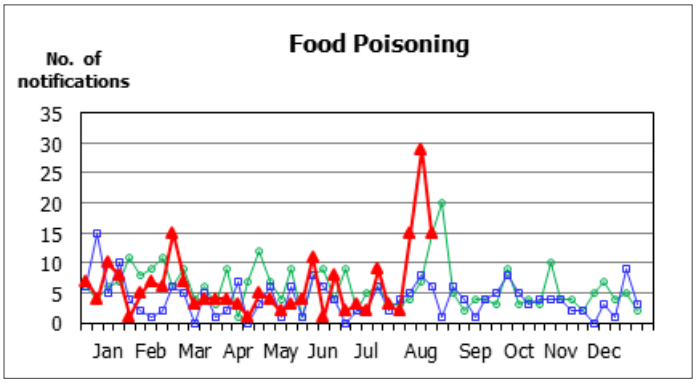




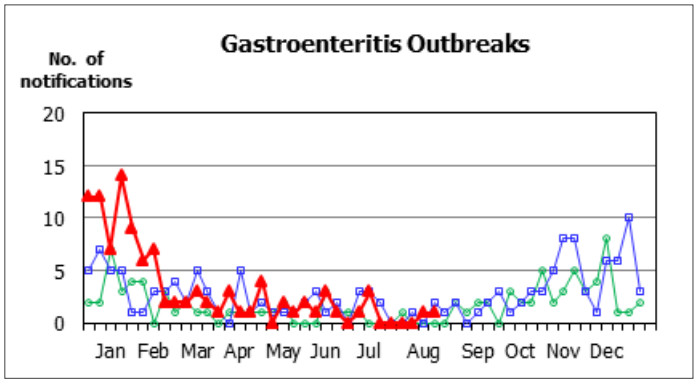
Week 30	4	Week 31	6
Week 32	**3**	**Week 33**	**3**



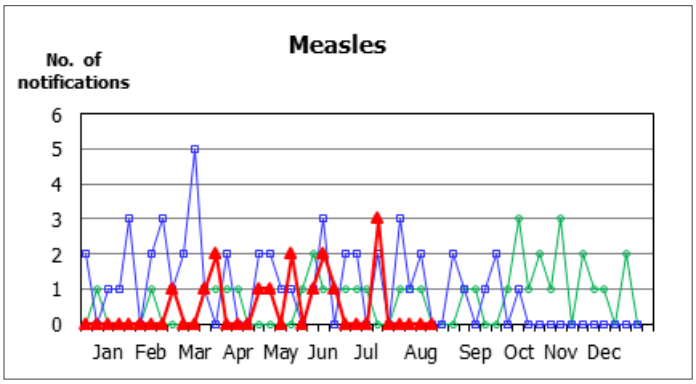
Week 30	3	Week 31	0
Week 32	**4**	**Week 33**	**1**



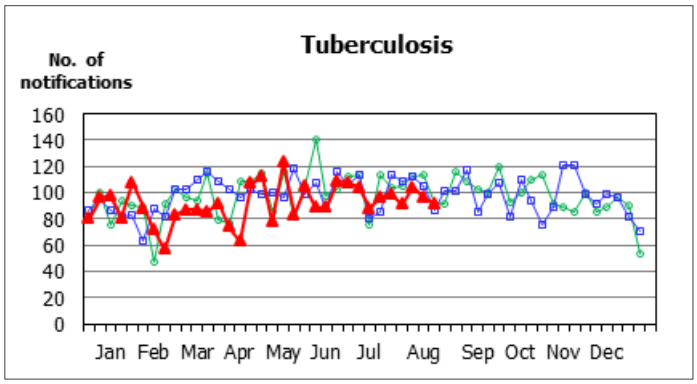
Week 30	2	Week 31	15
Week 32	**29**	**Week 33**	**15**



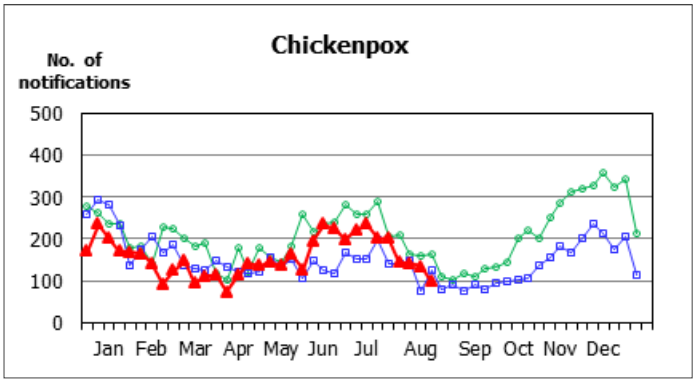
Week 30	0	Week 31	0
Week 32	**1**	**Week 33**	**1**



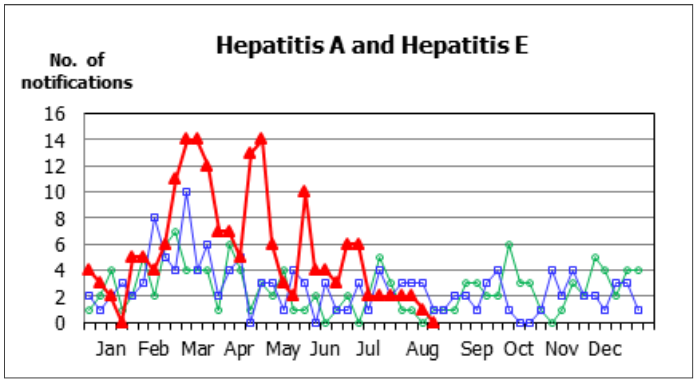
Week 30	0	Week 31	0
Week 32	**0**	**Week 33**	**0**



Week 30	91	Week 31	104
Week 32	**96**	**Week 33**	**92**



Week 30	144	Week 31	141
Week 32	**133**	**Week 33**	**98**



Week 30	2	Week 31	2
Week 32	**1**	**Week 33**	**0**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until August 15, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Aug 16 - Aug 29, 2015 WEEKS 34 - 35 VOL 12 ISSUE N⁰ 18

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Be vigilant against scrub typhus

Reported by Dr Terence LAM, Scientific Officer, Enteric and Vector-bone Disease Office, Surveillance and Epidemiology Branch, CHP.

Scrub typhus is a statutorily notifiable disease in Hong Kong. In the past ten years (2005 to 2014), seven to thirty cases each year were recorded by the Centre for Health Protection (CHP) of the Department of Health (DH). On average, more than 70% of the cases were recorded in the warmer months between June and October (Figure 1). Below we summarised the epidemiological features of the cases recorded by CHP in 2015.

As of August 31, 2015, CHP recorded a total of nine cases of scrub typhus in 2015. The male-to-female ratio was 2:1 and the median age was 59 years (range: 56 years to 94 years). The most common symptoms were fever (100%), headache (56%), and rash (56%). Eschars were found in 56% of the patients and 22% (2 cases) recalled a history of bite by arthropod during the incubation period. All patients required hospitalisation, with a median length of stay of five days. Two cases (22%) developed severe complications such as pneumonia (2 cases) and hearing impairment (1 case). All patients were discharged.

All except one case in 2015 were locally acquired infections. The remaining case went hiking in Mainland China during the incubation period, and was classified as an imported case. Eighty-nine percent of the patients recalled history of visit to vegetated areas during the incubation period. In the past few years (2012 to August 2015), the most common kind of exposure to vegetated areas was hiking areas (56%), followed by vegetated areas near home (28%), outdoor recreational areas (19%), and outdoor workplaces (15%). All cases in 2015 were sporadic infections with no epidemiological linkage observed.

Members of the public are reminded to take precautionary measures to prevent scrub typhus. Besides limiting exposure to potentially mite infested habitats (e.g. wooded or bushy areas with high grass and leaf litter), people should protect themselves against bites by mites. This is particularly important during seasonal periods of mite activity in the warmer months.

Most importantly, people with symptoms should seek medical attention as soon as possible if they develop fever after visiting vegetated area, and should report to the physician the travel history, exposure to animals, or history of arthropod bite.

What is scrub typhus ?

Scrub typhus is one of the common vector-borne diseases in Hong Kong, and globally about one million cases occur annually. It is caused by *Orientia tsutsugamushi*, an obligatory intracellular bacterium that infects the endothelial cells of blood vessels and causes vasculitis. The infection is transmitted by the bite of an infected chigger, the larval stage of the trombiculid mites, which is very small (0.2 to 0.4 mm) and can only be seen through a microscope or magnifying glass. Chiggers inhabit vegetated areas and wait on vegetation in order to be within easy reach of passing animal hosts, such as rodents. Humans are accidental hosts. Chiggers attach to animal hosts as ectoparasite and feed on digested body tissue. Scrub typhus usually affects those whose occupational or recreational activities bring them into contact with vegetated areas infested by mites. Bite by chigger is painless and itchy transiently, and is often found on the groin, axillae, genitalia, or neck. It sometimes leaves a black punch-out skin ulcer (eschar) at the site of bite, but it may go unnoticed in some cases. The incubation period for scrub typhus is about five to 20 days (mean: 10 to 12 days). Signs and symptoms are often nonspecific including acute fever, along with headache, chills, conjunctival injection, and lymphadenopathy. Maculopapular rash may develop on the trunk, extending to the extremities, and pneumonitis may also develop. The infection may cause severe complications and the untreated mortality rates range from 0% to 30%. Antibiotics are effective treatment and there is no effective vaccine.

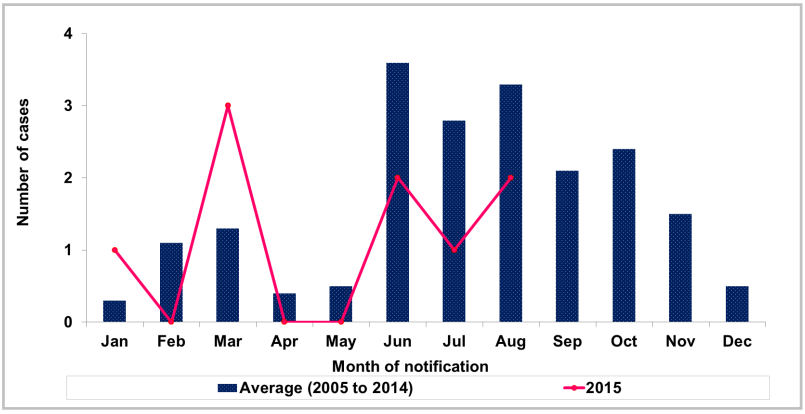


Figure 1 – Monthly number of scrub typhus cases recorded by CHP, 2005 to 2015 (as of August 31, 2015).

Protect yourself against scrub typhus

To prevent scrub typhus, members of the public need to protect themselves from bites of mites and help prevent their proliferation.

Protect yourselves against bites

- ☑ Wear loose, light-coloured long-sleeved tops and trousers;
- ☑ Use DEET-containing insect repellent on exposed parts of the body and clothing. For details about the use of insect repellents, please refer to CHP website at: http://www.chp.gov.hk/en/view_content/38927.html; and
- ☑ Take additional preventive measures when hiking or going to scrubby areas.

When members of the public hike or go to scrubby areas, here are some additional preventive measures:

Prepare for the visit
- ☑ Wear shoes that cover the entire foot and avoid wearing sandals or open shoes;
- ☑ Tuck trousers into socks or boots to prevent arthropods from reaching the skin; and
- ☑ Avoid using fragrant cosmetics or skin care products.

During the visit
- ☑ Stay on footpaths and avoid walking through vegetation. Do not brush along the vegetation at the sides of footpaths;
- ☑ Avoid resting on vegetation, or at humid and dark places;
- ☑ Do not hang clothing on vegetation;
- ☑ Do not feed wild or stray animals; and
- ☑ Re-apply insect repellents according to instructions.

After the visit
- ☑ Inspect body parts and clothing. Clear any attached arthropods carefully;
- ☑ Take a soapy shower and wash the clothes; and
- ☑ Inspect and clean the bodies of accompany pets.

Help prevent vector proliferation

Control vectors and reservoir of the disease
- ☑ Inspect and disinfest pets and pet beddings regularly;
- ☑ If applicable, trim vegetation particularly the grass in your premises; and
- ☑ Store food and dispose of garbage properly to prevent rat infestation.

Review of leptospirosis in Hong Kong, 2011-2015

Reported by Dr Grace TSOI, Medical and Health Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

Leptospirosis has been listed as a notifiable infectious disease in Hong Kong since July 14, 2008. The annual numbers of leptospirosis recorded by the Centre for Health Protection ranged from one to ten during 2005-2014 and two cases were recorded in 2015 (as of August 2015) (Figure 1).

A total of 16 cases (Figure 1) were recorded from 2011-2015 (as of August), including 11 males and five females (male-to-female ratio = 2.2:1). Their ages ranged from 19 to 59 years with median of 39.5 years. Common symptoms included fever (94%), headache (50%), myalgia (50%), malaise (38%), diarrhoea (38%) and vomiting (31%). Other symptoms included chill (25%), jaundice (25%), sore throat (19%), rigor (13%), dizziness (13%), nausea (13%), abdominal pain (13%), tea-colour urine (13%), leg swelling (6%), cough (6%), shortness of breath (6%), skin rash (6%), red eye (6%) and eye pain (6%). All cases required hospital admission with length of stay ranging from six to 20 days (median 12 days). Six cases (38%) required intensive care. Four cases (25%) had thrombocytopenia, 12 cases (75%) had deranged liver function and renal function respectively and three cases (19%) developed septic shock. All cases recovered after receiving antibiotic treatment.

What is leptospirosis ?

Leptospirosis is an infectious disease which occurs most prevalently in tropical and subtropical regions, especially following excessive rainfall or flooding. This zoonotic disease is caused by bacteria of the genus *Leptospira*, which is found in rodents and other wild and domestic animals. In urban environments like Hong Kong, rodents and dogs are implicated most often in human cases. The bacteria usually enter the body through skin abrasions or mucosa of nose, mouth and eyes when they are in contact with water contaminated with urine of infected animals. People working outdoors or having contact with animals, and people participating in outdoor water sports such as swimming and wading have higher risk of infection. The disease can also be transmitted through ingestion of contaminated food or water. Human-to-human transmission is rare.

The incubation period is usually between 5–14 days, with a range of 2–30 days. Clinical features can vary widely. Common presenting symptoms include high fever, severe headache, chills muscle aches and vomiting, while other symptoms like jaundice, red eyes, abdominal pain, diarrhoea and rash may also occur. Although majority of the infection is mild and self-limiting, 5-15% of untreated cases can have severe and potentially fatal outcome. The infection can be treated with antibiotics.

Among the 16 cases, eight sporadic cases acquired the infection locally. These local cases all occurred during the summer rainy season of Hong Kong, with three in August, two in July and one in May, June and October respectively (Figure 2). Epidemiological investigations did not identify any clusters. Regarding the exposure history, six cases reported stray dogs or rodents found in the vicinity of workplace or residence, and one of them was co-infected with scrub typhus which is also a zoonotic disease. The remaining two cases reported outdoor recreational activities (hiking or swimming in pond) during incubation period.

The eight imported cases had history of travel to Laos (1 case), Malaysia (6 cases) or Thailand[1] (2 cases) during their incubation period. All of them had participated in outdoor recreational activities including swimming, wading, rafting or hiking during their travel.

[1] One patient had travel history to both Malaysia and Thailand during the incubation period.

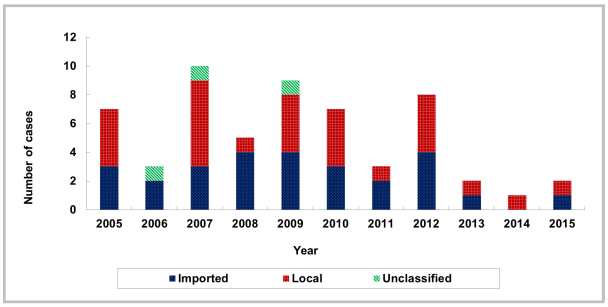


Figure 1 – Number of leptospirosis cases by year and importing status (2005 - August 2015).

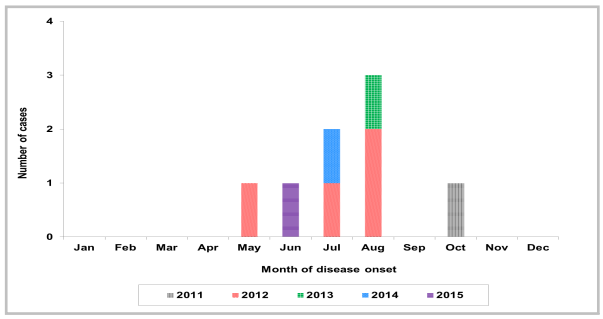


Figure 2 – Number of local leptospirosis cases by month of disease onset (2011 - August 2015).

References

[1] World Health Organization (WHO). Leptospirosis fact sheet, available at http://www.who.int/zoonoses/diseases/leptospirosis/en/

[2] World Health Organization Regional Office for the Western Pacific (WPRO). Leptospirosis fact sheet, available at http://www.wpro.who.int/mediacentre/factsheets/fs_13082012_leptospirosis/en/

Protect yourself against leptospirosis

To prevent the disease, members of public are advised to:

- Avoid contact with fresh water, mud, and vegetation that might be contaminated with the urine of infected animals, especially rodents. Never touch a dead animal with bare hands;
- Always clean any wounds as soon as possible and cover any cuts or grazes with waterproof dressings;
- Wear protective clothing or footwear when participating in recreational or work activities near soil or water that may be contaminated with animal urine;
- Wash hands with liquid soap and water after handling the pets or animals, and disinfect contaminated areas;
- Drink sealed bottled water or fresh water that has been boiled; and
- Travellers can contract the disease through outdoor water sports. Risk of infection can be minimised by limiting exposure to water sources, such as rivers, ponds or lakes that might be contaminated with the urine of infected animals and avoiding swimming or wading in potentially contaminated water.

NEWS IN BRIEF

Two sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus*

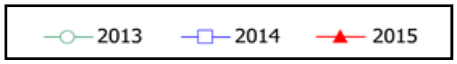
The Centre for Health Protection (CHP) recorded two cases of necrotising fasciitis caused by *Vibrio vulnificus* in August 2015. The first case was recorded on August 17. He was a 67-year-old man with pre-existing medical conditions. He presented with left ankle pain and swelling on August 14. Subsequently he was admitted to a public hospital on August 15 with septic shock. Emergency excisional debridement was performed on August 15 and the intraoperative findings were compatible with necrotising fasciitis. His left ankle wound swab and his ankle tissue specimens both cultured *Vibrio vulnificus*. He was treated with antibiotics and was in stable condition. He had exposure to seawater but he did not recall any previous injury. His household contacts were asymptomatic.

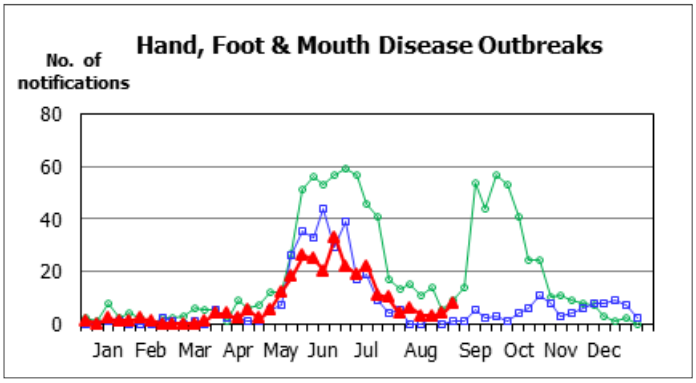
The second case was recorded on August 17. The patient was a 76-year-old man with underlying illness. He presented with fever, left leg pain, redness and swelling since August 14. He attended the Accident and Emergency Department of a public hospital on August 15 and was admitted on the same day. He was found to have injury over left leg upon admission. He subsequently developed shock and emergency operation of left above knee amputation was performed on the same day. The operative diagnosis was necrotising fasciitis. His blood specimen collected on August 15 grew *Vibrio vulnificus*. He was treated with antibiotics and his condition is currently stable. He had history of fish sting injury to his left leg while visiting a wet market on August 14. His home contact was asymptomatic.

Scarlet fever update (August 2 – August 29, 2015)

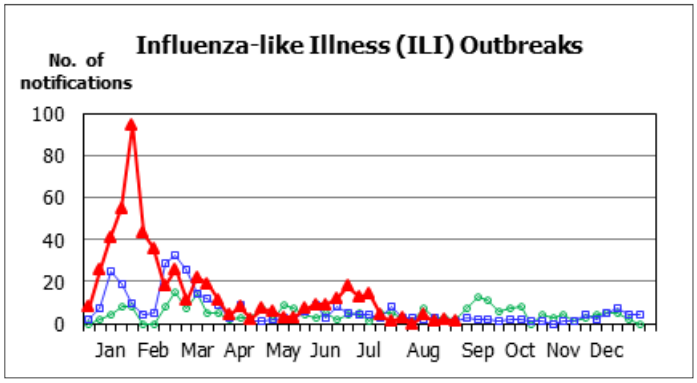
Scarlet fever activity in this reporting period decreased as compared with the previous 4 weeks. From August 2 – August 29, 2015, CHP recorded 30 cases of scarlet fever with a range of 6 to 9 cases per week as compared with 69 cases with a range of 13 to 22 cases per week in the previous reporting period (July 5 - August 1, 2015). The cases recorded in this reporting period included 19 males and 11 females aged between one and 9 years old (median: 5 years). There were no school or institutional scarlet fever clusters and no fatal cases reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 34 - WEEK 35)

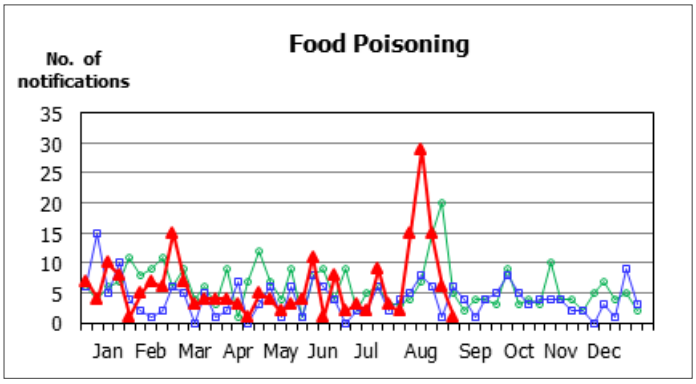




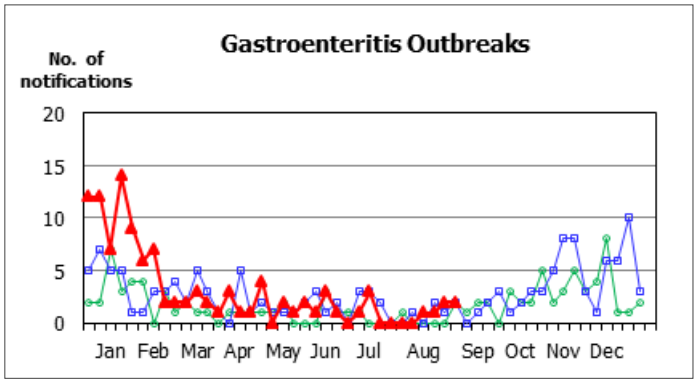
Week 32	3	Week 33	3
Week 34	**4**	**Week 35**	**8**



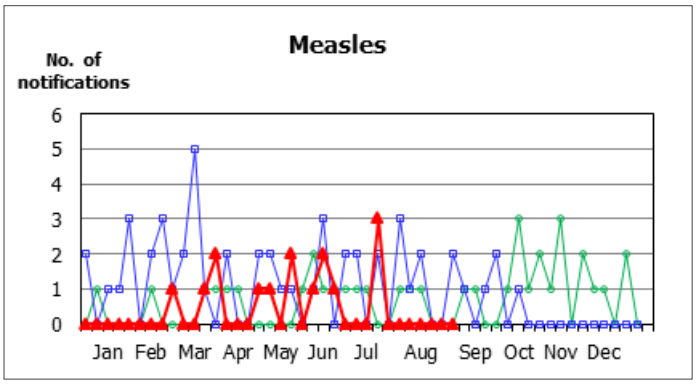
Week 32	4	Week 33	1
Week 34	**2**	**Week 35**	**1**



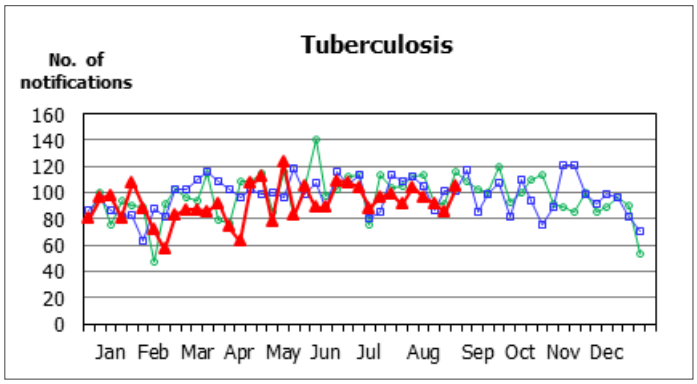
Week 32	29	Week 33	15
Week 34	**6**	**Week 35**	**1**



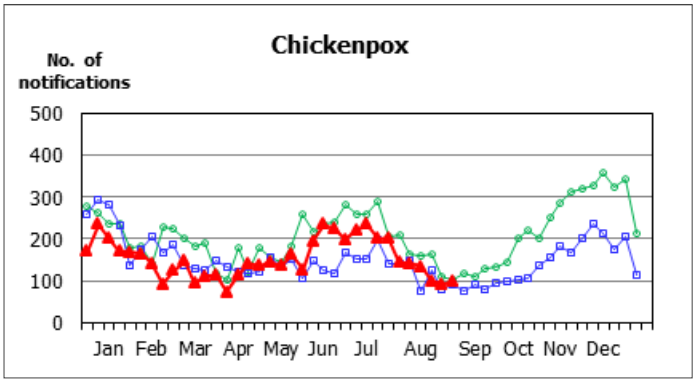
Week 32	1	Week 33	1
Week 34	**2**	**Week 35**	**2**



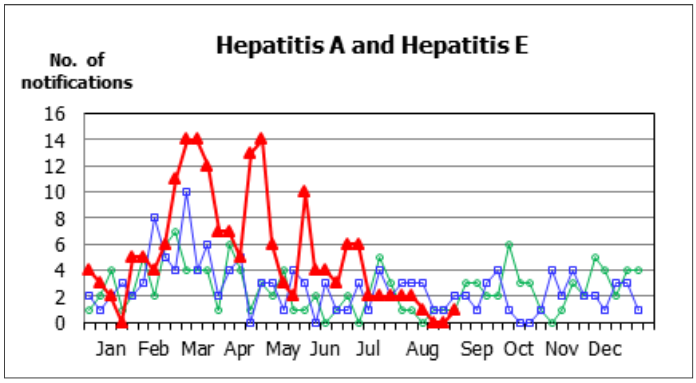
Week 32	0	Week 33	0
Week 34	**0**	**Week 35**	**0**



Week 32	96	Week 33	92
Week 34	**85**	**Week 35**	**105**



Week 32	133	Week 33	99
Week 34	**92**	**Week 35**	**98**



Week 32	1	Week 33	0
Week 34	**0**	**Week 35**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until August 29, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Aug 30 - Sep 12, 2015 WEEKS 36 - 37 VOL 12 ISSUE N⁰ 19

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Summary of the summer influenza season in 2015

Reported by Miss Vera CHOW, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

In Hong Kong, there are usually two influenza seasons in a year: a winter season between January and March and another summer influenza season in July and August. Here we summarised the influenza surveillance data in the 2015 summer season including the enhanced surveillance of severe influenza infection.

Overview

After the winter influenza season which lasted from January to April 2015, the local influenza activity remained at a low level from late April to late May. It started to rise rapidly since early June. The overall influenza activity reached the peak around late June to early July, and then decreased rapidly to a low level in early August. The 2015 summer influenza season lasted for about eight weeks from mid-June to early August. This was shorter than the 2014/15 winter season which lasted for about 17 weeks.

Laboratory surveillance

Among the respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP), the percentage tested positive for seasonal influenza viruses had increased from the trough of 6.8% in the week ending May 16 to above 10% since the week ending June 6. It reached the peak level of around 26% recorded in the three-week period from June 14 to July 4 and then started to decrease. The peak level was lower than that of 38.7% recorded in the winter season in early 2015. It took four weeks to decrease from the peak to 6.8% recorded in the first week of August (Figure 1).

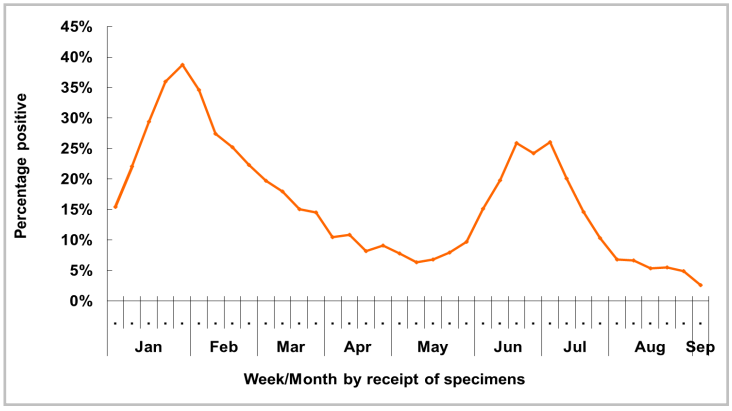


Figure 1 – Weekly percentage of respiratory specimens tested positive for influenza viruses by PHLSB in 2015 (as of September 5, 2015).

In the 8-week period from June 14 to August 8, the seasonal influenza viruses detected by PHLSB included influenza A (H3N2) (88.0%), influenza B (10.1%), influenza A (H1N1)pdm09 (1.4%) and influenza C (0.6%). Similar to the winter influenza season in early 2015, majority of the predominating H3N2 viruses belonged to the drifted Switzerland strain which was antigenically different from the A/Texas/50/2012 (H3N2)-like virus recommended by the World Health Organization for the 2014/15 Northern Hemisphere seasonal influenza vaccine (NH SIV). Of note, the same H3N2 virus predominated in two consecutive influenza seasons in 2015.

Influenza associated hospital admission

In public hospitals, increases in admission rates with principal diagnosis of influenza were observed in June and July (Figure 2). The weekly rates among children aged below five years and elderly aged 65 years or above reached their peaks of 3.26 (admissions per 10 000 population in the age group) in the week ending June 20 and 2.26 in the week ending July 4 respectively. Both rates subsequently decreased to low levels in early August. Though the same H3N2 virus was predominating in both the winter and summer seasons in

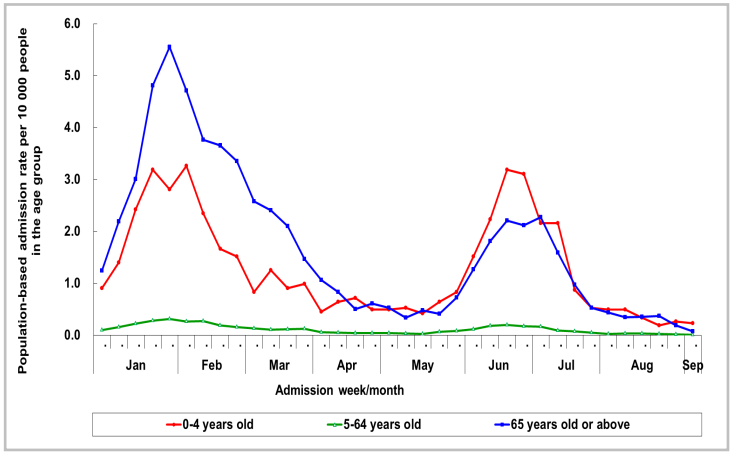


Figure 2 – Weekly admission rates with principal diagnosis of influenza in public hospitals in 2015 by age groups (as of September 5, 2015).

2015, there were some differences in the relative distribution of admissions between children and elderly. The peak rate among children aged below five years was higher than that among elderly aged 65 years or above in this season but vice versa in the winter season in early 2015. Among children aged below five years, the peak rate in this season was similar to that recorded in the winter season. On the other hand, among elderly aged 65 years or above, the peak rate was lower than that of 5.55 recorded in early 2015 during the winter season.

Institutional influenza-like illness (ILI) outbreaks

The weekly number of institutional ILI outbreaks reported to CHP showed a steady increase since late May. It reached the peak of 18 outbreaks in the week ending June 20 (Figure 3). The weekly numbers of ILI outbreaks recorded in this summer season were significantly fewer than those recorded during the winter season in early 2015. From June 14 to August 8, a total of 69 ILI outbreaks were reported with a range of 0 to 18 outbreaks per week. These included 41 (59%) in residential care homes for the elderly (RCHE), 21 (31%) in schools, four (6%) in residential care homes for persons with disabilities and three (4%) in other institutions.

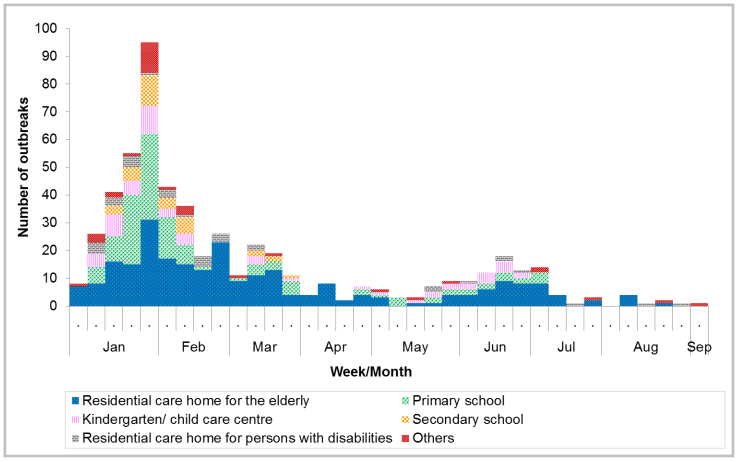


Figure 3 – Weekly number of institutional ILI outbreaks in 2015 (as of September 5, 2015).

Severe influenza cases

CHP has established a case-based enhanced surveillance system in collaboration with the Hospital Authority and private hospitals for monitoring severe influenza infection during influenza seasons since 2011. During the enhanced surveillance periods, adult patients aged 18 years or above who require intensive care unit admission or die and have laboratory confirmation of influenza infection will be reported to CHP by hospitals.

In this summer season, CHP had reactivated the above enhanced surveillance system for severe adult influenza cases from June 12 to August 7. During the above enhanced surveillance period, CHP recorded 185 severe adult cases (including 135 deaths), as compared to 647 cases (including 501 deaths) recorded during a 17-week period in the winter season in early 2015. The age distribution of the cases in both seasons was similar (Figure 4). Among the 185 cases recorded in this summer season, their ages ranged from 18 to 104 years (median 81 years). 150 cases (81.1%) and 125 fatal cases (92.6%) involved elderly aged 65 years or above. Overall, 124 patients (67.0%) had underlying chronic diseases (Table 1).

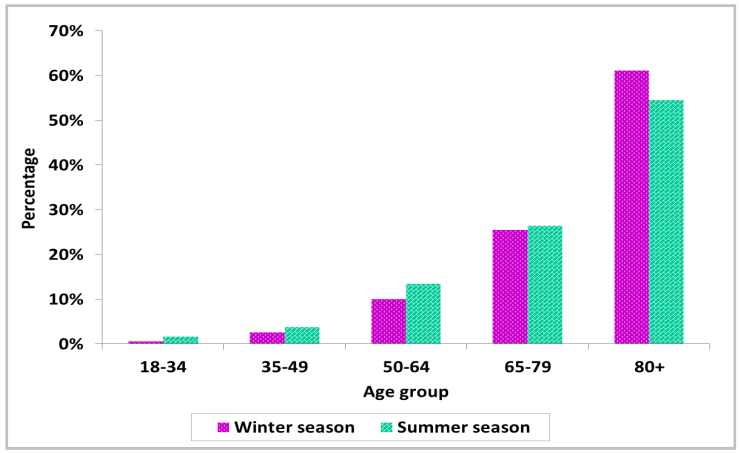


Figure 4 – Age distribution of severe adult influenza cases reported to CHP in the winter and summer seasons in 2015.

Regarding the types of influenza infection, there were 162 influenza A(H3N2), 19 influenza B, two influenza A(H1N1) pdm09, one influenza A without subtype, and one case tested positive for both influenza A(H3N2) and B viruses.

For influenza vaccination history, 121 severe cases (65.4%) were not known to have received 2014/15 NH SIV. Under the Southern Hemisphere Seasonal Influenza Vaccination (SH SIV) Programme launched in May/June 2015, the Government had provided SH SIV to residents of RCHE and community-dwelling elderly aged 75 or above. Among the 51 severe cases who resided in RCHE, 24 (47.1%) received SH SIV, which was significantly lower than the overall coverage rate of 75% among RCHE residents under this programme (Z-test for proportion, $p<0.01$).

Table 1 – Main types of chronic diseases among the severe adult influenza cases reported to CHP in the summer season.

Medical conditions	Number of cases (% among the 124 cases with any chronic disease)
Neurological	48 (38.7%)
Cardiovascular	39 (31.5%)
Diabetes mellitus (DM)	37 (29.8%)
Metabolic diseases other than DM	31 (25.0%)
Respiratory	26 (21.0%)
Malignancy	21 (16.9%)
Renal	18 (14.5%)

For paediatric patients aged below 18 years, there is an ongoing reporting system in place for influenza associated severe complications[1]/deaths. In this summer season, four non-fatal paediatric cases of severe influenza associated complications were recorded from June 12 to August 7, which was less than the total of 18 cases (including one fatal case) recorded in the winter season in early 2015. Their ages were one, seven, 11 and 15 years. All cases contracted H3N2 infections. Two of them had underlying chronic diseases, and all of them did not receive 2014/15 NH SIV.

In total, 189 severe cases (including 135 deaths) were recorded among all ages during the enhanced surveillance period in the summer season. The weekly number of reported severe cases ranged from seven to 39 (median=22). In comparison, the number of severe cases reported in 2014/15 winter season ranged from seven to 71 cases per week (median = 37) (Figure 5).

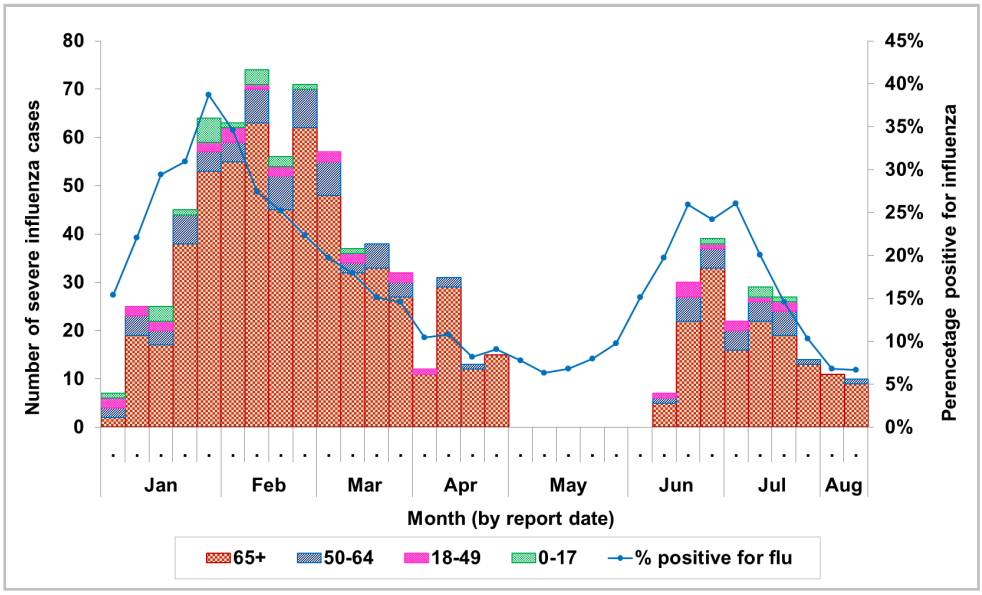


Figure 5 – Weekly number of reported severe cases (including both adult and paediatric cases) and percentage positive for influenza among respiratory specimens tested by PHLSB during winter and summer influenza seasons in 2015.
Remark: The enhanced surveillance system for severe cases among patients aged 18 years or above was only activated intermittently during influenza seasons.

Summary

In summary, the summer influenza season was dominated by the drifted H3N2 virus which had also circulated in the winter season this year. This summer season was shorter in duration than the winter season in early 2015 and also less severe in terms of number of institutional ILI outbreaks, hospital admission rates and number of severe cases. Nonetheless, the features of the severe cases were similar to those in the winter season. Elderly persons remained the most severely affected group in terms of severe and fatal cases.

Influenza can cause complications, especially among vulnerable people such as the elderly, young children and those with chronic medical conditions, and even healthy individuals. Influenza vaccination is one of the effective means to prevent the infection, its complications and associated hospitalisation and death. As influenza vaccines are safe and effective, except for those with known contraindications, influenza vaccination is suitable for all persons aged six months or above. For the latest recommendations on influenza vaccination for the coming 2015/16 winter season, please visit the following webpages:
http://www.chp.gov.hk/en/content/568/41001.html and http://www.chp.gov.hk/en/sas6/101/110/106.html

[1] Either severe pneumonia (requiring admission to ICU or assisted ventilation), sepsis, shock, encephalopathy or myocarditis.

Global and local update on meningococcal disease

Reported by Dr Alex LEUNG, Medical and Health Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Meningococcal infection is caused by the bacteria *Neisseria meningitidis*. Severe illness may result when invasive infection occurs. Meningococcaemia (when the bacterium invades the bloodstream) is characterised by sudden onset of fever, intense headache, purpura or shock. Meningococcal meningitis is characterised by high fever, severe headache, nausea, stiff neck and followed by drowsiness and photophobia. Even with appropriate antibiotic therapy, the fatality of serious meningococcal infection could be high and some of the survivors of meningococcal meningitis may suffer from permanent neurological damage and hearing loss.

Meningococcal meningitis occurs in small clusters throughout the world with seasonal variation and accounts for a variable proportion of epidemic bacterial meningitis. The largest burden of meningococcal disease occurs in an area of sub-Saharan Africa known as the meningitis belt, which stretches from Senegal in the west to Ethiopia in the east. During the dry season between December to June, dust winds, cold nights and upper respiratory tract infections combine to damage the nasopharyngeal mucosa, increasing the risk of meningococcal disease. At the same time, transmission of *Neisseria meningitidis* may be facilitated by overcrowded housing and by large population displacements at the regional level due to pilgrimages and traditional markets. This combination of factors explains the large epidemics which occur during the dry season in the meningitis belt. Following the successful roll-out of the meningococcal A conjugate vaccine, epidemics due to *Neisseria meningitidis* serogroup A are disappearing, but other meningococcal serogroups such as serogroup W, serogroup X and serogroup C still cause epidemics albeit at a lower frequency and smaller size.

Recently, five cases of meningococcal disease have been reported and several others are under investigation among Scottish and Swedish participants who attended an international Scout jamboree held in Kirara-hama, Yamaguchi Prefecture, Japan from July 28 to August 8, 2015. According to the Health Protection Scotland (HPS), there were a total of four confirmed cases of meningococcal disease associated with this international Scout jamboree. Among them, three were Scouts from Scotland who had returned from the jamboree while the fourth case was a parent of a Scout (not a case) who attended the event. The four cases were admitted to hospital for further management and all were confirmed as serogroup W. Meanwhile, according to the Public Health Agency of Sweden, there was one confirmed case of meningococcal infection and three more suspected cases were under investigation. All of them were participants who returned to their home country after attending the same event. In

this connection, the Centre for Health Protection (CHP) has contacted the Scout Association of Hong Kong (SAHK). According to SAHK, about 600 Hong Kong contingent members had attended the event and so far none of them were reported as suspected or confirmed cases. CHP will continue to closely monitor the situation.

Locally, as of August 31, five sporadic confirmed cases of invasive meningococcal infection were reported to CHP in 2015. In the 5-year period from 2010 to 2014, a total of 22 cases of invasive meningococcal infection were recorded (Figure 1). The ages of patients ranged from 1 month to 99 years (median: 45.5 years) with a male to female ratio of 1:2.1 (7/15). Among the 22 cases, all were sporadic cases and there was no epidemiological linkage between them. One of the cases was imported from Hainan, while the others probably acquired the infection locally.

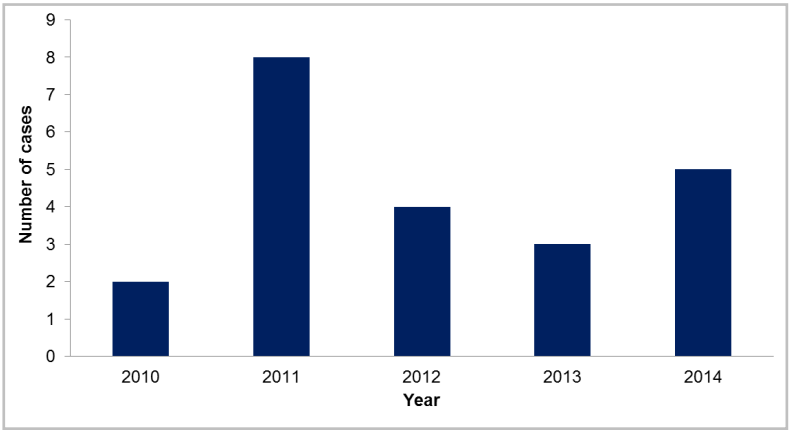


Figure 1 – Number of confirmed cases of invasive meningococcal infection in 2010-2014.

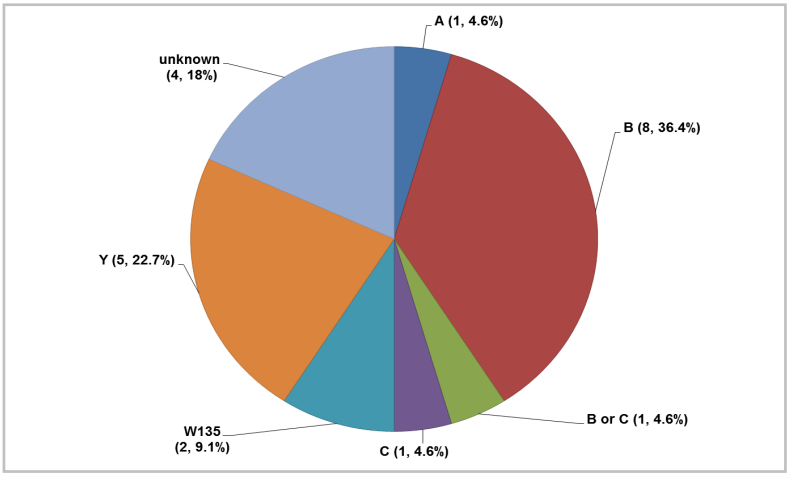


Figure 2 – Serogroups of invasive meningococcal infection in Hong Kong in 2010-2014.

Among the 22 cases, 11 cases were diagnosed as meningococcaemia, eight cases as meningococcal meningitis, and two cases had both forms of disease. The remaining case presented with septic arthritis without septicaemia. *Neisseria meningitidis* was detected in blood and/or cerebrospinal fluid or joint fluid. Serotyping yielded the commonest serogroup B (8 cases), followed by serogroups Y (5 cases), W135 (2 cases), C (1 case), A (1 case) while there were four cases with unknown serogroups. Serotyping of one case yielded either serogroup B or C (Figure 2). One elderly patient with underlying chronic medical illnesses and meningococcaemia passed away, giving a case fatality rate of 4.5% while another elderly patient with meningococcaemia died of liver failure due to primary biliary cirrhosis. The conditions of all other cases were stable after antibiotic treatment. Chemoprophylaxis was offered to close contacts and no secondary cases were reported.

At present, at least 13 serogroups of meningococcus have been identified and vaccines can only cover part of them. Vaccines against serogroup A, C, W135 and Y are available while vaccines against serogroup B, the most common serogroup seen locally, have not been registered in Hong Kong. As meningococcal infection can be transmitted by direct contact, or by droplets from the nose and throat of infected people, members of the public are advised to observe good personal and environmental hygiene practices to avoid the infection. Travellers to endemic areas may seek professional advice on meningococcal vaccination from doctors.

NEWS IN BRIEF

Two probable cases of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded two probable cases of sporadic Creutzfeldt-Jakob disease (CJD) in late August 2015. The first case was a 57-year-old woman who enjoyed good past health. She presented with vertigo and deteriorated cognitive function on July 1 and was admitted to a public hospital on July 24. She was found to have progressive dementia with cerebellar signs and subsequently developed myoclonus. Findings from magnetic resonance imaging (MRI) of the brain and electroencephalography were suggestive of CJD. The patient's condition deteriorated and succumbed on September 12.

The second case was a 58-year-old woman with underlying illnesses. She presented with progressive dementia in June 2015 and was admitted to a public hospital on July 3. Findings of electroencephalography and brain MRI were suggestive of CJD. She was discharged on July 10. Subsequently, her condition deteriorated rapidly and was readmitted to the same hospital on August 10 with pyramidal and extrapyramidal dysfunction, cerebellar and visual disturbance, myoclonus and akinetic mutism. She is currently in serious condition.

Both cases had no known family history of CJD. No risk factors for either iatrogenic or variant CJD were identified and they were classified as probable cases of sporadic CJD.

Two sporadic cases of *Streptococcus suis* infection

CHP recorded two cases of *Streptococcus suis* infection in late August and early September respectively. The first case was a 56-year-old woman with underlying illness. She presented with right shoulder pain on August 21 and was admitted to a private hospital on August 22. Her right shoulder joint aspirate collected on August 22 grew *Streptococcus suis*. She was diagnosed to have right shoulder septic arthritis and was treated with surgery and antibiotics. Her condition was stable.

The second case was a 45-year-old man with good past health. He presented with fever, cough, sputum and shortness of breath on August 25 and was admitted to a public hospital on September 1. His blood sample collected on September 1 grew *Streptococcus suis*. He was diagnosed to have pneumonia with pleural effusion and infective endocarditis. He was treated with antibiotics and his condition remained stable. He worked as a butcher and his colleagues remained asymptomatic.

Both patients had history of handling raw pork with bare hands but denied any previous skin wound. Their home contacts were asymptomatic. Investigations are on-going.

A domestic cluster of pertussis

CHP recorded a domestic cluster of pertussis in August 2015, affecting a baby and her mother, and a friend of the mother who lived together in a boarding house. The baby was a 1-month-old baby girl who presented with cough and sputum on August 18 and was admitted to a public hospital on August 25. Her pernasal swab taken on August 26 was tested positive for *Bordetella pertussis*.

Contact tracing identified two symptomatic household contacts. The baby's 31-year-old mother also started to have cough on August 14 and was referred to a public hospital on August 28 but admission was not required. Her pernasal swab taken on the same day was tested positive for *Bordetella pertussis*. The mother's 34-year-old friend who resided in the same boarding house had developed cough since July 2. Her pernasal swab collected on August 28 was tested positive for *Bordetella pertussis*.

All three patients were treated with a course of azithromycin and their condition was stable. Epidemiological investigation revealed that they did not travel outside Hong Kong during the incubation period. The baby has yet to receive her first dose of Diphtheria, Tetanus, acellular Pertussis & Inactivated Poliovirus Vaccine while the other two adults could not recall their vaccination history. Other household contacts were asymptomatic. Investigation is ongoing.

A sporadic case of necrotizing fasciitis caused by *Vibrio vulnificus*

On September 5, CHP recorded a case of necrotizing fasciitis caused by *Vibrio vulnificus* affecting an 89-year-old male with underlying illnesses. He presented with left hand pain and swelling, fever, shortness of breath and chest pain on August 30. He attended the Accident and Emergency Department of a public hospital and was admitted on the same day. The patient underwent excisional wound debridement and ray amputation of left little finger on September 2. Intraoperative diagnosis was necrotizing fasciitis of left hand and he required post-operative intensive care. His left palm wound swab collected during operation grew *Vibrio vulnificus*. He was treated with a course of antibiotics and his condition was stable.

Epidemiological investigation revealed that the patient had sustained left hand prick injury by fish bone in mid-August. He did not travel outside Hong Kong during incubation period. His home contacts remained asymptomatic.

CA-MRSA cases in August 2015

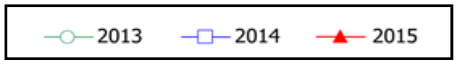
In August 2015, CHP recorded a total of 65 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 40 males and 25 females with ages ranging from 6 months to 82 years (median = 35 years). Among them, there were 55 Chinese, 2 Filipinos, 2 Nepalese, 1 Japanese, 1 Pakistani, and 4 of unknown ethnicity. Isolates of all these 65 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (39) or V (26). All cases presented with uncomplicated skin or soft tissue infections and there were no severe infections recorded.

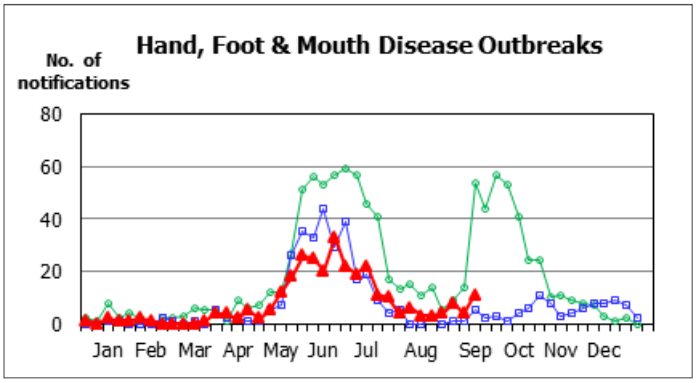
Among the 65 cases, two cases were healthcare workers working in two different public hospitals and investigation did not reveal any cases epidemiologically linked to these two healthcare workers.

Laboratory surveillance on multi-antimicrobial resistant bacteria (August 2015)

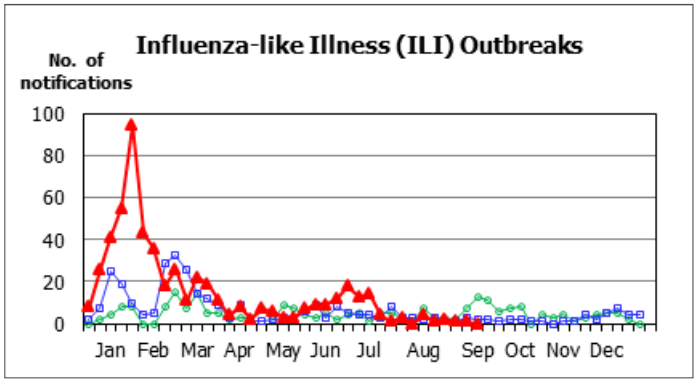
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website:
http://www.chp.gov.hk/en/data/1/10/641/695/3910.html

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 36 - WEEK 37)

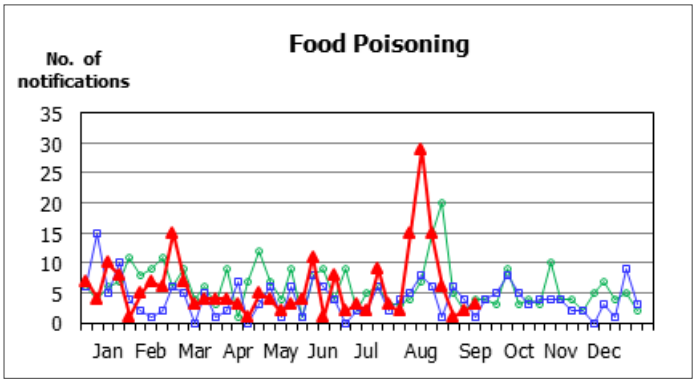




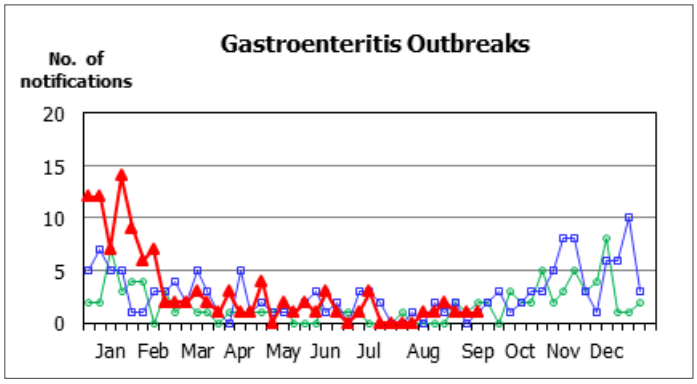
Week 34	4	Week 35	8
Week 36	**4**	**Week 37**	**11**



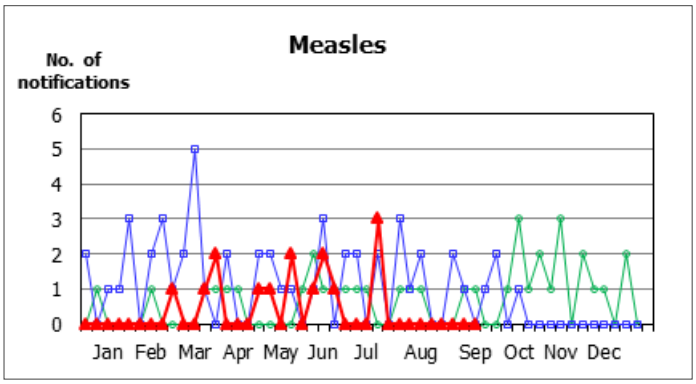
Week 34	2	Week 35	1
Week 36	**1**	**Week 37**	**0**



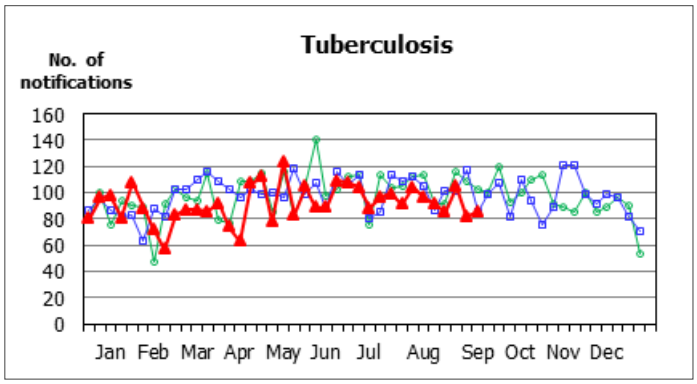
Week 34	6	Week 35	1
Week 36	**2**	**Week 37**	**3**



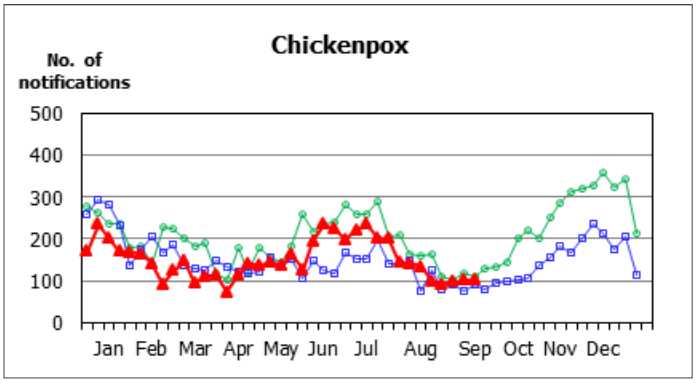
Week 34	2	Week 35	1
Week 36	**1**	**Week 37**	**1**



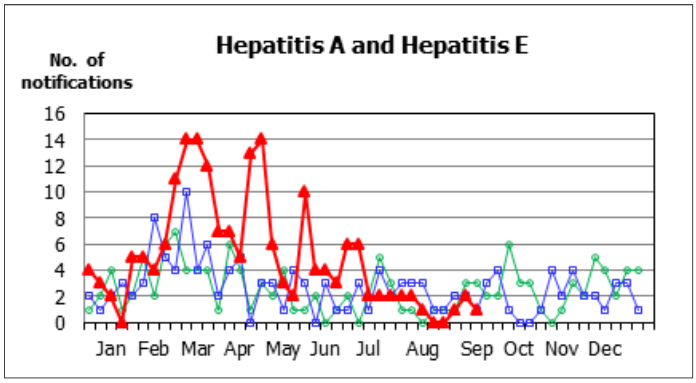
Week 34	0	Week 35	0
Week 36	**0**	**Week 37**	**0**



Week 34	85	Week 35	105
Week 36	**82**	**Week 37**	**85**



Week 34	92	Week 35	98
Week 36	**101**	**Week 37**	**104**



Week 34	0	Week 35	1
Week 36	**2**	**Week 37**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until September 12, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Sep 13 - Sep 26, 2015 WEEKS 38 - 39 VOL 12 ISSUE N⁰ 20

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Update on hand, foot and mouth disease

Reported by Dr Kong Wai Chi, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Hand, Foot and Mouth Disease (HFMD) is a common disease in children caused by enteroviruses such as coxsackieviruses and enterovirus 71 (EV71). Surveillance through sentinel surveillance[1] (Figure 1 to 3) and reporting of institutional HFMD/ herpangina outbreaks (Figure 4) showed that the disease activity exhibits a seasonal pattern. HFMD activity usually starts to increase in May, peaks in June/July and declines gradually after summer with an average duration of about 12 weeks. This article provides an update on the epidemiology of HFMD in Hong Kong in 2015.

This year, the HFMD activity started to increase in May, peaked in June and remained at high level till now.

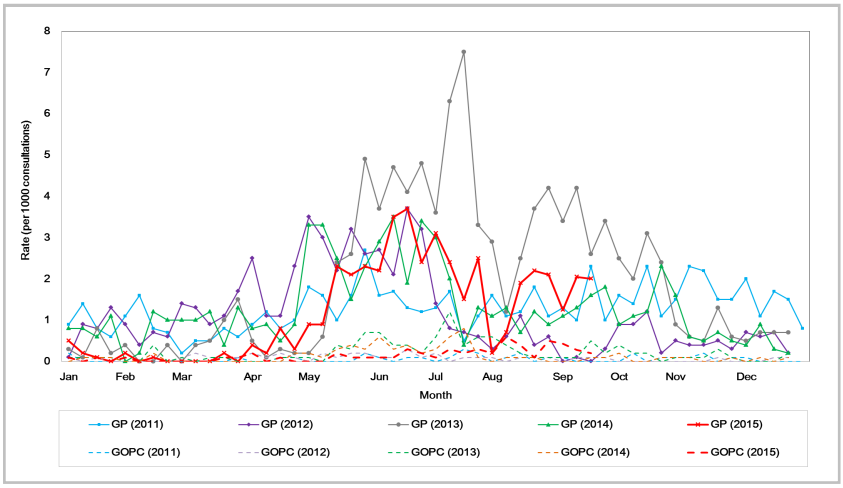


Figure 1 – Weekly consultation rates (per 1000 consultations) of hand, foot and mouth disease reported by General Out-patient Clinics (GOPC) and General Practitioners (GP), 2011 to 2015 (as of September 28, 2015).

As of September 28, 2015, a total of 290 HFMD/ herpangina institutional outbreaks, affected about 1 600 persons, were recorded as compared with 277 outbreaks in the same period of 2014. As in the previous years, the majority of outbreaks occurred in child care centres/ kindergartens (76.9%) followed by primary schools (12.1%) and secondary schools (8.6%). The remaining 2.4% outbreaks occurred in other institutions such as special school, other residential institution/hostel, and playgroup centre etc. The size of outbreaks ranged from two to 56 (median=4). Fifty two (17.9%) institutional outbreaks had causative agents confirmed by laboratory and they were associated with EV71 (21.2%) followed by coxsackievirus A6 (17.3%), coxsackievirus A16 (5.8%), coxsackievirus A2 (1.9%) and the others were untyped enteroviruses (53.8%).

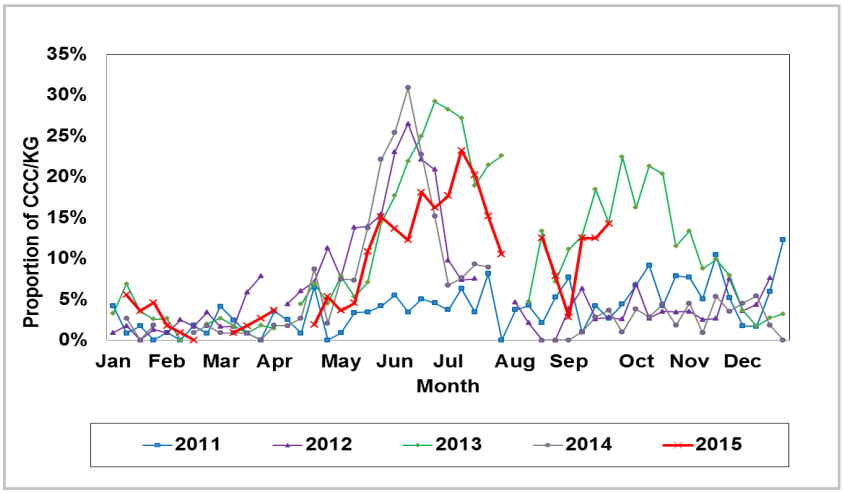


Figure 2 – Occurrence of HFMD in sentinel child care centres/kindergartens (CCC/KG) under Sentinel Surveillance of Infectious Diseases, 2011 to 2015 (as of September 28, 2015).

The number of EV71 infection in 2015 was lower than that in the same period of last year. As of September 28, 2015, 50 EV71 infections were recorded in 2015 as compared with 65 cases in the same period of 2014. The male-to-female ratio was 1.9:1 and their ages ranged from 28 days to 39 years (median = 2 years). Thirty eight EV71 cases required hospitalisation with a median length of stay of two days (range: discharged on the same day of admission to 14 days).

[1]Sentinel surveillance based at child care centres/kindergartens, general practitioners, General Out-patient Clinics and the Accident & Emergency Departments of public hospitals

Five cases developed severe complications (e.g. encephalitis, meningitis and cerebellitis) while none of them suffered from any long term neurological sequelae. No fatal cases were recorded in 2015 so far.

The number of severe enterovirus infections (SE) other than EV71 and poliovirus was also lower than that in the same period of last year. As of September 28, there were eight cases of SE in 2015 as compared with 18 cases in the same period of 2014. The male-to-female ratio was 1.7:1. The patients' age ranged from 22 days to eight years (median = 0.3 years). All were inpatients with a median length of stay of five days (range: 4 days to 11 days). Seven cases were complicated with meningitis and one case was complicated with atypical febrile convulsion. None of them were fatal. One of the cases was associated with coxsackievirus B2 while the remaining cases were untyped enterovirus other than poliovirus and EV71.

In summary, the overall HFMD activity in 2015 was moderate. This summer peak season lasted longer than last year as the HFMD activity returned to baseline level in August 2014 while the activity still remains at high level as of the date of report on September 28, 2015. Members of the public are reminded to stay vigilant and observe good personal and environmental hygiene to prevent the disease.

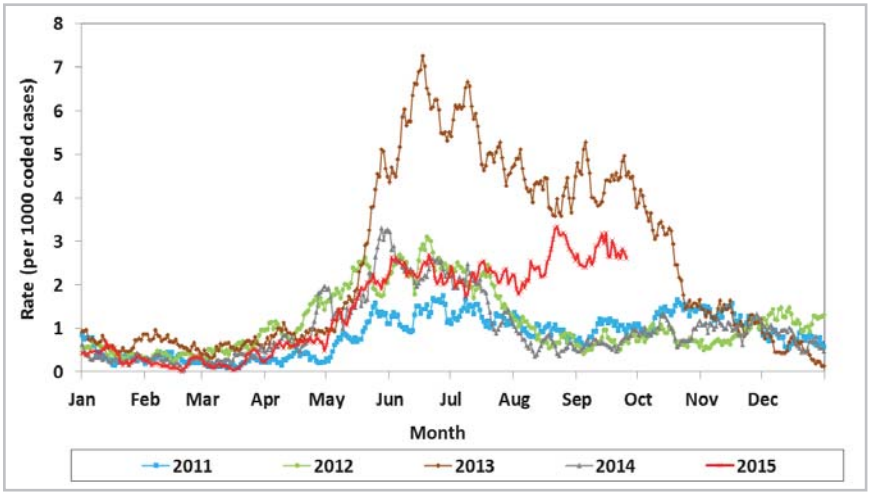


Figure 3 – Accident & Emergency Departments surveillance of HFMD syndrome, 2011 to 2015 (as of September 28, 2015).

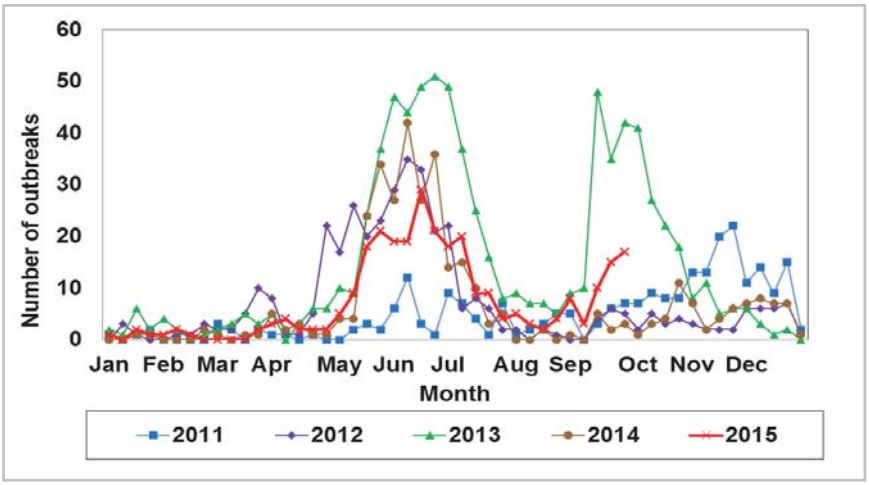


Figure 4 – Number of HFMD/herpangina outbreaks reported from 2011 to 2015 (as of September 28, 2015).

Prevention of HFMD

Good hygiene practices are the mainstay of prevention:

- ☑ Maintain good personal hygiene;
- ☑ Wash hands with liquid soap and water especially:
  - ✱ before touching nose and mouth;
  - ✱ before eating or handling food;
  - ✱ after touching blister;
  - ✱ after using the toilet;
  - ✱ when hands are contaminated by respiratory secretions e.g. after coughing or sneezing;
  - ✱ after changing diapers or handling soiled articles;
- ☑ Cover both the nose and mouth with a handkerchief or tissue paper when coughing or sneezing and discard the tissue paper into garbage bins with lids;
- ☑ Do not share towels and other personal items;
- ☑ Frequently clean and disinfect touched surface such as furniture, toys and commonly shared items with 1:99 diluted household bleach (mixing one part of 5.25% bleach with 99 parts of water), leave for 15 - 30 minutes, and then rinse with water and keep dry;
- ☑ Use absorbent disposable towels to wipe away obvious contaminants such as respiratory secretions, vomitus or excreta, and then disinfect the surface and neighbouring areas with 1:49 diluted household bleach (mixing 1 part of 5.25% bleach with 49 parts of water), leave for 15 - 30 minutes and then rinse with water and keep dry;
- ☑ Avoid group activities when HFMD outbreak occurs in the school or institution. Besides, minimize staff movement and arrange the same group of staff to take care of the same group of children as far as possible; and
- ☑ Avoid close contact (such as kissing, hugging) with infected persons.

Update on typhoid fever

Reported by Dr Terrence LAM, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

What is typhoid fever ?

Typhoid fever is a systemic bacterial disease caused by the invasive *Salmonella enterica* serovar Typhi (*S.* Typhi). Humans are the reservoir for typhoid fever. The disease is transmitted via faecal-oral route. The causative bacteria are passed in the faeces and urine of infected people, which may contaminate food, water or beverages and cause infection in the consumer of such contaminated food. Types of food which are susceptible to contamination include shellfish (particularly oysters), raw fruits and vegetables, unpasteurised dairy products, and food that require a lot of manual handling. The incubation period ranges from 7 to 21 days. Symptoms of typhoid fever include sustained fever as high as 39° – 40°C (103° – 104°F). There may also be headache, malaise, loss of appetite, and constipation or diarrhoea (adults tend to get constipation while children tend to get diarrhoea). In some cases, enlarged spleen and liver, and rose-coloured spots on the chest are seen. In severe cases, there may be intestinal bleeding and perforation, impaired consciousness and even death if untreated. Occasionally, infected individuals may be asymptomatic but able to shed bacteria in their faeces or urine.

From 2005 to 2015 (as of August), the Centre for Health Protection (CHP) of Department of Health recorded 427 cases of typhoid fever with the annual number ranged from 24 to 89 (Figure 1). In 2009, there was a spike of 89 cases which was largely due to an increased number of imported cases from endemic places (80% imported infection in 2009 vs the average of 50% over the years from 2005 to 2014). Among the 71 imported cases in 2009, 58 (82%) were from Indonesia, six (8%) were from Pakistan, five (7%) were from India, one (1%) was from Bangladesh, and one (1%) was from the Philippines. There was no particular seasonal trend (2005 to 2014, Figure 2). As compared to the number of cases recorded in the same period in the previous years (18 to 65 cases, 2005 to 2014), we recorded a similar number of 24 cases in 2015 (as of August).

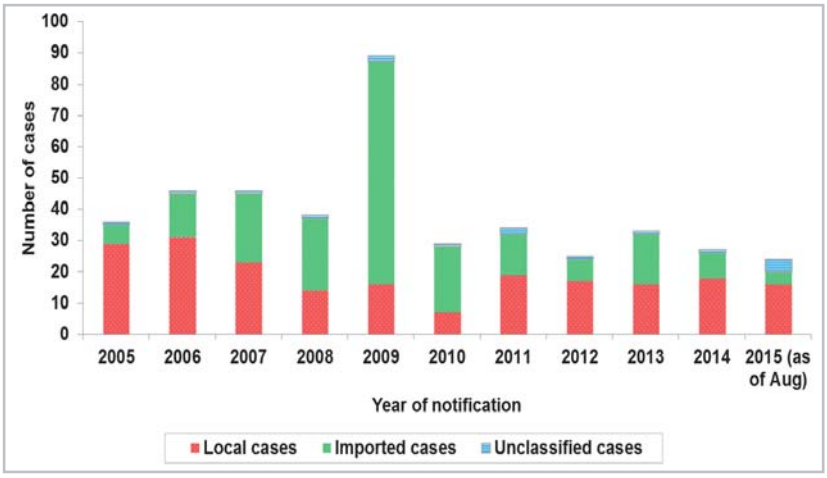


Figure 1 – Annual number of typhoid fever cases recorded by CHP, 2005 to 2015 (as of August 2015).

Among the 24 cases recorded in 2015, the male-to-female was 0.7:1, and the median age was 33 years (range: 2 to 78 years). The most common presentations included fever (96%), headache (54%) and diarrhoea (46%). All cases were hospitalised, for a duration from 2 to 43 days (median = 10.5 days). There were no fatal cases reported. Sixteen (67%) of the cases were locally acquired infection, and four (17%) cases acquired the infection outside Hong Kong, from India, Pakistan, the Philippines, and Singapore, respectively. The remaining four cases were unclassified because the patients stayed both in and outside Hong Kong during the incubation period and the place of infection could not be determined. All cases were sporadic cases with no epidemiological linkages and with the long incubation period, no incriminated food could be identified.

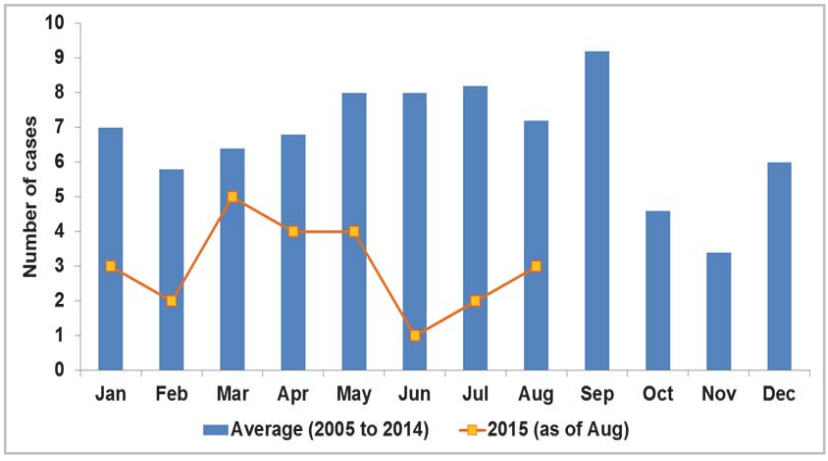


Figure 2 – Monthly number of typhoid fever cases recorded by CHP, 2005 to 2015 (as of August 2015).

As typhoid fever is transmitted by the ingestion of contaminated food or water, it is important to follow food safety practice, good personal and environmental hygiene. Vaccination may be considered for those travelling to endemic areas. More information is available at CHP website (www.chp.gov.hk) and Travel Health Service website (www.travelhealth.gov.hk).

Protect yourself against typhoid fever

Preventive measures are based on good personal and environmental hygiene, as well as adhesion to food safety practice.

1. Personal and environmental hygiene

- Wash hands properly with liquid soap and water before eating or handling food, and after going to toilet or changing diapers;
- Keep hands clean and trim fingernails regularly;
- Keep the kitchen, cooking and eating utensils clean; and
- Dispose of rubbish properly.

2. Food safety practice

Choose

- Drinking water should come from the mains and be boiled;
- Avoid using ice in drinks if its source or the hygienic condition of the food premises is doubtful;
- Bottled or prepackaged beverages are usually safe to drink, but remember to wipe clean and dry the packaging before opening; and
- Patronise reliable and hygienic shops and avoid buying food from street vendors or food outlets with poor environmental hygiene condition or seen to have improper food handling.

Clean

- Clean hands before eating or handling food; and
- Wash fruit and vegetables with safe drinking water if they are to be eaten raw and avoid those with damaged skin.

Separate

- Keep two sets of knife and chopping board, one for handling cooked food, another for raw food; and
- Handle and store raw and cooked food, especially seafood, separately (upper compartment of the refrigerator for cooked food and lower compartment for raw food) to avoid cross contamination.

Cook

- Cook food thoroughly and avoid raw or undercooked food; and
- If leftovers are to be kept, refrigerate them. Consume it as soon as possible and make sure that it is reheated thoroughly before consumption. Discard any spoilt food items.

Safe temperature

- Cook food to a core temperature of at least 75 °C.
- Do not leave any food in room temperature, especially the dangerous zone 4°C to 60°C, for more than two hours;
- Avoid cooked or ready-to-eat food that has been kept at room temperature for several hours;
- Avoid food at buffets, markets, food premises and street hawkers if it is not kept hot (above 60°C) or refrigerated (at or below 4°C); and
- If perishable food is not consumed immediately, keep it at 4°C or below. Keep it well covered.

3. Others

- Exclude typhoid patients and carriers from handling food and from providing care to patients, young children, or elderly persons; and
- Immunisation for typhoid fever is not routinely recommended. Even vaccinated individuals should take care to avoid consumption of potentially contaminated food and water as the vaccine does not provide full protection from infection.

NEWS IN BRIEF

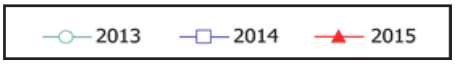
Workshop on Endoscope Disinfection & Sterilization and Infections Control Related to Ventilator-Associated Pneumonia (VAP)

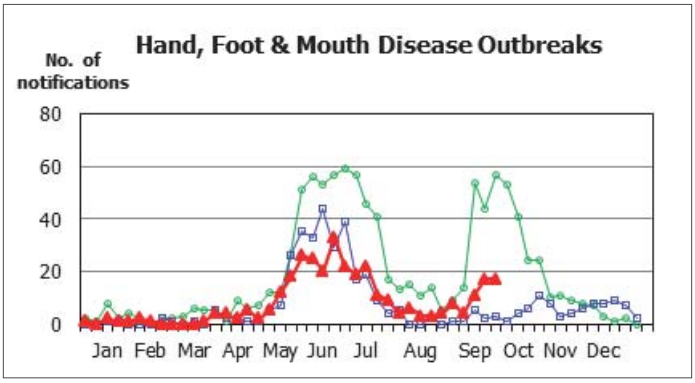
A two-day training on Endoscope Disinfection & Sterilization and Infections Control Related to Ventilator-Associated Pneumonia was held on August 25 and 26, 2015. The training included visiting endoscopic units of Pamela Youde Nethersole Eastern Hospital and Tuen Mun Hospital by the overseas speaker Professor David Weber, from the University of North Carolina at Chapel Hill, together with colleagues from various hospital clusters, Chief Infection Control Officer Office (CICO) and Infection Control Branch (ICB) of the Centre for Health Protection (CHP). The second day was a workshop well attended by private and public healthcare professionals. Professor Weber shared on 'Endoscope reprocessing in healthcare facilities: Best practices and recommendations'. The audience received the most up-to-date information on various strategies and methods to prevent gastrointestinal endoscope related outbreaks.

Scarlet fever update (August 30 – September 26, 2015)

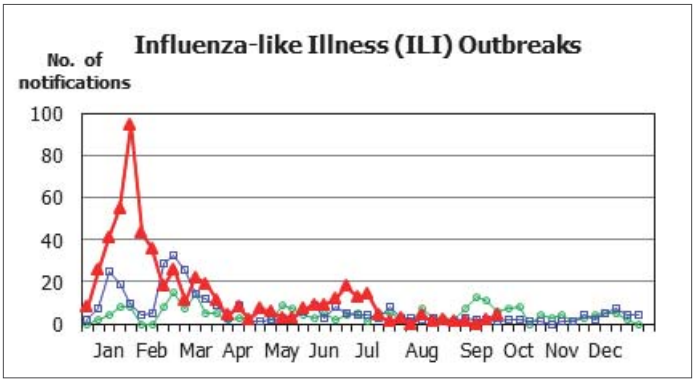
Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From August 30 to September 26, 2015, CHP recorded 71 cases of scarlet fever with a range of 9 to 26 cases per week as compared with 30 cases with a range of six to nine cases per week in the previous reporting period (August 2 - August 29, 2015). The cases recorded in this reporting period included 48 males and 23 females aged between nine months and 41 years old (median = 5 years). In the current reporting period, there was one scarlet fever cluster involving a kindergarten and affecting two persons. There were no fatal cases during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 38 - WEEK 39)

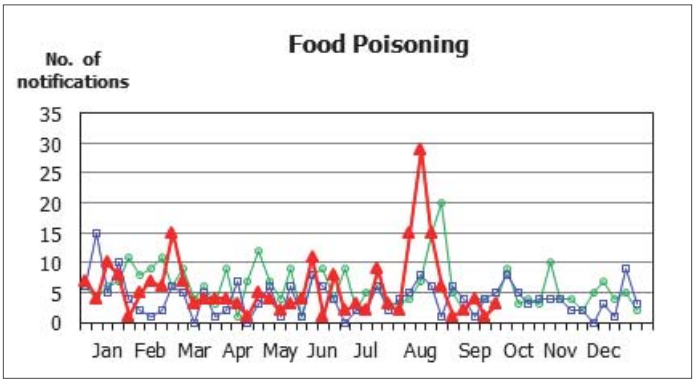




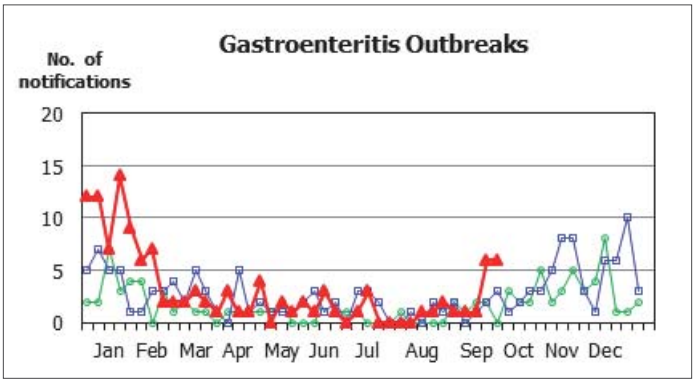
Week 36	4	Week 37	11
Week 38	**17**	**Week 39**	**17**



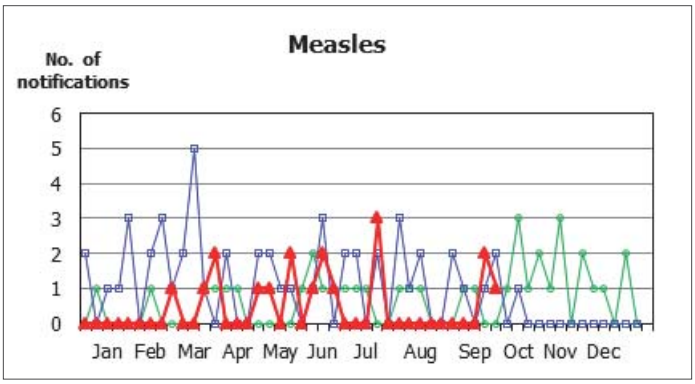
Week 36	1	Week 37	0
Week 38	**2**	**Week 39**	**4**



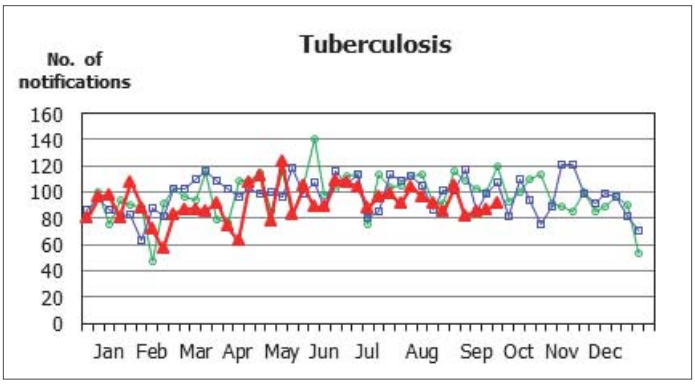
Week 36	2	Week 37	4
Week 38	**1**	**Week 39**	**3**



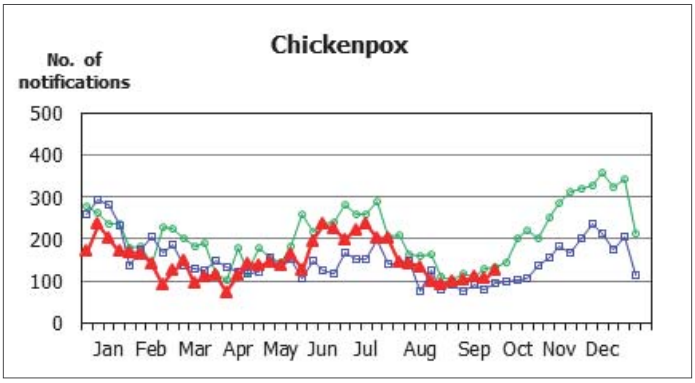
Week 36	1	Week 37	1
Week 38	**6**	**Week 39**	**6**



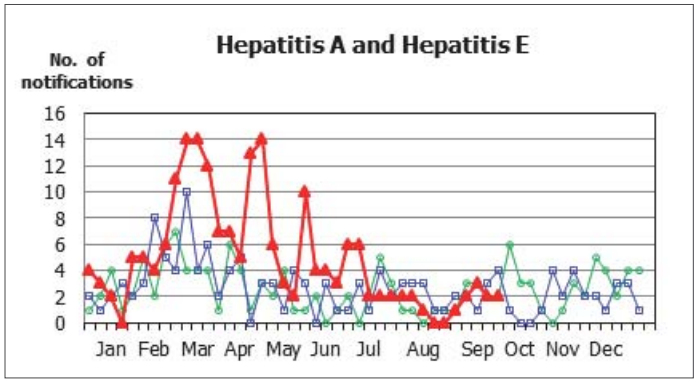
Week 36	0	Week 37	0
Week 38	**2**	**Week 39**	**1**



Week 36	82	Week 37	85
Week 38	**87**	**Week 39**	**91**



Week 36	101	Week 37	108
Week 38	**105**	**Week 39**	**126**



Week 36	2	Week 37	3
Week 38	**2**	**Week 39**	**2**

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Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Seasonal Influenza Vaccination Programmes 2015/2016

Reported by Dr May Ked THAM, Senior Medical and Health Officer, Programme Management and Professional Development Branch, CHP.

The Government has been arranging Government Vaccination Programme (GVP) (including Residential Care Home Vaccination Programme (RVP)) and Vaccination Subsidy Schemes (VSS) to provide free or subsidised vaccination to encourage the priority groups to have the vaccination every year. The upcoming round will be launched in phases starting from October 15, 2015.

In 2014/15, over 510 000 doses of seasonal influenza vaccines were administered, with 259 000 doses given under GVP (including RVP) and 251 000 doses under VSS. As compared with 2013/14, the total number of vaccines given by GVP (including RVP) and VSS were increased by 7% and 3.7% respectively.

New arrangement

In 2015/16, the Government will continue to conduct GVP (including RVP) and VSS, with extension of coverage for more elders and persons with intellectual disability (PID), aiming to have higher coverage.

The GVP will extend to cover all elderly people aged 65 or above. While elderly people aged 65 or above continue to be eligible for subsidised vaccination via Elderly Vaccination Subsidy Scheme (EVSS) as previous years, they may choose to have free vaccination in designated public clinics and hospitals under GVP this year.

In addition, the Government will adopt a more organised and comprehensive approach to provide free and subsidised vaccination for PID. Eligible PID may receive free or subsidised seasonal influenza vaccine under the arrangement of the various programmes.

Government Vaccination Programme (including RVP)

In 2015/16, free quadrivalent influenza vaccines will be provided under the GVP (including RVP). Eligible existing clients at public clinics and hospitals can get vaccination for free starting from October 15, 2015.

In the next phase, tentatively in early November 2015, elderly aged 65 or above living in the community can receive free vaccination from all 73 General Out-patient Clinics under the Hospital Authority (HA) and 10 designated Elderly Health Centres of the Department of Health (DH).

In addition, the programme will extend to cover more PID. PID living in residential care homes were included in existing RVP in the past years. For this year, community living PID receiving services in designated day centres, sheltered workshops and special schools are also eligible to receive free seasonal influenza vaccine under the arrangement of RVP. PID who are existing clients of public clinics and hospitals of the HA or designated DH clinics will also be provided free vaccination. PID may also receive subsidised vaccination by joining PIDVSS. More information about PIDVSS will be elaborated in the next section.

Vaccination Subsidy Schemes

The Government will continue the Childhood Influenza Vaccination Subsidy Scheme (CIVSS) and EVSS with the same arrangement as last season. In addition, the Government has created a new Scheme, namely Persons with Intellectual Disability Vaccination Subsidy Scheme (PIDVSS), to cover PID.

Under PIDVSS, PID who are Hong Kong residents, and holders of Registration Card for People with Disabilities with indication of intellectual

Poster: Seasonal Influenza Vaccination Programmes 2015/2016

disability or a medical certificate which indicates the person is a PID or eligible for PIDVSS, are entitled to subsidy for seasonal influenza vaccine received from enrolled private doctors. A maximum of two doses will be subsidised for eligible PID aged below nine years old who have never received SI vaccination before.

The subsidy levels for all three schemes under VSS, namely CIVSS, EVSS and PIDVSS, are all the same, i.e. HK$160 per dose of SI vaccine received from enrolled private doctors.

Promotion for vaccination

Influenza vaccines are safe and effective and it takes about two weeks after vaccination for antibodies to develop in the body. Influenza can cause serious illness in previously healthy persons and thus, members of the public aged six months or above except those with known contraindications are recommended to receive seasonal influenza vaccine early.

Review of Scarlet Fever Cases, 2014-2015

Reported by Dr Phillippa TSUI, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Scarlet fever (SF) is a bacterial infection caused by Group A *Streptococcus*. It is a notifiable disease in Hong Kong. Prior to 2011, the annual number of SF cases reported to the Centre for Health Protection (CHP) of the Department of Health ranged between 128 and 235 from 2005 to 2010. A huge increase in reported SF cases occurred during 2011 in which a record high number of 1 526 cases were recorded. Since then, the number of SF cases has remained at a much higher level than that before 2011 with an annual notification ranged between 1 100 and 1 500 during 2012-2014 (Figure 1). This article reviews the local epidemiology of SF cases reported to CHP in 2014 and the first nine months of 2015.

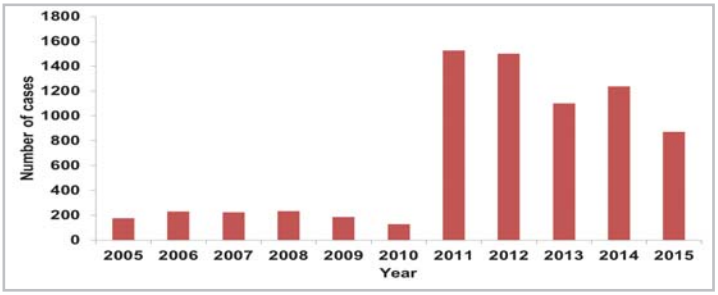


Figure 1 – Number of SF cases reported to CHP, 2005-2015 (as of September 30, 2015).

In this period, the overall activity of SF was similar to that in 2013 but was slightly lower than that in 2011 and 2012. A total of 1 238 and 874 cases were reported in 2014 and the first nine months of 2015 respectively. The monthly number of cases ranged from 43 to 180 cases. SF occurred year-round but the incidence was lower during August and September. This pattern was also observed in 2012 and 2013 (Figure 2).

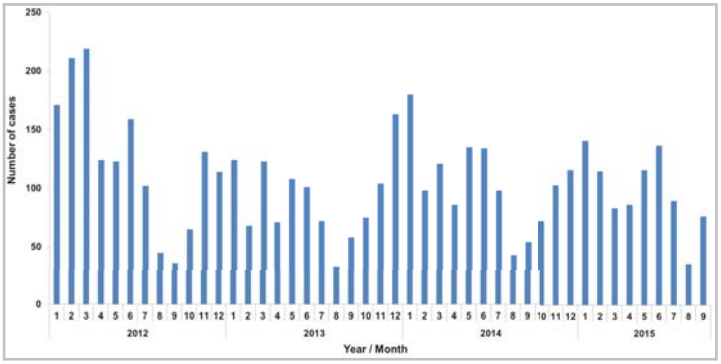


Figure 2 – Monthly number of SF cases reported to CHP, 2012 to 2015 (as of September 30, 2015).

Table 1 shows the demographic characteristics of the cases in this period, which were largely similar to those recorded in previous years. Among them, 60.8% of the cases were male. Their ages ranged from six months to 51 years (median = 6 years) and eight months to 45 years (median = 5 years) in 2014 and 2015 (up to September) respectively. Overall, 95.3% of the cases involved children aged 10 years or below and children aged five and six years had the highest incidence. Figure 3 shows the age distribution and age specific incidences of the reported cases.

Table 1 – Characteristics of SF cases, 2014 - 2015 (as of September 30, 2015).

	2014	2015 (as of September 30)
Number of cases	1 238	874
Sex ratio (M : F)	1.5 : 1	1.6 : 1
Age range (median)	6 months – 51 years old (6 years old)	8 months – 45 years old (5 years old)

Among the SF cases recorded, over half were managed in out-patient settings while 38.3% of them required hospitalisation. One severe case recorded in 2015 required admission to intensive care unit, involving a five-year-old girl complicated by severe pneumonia and septic shock. Four and six cases developed complications in 2014 and 2015* respectively, including pneumonia (5), sepsis (2), toxic shock syndrome (2), otitis media (1), necrotizing fasciitis (1), and post-streptococcal arthritis (1). No fatal cases were recorded.

Regarding institutional clusters of SF, 25 and 14 were identified in 2014 and 2015 (as of September 30, 2015) respectively (Table 2). All were small clusters involving two to four cases. Most of them occurred in kindergartens /child care centres.

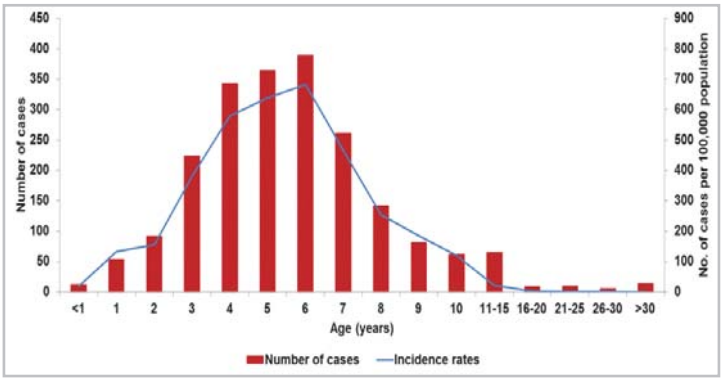


Figure 3 – Age distribution of SF cases and age-specific incidences, 2014 - 2015 (as of September 30, 2015) (N=2 112).

* Two patients had more than one complications.

In summary, the activity of SF in this reporting period remained at a stable level. Similar to previous years, most cases affected children. To prevent SF, people should:

- Maintain good personal and environmental hygiene;
- Keep hands clean and wash hands properly;
- Wash hands when they are dirtied by respiratory secretions, e.g., after sneezing;
- Cover nose and mouth while sneezing or coughing and dispose of nasal and mouth discharge properly;
- Maintain good ventilation; and
- Refrain from school or child care settings when having fever until fever is down and have been treated with antibiotics for at least 24 hours.

Table 2 – School / institutional clusters identified among reported SF cases, 2014 - 2015 (as of September 30, 2015).

Number of school / institutional clusters	25	14
Setting (number of clusters)	- Kindergarten / child care centre (17) - Primary school (7) - Sheltered home (1)	- Kindergarten / child care centre (9) - Primary school (5)
Number of persons affected in each cluster (median)	2 to 4 (2)	2 to 4 (2)

What is Scarlet Fever?

SF is a bacterial infection and is also known as scarlatina. It is transmitted through either respiratory droplets or direct contact with the respiratory secretions of the infected person. It mostly affects children under 10 years of age.

SF usually presents with sore throat and fever, followed by the appearance of fine erythematous rash on the body, giving the skin a sand-paper-like texture. The rash may occur at any part of the body including the upper trunk, armpit, and neck, but spare the palms of the hands, sole of the feet, and face. Tongue of the infected person may appear swollen, red and bumpy, and have a "strawberry"-like appearance with a whitish coating.

It usually runs a mild course, but complications may develop occasionally. Potential complications include otitis media, pneumonia, abscess of the throat, meningitis, acute rheumatic fever, acute glomerulonephritis, sepsis, and toxic shock syndrome. SF can be effectively treated with antibiotics. Prompt treatment helps alleviate symptoms faster, prevents rare but serious complications, and minimises the risk of transmission.

NEWS IN BRIEF

A case of necrotizing fasciitis caused by *Vibrio vulnificus*

The Centre for Health Protection (CHP) recorded a case of necrotizing fasciitis caused by *Vibrio vulnificus* on September 29, 2015. The patient was an 83-year-old man with underlying illnesses who had sustained a fish sting injury to his left middle finger on September 22 by a fish bought from market. He presented with fever and left middle finger painful swelling on September 23 and was admitted to a public hospital on the same day. Excisional debridement and amputation of left middle finger were performed on September 23 and 25 respectively. The operative diagnosis was necrotizing fasciitis. Post-operatively, he was managed in the intensive care unit and was treated with antibiotics. His condition was critical. His left hand tissue collected on September 23 yielded *Vibrio vulnificus*. His home contacts were asymptomatic.

A probable case of sporadic Creutzfeldt-Jakob disease

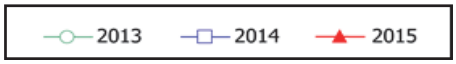
CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) in early October 2015. The patient was an 83-year-old woman with underlying medical illnesses. She presented with visual disturbance in July 2014. She was admitted to a private hospital between August 2014 and September 2014. She was found to have progressive dementia, myoclonus and akinetic mutism. Finding from electroencephalography was suggestive of CJD but cerebrospinal fluid (CSF) 14-3-3 protein assay was below cutoff level. She was discharged and under home care and her condition had been static since October 2014. Her neurological condition has been noted to have deterioration since September 2015. The patient developed acute myocardial infarction on September 30, 2015 and was admitted to a public hospital. The patient succumbed on October 5, 2015. She had no known family history of CJD. No risk factors for either iatrogenic or variant CJD were identified and it was classified as probable case of sporadic CJD.

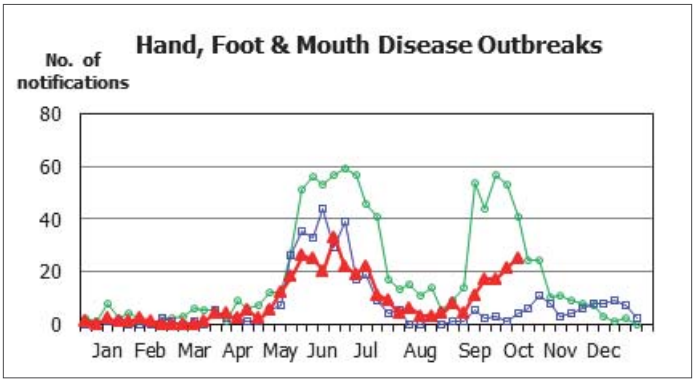
CA-MRSA cases in September 2015

In September 2015, CHP recorded a total of 88 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 44 males and 44 females with ages ranging from one month to 93 years (median = 36 years). Among them, there were 62 Chinese, 9 Filipinos, 5 Caucasian, 3 Pakistani, 2 Nepalese, 1 Indian, 1 Japanese, 1 Myanmarese, 1 Middle Eastern and 3 of unknown ethnicity. Isolates of all these 88 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (53) or V (35). All cases presented with uncomplicated skin or soft tissue infections.

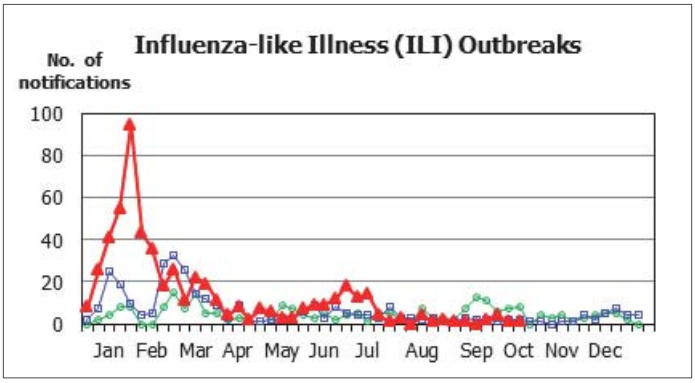
Three household clusters were identified during this reporting period. Three persons were affected in one cluster and two persons were affected in each of the remaining two clusters. Screening and decolonization would be provided for their close contacts. In addition, one case of mupirocin resistant CA-MRSA affecting a 13-year-old boy was reported. The patient presented with abdominal wall abscess. He did not require hospitalisation and was in stable condition. His home contacts remained asymptomatic. Separately, no cases involving healthcare worker were reported in September. The number of cases in August was revised to 66.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 40 - WEEK 41)

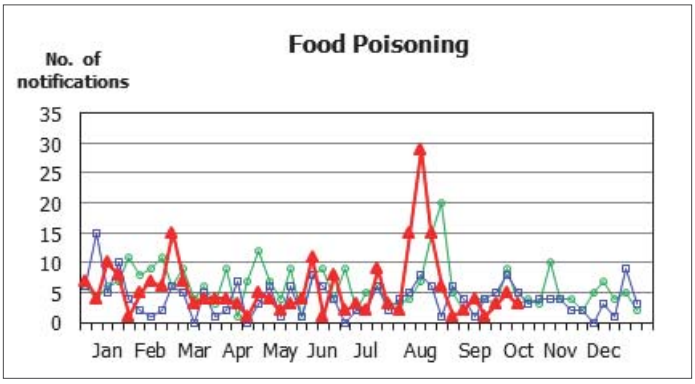




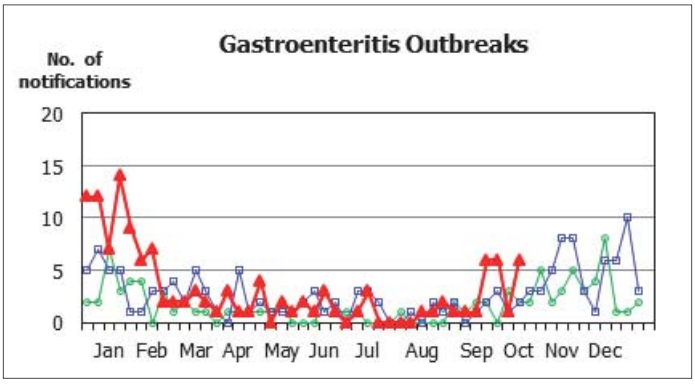
Week 38	17	Week 39	17
Week 40	**21**	**Week 41**	**25**



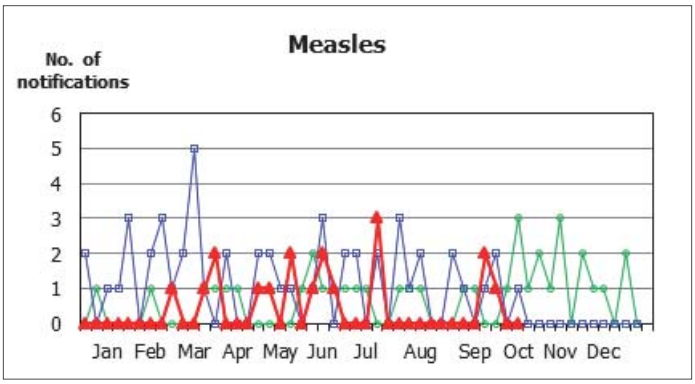
Week 38	2	Week 39	4
Week 40	**1**	**Week 41**	**1**



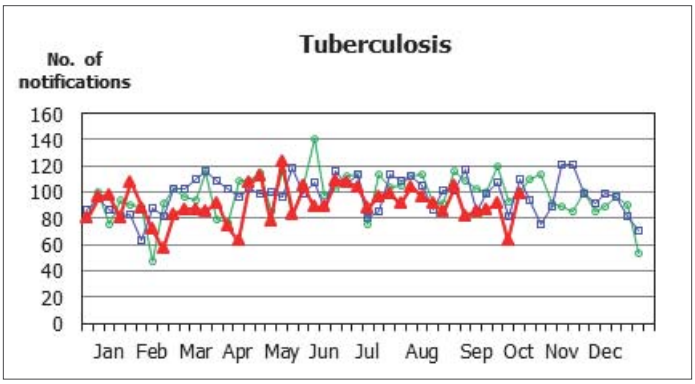
Week 38	1	Week 39	3
Week 40	**5**	**Week 41**	**3**



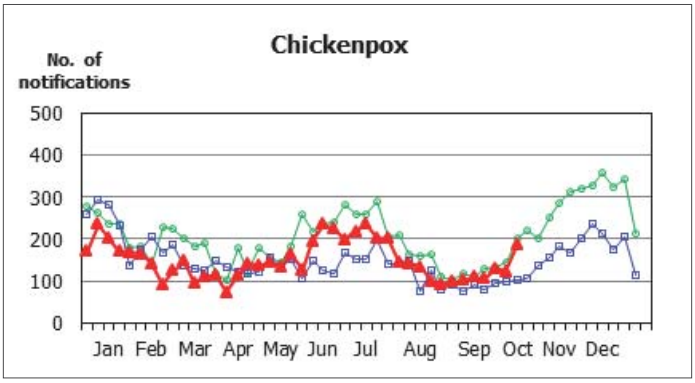
Week 38	6	Week 39	6
Week 40	**1**	**Week 41**	**6**



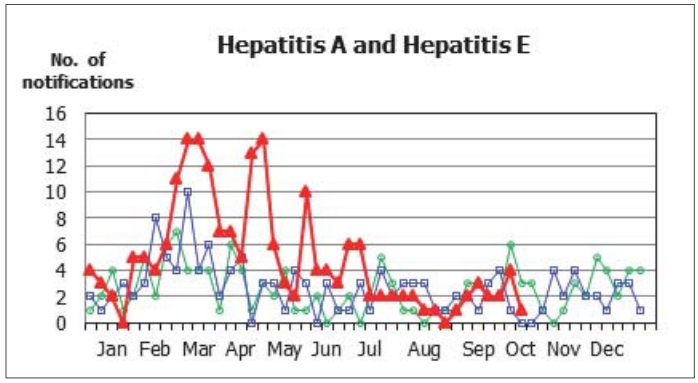
Week 38	2	Week 39	1
Week 40	**0**	**Week 41**	**0**



Week 38	87	Week 39	91
Week 40	**63**	**Week 41**	**99**



Week 38	105	Week 39	130
Week 40	**122**	**Week 41**	**186**



Week 38	2	Week 39	2
Week 40	**4**	**Week 41**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until October 10, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Oct 11 - Oct 24, 2015 WEEKS 42 - 43 VOL 12 ISSUE N⁰ 22

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Sexually transmitted infections in adolescents

Reported by Dr HO King-man, Consultant Dermatologist, Social Hygiene Service, Public Health Services Branch, CHP.

Based on the Census and Statistics Department, the mid-2014 population size for people aged 15-24 were 421 400 for male and 418 800 for female, together accounted for 11.5% of the total local population in Hong Kong[1].

Adolescence is the time period in a person's life when one transits from childhood to adulthood. It is a stage of rapid metamorphosis in one's value system and hence behavioural pattern. It is a stage for one to regain and master its locus of control. The adolescents explore and experiment in the perplexing world, however, expose themselves to information, peer influence and social context conducive to sexually transmitted infections (STIs) transmission.

According to the Hong Kong Family Association Sexuality Survey conducted in 2011, 9.8% (144 out of 1 475) and 7.4% (108 out of 1 459) of male and female respectively of Form 3 - Form 7 student respondents reported sexual experience. The average age of sex debut was 14.6 and 15.3 years old, respectively. More than 20% of the Form 3 - Form 7 student respondents could not identify the statement "condom reduces the chances of getting sexual transmitted diseases (STDs)" as correct. Besides, about 53% and 30% of male and female respondents reported the experience of browsing/watching pornographic materials[2].

Comprehensive data concerned to STIs is not available in Hong Kong. The Social Hygiene Service (SHS) of the Centre for Health Protection, Department of Health, operates walk-in clinics offering sexual health services and counseling to all eligible persons without any charges. Screening, diagnosis, treatment of STIs, sexual health counseling and partner notification are integral elements of the services provided. Data collected from SHS is an important regular data source for monitoring the local situation of STI. From 2010 to 2014, new cases of the five most frequent sexually transmitted or reproductive tract infections (here also including non-gonococcal urethritis in male and non-specific genital tract infection in female) remained stable from 10 209 to 11 420 in Social Hygiene Clinics (SHCs) (Table 1). Over the past five years, adolescents (defined here as 10- to less than 20 years old) contributed to less than 6% of the five most frequent sexually transmitted or reproductive tract infections cases, accounting for 475 to 635 cases annually (Figure 1).

Figure 2 and Table 2 show the age distribution of the five most frequent specific STIs recorded by SHS in 2014. Chlamydial infection is the commonest genital tract infection among the adolescents. Of the 107 adolescents with genital *Chlamydia trachomatis* (CT) infection, 93 were female (the male-to-female ratio was 1:6.6). The age distribution of genital CT infection is shown in Figure 3 and Table 3.

Table 1 – Distribution of the five most frequent sexually transmitted and reproductive tract infections recorded by SHS, 2010 to 2014.*

	2010	2011	2012	2013	2014
Total diagnoses reported	10 618	10 209	10 631	11 420	10 902
Total diagnoses from adolescents	475	484	568	635	596
Proportion of adolescents	4.5%	4.7%	5.3%	5.6%	5.5%

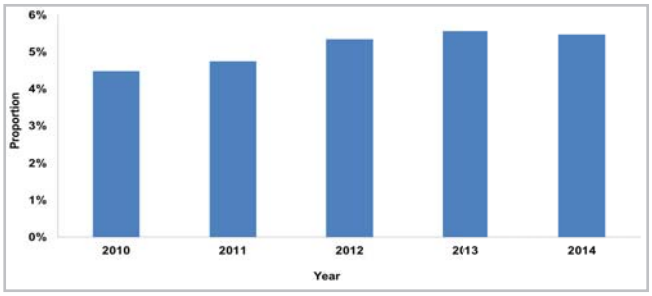


Figure 1 – Proportion of adolescent among the five most frequent sexually transmitted and reproductive tract infections, 2010 to 2014 (Source of data: Social Hygiene Service).*

**Note : Five most frequent sexually transmitted and reproductive tract infections include NGU/NSGI/CT, Genital Warts, Gonorrhoea, Syphilis and Herpes Genitalis. NGU: Non Gonococcal Urethritis; NSGI: Non Specific Genital Infection, and CT: Chlamydia trachomatis.*

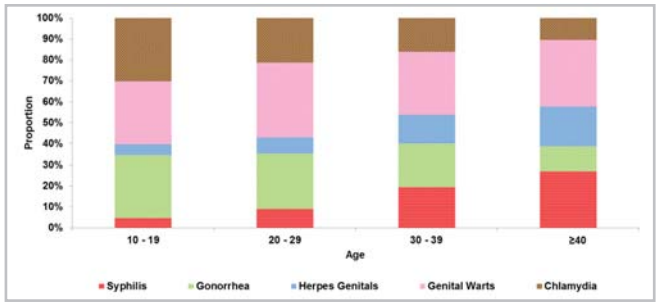


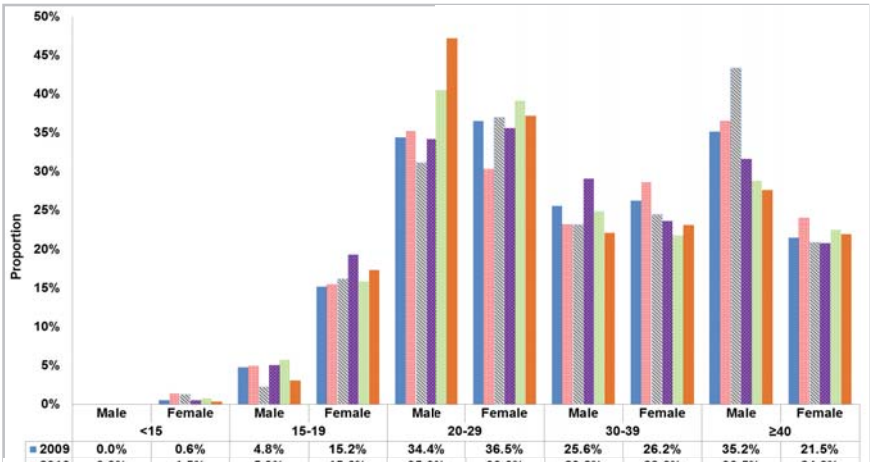
*Figure 2 – Distribution of the five most frequent specific STIs by age** in 2014 (Source of data: Social Hygiene Service).*

*Table 2 – Age distribution** of the five most frequent specific STIs recorded by SHS in 2014.*

	10 - 19	20 - 29	30 - 39	≥ 40	TOTAL
Number of diagnoses recorded	353	1 912	1 371	2 280	5 916

***Note: No cases were found under age 10 in 2014.*

Of the total 13 syphilis cases in male adolescents, 8 (62%) reported themselves to have homosexual practice (A detailed analysis of syphilis in men who have sex with men (MSM) was reported in a previous issue of Communicable Disease Watch[3]). As a comparison, the number and percentage of MSM among adolescents with syphilis in 2011 was two (40%) out of five. Of the 42 male adolescents with genital warts, 11(26%) reported themselves to have homosexual practice. As a comparison, the number and percentage of MSM among adolescents with genital warts in 2011 was seven (21%) out of 33.



	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	<15		15-19		20-29		30-39		≥40	
2009	0.0%	0.6%	4.8%	15.2%	34.4%	36.5%	25.6%	26.2%	35.2%	21.5%
2010	0.0%	1.5%	5.0%	15.6%	35.3%	30.3%	23.2%	28.6%	36.5%	24.0%
2011	0.0%	1.4%	2.3%	16.2%	31.1%	37.0%	23.2%	24.5%	43.4%	20.9%
2012	0.0%	0.6%	5.1%	19.4%	34.2%	35.6%	29.1%	23.6%	31.6%	20.8%
2013	0.0%	0.7%	5.8%	15.9%	40.5%	39.1%	24.9%	21.7%	28.8%	22.5%
2014	0.0%	0.4%	3.1%	17.4%	47.2%	37.2%	22.1%	23.1%	27.6%	21.9%

Figure 3 – Proportion of confirmed Chlamydia trachomatis (CT) diagnoses among different age groups from 2009 to 2014 (Source of data: Social Hygiene Service).

Of the 207 female adolescents with STI , only one identified herself as commercial sex worker. Given the estimation in "Community Stakeholders Consultation Meeting for Development of Recommended HIV/AIDS Strategies for Hong Kong 2012-2016 Summary for the Session on Youth at Risk", that there were about 1 000 young female sex workers (below 26 years old) in 2009[4], the number of young female sex worker captured by SHS was likely low though some young female sex workers might not have identified themselves to be sex worker during presentation to SHS.

Table 3 – Number of genital CT infection by gender, 2009 - 2014.

Number of CT diagnosis	Male	Female	Total
2009	270	545	815
2010	241	475	716
2011	302	511	813
2012	430	542	972
2013	486	534	1020
2014	453	524	977

Of 332 adolescents, 275 presented with STI related symptoms. The presence of symptoms was the major driving force for seeking medical care. As a significant portion of STI would be asymptomatic, the figure indicates an undefined number of asymptomatic STI among the adolescents in the community might have gone unnoticed. One hundred and four(83%) out of 125 male adolescents and 138(67%) out of 207 female adolescents attended SHS without any referral. Thirty four females (16%) were referred by services under the Hospital Authority. A total of 67(54%) males and 25 (12%) females reported that they did not have any traceable partner. That meant they had sexual contact with someone whom could not be clearly identified by themselves or these contacts happened in places outside Hong Kong, or they did not volunteer to tell the information of contacts to the health advisor of SHS.

In summary, adolescents contributed to less than 6% of the commonest sexually transmitted and reproductive tract infections among the local social hygiene clinic attendees. Genital *Chlamydia trachomatis* infection was the most common specific sexually transmitted infection among the adolescent attendees. There were more adolescents with syphilis and genital warts reported themselves to be MSM as compared with other STI diagnoses.

The above analysis has its limitations as data collected by SHS are only indicative of those who attended SHS for STI care and thus is likely the tip of an iceberg.

References

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[2] The Family Planning Association of Hong Kong; available from: http://www.famplan.org.hk/fpahk/en/template1.asp?content=info/research.asp; accessed September 25, 2015
[3] Ho KM. Syphilis in Hong Kong. Comm Dis Watch 2015;12(15):69-71
[4] Community Forum on AIDS, Hong Kong Advisory Council on AIDS and Hong Kong Coalition of AIDS Service Organisation; available from http://www.aca.gov.hk/publication/g241_youth.pdf accessed in September 25, 2015

A ten years review of brucellosis cases in Hong Kong, January 2005 to September 2015

Reported by Ms Sheree CHONG, Scientific Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

Brucellosis is a bacterial infection caused by various species of *Brucella* bacteria. It remains an important zoonotic disease globally as it has a worldwide distribution in animals, especially in South America, central Asia, the Mediterranean and the Middle East[1]. Sources of infection and responsible organism vary according to geographical area. *Brucella* bacteria can cause a chronic infection that lasts for the life of the infected animals. The bacteria are usually found in the reproductive organs and can lead to abortion and sterility. Animals can release a large number of bacteria in their milk, urine, and aborted fetuses, allowing for transmission between animals and to humans. Infection in people is acquired from cattle (*B. abortus*), dogs (*B. canis*), pigs (*B. suis*), or sheep and goats (*B. melitensis*). Globally, *B. melitensis* is the most prevalent species causing human brucellosis[2].

According to the World Health Organization (WHO), consumption of raw milk and milk products (especially unpasteurised soft cheese) or eating undercooked meat/internal organs from infected animals is the major source of infection in human[3].

Secondary to this, brucellosis is considered as an occupational disease for those working with infected animals or their tissues, especially farm workers, veterinarians, abattoir workers and laboratory workers. It can be transmitted through direct contact via breaks in skin or inhalation of contaminated aerosols. Human-to-human transmission is rare.

The incubation period is usually 5-60 days, but can be as long as several months. The symptoms of brucellosis are non-specific and usually present like influenza with fever, sweats, malaise, headache, and back pain. Severe form of the disease may affect the brain, heart, skin, any organs or body systems. The disease may progress to a chronic one and persist for years, if not adequately treated. The standard diagnostic test is the isolation of the organism from clinical specimen including blood and tissues or serological testing. Brucellosis can be treated by antibiotics and treatment will last for several weeks. The WHO recommended the use of a combination of two or more antibiotics (doxycycline and rifampicin or streptomycin) for treatment[3]. Fatality among untreated patients is approximately 2% or less, usually secondary to endocarditis[4].

In Hong Kong, brucellosis has been put under case-based surveillance at the Centre for Health Protection (CHP) of the Department of Health (DH) since 2004. During the period from January 2005 to September 2015, a total of 17 cases of laboratory confirmed brucellosis were recorded. They included 15 men and two women aged between 15 and 73 years old (median age = 51 years). The common presenting symptoms included fever (94.1%), musculoskeletal pain (52.9%), malaise (23.5%), chills (23.5%) and headache (23.5%). Five cases also developed spondylitis. All cases required hospitalisation for treatment. All cases had recovered completely after antibiotics treatment, except for one case who had succumbed due to terminal malignancy.

The diagnoses of majority of cases (15 cases, 88.2%) were confirmed by isolation of *Brucella* species from clinical specimen (blood or tissue) and the remaining were confirmed by serological testing (2 cases, 11.8%). For the 15 cases with *Brucella* species isolated, 13 cases were *B. melitensis*, one case was *B. suis*, and one case was *B.* spp (species not identified).

For the 17 cases recorded in the past ten years, eight were locally acquired infection, six were imported infection (five from Mainland China and one from Pakistan) and the remaining three were unclassified cases as they stayed both in and outside Hong Kong during the incubation period and no specific exposure history could be recalled by these patients (Figure 1).

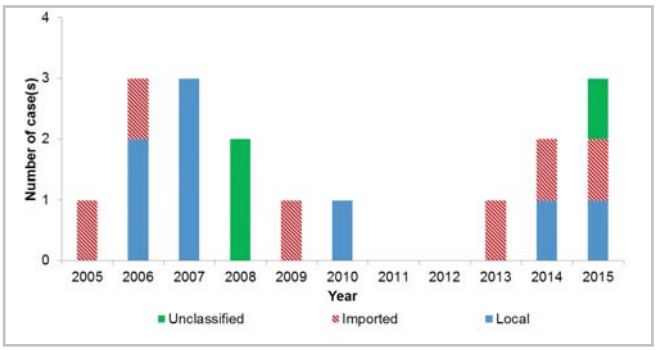

Figure 1 – Brucellosis cases by year and importation status in Hong Kong (January 2005 - September 2015).

For the eight locally acquired infections, three were butchers who had history of handling raw meat and internal organs at work and one of them had also consumed raw goat meat and internal organs seven months before symptom onset. Two other cases were a couple who had history of visit to a local farm in Yuen Long where goats and pigs were reared together but they did not recall direct contact with the live animals there. Among the remaining three cases, two had history of handling raw meat during food preparation, but only one of them had history of contact with raw lamb and occasionally consumed partially cooked frozen thin sliced lamb and beef in hot pot. The other one could not recall significant exposure history.

Among the five imported cases from Mainland China, one had history of contact with cows and pigs in the rural area in Sichuan and two had history of consuming cooked sheep placenta four months and three months respectively before symptom onset. Both of them did not handle the raw sheep placenta during food preparation. The other two did not recall specific high risk exposures. The case acquired from Pakistan reported having consumed unpasteurised home-made yogurt in the home country.

The three unclassified cases had visited overseas countries (Australia, Pakistan, and Mainland China, respectively) during the incubation period. However, all of them had no significant exposure history both locally and abroad. They did not handle or consume any meat, milk and milk products from cows and goats.

The most effective approach for preventing human brucellosis is the control and elimination of the infection in animals through vaccination of cattle, sheep and goats and/or based on the test-and-slaughter programmes. Pasteurisation of milk is another protective mechanism.

Doctors are encouraged to report any suspected or confirmed brucellosis cases to the CHP/DH for surveillance, control and prevention of the disease in the community. Moreover, brucellosis is a notifiable occupational disease. To prevent brucellosis, members of the general public are urged to observe good personal and food hygiene:

- ❖ Do not consume unpasteurised dairy products, raw or undercooked meat and internal organs;
- ❖ Wash hands with liquid soap and water after having contacts with animals or their secretions;
- ❖ Cover wounds properly; and
- ❖ Wear appropriate protective gears, e.g. gloves when handling animal tissues or internal organs especially for those who are exposed occupationally.

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NEWS IN BRIEF

Two confirmed sporadic cases of necrotizing fasciitis caused by *Vibrio vulnificus*

In mid-October 2015, the Centre for Health Protection (CHP) recorded two sporadic cases of necrotizing fasciitis caused by *Vibrio vulnificus*. The first case was a 72-year-old woman with underlying illnesses. She presented with right thumb and palm redness and swelling on October 11 and was admitted on the same day to a public hospital through the Accident and Emergency Department.The patient underwent right above elbow amputation. Intraoperative diagnosis was necrotizing fasciitis of right upper limb and she required post-operative intensive care. Her left hand wound swab collected during operation grew *Vibrio vulnificus*. She received a course of antibiotics and her condition was stable. Investigation revealed that the patient had handled raw fish on October 10 but she could not recall the injury. She did not travel outside Hong Kong during incubation period. Her home contacts remained asymptomatic.

The second case was a 54-year-old woman with liver cirrhosis and other co-morbidities. She presented with fever, abdominal pain, vomiting and diarrhoea on October 11 and was admitted to a public hospital on October 12. Physical examination showed greyish patches of maculopapular rash on bilateral lower limbs with edema. She was diagnosed to have lower limbs necrotizing fasciitis and septic shock. The patient refused surgery and she was managed in the intensive care unit with conservative treatment. She passed away on October 13. Her blood sample collected on October 12 yielded *Vibrio vulnificus*. According to her family members, the patient had consumed raw shrimp before illness onset and she had no history of injury to lower limbs. She had no travel history during incubation period. Her home contacts and food collateral were asymptomatic.

Two sporadic imported cases of psittacosis

In late October, CHP recorded two sporadic imported cases of psittacosis. The first case was a 32-year-old female with good past health. She presented with on and off fever, cough and blood-stained sputum on September 16 while travelling outside Hong Kong. She was admitted to a public hospital on October 12 after coming back to Hong Kong. Her chest X-ray showed right lung consolidation and the diagnosis was pneumonia. Her nasopharyngeal aspirate collected on October 12 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction (PCR). She remained stable and was discharged on 16 October 2015. She travelled to various Asian and European countries from April to October 2015. She also recalled potential contact with bird droppings while camping during her stay in Norway and Finland in September. Her travel collateral and home contacts remained asymptomatic.

The second case was a 76-year-old male with underlying illnesses. He presented with fever and cough with sputum on October 8 and was admitted to a public hospital on October 10. His clinical diagnosis was pneumonia and he was treated with antibiotics. His sputum collected on October 15 was tested positive for *Chlamydophila psittaci* DNA by PCR. He remained stable and was discharged on October 19. Investigation revealed that the patient resided in Humen of Guangdong Province all along. He had no contact history of birds or bird droppings during incubation period. His home contacts were asymptomatic.

A sporadic local case of human myiasis in a residential care home for the elderly (RCHE)

On October 14, CHP recorded a case of human myiasis affecting a 71-year-old man. He lived in a residential care home for the elderly (RCHE) in Kwai Tsing district. He had multiple underlying illnesses and was bed-ridden. He was found to have blood in his mouth by staff member of the RCHE on October 13 and was admitted to a public hospital on the same day. The patient was found to have worm in his mouth which was later identified as *Chrysomya bezziana* larvae. He was noted to have chest infection after admission and died from pneumonia on October 15. He had no recent travel history and his contacts in the RCHE were asymptomatic. Health advice was given to the institution.

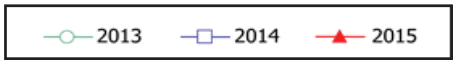
A sporadic case of listeriosis

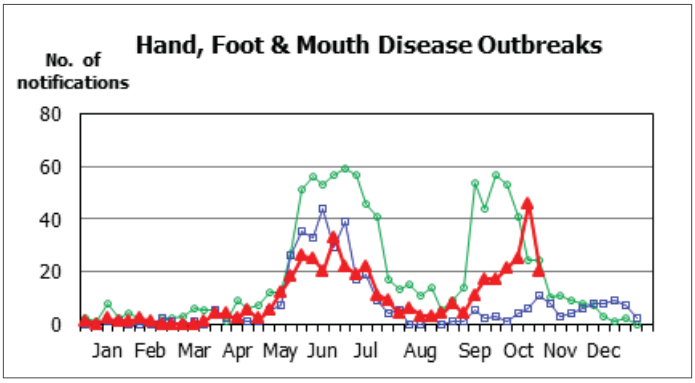
On October 16, 2015, CHP recorded a case of listeriosis affecting a 53-year-old woman with pre-existing medical conditions. She presented with fever and headache on October 4, and was admitted to a public hospital on October 6. Her blood specimen collected on October 6 grew *Listeria monocytogenes*. The clinical diagnosis was sepsis and meningitis. She was treated with antibiotics and was in stable condition. Her family member was asymptomatic. She had no travel history and did not report consumption of high risk food during the incubation period. Investigations are on-going.

Scarlet fever update (September 27 – October 24, 2015)

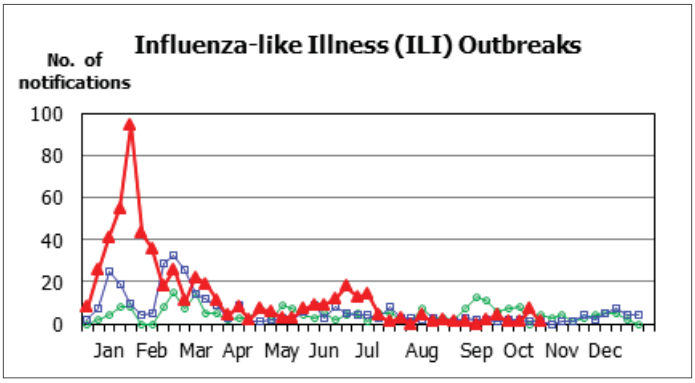
Scarlet fever activity in this reporting period decreased as compared with the previous four weeks. From September 27 – October 24, 2015, CHP recorded 56 cases of scarlet fever with a range of 12 to 19 cases per week as compared with 72 cases with a range of nine to 26 cases per week in the previous reporting period (August 30 - September 26, 2015). The cases recorded in this reporting period included 32 males and 24 females aged between two and 30 years old (median = 5 years). In the current reporting period, there was one scarlet fever cluster involving two students in a kindergarten. There were no fatal cases reported during this reporting period.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 42 - WEEK 43)

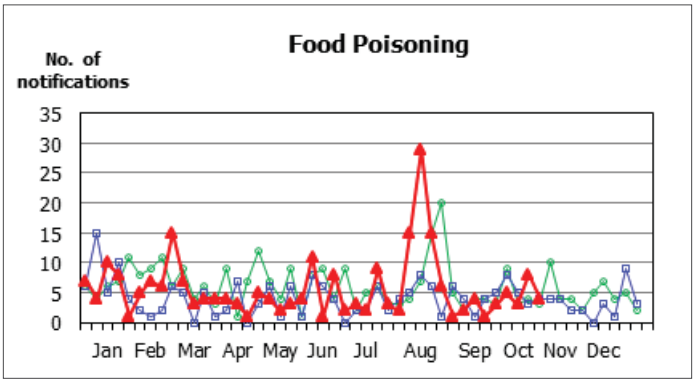




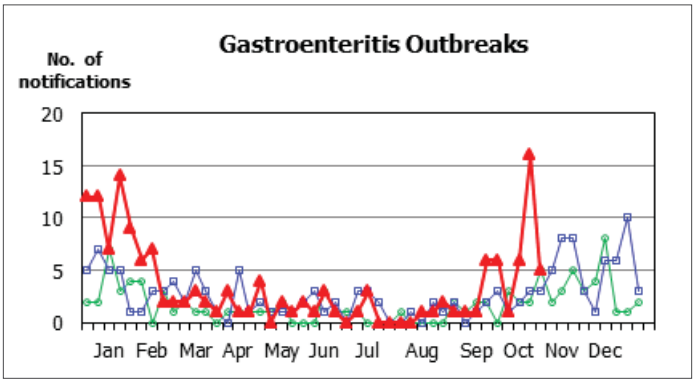
Week 40	21	Week 41	25
Week 42	**46**	**Week 43**	**20**



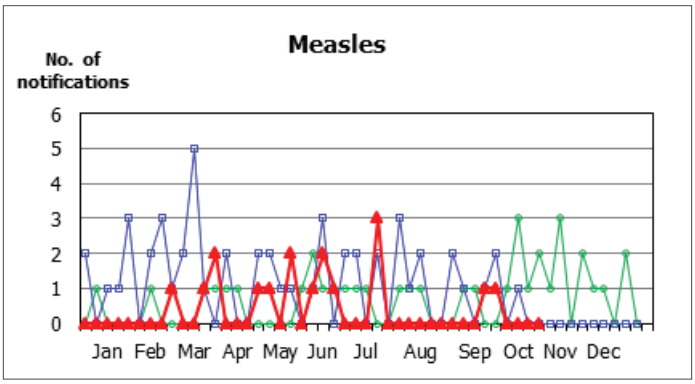
Week 40	1	Week 41	1
Week 42	**7**	**Week 43**	**1**



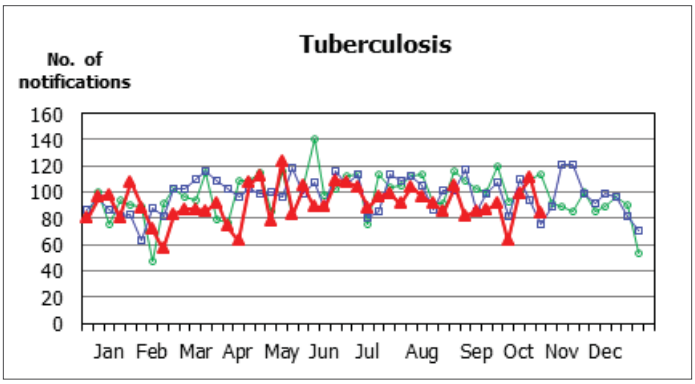
Week 40	5	Week 41	3
Week 42	**8**	**Week 43**	**4**



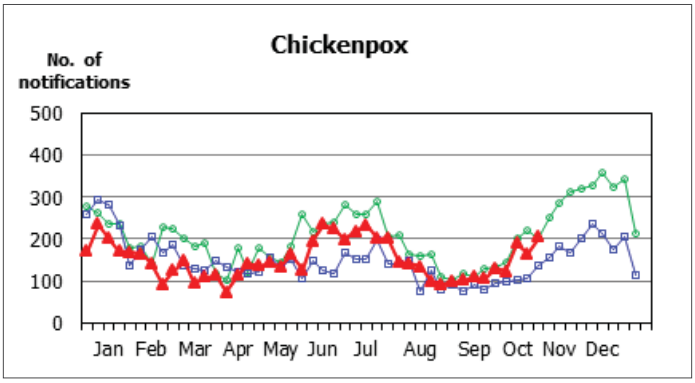
Week 40	1	Week 41	6
Week 42	**16**	**Week 43**	**5**



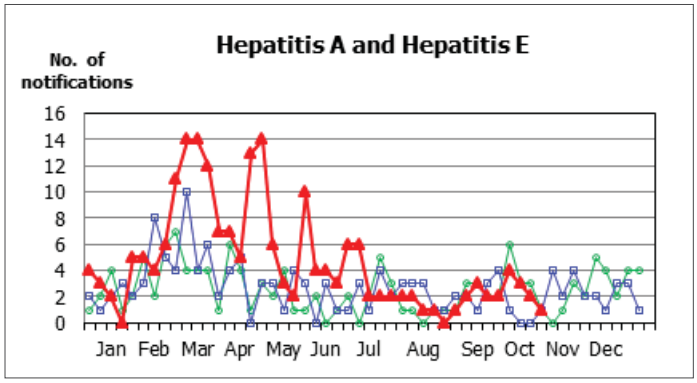
Week 40	0	Week 41	0
Week 42	**0**	**Week 43**	**0**



Week 40	63	Week 41	99
Week 42	**111**	**Week 43**	**84**



Week 40	123	Week 41	189
Week 42	**164**	**Week 43**	**204**



Week 40	4	Week 41	3
Week 42	**2**	**Week 43**	**1**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until October 24, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Oct 25 - Nov 7, 2015 WEEKS 44 - 45 VOL 12 ISSUE Nº 23

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

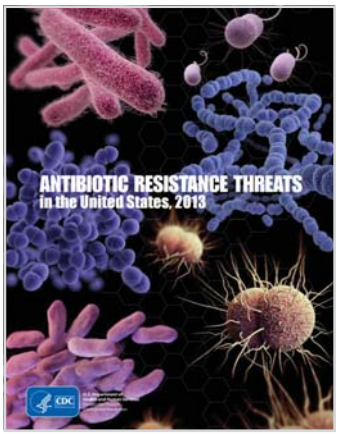
The first World Health Organization "World Antibiotic Awareness Week- Antibiotics: Handle with Care"

Reported by Ms Jane LEUNG, Advanced Practice Nurse, Dr Ada WONG, Senior Medical and Health Officer and Dr TY WONG, Head, Infection Control Branch, CHP.

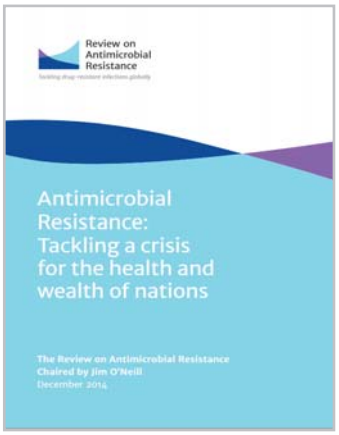
Antimicrobial resistance (AMR) has become one of the greatest challenges to global public health today, and the problem is increasing and imposes heavy burden on society. Although AMR is a natural phenomenon, in many places it is being propagated by misuse of antimicrobial medicines, inadequate or inexistent programmes for infection prevention and control (IPC), poor-quality medicines, weak laboratory capacity, inadequate surveillance and insufficient regulation of the use of antimicrobial medicines. AMR not only prolongs hospitalisation, but also increases treatment failure and mortality. In addition, it also increases the economic burden including the increased healthcare costs and societal costs for lost productivity.

Antimicrobial resistance - a global health challenge

According to the Centers for Disease Control and Prevention (CDC), AMR leads to at least 2 million serious infections and 23,000 deaths each year in the United States (US), costing $20 billion in excess direct healthcare and $35 billion in lost productivity. Last year, President Obama signed an Executive Order directing Federal efforts to combat the rise of antibiotic-resistant bacteria.



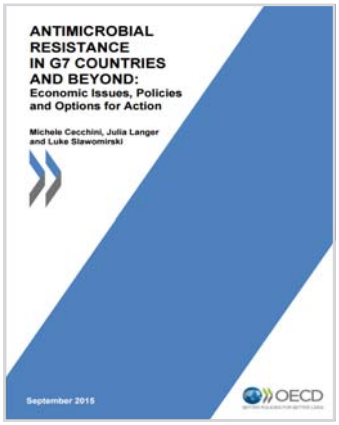
Antibiotic resistance Threats in the United States, 2013.
Source: CDC, US. http://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf



Antimicrobial Resistance:Tackling a crisis for the health and wealth of nations, 2014.
Source: Review on Antimicrobial Resistance. http://amr-review.org/sites/default/files/AMR%20Review%20Paper%20-%20Tackling%20a%20crisis%20for%20the%20health%20and%20wealth%20of%20nations_1.pdf

In the United Kingdom (UK), a review paper "Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations" estimated that a continued rise in resistance will result in 10 million deaths per year and a reduction of 2% to 3.5% in Gross Domestic Product (GDP) globally by 2050. The overall economic impact may be much higher than the estimates taking into account of insufficient data on disease burden and costs.

The findings in "Antimicrobial Resistance in G7 Countries and Beyond: Economic Issues, Policies and Options for Action", a recent work of the Organisation for Economic Co-operation and Development (OECD) on AMR, echo with the report of the UK. It indicated that AMR poses not only a significant threat to the economic sustainability of healthcare systems but also negatively affects the broader economic performance of countries. Globally, 700,000 deaths may be caused each year by resistant pathogens. Patients infected by ARMs are more likely to develop complications and up to three times more likely to die. An antibiotic-resistant infection – compared to an antibiotics susceptible infection - can be responsible for approximately 10,000 to 40,000 US dollars (USD) in extra healthcare costs. Compared to a world with no AMR, current rates of AMR may cause a gross domestic product contraction in OECD

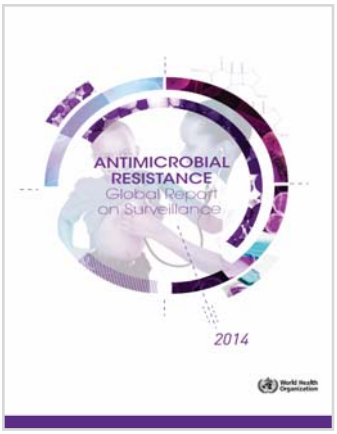


Antimicrobial Resistance in G7 Countries and Beyond: Economic issues, Politics and Options for Action, 2015.
Source: OECD. http://amr-review.org/sites/default/files/AMR%20Review%20Paper%20-%20Tackling%20a%20crisis%20for%20the%20health%20and%20wealth%20of%20nations_1.pdf

Declaration of the G7 Health Ministers, 2015.
Source: G7 Health Ministers. http://amr-review.org/sites/default/files/AMR%20Review%20Paper%20-%20Tackling%20a%20crisis%20for%20the%20health%20and%20wealth%20of%20nations_1.pdf

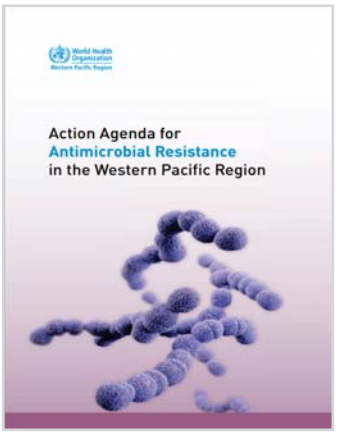
countries equal to 0.03% in 2020, 0.07% in 2030, and 0.16% in 2050. This would result in cumulative losses of approximately 2.9 trillion USD.

In a G7-Meeting in Berlin on October 8 and 9, 2015, the Health Ministers discussed the health topic on Antimicrobial Resistance (AMR). At this meeting, the "Berlin Declaration on Antimicrobial Resistance: A Global Union for Antibiotics Research and Development (GUARD)" was agreed. The declaration officially recognises: (1) antimicrobial resistance (AMR) as a serious global threat to public health that requires immediate concerted global action; (2) the various threats associated with AMR, both to health and to the economy, as well as; (3) the range of actions (one-health approach, coordinating activity through the World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), and World Organisation for Animal Health (OIE)) required to address the issue. The G7 Health Ministers are also calling for a High Level Meeting on AMR in 2016 at the United Nations General Assembly to promote increased political awareness, engagement and leadership on antimicrobial resistance among Heads of States, Ministers and global leaders.



Antimicrobial Resistance Global Report on Surveillance, 2014.
Source: WHO, 2014. http://www.who.int/drugresistance/documents/surveillancereport/en/

International collaboration to combat AMR has been established in western countries. For example, the Transatlantic Taskforce on Antimicrobial Resistance (TATFAR) was created in 2009 with the goal of improving cooperation between the US and the Europe. Nevertheless, AMR is not a problem confined to developed countries. In the "Antimicrobial Resistance: A Global Report on Surveillance 2014" issued by WHO, the report makes it clear that resistance to common bacteria has reached alarming levels in many parts of the world.



Action Agenda for Antimicrobial Resistance in the Western Pacific Region.
Source: WPRO. http://www.wpro.who.int/entity/drug_resistance/documents/action_agenda.pdf

Strategies of WHO

WHO has been developing an international framework of actions to address the emerging threats of AMR during the past two decades. The first global strategy was published in 2001 which provided a series of supportive background materials and recommendations for containment of AMR. A policy package was further published in the World Health Day 2011. In 2014, the global AMR surveillance report provided a clear picture that AMR has reached an alarming level over the world. In view of the ever growing threats, the WHO Western Pacific Regional Office (WPRO) has published the regional action agenda for the control of AMR.

Subsequently, in May this year, the 68th World Health Assembly endorsed a global action plan to tackle AMR. The 5 strategic objectives are:

- To improve awareness and understanding;
- To strengthen knowledge through surveillance and research;
- To reduce the incidence of infection;
- To optimise the use of antimicrobial agents; and
- To develop sustainable investment and increase investment in new medicines, diagnostic tools, vaccines and other interventions.

Local Situation

In Hong Kong, resistance among the public health important pathogens which are controlled under disease specific programme (namely TB and HIV) remains low when compared with the WHO report[1] (Table 1). However, an increasing trend of the AMR is in general also noted locally as exemplified by the rising notification of Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) (Table 2).

Table 1 – Disease Specific Surveillance Programmes.

Diseases	Local Data	WHO
Multidrug-resistant TB (MDR-TB)	New cases: 0.74%;[2] Previously treated cases: 3.74%[2]	New cases: 3.6%;[1] Previously treated cases: 20.2%[1]
HIV (Resistant to at least one antiretroviral drug)	2.3%[3]	10-17%[1]

Table 2 – Number of notifications of CA-MRSA in Hong Kong[4].

Year	2007	2008	2009	2010	2011	2012	2013	2014
Number	173	282	368	495	624	813	988	995

Antibiotic Awareness Publicity Activities

In order to improve awareness and understanding of antimicrobial resistance, WHO is launching the first World Antibiotic Awareness Week this year (November 16-22, 2015). The theme of the campaign, Antibiotics: Handle with Care, reflects the overarching message that antibiotics are a precious resource and should be preserved. They should only be used to treat bacterial infections, and be prescribed by a certified health professional. Antibiotics should never be shared and the full course of treatment should be completed – not saved for the future.

The Centre for Health Protection (CHP), Department of Health (DH) commits to support the WHO global initiative in combatting AMR. Since 2012, Antibiotic Awareness Day has been marked annually on November 18 in Hong Kong as a public health initiative to raise awareness on the threat of AMR and the importance of prudent antibiotic use.

Logo of the World Antibiotic Awareness Week.

In response to WHO's global call for actions, DH has been coordinating a series of publicity campaigns and activities which aim at raising awareness among both healthcare professionals and the general public. In addition to Announcement in the Public Interests (API), posters, pamphlets and cue cards, an animation will be broadcast on different media channels for public education. Furthermore, an AMR video competition will be launched from November 19, 2015 to July 31, 2016 to promote the messages of smart use of antibiotics and invite general public to join hands to prevent AMR. The selected videos will be awarded in the Antibiotic Awareness Day in 2016.

Antimicrobial consumption is the key driver of emergence of AMR. Realising that healthcare professionals play a critical role in preventing AMR, DH has launched the locally adapted "I pledge" campaign in 2014 for the healthcare professionals working in DH and hospitals. About 700 healthcare professionals including doctors, nurses and pharmacists have signed the pledge to show their commitments to judicious use of antibiotics. To further promote the messages to the healthcare professionals and other allied healthcare workers working in the ambulatory care settings and community this year, a new webpage has been developed for the "I pledge" campaign to provide easy internet access to the information.

Antibiotic Stewardship Programme (ASP) has been established in HA acute hospitals for nearly a decade. In the primary care font, evidence has shown that ASP can help decrease antibiotic consumption without an increase in patient adverse outcome. In view of the significant consumption of antibiotics in primary care sector, DH will roll out ASP for the primary care settings in 2016 after pilot run in selected DH clinical services early next year.

For more information about "I pledge" and the AMR video competition 2015, please visit designated webpages established in the CHP's website

I pledge:
https://ipledge.chp.gov.hk

Video Competition:
http://www.chp.gov.hk/en/view_content/41461.html

http://www.chp.gov.hk/tc/view_content/41461.html

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[1] World Health Organization. Antimicrobial Resistance: Global Report on Surveillance. Geneva; 2014.
[2] Annual report of TB & Chest Service, Department of Health [Internet]. Hong Kong Special Administrative Region: Department of Health. [Assessed 16 Oct 2015]. Available from: http://www.info.gov.hk/tb_chest/doc/AnnualReport2013.pdf
[3] HIV Surveillance Report-2013 Update [Internet]. Hong Kong Special Administrative Region: Department of Health. [Assessed 16 Oct 2015]. Available from: http://www.info.gov.hk/aids/english/surveillance/sur_report/hiv13.pdf
[4] Number of notifications for notifiable infectious diseases [Internet]. Hong Kong Special Administrative Region: Department of Health. [Assessed 16 Oct 2015]. Available from: http://www.chp.gov.hk/en/notifiable1/10/26/43.html

Review of community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infection in Hong Kong, 2012-2015

Reported by Dr Shirley TSANG, Scientific Officer, , Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) was first reported in Hong Kong in 2004. It is different from the healthcare-associated methicillin-resistant *Staphylococcus aureus* strains found in healthcare settings in terms of antibiotic resistance pattern and molecular feature. Patients with CA-MRSA infections may not have a history of stay in hospitals or residential institutions within a year prior to symptom onset. Since CA-MRSA infection was made notifiable in January 2007, the number of cases reported to the Centre for Health Protection (CHP) has been on the rise (Figure 1). This article reviews the characteristics of the CA-MRSA cases reported to CHP from 2012 through 2015 (as of October 31).

In 2012, CHP recorded 813 cases of CA-MRSA infection. The number of reported cases increased to 988 and 995 in 2013 and 2014 respectively. In 2015, 854 cases were recorded in the first 10 months. The annual incidence of reported cases between 2012 and 2014 ranged from 11.3 to 13.7 per 100,000 population. A total of 3,650 CA-MRSA cases were recorded between January 2012 and October 2015. The monthly number of cases ranged from 49 to 106. Relatively more CA-MRSA cases occurred from May to September in which the ambient temperature is relatively higher (Figure 2).

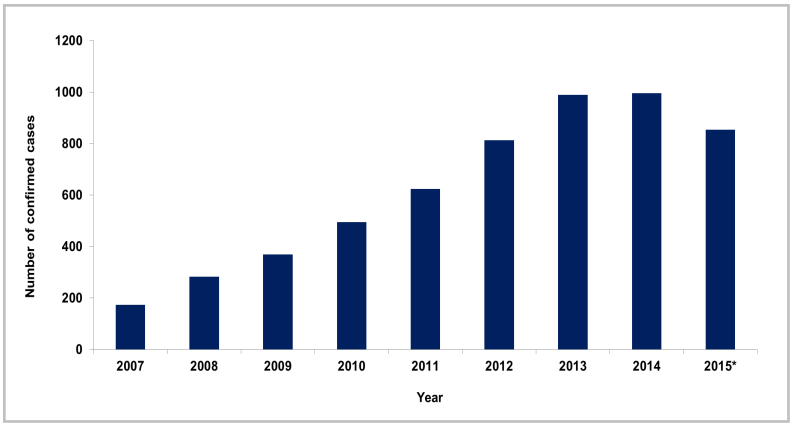


Figure 1 – Number of reported CA-MRSA cases by year, 2007- 2015 (up to October 31, 2015).*

The characteristics of the cases in this reporting period were similar to those recorded in previous years. The male-to-female ratio was 1.3:1. Their ages ranged from 4 days to 98 years (median: 35 years). Figure 3 shows the age distribution. Persons aged between 20 and 49 years constituted 58.2% of the cases. The cumulative incidence in this reporting period was highest in children aged below10 years and adults between 30-39 years. One hundred ninety-two cases (5.3%) had recurrent infections. Regarding the ethnicity, the majority (70.0%) of the cases were Chinese, followed by Filipinos (13.2%) and Caucasian (6.3%).

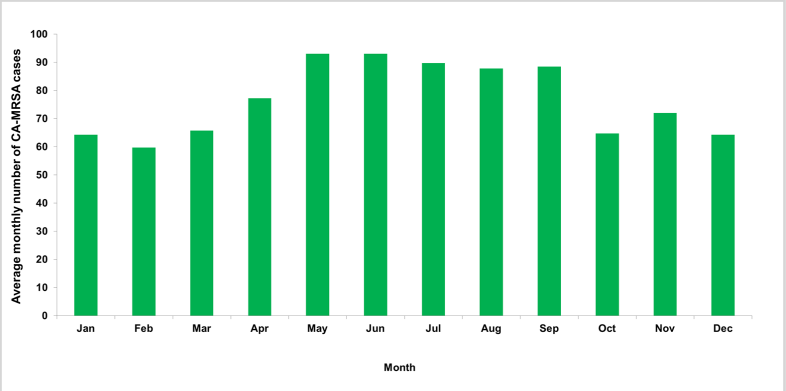


Figure 2 – Average monthly number of CA-MRSA cases by onset, 2012-2015 (up to October 31, 2015).

Clinically, 3,593 (98.4%) presented with uncomplicated skin and soft tissue infections (SSTIs) including skin abscess, boil, carbuncle and impetigo, etc. The most common affected sites were lower limbs region (31.3%), followed by buttock, groin and perineum (19.8%), head and neck (17.0%), upper limbs and axilla (16.5%), and back, trunk and abdomen (15.4%). 2,681 (73.5%) of these cases required surgical management such as aspiration, incision and drainage, and surgical debridement of the lesions. Four cases had CA-MRSA infection affecting other sites, i.e. urinary tract infection, mild chorioamnionitis, bronchitis and upper respiratory tract infection.

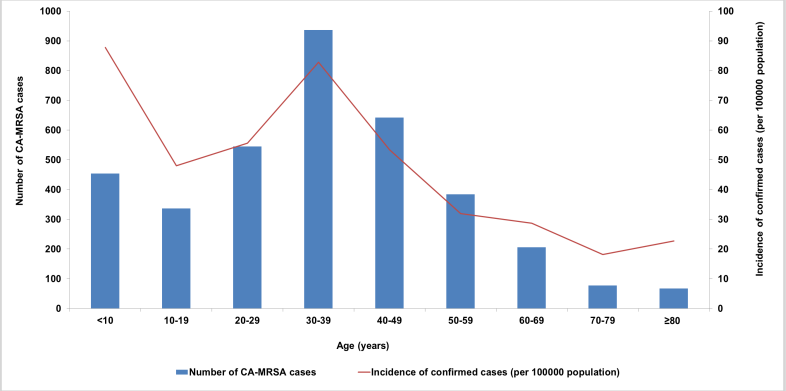


Figure 3 – Age distribution and cumulative incidence of the CA-MRSA cases reported from2012-2015 (up to October 31, 2015).

The remaining 53 cases (1.5%) presented with invasive CA-MRSA infections. The presenting conditions include pneumonia (25), sepsis (19), osteomyelitis (2), liver abscess (2), necrotizing fasciitis (1), sphenoid sinusitis (1), acute cholecystitis (1), empyema (1), and retroperitoneal abscess (1). Four cases (0.1%) died due to CA-MRSA infection, including sepsis (2), pneumonia (1) and necrotizing fasciitis (1).

Overall, about two-third of the cases required hospitalisation while the remaining cases were managed in outpatient settings. Among the invasive CA-MRSA cases, 14 cases were admitted to intensive care unit for treatment.

Genetic characterisation revealed that all CA-MRSA isolates carried the Panton-Valentine leukocidin gene. About two-third of the isolates belonged to staphylococcus cassette chromosome *mec* (SCC*mec*) type IV and the remaining isolates were of SCC*mec* type V. Among the cases affecting ethnic Chinese, about 61.2% of the isolates belonged to type IV and 38.8% belonged to type V. On the other hand, nearly all Filipino cases (98.1%) and 86.5% Caucasian cases belonged to type IV.

While most cases (92.8%) were sporadic infections, a total of 121 clusters affecting 264 persons were recorded. Among the clusters, 113 were small household clusters with two to three persons affected in each cluster. The remaining eight were institutional outbreaks involving four residential care homes for the elderly, one childcare centre, one university residential hall, one small group home, and one boarding school. The number of cases in each outbreak ranged from two to five persons.

A total of 43 (1.2%) sporadic CA-MRSA cases affected healthcare workers. Contact tracing did not reveal any other epidemiological linked cases in the concerned healthcare settings.

In Hong Kong, the "search and destroy" strategy is employed as one of the measures to control the spread of CA-MRSA in the community. For every reported case, colonisation screening and decolonization therapies would be offered to the case and the close contacts. From January 2012 to October 2015, 32% of the cases and 14% of asymptomatic close contacts were found to be colonised with CA-MRSA. Separately, there were 15 cases with the CA-MRSA isolates found to be resistant to mupirocin which is the topical agent currently used for decolonisation therapy.

To prevent CA-MRSA infection, the public are advised to:

1. Use antibiotics only under medical advice. The frequency and dosage as prescribed by doctors should be strictly followed and the whole course of therapy should be completed;

2. Maintain good personal hygiene including proper hand hygiene, avoidance of sharing personal items such as towels, clothing, razors or nail-clippers;

3. Disinfect wounds promptly and cover the wounds properly with waterproof adhesive dressings. Avoid contacts sports and visiting public bathrooms if there is an open wound, and consult a doctor promptly if symptoms of infection develop; and

4. Maintain environmental hygiene including regular disinfection of reusable items in public places such as sports centres and public bathrooms.

More information on CA-MRSA is available on the CHP website at: http://www.chp.gov.hk/en/content/9/24/5392.html.

NEWS IN BRIEF

Four local cases of listeriosis

In late October 2015, the Centre for Health Protection, Department of Health recorded four sporadic cases of listeriosis. The first case was a 37-year-old pregnant woman who was at her 17-week of gestation and had good past health. She presented with fever and abdominal pain on October 21, and was admitted to a public hospital on the same day. She was diagnosed to have spontaneous abortion with complication requiring surgery. Her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics and her condition was stable. She was discharged on November 5. She had no recent travel history. Investigation revealed that she had consumed salad, smoked salmon and smoked ham during the incubation period. Her family member and food collaterals remained asymptomatic.

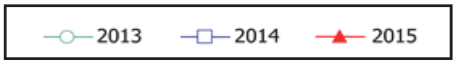
The second case was a 74-year-old lady with underlying illnesses. She presented with fever and acute confusion on October 13 and was admitted to a public hospital on the same day. Her blood specimen collected on October 13 grew *Listeria monocytogenes*. Her condition deteriorated rapidly despite antibiotics treatment and eventually succumbed on October 19. According to the clinician, the clinical diagnosis was sepsis which was also the cause of death. According to her family, she had no recent travel history or consumption of high risk food during the incubation period. Her family members remained asymptomatic.

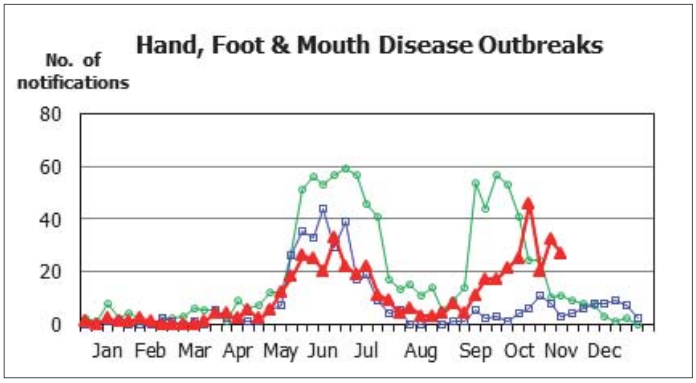
The third case was an 84-year-old lady with underlying illnesses. She presented with shortness of breath on October 11 and was admitted to a public hospital on the same day. She developed fever and sepsis with confusion on October 26 during hospital stay. Her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics and her condition was stable. She had no recent travel history. She resides in a residential care home for the elderly (RCHE) in Tuen Mun. Investigation revealed that she had not consumed high-risk food items during the incubation period. There were no other cases identified at the RCHE and concerned hospital.

The fourth case was an 83 years old female with underlying medical illness and wheel-chair bound. The patient presented with generalised weakness, on-and-off low grade fever and reduced general condition October 15. She attended Accident and Emergency Department of a public hospital on November 1 and was admitted on same day. Blood cultured collected on November 1 grew *Listeria monocytogenes*. Clinical diagnosis was sepsis and she was treated with a course of antibiotics. Her condition was stable. Epidemiological investigation revealed that she did not travel outside Hong Kong during incubation period. Her family members remained asymptomatic.

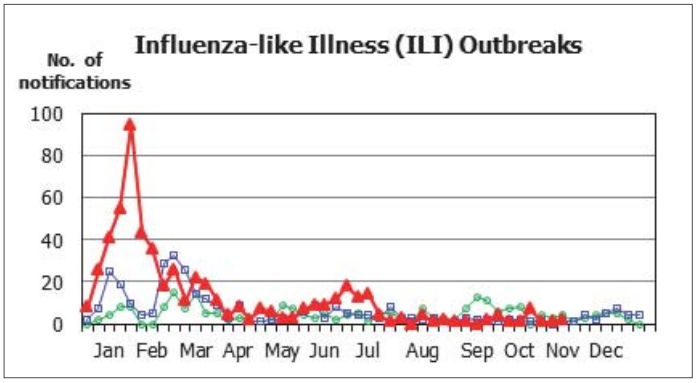
Investigations of these four cases are ongoing and so far no epidemiological linkage is identified.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 44 - WEEK 45)

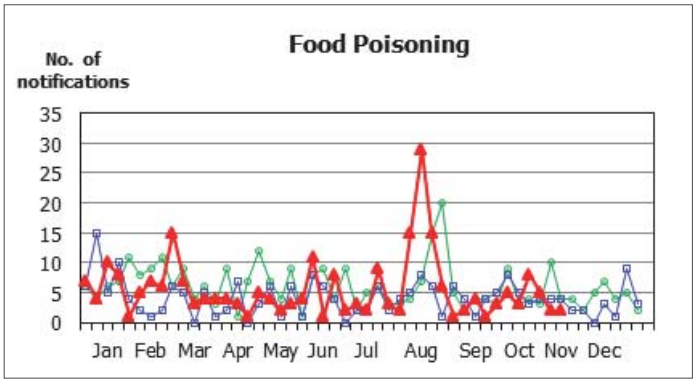




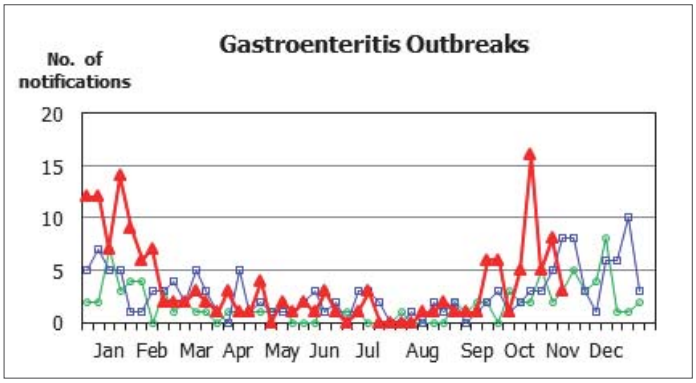
Week 42	46	Week 43	20
Week 44	**32**	**Week 45**	**27**



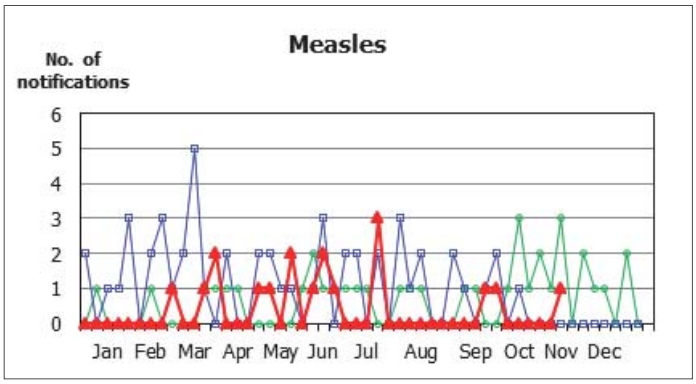
Week 42	7	Week 43	1
Week 44	**1**	**Week 45**	**2**



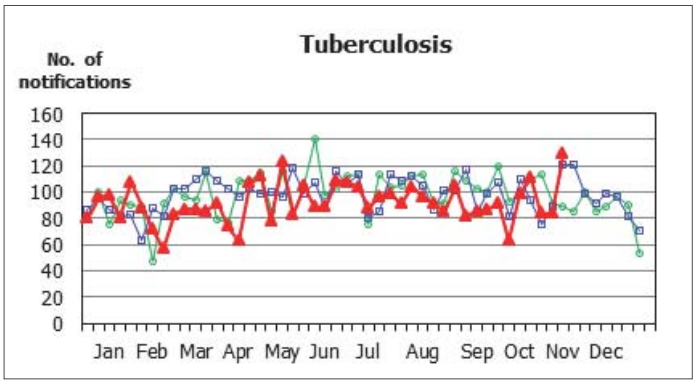
Week 42	8	Week 43	5
Week 44	**2**	**Week 45**	**2**



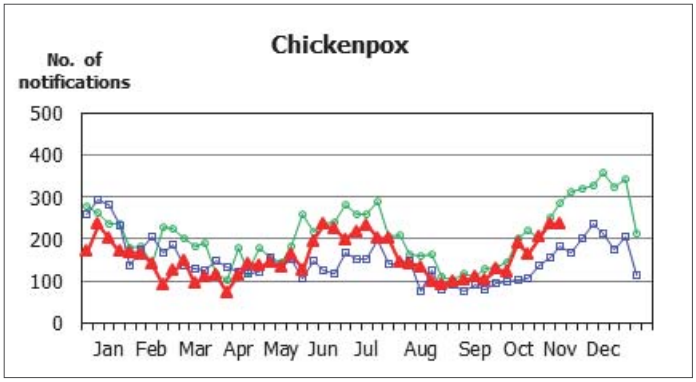
Week 42	16	Week 43	5
Week 44	**8**	**Week 45**	**3**



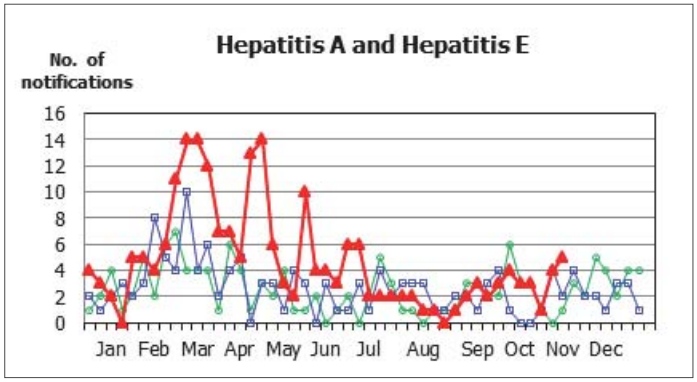
Week 42	0	Week 43	0
Week 44	**0**	**Week 45**	**1**



Week 42	111	Week 43	84
Week 44	**84**	**Week 45**	**129**



Week 42	164	Week 43	204
Week 44	**238**	**Week 45**	**236**



Week 42	3	Week 43	1
Week 44	**4**	**Week 45**	**5**

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO), Public Health Information System (PHIS) and Communicable Disease Information system (CDIS) up until November 7, 2015. This information may be updated over time and should therefore be regarded as

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Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Review of Japanese Encephalitis in Hong Kong, 2005-2015 (as of October 31, 2015)

Reported by Dr Gladys YEUNG, Medical and Health Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

From 2005 to 2014, the Centre for Health Protection (CHP) of the Department of Health recorded 19 Japanese encephalitis (JE) cases. The annual number of cases ranged from zero to six. In 2015 (as of October 31), one unclassified case and one local case were recorded (Figure 1).

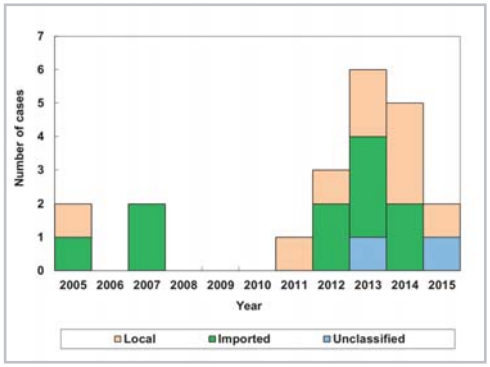


Figure 1 - JE cases recorded from 2005 to 2015 (as of October 31,2015).

Out of the 21 cases, nine (42.9%) were local cases, ten (47.6%) contracted the disease overseas and for two cases (9.5%), the source of infection could not be determined. All cases were sporadic infection without epidemiological linkages. Eleven patients (52.3%) required intensive care treatment. Two patients (9.5%) passed away due to JE and one died of other disease. One patient was transferred back to the home country for further management and one was still in hospital as of October 31, 2015. The remaining 16 patients have been discharged. Neurological sequelae were documented in four (25.0%) of the 16 discharged patients.

All nine local cases had their symptom onset in June and July (Figure 2). Seven (77.8%) patients resided in Yuen Long and two lived in Tuen Mun and North District, respectively. Those living in Yuen Long were all found to reside within two kilometers of pig farm(s). Among the ten imported cases, eight and two cases were imported from Mainland China and Thailand, respectively. In 2013, there was one unclassified case as the patient had stayed in both Tokyo and Hong Kong during the incubation period.

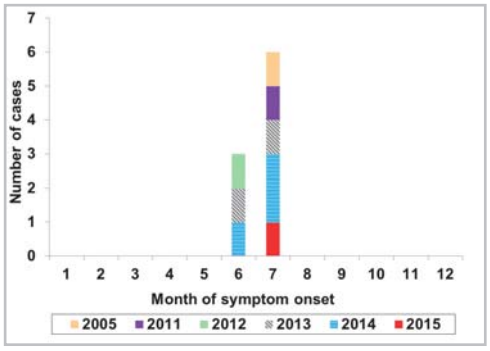


Figure 2 - Distribution of local JE cases by month of symptom onset from 2005 to 2015 (as of October 31,2015).

The two cases of JE recorded in 2015 had symptom onset in June and July, respectively. The first patient was a 68-year-old man living in Kwai Tsing with underlying illness. He developed fever and poor appetite on June 23 and acute confusion on June 24. He was then taken to General Out-patient Clinic for medical attention and was transferred and admitted to a public hospital for further management. Both his cerebrospinal fluid and blood sample were tested positive for IgM antibodies against JE. He received intensive care and was in stable condition as of October 31, 2015. As the patient had stayed in Hong Kong and Mainland China during the incubation period, the source of infection could not be determined.

The second patient was a 55-year-old man living in North District. He had good past health. He presented with fever, drowsiness, slurring of speech and vomiting since July 4. He attended the Accident and Emergency Department of a public hospital on 6 July and was admitted for management. Both his cerebrospinal fluid and blood sample tested positive for IgM antibodies to JE virus. The clinical diagnosis was meningoencephalitis. He was in stable condition and was discharged on July 16. He had not travelled outside Hong Kong during the incubation period and was classified as a locally acquired infection.

In Hong Kong, the vector for JE, *Culex tritaeniorhynchus*, is widely distributed in both rural and urban areas. There are 43 registered pig farms in Hong Kong. Majority are located in Yuen Long (34 farms) and North District (8 farms) with the remaining one in Sai Kung. Besides, the wetlands in the territory provides favourable natural habitat for wading birds. With the presence of vectors, amplifying and reservoir hosts, there is always the risk of human infection of JE.

To prevent contracting the disease, one should take general measures to prevent mosquito bites. JE vaccine is recommended for travellers who plan to stay one month or longer in endemic areas in Asia and Western Pacific Region, particularly in rural areas; and for short-term (less than one month) travellers if they plan to have significant extensive outdoor or night-time exposure in rural areas during the transmission season of the disease. For further information on JE prevention, please visit the CHP website at: http://www.chp.gov.hk/en/content/9/24/28.html

Facts on Japanese encephalitis

JE is a mosquito-borne disease caused by the JE virus. The JE virus transmission cycle involves *Culex* mosquitoes that lay eggs in fields with wet cultivation, pools, ditches and other large water bodies. Pigs and wading birds act as principal vertebrate amplifying hosts and reservoir hosts respectively. Humans get infected when bitten by an infected mosquito. Since humans seldom develop enough viremia to infect feeding mosquitoes, they are considered a dead-end host for viral transmission.

Most JE infections are asymptomatic or present as a mild non-specific febrile illness, and only one in approximately 250 infections results in severe disease characterised by rapid onset of high fever, headache, neck stiffness, disorientation, coma, seizures, spastic paralysis and death. Among clinical cases, the case-fatality rate is estimated to be around 20% to 30%. About 30% of survivors have serious residual neurologic, psychological, intellectual and/or physical disabilities.

Exercise "Sapphire" tests government response to outbreak of norovirus gastroenteritis

Reported by Mr Joe CHAN, Chief Inspector of Police, Emergency Response and Information Branch, CHP.

On November 9, 2015, the Centre for Health Protection (CHP) of the Department of Health (DH) in collaboration with other government and organisations conducted a one-day exercise, code-named Sapphire, at the Kai Tak Cruise Terminal (KTCT) to test preparedness for an outbreak of norovirus gastroenteritis in Hong Kong. About 50 representatives from relevant government departments and organisations, namely the Customs and Excise Department, the DH, the Fire Services Department, the Immigration Department, the Marine Department, the Hong Kong Police Force, the Tourism Commission, the terminal operator and the shipping agent, participated in the exercise.

Photo 1 - The Government tested its preparedness for a possible outbreak of norovirus gastroenteritis on November 9 during an exercise code-named "Sapphire". Photo shows the Director of Health, Dr Constance Chan (centre left), inspecting the exercise at the Kai Tak Cruise Terminal.

The exercise aimed at assessing the effectiveness of the Government's plans and procedures and the interoperability of governmental departments and agencies in response to communicable disease outbreaks on board cross-boundary cruise ships, as well as heightening the overall awareness and readiness of relevant stakeholders in preventing the international spread of disease and protecting Hong Kong.

The exercise consisted of two parts. The first part was a table-top exercise conducted on October 29, 2015 in which relevant departments and organisations discussed and commanded response measures in a simulated outbreak of norovirus gastroenteritis.

The second part of the exercise conducted on November 9, 2015 was a ground exercise. Under the exercise simulation, a cross-boundary cruise ship was heading towards Hong Kong and scheduled to berth at the KTCT. The shipping agency was informed that about 30 passengers and crew members developed symptoms of vomiting, diarrhoea and fever. The DH then activated the emergency response mechanism and formed the Public Health Incident Assessment Group (PHIAG) with relevant departments and agencies, disciplinary services, terminal operators and the shipping agency to operate and formulate a response plan before the ship's arrival.

Photo 2 - Under simulation, a ship's surgeon and the medical crew checked passengers who developed suspected norovirus gastroenteritis symptoms in a cruise ship medical facility prior to the arrival of government officers.

Upon the ship's arrival, the DH convened a Public Health Team to conduct on-board assessment and epidemiological investigation. The PHIAG also co-ordinated multi-agency efforts in the transfer of sick passengers and crew, implementation of special immigration and customs clearance for hospitalised passengers, and disinfection of the cruise ship and the terminal building.

The exercise provided a valuable opportunity for relevant parties to strengthen their preparedness and identify areas for improvement. It also helped enhance the preparedness of relevant stakeholders to respond to any possible future outbreak of communicable diseases.

Photo 3 - In a simulated drill, a patient suspected of contracting norovirus gastroenteritis was transferred to hospital.

Four cases of listeriosis

From November 10 to 20, 2015, the Centre for Health Protection (CHP) of the Department of Health recorded four cases of listeriosis. The first case was a 47-year-old woman with underlying illnesses. She was admitted to a public hospital on May 6 for management of her underlying illnesses and remained hospitalised since. She developed fever on November 8 and her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics and her condition remained stable. Investigation revealed that she had consumed sushi rice mixed with raw salmon, shell fish and other side ingredients; purchased by her family from a sushi take-away shop in Wan Chai. The case was then referred to the Centre for Food Safety (CFS) for investigation. Food and environmental samples were collected by CFS from the food premises for testing. *Listeria monocytogenes* was detected in a sushi rice sample and swab taken from a chopping board. However, further typing showed that isolates from the positive food and environmental samples were of different serotype as the clinical specimen collected from the patient. Follow-up food samples collected from the food premises were all tested negative. Investigations are ongoing. So far, no other epidemiologically linked cases are identified.

The second case was a 41-year-old pregnant woman who was at her 28-week of gestation and had good past health. She presented with fever, headache, vomiting and generalised malaise on November 5. She attended Accident and Emergency Department of a public hospital on November 7 and was admitted on the same day. The clinical diagnosis was sepsis and her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotic. Both she and her foetus remained in stable conditions. She had no recent travel history. She denied consumption of any raw seafood or cheese during the incubation period. Her family member and food collaterals remained asymptomatic.

The third and fourth cases affected a 41-year-old woman and her newborn baby girl. The woman presented with fever and headache after admission to a public hospital for show at 38 weeks gestation on November 14. Emergency caesarean section was performed because of maternal fever and foetal distress. The newborn baby girl presented with respiratory distress after birth with clinical diagnosis of sepsis. Placental swab from the mother, as well as the eye and rectal swabs from the newborn baby grew *Listeria monocytogenes*. Both the mother and the baby were treated with antibiotics and remained in stable condition. Investigation revealed that the mother had consumed salad and cheese cake during the incubation period. Her food collaterals and family members remained asymptomatic. The CFS has taken food sample of cheese cake which was tested negative for *Listeria monocytogenes* and investigations are ongoing.

CA-MRSA cases in October 2015

In October 2015, CHP recorded a total of 95 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 63 males and 32 females with ages ranging from 11 months to 87 years (median = 37 years). Among them, there were 72 Chinese, 8 Filipinos, 6 Pakistani, 4 Caucasian, 4 Indian, and 1 of unknown ethnicity. Isolates of all these 95 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (67) or V (28).

Ninety-two cases (96.8%) presented with uncomplicated skin and soft tissue infections. The remaining three cases had invasive CA-MRSA infections. The first case was a 33-year-old man who had onset of right upper abdominal pain on September 1 and fever on September 18. He was admitted to a public hospital on September 19. Investigation revealed that he had a liver abscess with deranged liver function. Computer tomography guided drainage of the liver abscess was performed and the aspirate collected was cultured positive for CA-MRSA. He recovered after treatment. The second case was a 68-year-old man who presented with fever and neck pain on September 25. He was admitted to a public hospital on September 27 and he subsequently developed left upper limb weakness during hospitalisation. Magnetic resonance imaging of the cervical spine revealed an epidural abscess. His blood specimen collected on October 3 was cultured positive for CA-MRSA. He was in stable condition. The last case was an 11-month-old girl who had cystic fibrosis. She was initially admitted to a public hospital on October 5 for investigation of cystic fibrosis and she developed fever and respiratory distress during her hospitalisation. She was diagnosed to have sepsis, pneumonia and respiratory failure requiring intensive care. Her blood specimen taken on October 8 was cultured positive for CA-MRSA. She was in stable condition. The close contacts of these three cases were asymptomatic, and screening and decolonisation would be provided to them.

Among the 95 cases, one case was a nurse working in a public hospital. Investigation did not reveal any epidemiological linkage to other cases. Besides, three family clusters, with each affecting two persons, were identified. Screening and decolonization would be provided to their close contacts.

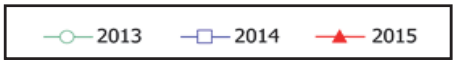
Scarlet fever update (October 25 – November 21, 2015)

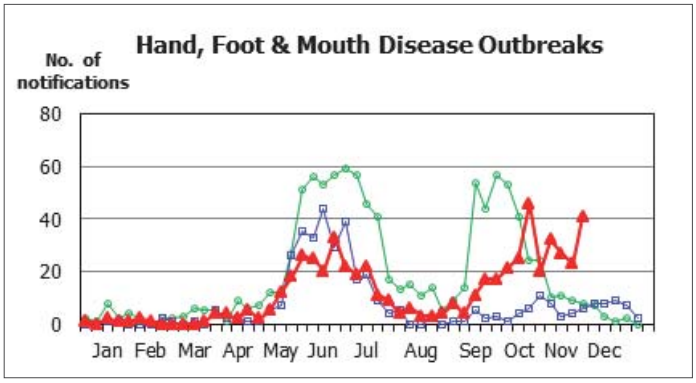
Scarlet fever activity in this reporting period increased as compared with the previous 4 weeks. From October 25 – November 21, 2015, CHP recorded 93 cases of scarlet fever with a range of 16 to 28 cases per week as compared with 58 cases with a range of 12 to 19 cases per week in the previous reporting period (September 27 - October 24, 2015). The cases recorded in this reporting period included 60 males and 33 females aged between two months and 64 years old (median: 6 years). In the current reporting period, there was one scarlet fever cluster involving two students in a kindergarten. There were no fatal cases reported during this reporting period.

Laboratory surveillance on multi-antimicrobial resistant bacteria (October 2015)

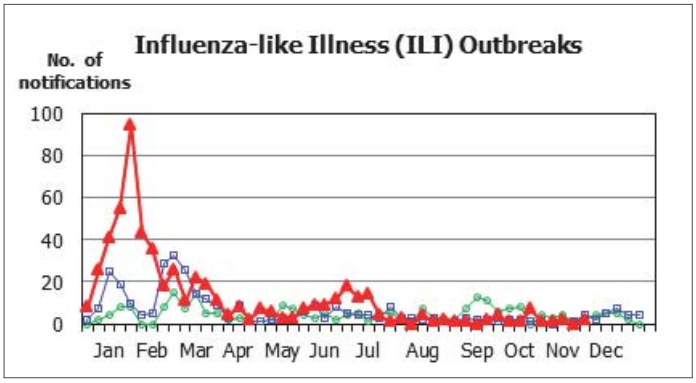
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website: http://www.chp.gov.hk/en/data/1/10/641/695/3910.html

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 46 - WEEK 47)

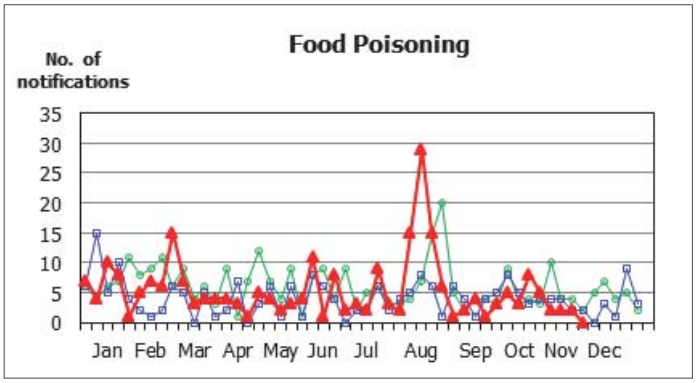




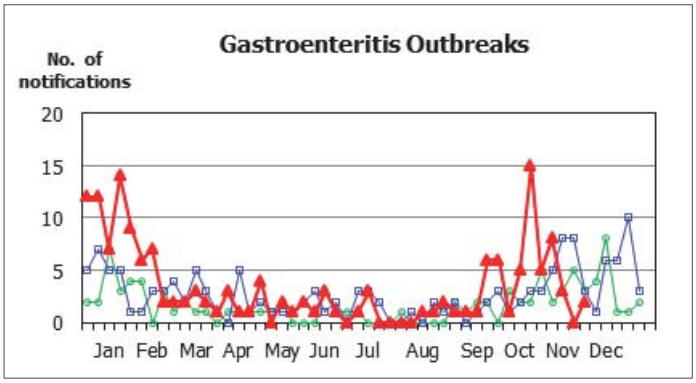
Week 44	32	Week 45	27
Week 46	**23**	**Week 47**	**41**



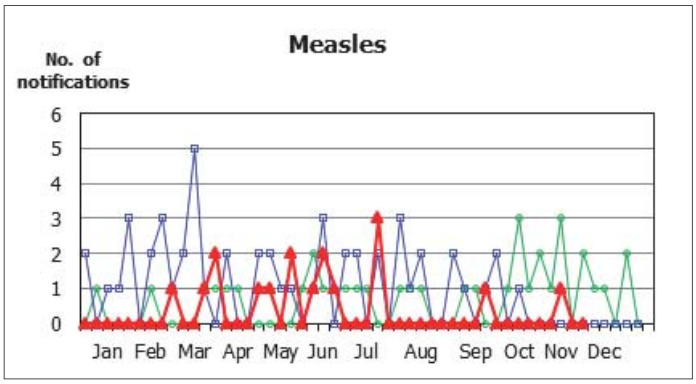
Week 44	1	Week 45	2
Week 46	**0**	**Week 47**	**2**



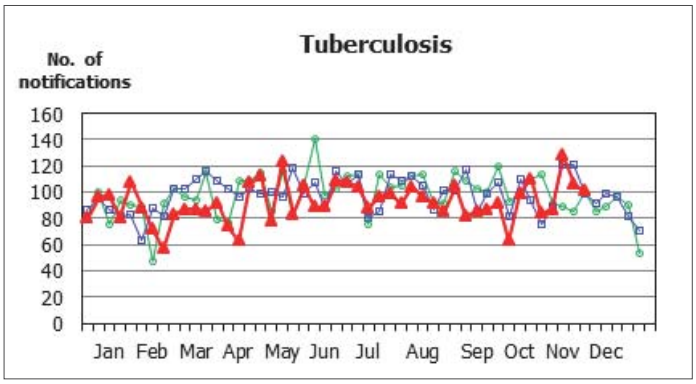
Week 44	2	Week 45	2
Week 46	**2**	**Week 47**	**0**



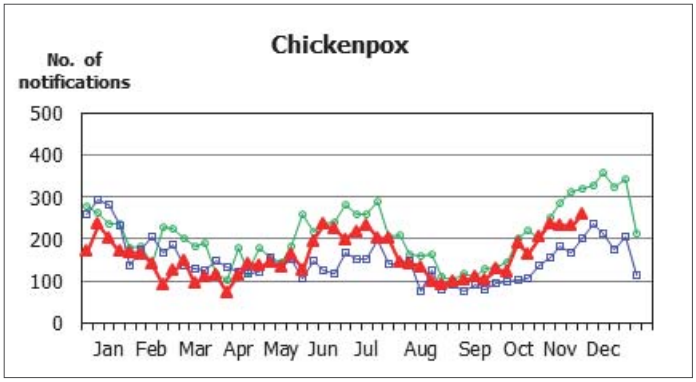
Week 44	8	Week 45	3
Week 46	**0**	**Week 47**	**2**



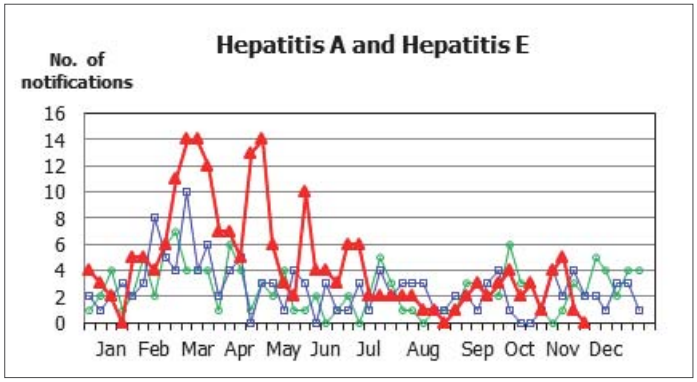
Week 44	0	Week 45	1
Week 46	**0**	**Week 47**	**0**



Week 44	87	Week 45	128
Week 46	**106**	**Week 47**	**101**



Week 44	238	Week 45	234
Week 46	**231**	**Week 47**	**258**



Week 44	4	Week 45	5
Week 46	**1**	**Week 47**	**0**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until November 21, 2015. This information may be updated over time and should therefore be regarded as provisional only.

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Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Updated Situation of Avian Influenza

Reported by Dr Albert AU, Senior Medical and Health Officer, and Dr Francis WONG, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

A seasonal pattern of avian influenza activity was generally observed in which animal outbreaks and human cases were less frequent in summer months but more frequent in winter months. As such, the activity of avian influenza is expected to increase in the coming months. Below we reviewed the latest global situation of avian influenza.

Avian influenza A(H7N9)

Human H7N9 infections

There has been a recent increase in sporadic human cases of avian influenza A(H7N9) infection in Mainland China, with five laboratory-confirmed cases reported since October 2015 (as of December 9). Four cases were reported in Zhejiang and one case in Guangdong (Meizhou). Their ages ranged from 51 to 74 years (median: 55 years). The first case had onset of illness on September 18. At the time of reporting, four patients were in serious condition and one was in critical condition. All the four cases in Zhejiang had reported exposure to live poultry before onset and one of them was a poultry worker.

Since the emergence of human infections with H7N9 virus in Mainland China in March 2013, 662 human H7N9 cases have cumulatively been reported in 17 provinces/municipalities in Mainland China (as of December 9). In addition, 20 cases were exported to other countries/areas from Mainland China (13 cases in Hong Kong, 4 cases in Taiwan, 2 cases in Canada and 1 case in Malaysia), making a total of 682 cases globally. There were 148, 323 and 211 cases reported in 2013, 2014 and 2015 respectively. At least 275 cases were fatal, resulting in a case fatality rate of about 40%.

Regarding the seasonality, three distinct waves of human infections were observed in the past (Figure 1). The first and second wave occurred in early 2013 and early 2014 respectively and the activity of H7N9 was low during summer and autumn months. In the third wave, the number of reported cases in Mainland China had started to increase since November 2014 and reached a high level in January 2015. Since February 2015, the disease activity of H7N9 had been decreasing to a low level in June 2015. The last case in the third wave had onset on June 18, 2015. No cases occurred in July and August 2015. Judging from the seasonal pattern of human H7N9 infections in the past few years, more cases are expected to occur in the coming months.

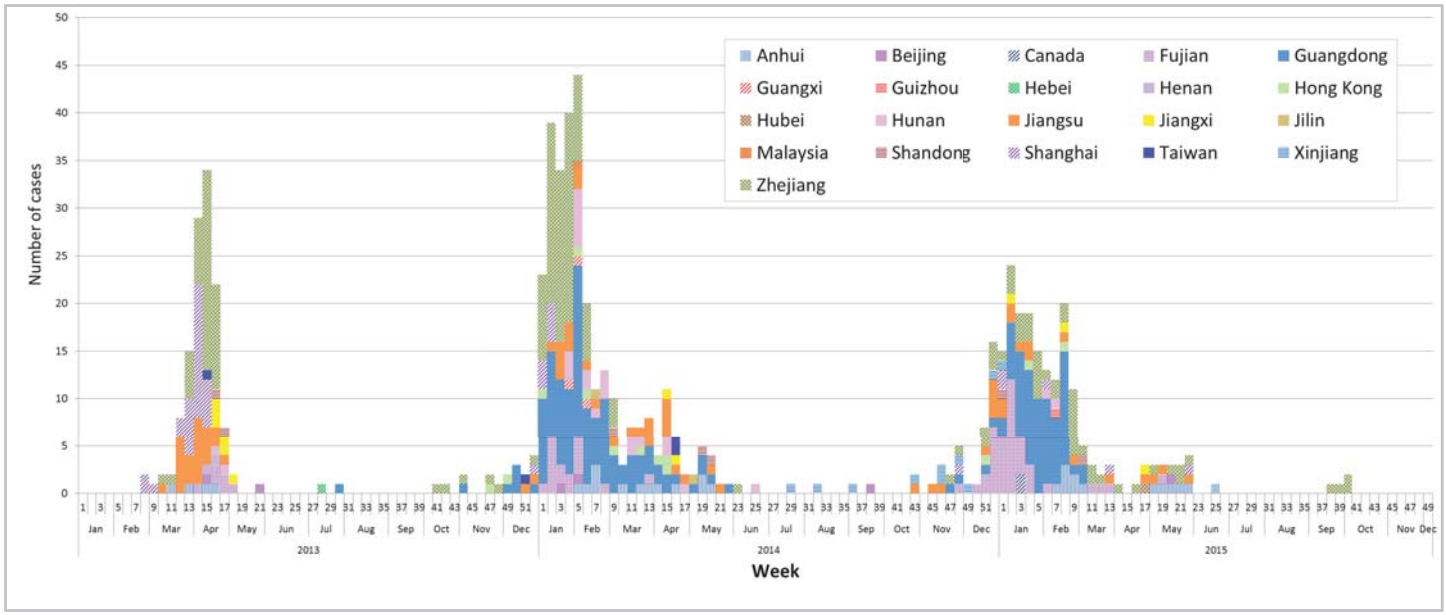

Figure 1 - Weekly number of confirmed H7N9 cases by place of confirmation and onset date since 2013.
Remark: The onset date of 11 cases remained unknown (including the most recent case in Guangdong).

In Hong Kong, so far, 13 imported human H7N9 infections were recorded since December 2013, with three cases detected in the third wave. They included seven males and six females with ages ranging from five months to 85 years (median: 65 years). All were imported cases from Guangdong. Most cases either had visited wet market or had contact with poultry. Extensive contact tracing did not identify any secondary cases. The last case was confirmed on February 23, 2015. Since then, the enhanced surveillance in public and private hospitals has not detected any new cases so far.

H7N9 outbreaks in poultry

Locally, H7N9 viruses were detected in samples from a consignment of live chickens from a registered farm in Huizhou of Guangdong on December 31, 2014. Since then, no H7N9 virus was detected in poultry and environments in Hong Kong. Regarding the situation in Mainland China, under the national animal H7N9 avian influenza monitoring programme of the Ministry of Agriculture, environmental and poultry samples obtained from Anhui, Fujian, Guangdong, Hubei, Hunan, Jiangsu and Shanghai were tested positive for H7N9 by virological test from January to May 2015. From June to September 2015, no H7N9 virus was detected among samples collected from surveillance sites. In October and November 2015, one chicken sample taken from a market in Guangzhou and one chicken sample and one duck sample from that in Zhejiang were tested positive for H7N9.

Avian influenza A(H5N6)

Human H5N6 infections

Avian influenza A(H5N6) viruses of highly pathogenic type emerged in 2014 causing outbreaks in poultry in Laos, Vietnam and Mainland China. Globally, the first human case of H5N6 infection was officially reported by the National Health and Family Planning Commission in May 2014. Three other sporadic human cases were reported in Mainland China subsequently (Table 1). These included three males and one female with ages ranging from 37 to 58 years (median: 46.5 years). There was no evidence of human-to-human transmission of this virus among the close contacts of the cases. No new human H5N6 case has been reported since August 2015. Also, no human case has been detected in Hong Kong so far.

Table 1 - Details of the laboratory confirmed human cases of H5N6 infection in Mainland China.

Reporting date	Province of reporting	Sex / age (years)	Clinical outcome	Risk factor
May 2014	Sichuan	Male / 49	Developed severe pneumonia and died	Exposure to H5N6-infected chicken in his poultry farm
December 2014	Guangdong	Male / 58	Recovered after treatment	Exposure to live poultry
February 2015	Yunnan	Male / 44	Died	Exposure to dead wild fowl
July 2015	Yunnan	Female / 37	Died	Unknown

H5N6 outbreaks in poultry/wild birds

Low pathogenic viruses belonging to the H5N6 subtype occurred in the past. They were mainly found in ducks but also in environmental samples. Nonetheless, these outbreaks had little to no impact on the poultry industry and no implications for public health. According to the World Organisation for Animal Health (OIE), the first outbreak of highly pathogenic H5N6 viruses in poultry occurred in March 2014 in Laos, followed by Vietnam and Mainland China (Sichuan) in April 2014. Since 2014, multiple H5N6 outbreaks in birds and poultry have been reported in Laos, Vietnam and Mainland China (Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Hubei, Hunan, Jiangsu, Sichuan, Tibet, Yunnan and Zhejiang) (Figure 2). In 2015, H5N6 outbreaks in birds and poultry have continued to occur in Laos, Vietnam and Mainland China (Guangdong, Hunan and Jiangsu). The last outbreak in Mainland China occurred in Qingyuan, Guangdong in early August 2015. Since then, no H5N6 outbreak was reported in Mainland China.

Locally, three wild birds were tested positive for H5N6 virus in 2015. In early April 2015, the carcass of a peregrine falcon found at a construction site in Yuen Long was confirmed to be H5N6-positive, which was the first case of H5N6 in a wild bird in Hong Kong. Subsequently, carcasses of two oriental magpie robin found in Sai Kung in late April and Kwai Chung in late November respectively were tested positive for H5N6.

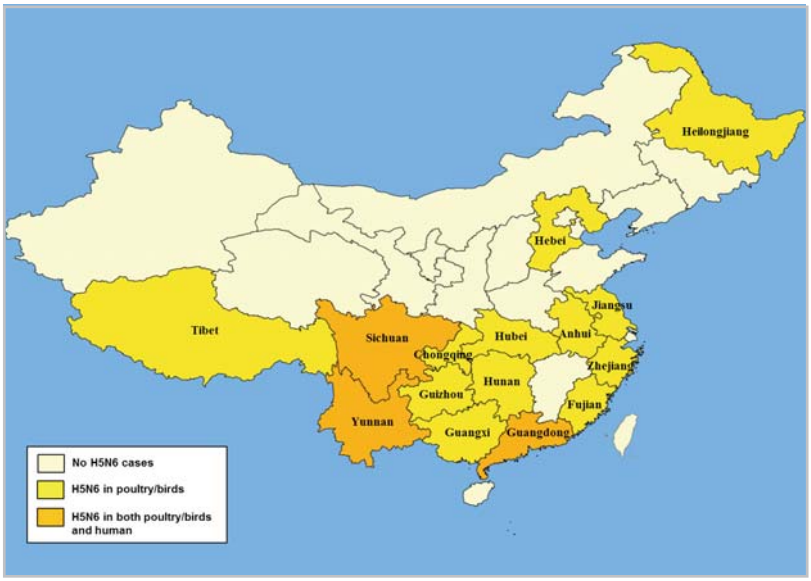

Figure 2 - Detections of H5N6 in poultry/birds in Mainland China since 2014.

Avian influenza A(H5N1)

Human H5N1 infections

As of December 9, 2015, a total of 143 human cases of influenza A(H5N1) virus infection with onset in 2015 have been reported to the World Health Organization (WHO) from Egypt (136), China (5) and Indonesia (2). At least 42 of the cases (29.4%) died. The majority of the cases (94.4%) had onset of illness between January and March with a peak in February. The last reported case occurred in Egypt in June 2015. All the above three countries have reported human cases every year in the previous nine years.

So far, the number of H5N1 cases reported to WHO during 2015 already exceeded the highest number of cases reported per year since the emergence of human infections in 1997. This is mainly due to the large increase in cases in Egypt in early 2015. According to WHO, the epidemiological characteristics of the human cases essentially remained unchanged from previous years.

H5N1 outbreaks in poultry/wild birds

In 2015 (up to November), 112 detections of avian influenza A(H5N1) viruses in poultry/birds were reported by 22 countries/areas to OIE, including Nigeria (36), Vietnam (15), Ghana (11), Israel (6), Mainland China (6), Cote D'Ivoire (5), Bulgaria (4), Burkina Faso (4), India (4), Russia (4), Turkey (3), Myanmar (2), Palestinian Autonomous Territories (2), the United States (2), Bhutan (1), Cambodia (1), Canada (1), France (1), Iran (1), Libya (1), Niger (1) and Romania (1).

Avian influenza A(H5N8)

Since early 2014, several outbreaks involving novel reassortant influenza A(H5N8) viruses have been detected in poultry and wild bird species in Korea, Mainland China as well as Japan. In Korea, highly pathogenic H5N8 viruses first emerged in domestic poultry in January 2014 and caused mortality in domestic poultry and wild birds. This was followed by a new outbreak in ducks reared for meat production.

In Europe, highly pathogenic H5N8 virus has first been detected in late 2014 in Germany, the Netherlands and the United Kingdom. According to OIE, based on the partial sequence data of the haemagglutinin gene segment, the German, the Dutch and the British viruses were closely related to the H5N8 viruses detected in Korea. In the United States, H5N8 viruses were detected in wild birds for the first time in December 2014.

In 2015 (up to November), there were 47 detections of H5N8 viruses in poultry/birds reported to OIE, including Taiwan (21), the United States (10), Japan (5), Korea (5), Germany (3), Canada (1), Hungary (1) and Sweden (1). In Mainland China, the last reported detection of H5N8 in birds occurred in Liaoning in September 2014. To date, no human infections with this virus have ever been reported world-wide.

Risk assessment for avian influenza viruses

According to WHO, whenever avian influenza viruses are circulating in poultry, sporadic infections and small clusters of human cases are possible in people exposed to infected poultry or contaminated environments, therefore sporadic human cases would not be unexpected.

Regarding H7N9, it is likely that most human cases were exposed to the H7N9 virus through contact with infected poultry or contaminated environments, including markets that sell live poultry. Current evidence suggests that the H7N9 virus does not transmit easily among humans. It is possible that limited human-to-human transmission may have occurred where there was unprotected close contact with symptomatic human cases. An epidemiological investigation of two patients in Zhejiang hospitalised in the same ward also revealed that nosocomial H7N9 transmission may be possible between two unrelated individuals[1]. However, all possible transmission chains have been short, with no evidence of spread into the wider community.

Locally, since the H7N9 virus continues to be detected in animals and environments in Mainland China, further human cases are expected in affected and possibly neighbouring areas. In view of the heavy trade and travel between Mainland China and Hong Kong, further sporadic human cases imported to Hong Kong every now and then are expected. Nonetheless, with antiviral prophylaxis and medical surveillance of the close contacts of confirmed cases, the risk of secondary spread from imported cases in Hong Kong is considered to be low.

Regarding influenza A(H5) viruses, various subtypes continue to be detected in birds in Africa, Asia, Europe and North America. These influenza A(H5) viruses might have the potential to cause disease in humans. Nonetheless, except human H5N1 infections and the four human H5N6 infections detected, no human infections with other H5 subtypes have been reported so far. The highly pathogenic H5N1 virus, which has been causing poultry outbreaks in Asia almost continuously since 2003 and is now endemic in several countries, remains the animal influenza virus of greatest concern for human health. The Centre for Health Protection (CHP) will continue to closely monitor the global and regional situation of avian influenza.

Prevention measures

On the prevention side, travellers returning from affected areas with fever or respiratory symptoms should wear a mask, seek medical attention and reveal their travel and exposure history to doctors. Healthcare professionals should pay special attention to patients who might have had contact with poultry, birds or their droppings in affected areas. Any suspected case meeting the reporting criteria (https://ceno.chp.gov.hk/casedef/casedef.pdf) should be immediately reported to CHP for investigation. Moreover, the public should remain vigilant and take heed of the following advice against avian influenza:

- Do not visit live poultry markets and farms;
- Avoid entering areas where poultry may be slaughtered, and contact with surfaces which might be contaminated by droppings of poultry or other animals;
- Avoid contact with poultry, birds and their droppings. If such contact has been made, thoroughly wash hands with soap;
- Cook poultry and eggs thoroughly before eating;
- Wash hands frequently with soap, especially before touching the mouth, nose or eyes, handling food or eating; after going to the toilet or touching public installations or equipment (including escalator handrails, elevator control panels and door knobs); and when hands are dirtied by respiratory secretions after coughing or sneezing; and
- Wear a mask when having respiratory symptoms or when taking care of fever patients.

Reference

[1]Fang CF, Ma MJ, Zhan BD, et al. Nosocomial transmission of avian influenza A (H7N9) virus in China: epidemiological investigation. BMJ. 2015 Nov 19;351:h5765.

Review of Tetanus in Hong Kong, 2004 to December 2015

Reported by Ms Fanny HO, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Tetanus is an acute disease caused by a neurotoxin produced by the bacterium *Clostridium tetani*. The tetanus spores are widespread in the environment, usually in soil, dust and manure. Tetanus is not transmitted from person to person. Infection usually occurs when the bacterium enter the blood through puncture wounds, burns or any break in the skin, animal bites or sometimes intravenous drug access sites. The disease is characterised by generalised rigidity and convulsive spasms of skeletal muscles. The muscle stiffness usually involves the jaw (lockjaw) and neck and then becomes generalised. In severe cases, the infected persons may have difficulty in swallowing or breathing, leading to suffocation or even death. The overall case fatality ratio varies significantly from 10 to over 80%, with infants and elderly being at greatest risk[1-3]. Neonatal tetanus is particularly common in developing countries or rural areas where vaccination is inadequate and deliveries are performed under insanitary conditions, whilst in most developed countries, tetanus primarily affects older adults because of their higher rate of being unimmunised or inadequately immunised.

In Hong Kong, tetanus cases were reported to the Department of Health (DH) on a voluntary basis before the disease became notifiable in 1994. Tetanus vaccine had been introduced as part of the Childhood Immunisation Programme (CIP) since 1956. Over the past few decades, tetanus notifications had markedly declined from 89 cases in 1966 to less than 20 cases during the late 1990s (Figure 1), as a result of universal primary immunisation and widespread use of tetanus toxoid as tetanus prophylaxis in wound management. The number of tetanus cases and deaths continued to diminish and remained low with 0-4 cases reported each year from 2001 to December 2015.

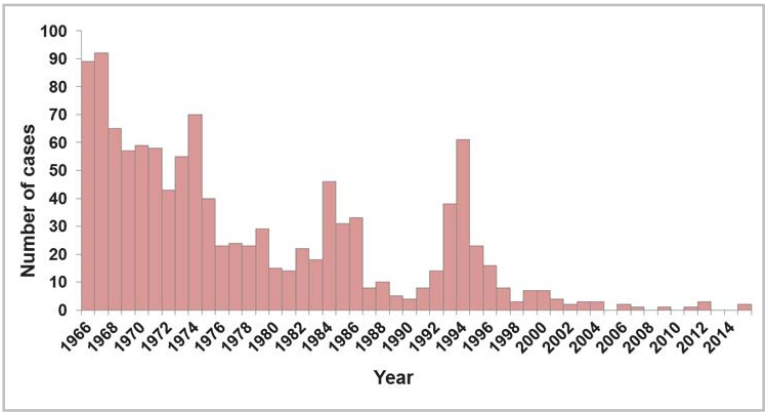

Figure 1 – Tetanus cases recorded in Hong Kong, 1966 – December 5, 2015.

Local outbreaks were uncommon but clusters of tetanus had been recorded among injecting drug users in the past. In 1994, an outbreak of 30 tetanus cases was identified among heroin injectors from various parts of Hong Kong[4]. All cases suffered from severe tetanus requiring ventilation support and intensive care. It was suggested that the outbreak was possibly caused by dirty injecting apparatuses and contaminated heroin, although the heroin samples were tested negative for *C. tetani*.

The tetanus cases reported to the DH from 2004 to December 5, 2015 were reviewed. A total of 13 cases were recorded with ages ranged from 36 to 89 years (median age = 61 years). As in other developed countries, tetanus in Hong Kong mainly occurred in adults, in particular the elderly. No neonatal cases were reported during the period. Cases were almost evenly distributed between the two sexes (7 males and 6 females). Four cases (30%) were imported infections from the Mainland. Among all, 11 (85%) patients reported to have sustained lacerations or injuries to their body such as head, finger, elbow and lower limb prior to disease onset, but none (except one who visited a herbalist in the Mainland) sought medical treatment at the time of their injury. Two patients had history of injection drug use. There was no known epidemiological link between the cases.

Clinical forms of tetanus[6]

Generalised tetanus - The most common type (about 80%) of reported tetanus. The disease usually presents with a descending pattern. The first sign is trismus or lockjaw, followed by stiffness of the neck, difficulty in swallowing, and rigidity of abdominal muscles. Other symptoms include elevated temperature, sweating, elevated blood pressure, and episodic rapid heart rate. Spasms may occur frequently and last for several minutes. Spasms continue for 3 - 4 weeks. Complete recovery may take months.

Localised tetanus - An uncommon form of the disease, in which patients have persistent contraction of muscles in the same anatomic area as the injury. These contractions may persist for many weeks before gradually subsiding. Local tetanus may precede the onset of generalised tetanus but is generally milder. Only about 1% of cases are fatal.

Ten patients were clinically diagnosed with generalised tetanus while three with localised infection. Almost all patients (90%, 9/10 cases) suffering from generalised tetanus developed trismus (or lockjaw). Other presenting symptoms included hypertonia (46%, 6/13 cases), muscle spasms (46%, 6/13 cases), neck stiffness (38%, 5/13 cases), dysphagia (31%, 4/13 cases) and opisthotonus (23%, 3/13 cases). All cases were hospitalised for treatment including anti-tetanus toxoid (ATT) vaccination, administration of tetanus immunoglobulin (TIG), antibiotics and wound debridement. The length of hospital stay ranged from two to 88 days (median = 16 days). Among the eight patients with generalised tetanus requiring intensive care, seven were put on mechanical ventilation. Three of them, complicated with cardiac arrest, pneumonia, wound sepsis and multiple organ failure, died from the disease. One patient remained in critical condition in the intensive care unit at the time this report was published, while the remaining cases were discharged after treatment.

All except one reported cases had no known history of previous tetanus vaccination. Among them, four patients were aged 60 years or above who were born prior to the introduction of routine childhood vaccination. Immunisation status was unknown in eight cases, while one 39-year-old woman claimed to have been vaccinated in the Mainland during childhood and received a booster in Hong Kong one year before disease onset.

Tetanus is highly preventable through routine vaccination. Completion of the primary series with booster vaccination at appropriate intervals is essential to reduce the risk of tetanus in all age groups. Under the current CIP, tetanus primary immunisation is provided free to eligible children in combination with diphtheria, acellular pertussis and inactivated poliovirus (DTaP-IPV) vaccines at two, four and six months of age, followed by booster doses at 18 months, Primary one and Primary six (reduced dose). A complete primary series with boosters according to the immunisation schedule is expected to give effective protection for 20 - 30 years[5]. In Hong Kong, the vaccination coverage for 3-dose primary series among children two to five years of age has been well above 95%, according to a territory-wide survey conducted in 2012.

To prevent tetanus, members of the public who have sustained a wound should have the wound cleaned with antiseptics and covered properly. If necessary, medical treatment should be sought. Tetanus toxoid or immunoglobulin may be administered, depending on the condition of the wound and the patient's immunisation history. Travellers are also advised to keep their vaccinations up-to-date and, if required, consult their family doctor for primary or booster vaccination before departure. For more information on tetanus, please visit the CHP website: http://www.chp.gov.hk/en/content/9/24/42.html.

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[3] Tiwari T, Clark TA, Messonnier NE, Thomas CG. Tetanus surveillance - United States, 2001-2008. MMWR 2011; 60(12):365-9.
[4] Sun KO. Outbreak of tetanus among heroin addicts in Hong Kong. J R Soc Med 1994; 87(8): 494–495.
[5] World Health Organization. Tetanus vaccine - WHO position paper. WER 2006; 20(81): 198–208.
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NEWS IN BRIEF

Five sporadic cases of listeriosis

From November 20 to 28, 2015 the Centre for Health Protection (CHP) recorded five sporadic cases of listeriosis. They were three women and two men aged from 49 to 71 years old, all with underlying medical illnesses. The first case (F/49 years old) presented with dizziness on November 17 and was admitted to a public hospital on the same day. She developed fever, hypotension with confusion on November 18. Lumbar puncture was performed and cerebral spinal fluid grew *Listeria monocytogenes*. Her diagnosis was meningitis. She was treated with a course of antibiotic and her condition became stable. Her family could not recall the patient having consumed high-risk food items during incubation period.

The second case (F/49 years old) presented with left side limb weakness on November 20. She then developed fever on November 22 and was admitted to a public hospital on the same day. Blood culture grew *Listeria monocytogenes*. Her diagnosis was acute stroke and sepsis. She was treated with a course of antibiotic and her condition remained stable. Investigation revealed that the patient had consumed ice-cream during the incubation period.

The third case (M/49 years old) presented with fever, abdominal pain, nausea and vomiting on November 19. He was admitted to a public hospital on the November 20. His peritoneal fluid grew *Listeria monocytogenes*. Clinical diagnosis was peritonitis and he was treated with a course of antibiotic. He remained in stable condition. Investigation revealed that the patient had consumed sushi containing salad and raw seafood during the incubation period.

The fourth case (M/71 years old) presented with fever, cough with blood stained sputum and shortness of breath on November 9 and diarrhoea on November 22. He attended Accident and Emergency Department of a public hospital on November 23 and was admitted on the same day. Blood culture grew *Listeria monocytogenes*. Clinical diagnosis was pleural effusion and sepsis. He was treated with a course of antibiotic and his condition was stable. The patient had consumed cheese sandwich during the incubation period.

The fifth case (F/76 years old) presented with fever, chills, abdominal discomfort, nausea and diarrhoea on November 24. She was admitted to a public hospital on November 25. Her peritoneal fluid grew *Listeria monocytogenes*. Clinical diagnosis was peritonitis and she was treated with a course of antibiotic. She remained in stable condition. The patient denied consumption of any high risk food items during the incubation period.

No epidemiological links were identified among these five cases. All five of them had no travel history outside Hong Kong during the incubation periods. Their family members and food collaterals remained asymptomatic. Investigations are ongoing.

An imported case of leptospirosis

In November 2015, CHP recorded an imported case of leptospirosis affecting a 29-year-old man with unremarkable past health. He developed fever and watery diarrhoea on November 1. He attended the Accident and Emergency Department of a public hospital on November 4 and was admitted on the same day. Blood tests showed derangement of liver and renal function. His condition was stable. He was treated with antibiotics and was discharged on November 12. His paired sera collected on November 6 and November 11 showed more than four-fold increase in antibody titre against *Leptospira* by microscopic agglutination test. Epidemiological investigation revealed that the patient had travelled to Laos from October 9 to 16 and swam in Mekong River during the trip. He denied any skin wound and could not recall history of rodent bite. The patient denied outdoor water sports and he did not visit streams or rivers in Hong Kong during incubation period. His travel collaterals and family members remained asymptomatic. Health advice was given to the patient.

Two sporadic cases of *Streptococcus suis* infection

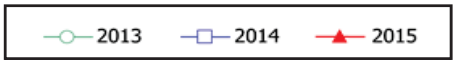
The CHP recorded two sporadic cases of *Streptococcus suis* infection in November 2015. The first case affected a 70-year-old man with underlying medical illnesses. He presented with fever and arthralgia on November 17. He attended the Accident and Emergency Department of a public hospital and was admitted on the same day. During hospital stay, he presented with right knee pain and swelling on November 23. His blood culture grew *Streptococcus suis*. The diagnosis was septic arthritis with septicaemia. He was treated with surgery and antibiotics. His condition was stable. Epidemiological investigation revealed that the patient had no recent travel history outside Hong Kong. He had handled raw pork with bare hands during incubation period but denied any previous skin wounds. His home contacts were asymptomatic.

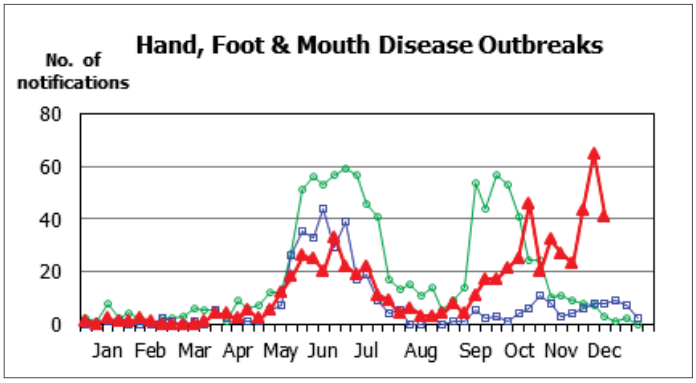
The second case was a 69-year-old man with good past health. He presented with right hand swelling on November 13. He later developed fever and left thigh pain since November 23 and was admitted to a public hospital on the same day. His blood culture grew *Streptococcus suis*. He was diagnosed to have septicaemia and was treated with antibiotics. His condition was stable. He worked as butcher and suffered a cut at his right index finger while handling pork at work on November 8 (five days before onset of symptoms). He had also handled raw pork with bare hands at home. His home contact remained asymptomatic. No epidemiological linkage was identified between these two cases. Investigations are ongoing.

A sporadic case of psittacosis

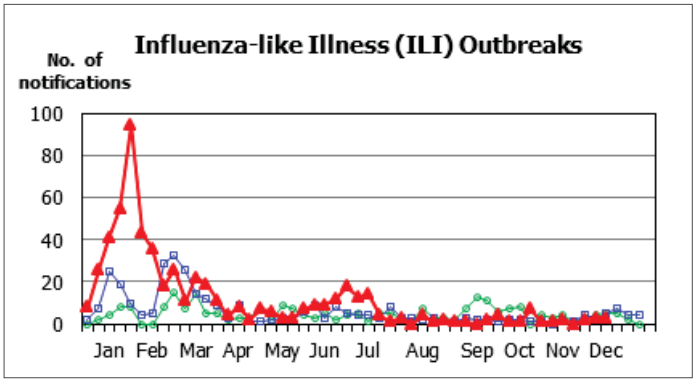
On December 4, 2015, CHP recorded a case of psittacosis affecting a 63-year-old man with underlying illness. He presented with fever and cough with sputum on November 21. He attended the Accident and Emergency Department of a public hospital on November 27 and was admitted on the same day. His condition deteriorated rapidly and was transferred to intensive care unit due to respiratory failure. His endotracheal aspirate detected *Chlamydophila psittaci* DNA by polymerase chain reaction (PCR). His condition was serious. Investigations revealed that he did not keep birds at home. He reported travelling to Qingyuan and Guangzhou with his wife from November 15 to 17. He denied any contact of birds or bird droppings during the incubation period. The patient's family members were all asymptomatic. Investigation is on-going.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 48 - WEEK 49)

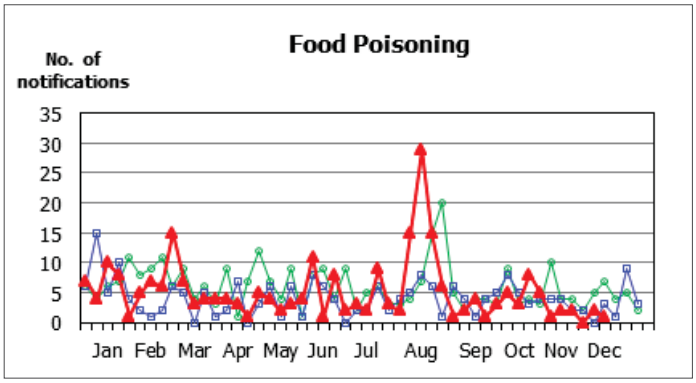




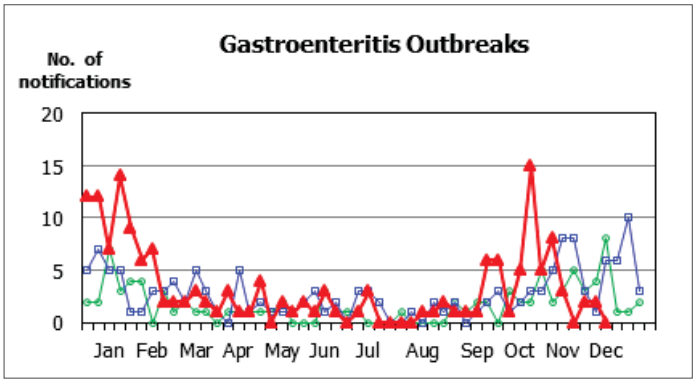
Week 46	23	Week 47	43
Week 48	**65**	**Week 49**	**41**



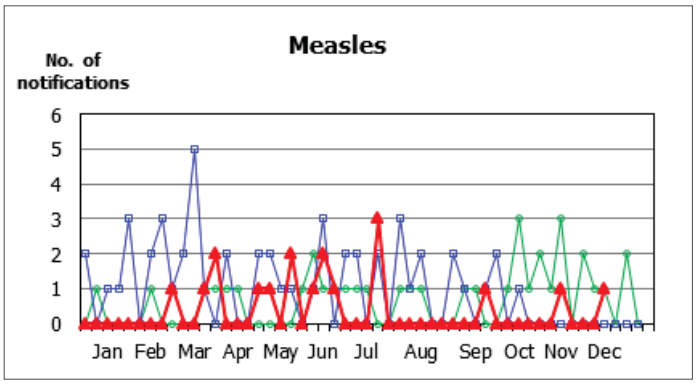
Week 46	0	Week 47	2
Week 48	**3**	**Week 49**	**3**



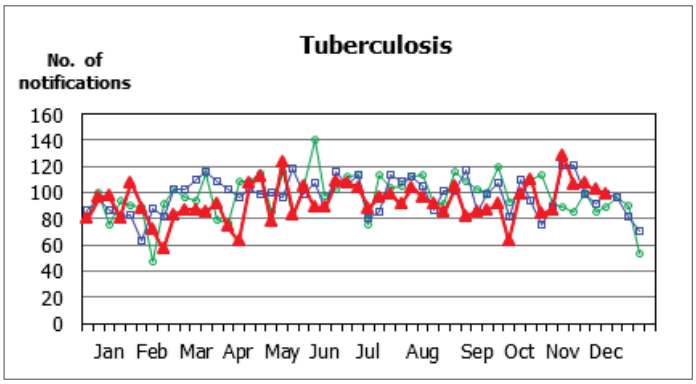
Week 46	2	Week 47	0
Week 48	**2**	**Week 49**	**1**



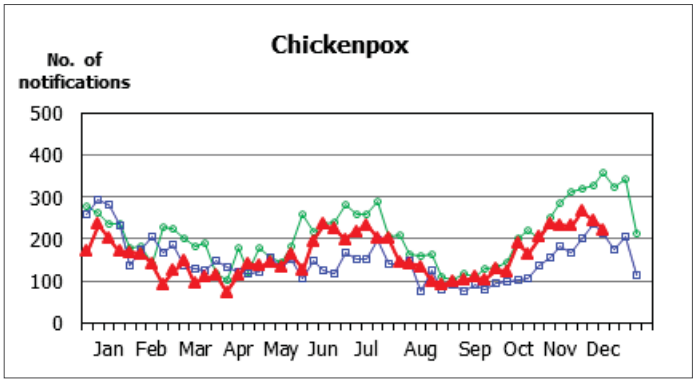
Week 46	0	Week 47	2
Week 48	**2**	**Week 49**	**0**



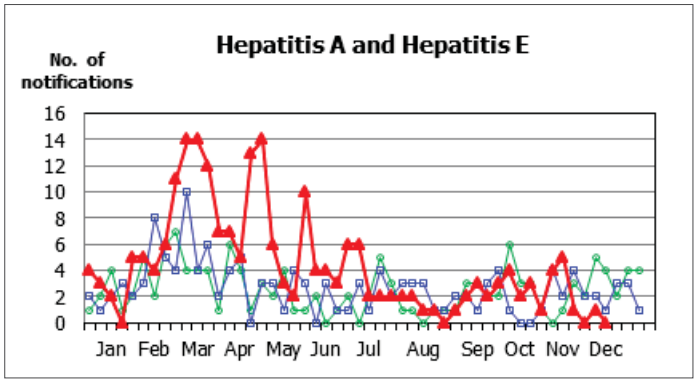
Week 46	0	Week 47	0
Week 48	**0**	**Week 49**	**1**



Week 46	106	Week 47	107
Week 48	**102**	**Week 49**	**99**



Week 46	231	Week 47	266
Week 48	**244**	**Week 49**	**222**



Week 46	1	Week 47	0
Week 48	**1**	**Week 49**	**0**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until December 5, 2015. This information may be updated over time and should therefore be regarded as provisional only.

Dec 6 - Dec 19, 2015 WEEKS 50 - 51 VOL 12 ISSUE N⁰ 26

Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Vigilance Against Zika Virus Infection

Reported by Dr YU Wing Man, Medical and Health Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Zika virus infection is a mosquito-borne disease caused by Zika virus which belongs to the genus *Flavivirus*. It was first isolated from a rhesus monkey in Zika forest of Uganda in 1947, in mosquitoes (*Aedes africanus*) in the same forest in 1948 and in humans in Nigeria in 1954.

Zika virus is primarily transmitted to humans through bites from *Aedes* mosquitos. *Aedes aegypti* is considered the most important vector for Zika virus transmission to human and other *Aedes* mosquito species including *Aedes albopictus* are considered as potential vectors. Some evidence suggests the virus can also be transmitted to humans through blood transfusion, perinatal transmission and sexual transmission.

The incubation period is typically between 3 and 12 days. Approximately, one in four people infected with Zika virus will develop symptoms including mild fever, rash, muscle pain, joint pain, headache, retro-orbital pain and conjunctivitis which last from several days to a week. Its clinical manifestation is similar to dengue fever. Compared with dengue fever, Zika virus infection has a mild to moderate clinical picture with onset of fever more acute and shorter in duration and no shock or severe bleeding has been observed. There is no specific medication for the disease and symptomatic treatment is given to relief discomfort. Most people recover fully without severe complications.

Zika virus is endemic in parts of Africa and Asia and was first identified in the South Pacific after an outbreak on Yap Island in the Federated States of Micronesia in 2007. Moreover, an outbreak was reported in French Polynesia in October 2013 and spread to other Pacific Islands including New Caledonia, Cook Islands, and Easter Island. In Asia, sporadic cases have been reported in travellers between 2007 and 2013 in Thailand, Cambodia and Indonesia. Since 2014, indigenous circulation of Zika virus has been detected in the Americas. In February 2014, the public health authorities of Chile confirmed the first case of indigenous transmission of Zika virus infection on Easter Island, and cases were reported until June 2014. Autochthonous cases have been reported in the Americas from Brazil, Colombia, El Salvador, French Guyana, Guatemala, Honduras, Martinique, Mexico, Panama, Paraguay, Suriname and Venezuela in 2015. Autochthonous cases have also been reported outside the Americas from Cape Verde, Fiji, Vanuatu, Samoa, the French territory of New Caledonia, Solomon Islands and Indonesia in 2015. Recent outbreaks of Zika virus infection in different regions of the world (Figure 1) demonstrate the potential for the virus to spread through territories where the vector is found.

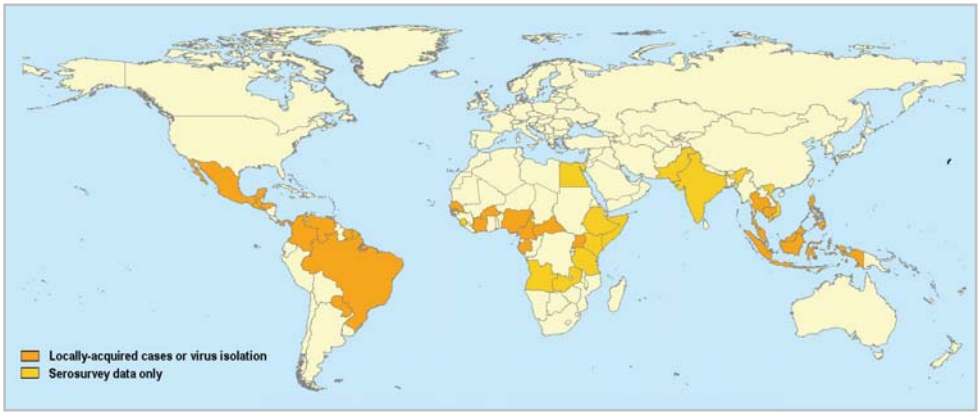


Figure 1 - Countries that have past or current evidence of Zika virus transmission (as of December 23, 2015).

Complications of Zika virus infection are rare and have been identified in the epidemic in French Polynesia in 2013 to 2014. Among some 10 000 cases recorded in that outbreak, approximately 70 were severe cases presented with complications that included neurological (Guillain–Barré syndrome, meningoencephalitis) or autoimmune (thrombocytopenic purpura, leukopenia). The association between these complications and the disease remains under investigation. Moreover, deaths related to Zika virus infection have been reported. According to the European Centre for Disease Prevention and Control, there were estimated 440 000 to 1300 000 cases of Zika virus infection that may have occurred in Brazilian states with laboratory confirmed autochthonous cases in 2015 and three deaths involving two adults and one newborn were reported as of November 28, 2015.

In October 2015, the Ministry of Health of Brazil reported an unusual increase in cases of microcephaly in the state of Pernambuco and some other north-eastern states. The Ministry of Health of Brazil later reported the confirmation of the presence of Zika virus genome in amniotic fluid samples collected from two pregnant women with foetal microcephaly from the state of Paraíba. Both pregnant women presented compatible symptoms of Zika virus infection during their pregnancy. In addition, Zika virus genome was detected in the blood and tissue samples of a newborn who presented with microcephaly and other congenital anomalies and died shortly after birth from the state of Pará. As of December 12, 2015, 2 401 suspected cases of microcephaly, including 29 deaths, have been reported in 20 states of Brazil. An increase in central nervous system malformations in foetuses and newborns has also been reported in French Polynesia during 2014 to 2015 following an epidemic of Zika virus infection. Causal relationships between congenital microcephaly and Zika virus infection are currently under investigation. Besides, the number of cases of Guillain–Barré syndrome increased significantly in the north-east of Brazil between April and June 2015 shortly after the epidemic of Zika virus infection started and investigations are ongoing regarding a possible association with the infection.

In Hong Kong, the principal vector, *Aedes aegypti*, is not found but *Aedes albopictus* is widely present so there is a risk of secondary spread for imported infections. Zika virus infection is not a notifiable disease under Cap. 599 and no human cases have been reported to the Centre for Health Protection (CHP) so far. Nevertheless, laboratory tests for Zika virus detection are available at the Public Health Laboratory Services Branch (PHLSB) of CHP. Doctors should be aware of the possibility of Zika virus infection for travellers returning from affected areas who present clinically compatible picture not attributable to dengue fever or chikungunya fever and consider further investigations of Zika virus infection. Laboratory tests can be arranged with PHLSB for a clinically suspected case.

At present, there is no vaccine to prevent Zika virus infection. To prevent the disease, members of the public are reminded to protect themselves from mosquito bites and help prevent their proliferation.

Protect yourselves against bites

- ☑ Wear loose, light-coloured long-sleeved tops and trousers; and
- ☑ Use DEET-containing insect repellent on exposed parts of the body and clothing.

Special notes when travelling abroad

- ☑ Before the trip
  - ✦ Arrange a travel health consultation with your doctor at least six weeks before the journey for risk assessment and advice on vector preventive measures.
- ☑ During the trip
  - ✦ Rest in air-conditioned or well-screened rooms;
  - ✦ If travelling in rural areas of countries where Zika virus infection or other vector-borne diseases have been reported, carry a portable bed net and apply permethrin (an insecticide) on it as well as to clothes. Permethrin should NOT be applied to skin; and
  - ✦ Seek medical attention as early as possible if feeling unwell.
- ☑ After the trip
  - ✦ Travellers who return from affected areas and feel unwell should seek medical advice as soon as possible, and provide travel details to their doctor.

Help prevent vector proliferation

- ☑ Prevent accumulation of stagnant water
  - ✦ Change the water in vases once a week;
  - ✦ Clear the water in the saucers under potted plants every week;
  - ✦ Cover water containers tightly;
  - ✦ Ensure air-conditioner drip trays are free of stagnant water; and
  - ✦ Put all used cans and bottles into covered dustbins.

NEWS IN BRIEF

2015 Southern Hemisphere Seasonal Influenza Vaccination Programme

The predominating virus for the 2014/15 winter influenza season in Hong Kong was an antigenically drifted H3N2 virus strain, which can have negative impact on the effectiveness of vaccine used for northern hemisphere in 2014/15. In view of this, the Scientific Committee on Vaccine Preventable Diseases (SCVPD) convened two meetings respectively in February and March 2015 to discuss the use of the 2015 southern hemisphere (SH) seasonal influenza vaccine (SIV) which contains the above mentioned influenza virus, including vaccine composition, vaccine effectiveness, any adverse effects and priority groups. Based on risk assessment, SCVPD recommended all residents of Residential Care Homes for the Elderly (RCHE)s and elders to receive 2015 SH SIV to protect against possible occurrence of summer influenza season and prevent influenza outbreaks in RCHEs. The Government took forth the recommendation and purchased 100 000 doses of 2015 SH SIV in order to provide to all RCHE residents as well as community elders by phases, with elders aged 85 years or above starting from May 20, 2015, followed by elders aged 80 years or above starting from June 4, 2015 and elders aged 75 or above starting from June 24, 2015. The 2015 Southern Hemisphere Seasonal Influenza Vaccination Programme was concluded on August 31, 2015. As at August 31, 2015, around 44 300 and 53 700 doses were provided to RCHE residents and community elders respectively. So far, there were no Guillain-Barré Syndrome and other neurological adverse events causally associated with 2015 SH SIV recorded by the Department of Health.

A confirmed case of necrotizing fasciitis caused by *Vibrio vulnificus*

On December 9, 2015, the Centre for Health Protection (CHP) recorded a case of necrotizing fasciitis caused by *Vibrio vulnificus* affecting an 81-year-old woman with underlying illnesses. She presented with shortness of breath, right upper limb swelling and pain on December 5 and was admitted to a public hospital on December 6. She was diagnosed to have necrotizing fasciitis of right upper limb. Blood culture and tissue specimen from the affected part yielded *Vibrio vulnificus*. She was treated with antibiotics. Her condition deteriorated and she passed away on December 7. The patient occasionally handled raw fish during food preparation but no preceding injury was noted by her family. She did not travel outside Hong Kong recently. Her home contacts remained asymptomatic.

A confirmed local case of listeriosis

On December 9, 2015, CHP recorded a case of listeriosis affecting a 50-year-old woman with pre-existing medical conditions. She presented with fever, chills, diarrhoea and headache since December 4, and was admitted to a public hospital on December 5. Her blood specimen collected on December 5 grew *Listeria monocytogenes*. The clinical diagnosis was sepsis. She was treated with antibiotics and was in stable condition. She lives with her husband and daughter, both were asymptomatic. Investigation revealed that she had consumed salad during the incubation period. Investigation on possible sources of infection is on-going.

CA-MRSA cases in November 2015

In November 2015, CHP recorded a total of 113 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 75 males and 38 females with ages ranging from 1 year to 92 years (median = 37 years). Among them, there were 75 Chinese, 10 Caucasian, 6 Filipinos, 4 Nepalese, 2 Japanese, 1 Indian, 1 Malaysian, 1 Pakistani, 1 Singaporean, 1 Vietnamese, 1 Mixed and 10 of unknown ethnicity. Isolates of all these 113 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (75) or V (38).

One hundred and ten cases (97.3%) presented with uncomplicated skin and soft tissue infections. The remaining three cases had invasive CA-MRSA infections. The first case is a 47 years old man who presented with fever, chest pain and lower limb edema on October 10. He was admitted to a public hospital on October 17. He was diagnosed to have infective endocarditis and sepsis with a blood specimen collected on October 18 cultured positive for CA-MRSA. He was treated with antibiotics and remained in stable condition all along. He requested discharge against medical advice on October 24. The second case is a 62 years old man with underlying illnesses. He presented with left neck mass, abdominal pain, cough and shortness of breath in early November and was admitted to a public hospital on November 3. He was diagnosed to have neck abscess and pneumonia. Pus collected from the neck abscess and respiratory specimens were cultured positive for CA-MRSA. He was treated with antibiotics. His condition deteriorated and he passed away on December 4. The third case is a 92 years old man with underlying illnesses. He presented with fever, chills, cough and shortness of breath on November 2 and was admitted to a private hospital on the same day. He was diagnosed to have chest infection with a sputum specimen cultured positive for CA-MRSA. He recovered after antibiotic treatment and was discharged on November 12. The close contacts of these three cases were asymptomatic, and screening and decolonization would be provided to them.

During this reporting period, five family clusters, with each affecting two persons, were identified. Screening and decolonization would be provided to their close contacts. No cases involving healthcare workers were recorded.

(Note: The number of CA-MRSA cases in October was revised to 97.)

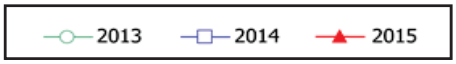
Scarlet fever update (November 22 – December 19, 2015)

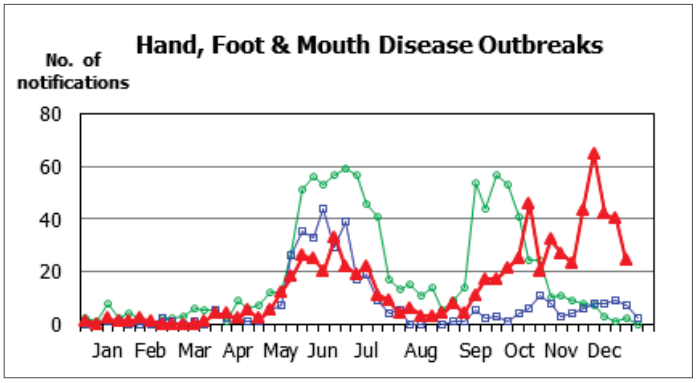
Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From November 22 - December 19, 2015, CHP recorded 153 cases of scarlet fever with a range of 33 to 49 cases per week as compared with 91 cases with a range of 15 to 28 cases per week in the previous reporting period (October 25 - November 21, 2015). The cases recorded in this reporting period included 94 males and 59 females aged between 11 months and 32 years old (median = 6 years). Among them, a three-year-old boy developed pneumonia and septic shock requiring admission to paediatric intensive care unit for management. His condition improved and was now in stable condition. No fatal cases were reported during this reporting period. In the current reporting period, there were two scarlet fever clusters involving two primary schools with each affecting two students.

Laboratory surveillance on multi-antimicrobial resistant bacteria (November 2015)

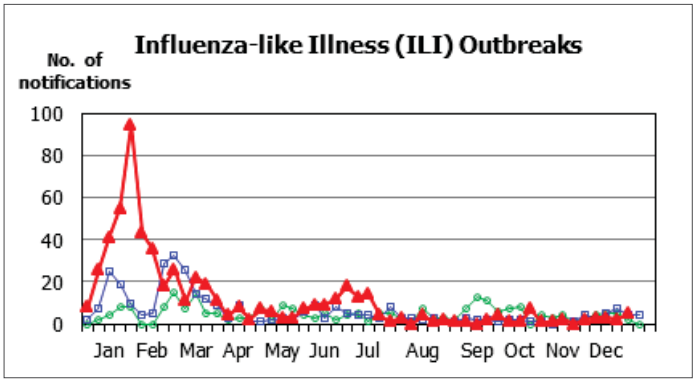
The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data can be found on CHP's website:
http://www.chp.gov.hk/en/data/1/10/641/695/3910.html.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 50 - WEEK 51)

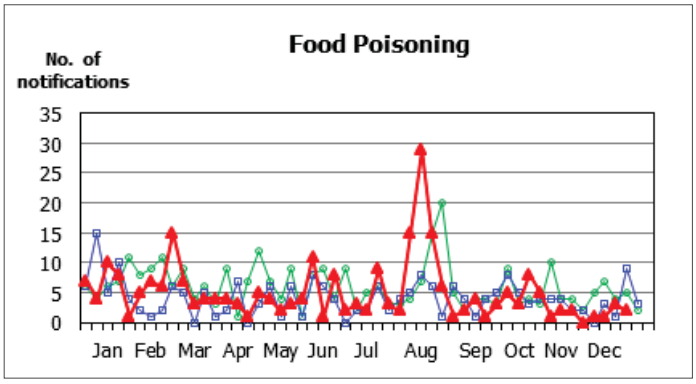




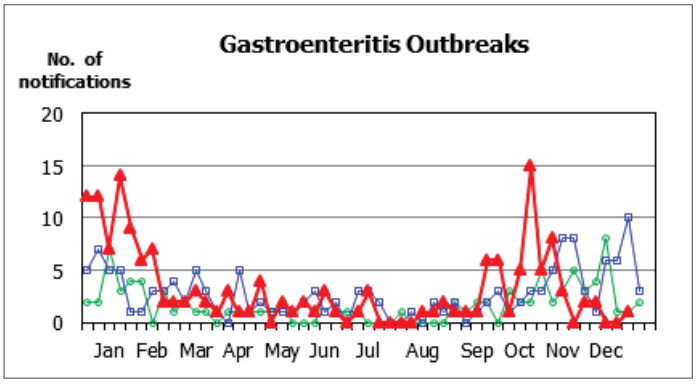
Week 48	65	Week 49	42
Week 50	**40**	**Week 51**	**24**



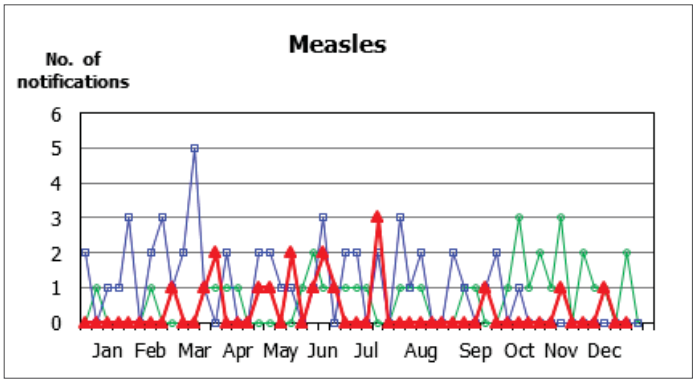
Week 48	3	Week 49	3
Week 50	**2**	**Week 51**	**5**



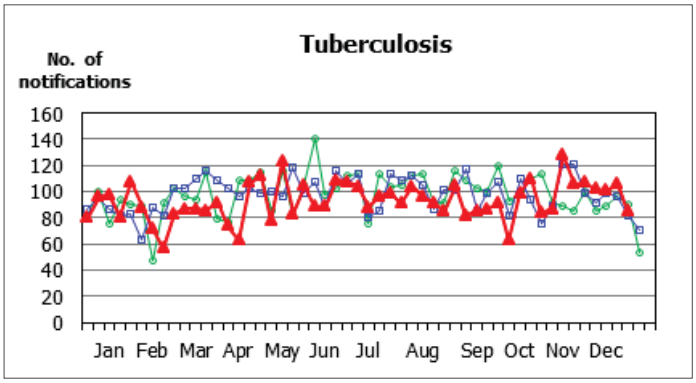
Week 48	1	Week 49	1
Week 50	**3**	**Week 51**	**2**



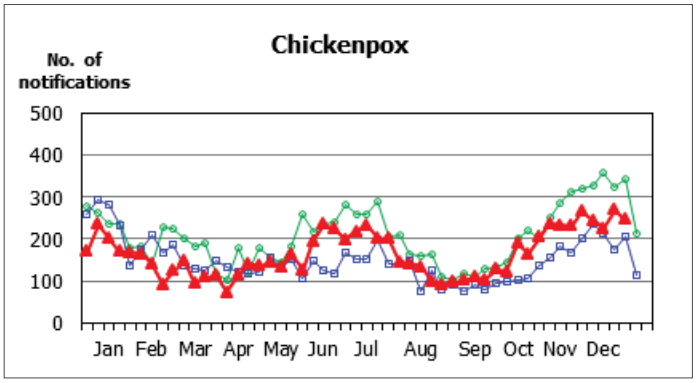
Week 48	2	Week 49	0
Week 50	**0**	**Week 51**	**1**



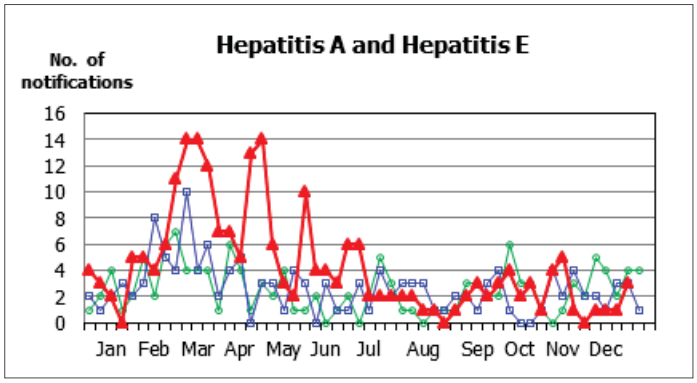
Week 48	0	Week 49	1
Week 50	**0**	**Week 51**	**0**



Week 48	102	Week 49	101
Week 50	**106**	**Week 51**	**85**



Week 48	244	Week 49	225
Week 50	**270**	**Week 51**	**246**



Week 48	1	Week 49	1
Week 50	**1**	**Week 51**	**3**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until December 19, 2015. This information may be updated over time and should therefore be regarded as provisional only.