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.

Communicable Diseases Watch 2016 Compendium

ISSN 1818-4111

Produced and published by

Communicable Disease Division
Surveillance and Epidemiology Branch
Centre for Health Protection
Department of Health
Government of the Hong Kong Special Administrative Region

147C Argyle Street, Kowloon, Hong Kong

Communicable Diseases Watch

2016 Editorial Board

This publication is produced by the Centre for Health Protection of the Department of Health, Hong Kong Special Administrative Region Government

147C, Argyle Street, Kowloon
Hong Kong SAR

ISSN: 1818-4111

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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

How to Enhance Infection Control Practice in Residential Care Homes for the Elderly (RCHEs) in Hong Kong

Reported by Dr H CHEN, Associate Consultant; Ms KY FU, Advanced Practice Nurse; Mr Enoch HSU, Senior Research Officer; Ms Helen NG, Research Officer, and Dr TY WONG, Head, Infection Control Branch, CHP.

There were 741 residential care homes for the elderly (RCHEs) providing 79 052 beds in Hong Kong in 2014. Residents in these homes are vulnerable and prone to develop communicable diseases. Crowded environment, common social activities of residents, sharing of rooms, toilet and bathing facilities increase person-to-person contacts and risk of exposure to contaminated environments, which in turn promote transmission of communicable diseases and spread of pathogens. Promoting and maintaining vigilance to proper infection control practices pose great challenges to infection control practitioners in RCHEs. The Infection Control Branch of the Centre for Health Protection has developed a multipronged infection control programme to enhance infection control knowledge and practices of staff in RCHEs in the past few years.

We invited RCHEs, which had rooms for improvement with regards to their infection control practice, to join our one-year RCHE infection control enhancement programme. We conducted six visits to the homes joining our programme. During the first and last visit, we performed infection control assessment with a standard questionnaire on facilities and practice of hand hygiene and environmental hygiene. The second to fifth visits were intervention visits. During these four intervention visits, we carried out the followings: 1) Conducted half-hour evidence-based tailor-made interactive infection control talks covering six core aspects of infection control: basic infection control concepts, hand hygiene, environmental hygiene, care of residents with multi-drug resistant organisms (MDROs), care of residents with medical devices, and influenza vaccination promotion. The training materials had been developed taking reference to evidence-based guidelines. They were tailor-made to fit the need of the RCHEs after situation analysis. Infection control knowledge of the staff was tested before and after each talk. 2) Provided prompt feedback and recommendations to the homes after each visit. We adopted one-RCHE-one-nurse approach so that the RCHE can seek infection control advice timely from the responsible nurse who knew the RCHE well. 3) Provided homes with gimmicks, posters and reminders to promote an infection control friendly environment. 4) Made the training materials easily accessible by distributing the hard copies, DVDs and creating a mini-web[1] so that RCHEs can take reference to these materials whenever needed.

We used paired t-test and McNemar's test to compare the staff knowledge scores and the change in facility and practice assessment scores respectively before and after the intervention.

Table 1 - Comparisons of staff knowledge scores and IC practice assessment scores before and after the intervention.

	Before-intervention mean scores	After-intervention mean scores	*p*-values
Knowledge scores			
Basic infection control concepts	91.6	96.5	<0.05†
Hand hygiene	93.2	94.7	<0.05†
Environmental hygiene	71.3	82.9	<0.05†
Care of residents with MDROs	73.7	87.3	<0.05†
Care of residents with medical device	95.0	96.2	0.11†
Influenza vaccination promotion	92.7	97.5	<0.05†
Overall	**85.3**	**92.3**	**<0.05†**
Facility and Practice scores			
Hand hygiene – facility	51.8	77.2	<0.05^
Hand hygiene – practice	83.8	92.9	<0.05^
Environmental hygiene	82.2	95.4	<0.05^

† *paired t-test;* ^*McNemar's test*

Forty-two RCHEs joined our programme. We conducted 168 talks with 1 150 staff attended. Improvements were indicated by staff knowledge scores and infection control practice assessment scores. The overall knowledge scores, facility and practice assessment scores improved significantly (p<0.05) (Table 1).

Feedbacks from RCHE staff were sought during the last visit. They commented that the programme enabled them to understand the importance of infection control, improved their knowledge and helped them to create an environment to perform proper infection control, improved their knowledge and helped them to create an infection control friendly environment.

[1] http://icidportal.ha.org.hk/sites/en/rche/default.aspx

Infection control recommendation can be effectively implemented by RCHE if it adapts with specific needs of individual RCHE. Some RCHEs may not be able to fully comply with infection control recommendations from the guidelines because they may encounter different limitations and challenges like lack of knowledge, lack of resources or rapid turnover of the staff. Our one-RCHE-one-nurse approach allowed two-way communication between RCHE and programme nurse. The interactive process with fine tuning of the recommendations tailor-made for the home allowed effective implementation. We distributed the training materials to RCHEs and put them onto the internet to facilitate infection control officer of the RCHE to train their newly recruited staff to maintain their infection control standards.

This programme also empowered the RCHEs to enhance their infection control practice to receive carriers with emerging MDROs like Vancomycin-Resistant Enterococcus (VRE) after their discharge from hospitals and minimize the risk of spread of MDROs among residents of RCHEs. Collaboration with different stakeholders and effective communication were essential elements.

In conclusion, our programme succeeded in improving the infection control knowledge of RCHE staff and helped them to transform their knowledge to infection control practice in their daily work. The key reason for the success was that our infection control advices were formulated with an understanding of RCHE operation. These advices were "tailor-made" for the homes and can be followed by staff members of the homes. To make the improvement sustainable, we empowered the RCHE to create an infection control friendly environment by helping them to set up hand hygiene facilities, and to create a hand hygiene culture and environment. Feedbacks from the RCHE staff members enabled us to enrich and fine-tune our programme during the process. In addition, we made the information freely and easily accessible for all RCHEs so that they can make use of them to improve their infection control practice and protect the elders from communicable diseases. The programme will be incorporated into the infection control training of the Elderly Health Service, the Department of Health so that the programme can benefit to all RCHEs in Hong Kong.

Photo 1 - Training materials, posters and pamphlets of the program.

Photo 2 - Staff attending the out-reach training in their own RCHE

Acknowledgement
The authors would like to express their gratitude to all the RCHE staff for their participation and support to this programme.

Prevention and Control of Legionnaires' Disease in Hong Kong

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.

Legionnaires' Disease (LD) is a type of bacterial pneumonia caused by legionella, most commonly *Legionella pneumophila* serogroup 1 (Lp1). Legionellae are ubiquitous in aqueous environments including man-made water systems such as potable water supplies systems. Overseas studies have shown that legionella bacteria were found in about 10% to 60% of potable water systems. A local study in 2011 also revealed that about 20% of the households had legionella species colonising the domestic water systems[1]. As such, it is difficult to achieve long-term elimination of legionella in potable water systems and recolonisation of legionella after disinfection is common.

In view of the local epidemiology as well as prevention and control practices overseas, the Centre for Health Protection (CHP) of the Department of Health recently revised the strategy for environmental investigation and sampling for LD cases according to recommendations by CHP's Scientific Committee on Emerging and Zoonotic Diseases (SCEZD). The article detailed the revised risk-based strategy and the rationales for the changes.

Current situation in Hong Kong

In Hong Kong, the number of LD cases reported to CHP was on the rise in the past few years and reached 66 in 2015 (Figure 1). Among the 200 cases reported from 2010 to 2015, 155 (77.5%) were locally acquired infection. Males were predominately affected with a male-to-female ratio of 5.3:1. Their ages ranged between 25 and 96 years (median: 65 years). There were no significant changes in the characteristics of the cases in the past few years.

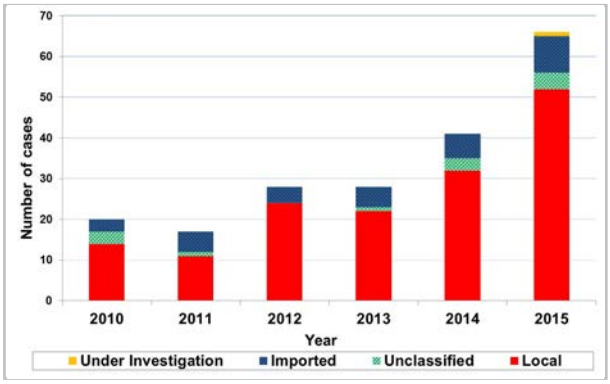


Figure 1 - Number of LD cases recorded per year, 2010 – 2015.

[1]Cheng VC, Wong SS, Chen JH, et al. An unprecedented outbreak investigation for nosocomial and community-acquired legionellosis in Hong Kong. *Chin Med J* (Engl). 2012;125(23):4283-90.

Improvement in laboratory diagnostic tests leading to increased case detection

One of the reasons accounting for the increasing incidence of reported LD cases in Hong Kong was the availability and wider use of rapid diagnostic tests including urine antigen test (UAT) and polymerase chain reaction (PCR) for investigation of suspected cases in the past decade, which enabled previously undiagnosed LD to be diagnosed, and diagnosed more timely, as compared with traditional tests such as serological test and culture.

The number of UAT performed in the Public Health Laboratory Services Branch (PHLSB) under CHP and public hospitals under the Hospital Authority (HA) showed a 78% and 180% increase respectively from 2010 to 2014. For PCR performed in HA, the corresponding increase was 6.6 fold. As such, among patients with pneumonia, more LD cases would be detected in recent years due to the wider use of rapid and sensitive diagnostic tests. However, the percentage of specimens tested positive for Lp1 did not show an increasing trend in the past few years. (Table 1)

Table 1 - UAT and PCR performed by PHLSB and public hospitals.

Year	PHLSB			Public hospitals					
	UAT			UAT			PCR		
	Number performed	Number positive	% positive	Number performed	Number positive	% positive	Number performed	Number positive	% positive
2010	1 566	18	1.15%	1 966	13	0.66%	143	5	3.50%
2011	1 742	13	0.75%	2 567	12	0.47%	206	2	0.97%
2012	2 011	12	0.60%	3 281	20	0.58%	475	8	1.68%
2013	2 518	15	0.60%	4 449	16	0.36%	622	9	1.45%
2014	2 780	14	0.50%	5 491	22	0.40%	1 084	14	1.29%
2015*	1 728	11	0.64%	6 144	45	0.73%	1 518	21	1.38%

*Only included data from January to June

Environmental investigations of the sources of infection

Regarding the sources of infection, except one case in 2007 related to the use of a home respirator, the sources could not be confirmed in all other cases despite extensive environmental investigation of each reported LD case.

From 2010 to 2015 (up to October), CHP conducted epidemiological investigation for 173 reported LD cases with local movements in collaboration with Electrical and Mechanical Services Department (EMSD). During field investigations, a total of 2 249 water samples were collected from possible sources, including 89 water samples from fresh water cooling towers (FWCTs) and 2 160 water samples from non-FWCT sources (mainly potable water systems in the patients' residences and workplaces). Legionellae were detected in about 40% of water samples from cooling towers and 20% of those from non-FWCT sources (Table 2). These were within the expected ranges reported in local and overseas studies/surveys of colonisation of legionellae in various water systems.

Nonetheless, positive detection of Lp1 in these water systems did not imply that they were the sources of infection for the patients because of the ubiquitous nature of legionellae in the environment. Among the 17 cases with both respiratory specimens and environmental samples collected from related water systems tested positive for Lp1 from 2010 to 2015, molecular typing studies conducted by PHLSB did not detect the same sequence-based type of Lp1 bacteria between the human and environmental samples. Hence, the environmental sites with Lp1 detected were probably incidental findings and unlikely to be the source of infection for the cases. In this regard, subsequent disinfection of domestic potable water systems upon detection of Lp1 may not be necessary. Besides, legionella bacteria may recolonise in the potable water distribution systems after disinfection in the long term.

Table 2 - Results of water samples collected during environmental investigations for cases reported to CHP from 2010 to 2015 (as of October 31).

	Cooling towers+	Other sources (mainly potable water systems)^
Number of samples taken	89	2,160
Number of samples positive for Lp1 (%)	30 (33.7%)	211 (9.8%)
Number of samples positive for Lp serogroups 2-14 (%)	16 (18.0%)	247 (11.4%)
Number of samples positive for any legionella #	38 (42.7%)	406 (18.8%)

+*Positive if Legionella bacteria count (LBC) ≥10 colony forming units per millilitre (cfu/ml)*
^*Positive if LBC ≥0.1 cfu/ml*
Including Lp & non-pneumophila legionellae

Revised strategy for investigation of LD cases recommended by SCEZD

CHP's SCEZD reviewed international practices in environmental investigation and sampling for LD cases. In general, international health or relevant authorities do not recommend routine environmental investigation and sampling for sporadic community-acquired cases. Environmental sampling is mainly restricted for investigations involving hospitals, residential institutions and disease clusters or outbreaks where a common potential exposure could be identified.

Based on the review of the local epidemiology, scientific literature and practices/guidelines from major developed countries, SCEZD recommended the following strategy for investigation of LD cases in Hong Kong.

CHP will continue to conduct epidemiological investigations to identify potential sources of infection, high-risk exposures and clusters. In principle, environmental investigation and sampling from potential sources will be carried out for LD cases if one of the following criteria is met (Figure 2):

- A single definite or possible nosocomial case associated with high-risk areas of a hospital (e.g. wards with severely immunosuppressed patients such as transplant unit, intensive care unit, etc.), i.e. the patient stayed in the hospital during the entire

or part of the incubation period (IP) (two to ten days before onset) respectively;

- The patient spent the whole IP as a resident of a residential institution, such as a residential care home for the elderly (RCHE) or a residential care home for persons with disabilities (RCHD), or as an in-patient in low-risk areas of a hospital;
- Two patients with onset within six months **and** who had common exposure for a portion of the IP to either a residential institution such as RCHE/RCHD, or low-risk areas of a hospital;
- The patient had exposure to a high-risk source, such as aerosol-generating device (e.g. respiratory equipment), during the IP;
- The patient visited a high-risk venue, such as spa, jacuzzi or whirlpool, during the IP; and
- A cluster which is defined as two or more confirmed cases with onset within six months and common exposure to the same potential source of infection during the IP (e.g. a cooling tower, living in the same building, etc.).

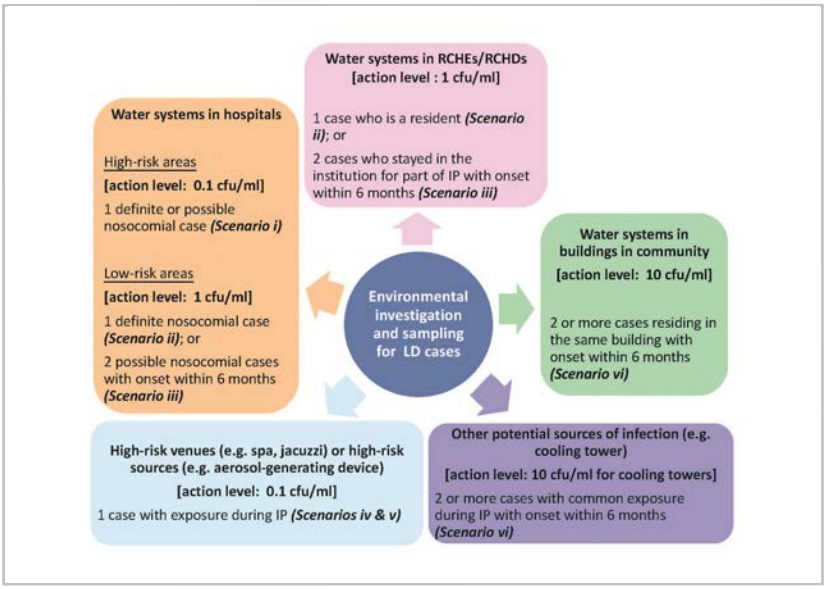


Figure 2 - Scenarios in which environmental investigation and sampling from potential sources will be carried out and the respective action levels.

Regarding environmental investigation, CHP will liaise with EMSD to collect samples from potential sources for testing of legionella. Currently, there is no established dose–response relationship for legionella infections, and the legionella count necessary to cause an outbreak is unknown. Moreover, there is neither scientific evidence nor international consensus on the action levels of legionella count. In this regard, a risk based approach is adopted rather than using a single action level for control measures universally, taking into consideration of the variable degree of risk in different settings/facilities and the ubiquitous nature of legionella in the environment. The following risk-based action levels of total legionella count are adopted for water samples collected from different settings or potential sources (Figure 2):

- Cooling towers associated with two cases within six months: ten cfu/ml or above;
- Water systems in buildings in community epidemiologically linked to two cases within six months: ten cfu/ml or above;
- Water systems in residential institutions (RCHE or RCHD) and low-risk areas of hospitals associated with either any case who stayed there for the whole IP or two cases who spent part of the IP there within six months: one cfu/ml or above;
- Water systems in high-risk areas of hospitals (e.g. wards with severely immunosuppressed patients such as transplant unit, intensive care unit, etc.) associated with any case: 0.1 cfu/ml or above; and
- Hot tubs (e.g. spa, Jacuzzi or whirlpool) and aerosol-generating devices (e.g. respiratory equipment) associated with any case: 0.1 cfu/ml or above.

Potential actions taken for water samples exceeding the action levels

Regarding the actions in response to detection of legionella in the above water samples, these will depend on the nature of the suspected source of infection, the proportion of specimens with positive laboratory results, and specific risk assessment of individual scenarios. Specific actions might include installation of point-of-use water filters, removal of contaminated tap aerators or shower facilities, possible disinfection of the water systems concerned, etc. After implementation of the necessary control measures, CHP will collect follow-up water samples for further legionella testing in order to ensure that the measures are effective.

Prevention of LD in the community

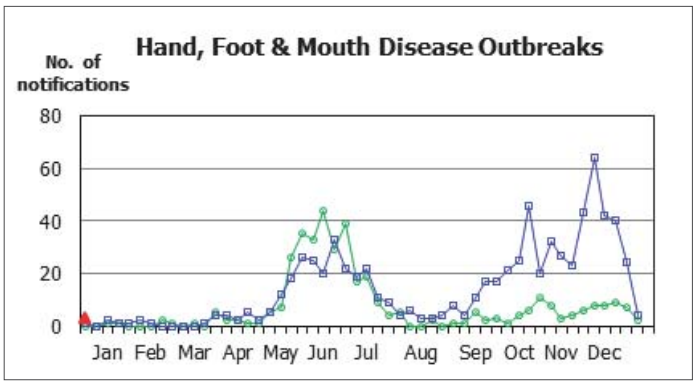
For the prevention of LD in the community, proper design, operation and maintenance of water systems are important to prevent proliferation of legionella. For details, building management and the public can refer to the Housekeeping Guidelines for Cold and Hot Water Systems for Building Management (http://www.emsd.gov.hk/filemanager/en/content_644/PLDC_CHWS.pdf) published by the Prevention of Legionnaires' Disease Committee.

Patients using home respiratory devices should seek and follow their doctors' advice regarding the use and maintenance, and use only sterile (not distilled) water to rinse and fill the equipment. Immunosuppressed patients are most at risk. Hence, it was of utmost importance for them to take extra precautions against LD. They should:

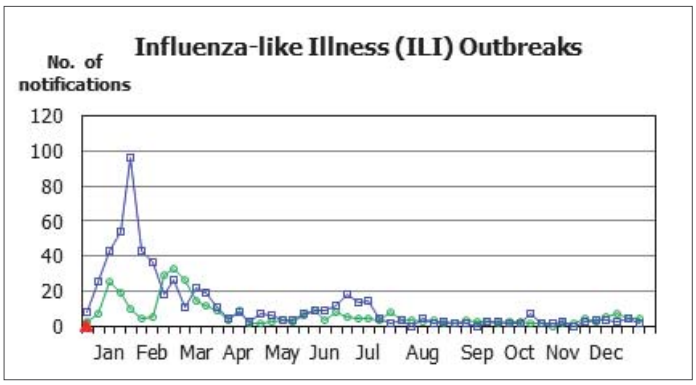
- Use sterile water, boiled water or water filtered with 0.2 micrometre filters for drinking, tooth brushing and mouth rinsing;
- Avoid using humidifiers, or other mist- or aerosol-generating devices. Shower may also generate small aerosols; and
- If using humidifiers, or other mist- or aerosol-generating devices, fill the water tank with only sterile or cooled freshly boiled water, and not water directly from the tap. Besides, clean and maintain humidifiers/devices regularly according to manufacturers' instructions. Never leave stagnant water in a humidifier/device. Empty the water tank, wipe all surface dry, and change the water daily.

The public may visit the CHP's LD page for further information (www.chp.gov.hk/en/view_content/24307.html).

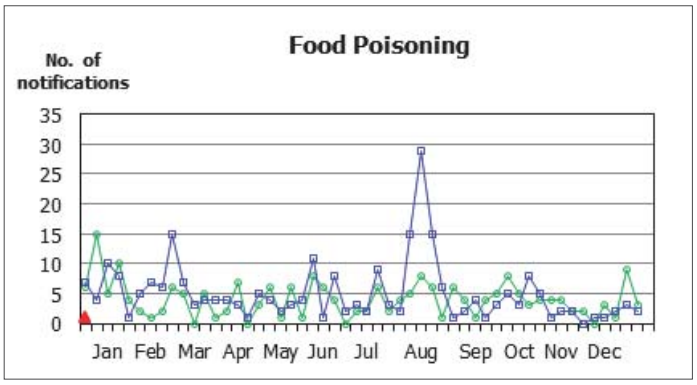
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 52 - WEEK 1)



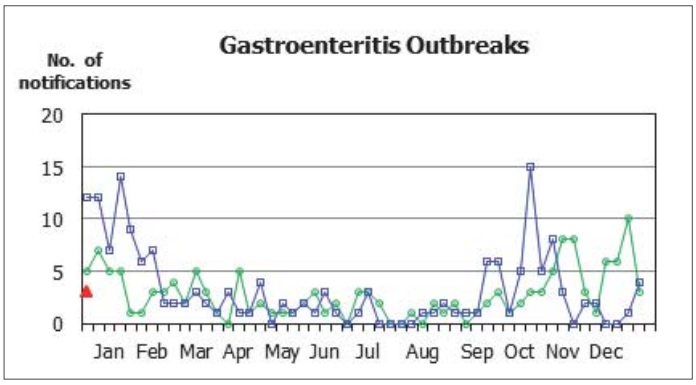
Week 50	40	Week 51	24
Week 52	**4**	**Week 01**	**3**



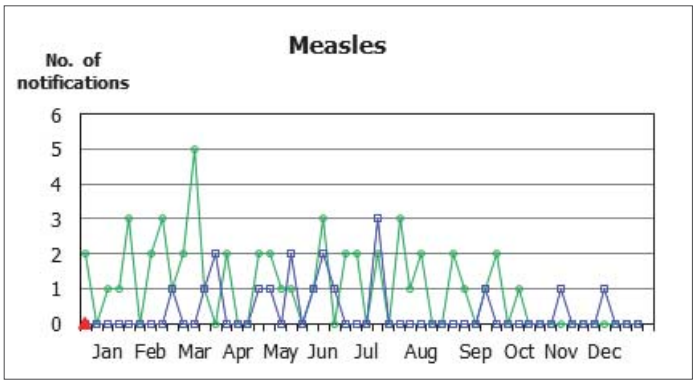
Week 50	2	Week 51	4
Week 52	**1**	**Week 01**	**0**



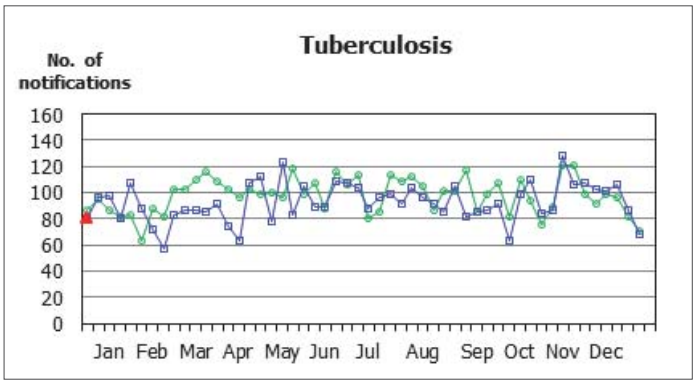
Week 50	2	Week 51	3
Week 52	**2**	**Week 01**	**1**



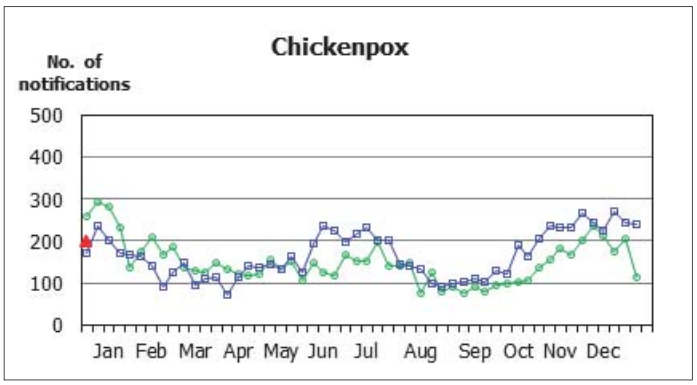
Week 50	0	Week 51	1
Week 52	**4**	**Week 01**	**3**



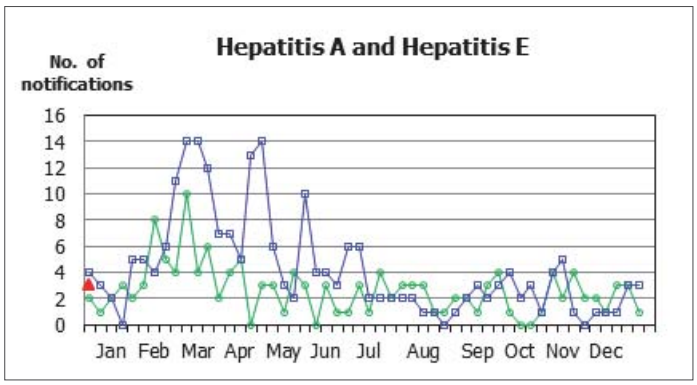
Week 50	0	Week 51	0
Week 52	**0**	**Week 01**	**0**



Week 50	106	Week 51	87
Week 52	**68**	**Week 01**	**80**



Week 50	270	Week 51	245
Week 52	**239**	**Week 01**	**197**



Week 50	1	Week 51	3
Week 52	**3**	**Week 01**	**3**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until January 2, 2016. This information may be updated over time and should therefore be regarded as provisional only.

Jan 3 - Jan 16 2016 WEEKS 2 - 3 VOL 13 ISSUE N⁰ 2

Communicable Diseases WATCH

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

FEATURE IN FOCUS

Epidemiology of Varicella in Recent Years

Reported by Mr Desmond CHAN, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Varicella (chickenpox) is an acute infectious disease caused by Varicella-Zoster Virus (VZV). Patient usually presents with fever and itchy skin rashes which first appear as flat spots and later as vesicles. The vesicles continue for 3 - 4 days, then dry up and form scabs. Varicella is usually a mild childhood disease but it can be severe and even fatal in adults and immuno-compromised individuals. The disease burden of varicella in Hong Kong is substantial, as it is the most commonly reported notifiable infectious disease in Hong Kong.

In Hong Kong, the Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the Centre for Health Protection (CHP) of the Department of Health (DH) is the advisory body on local immunisation programme. After taking into account factors including local epidemiology, scientific literatures, overseas recommendation and latest economic analysis, SCVPD recommended varicella vaccine to be incorporated into the Hong Kong Childhood Immunisation Programme (HKCIP)[1]. Varicella vaccination programme started on July 2, 2014. Children born on or after January 1, 2013 who reached one year old are eligible to receive the first dose of varicella vaccine at Maternal and Child Health Centres (MCHCs). The second dose of varicella vaccine will be given by the School Immunisation Teams (SIT) when these children reach primary one. From July 2014 to November 2015, over 95 500 doses of varicella vaccines were administered in the MCHCs.

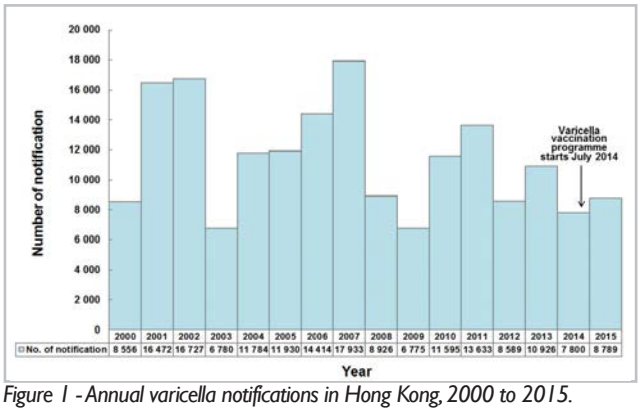


Figure 1 - Annual varicella notifications in Hong Kong, 2000 to 2015.

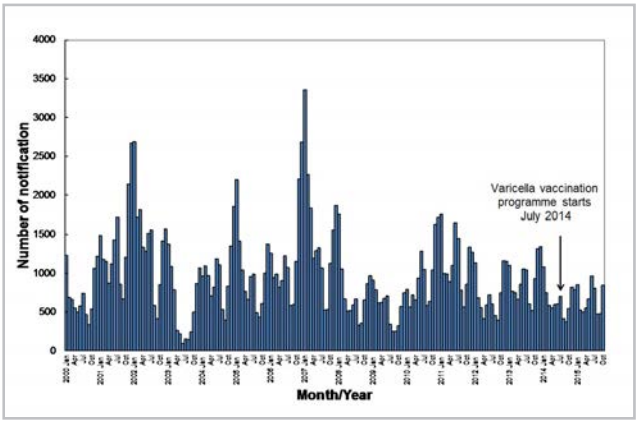


Figure 2 - Monthly varicella notifications in Hong Kong, 2000 to 2015.

The annual number of varicella notifications varied from about 6 700 to about 18 000 from 2000 to 2015. The number of notifications peaked at 2001-2002 and 2007. During these years, the annual notifications reached 16 000 to 18 000 cases (Figure 1). Notifications were usually more common in winter months (Figure 2). Majority of the varicella cases occurred in children aged 2 to 11, who accounted for nearly 70% of all cases over the year (Figure 3). The CHP investigated outbreaks of varicella in different settings. The annual number of institutional varicella outbreaks varied with the annual number of varicella notifications, as reflected in Figure 4. From 2007 to 2015 (up to December 18, 2015), the number of institutional outbreaks recorded by the CHP of the DH varied from 487 to 1 072 annually. Most of the varicella outbreaks occurred in pre-primary institutions (including kindergartens, child care centres, etc.) (52%), followed by primary schools (41%).

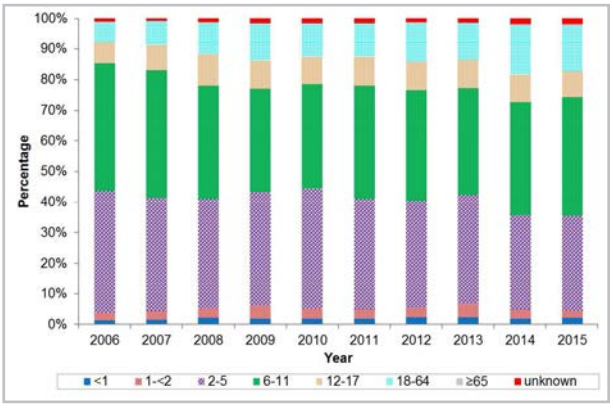


Figure 3 - Age distribution of varicella cases, 2006 to 2015.

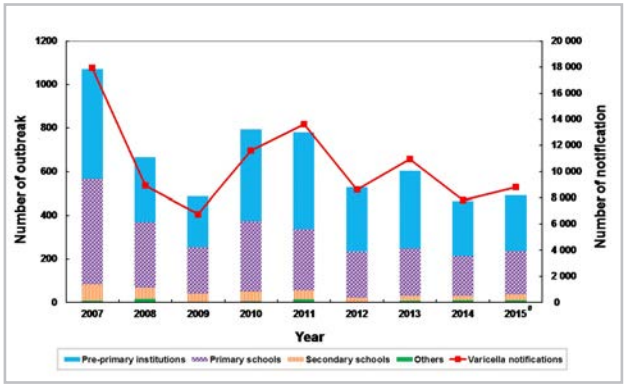


Figure 4 - Varicella outbreaks and notifications, 2007 to 2015 (#Outbreak data up to December 18, 2015; notification data up to December 31, 2015).

Since the implementation of the childhood varicella vaccination programme in July 2014, the total number of notifications slightly dropped from 10 926 to 8 789 in 2013 to 2015, while the number of notifications between 1 to < 2-year-old decreased from 460 to 208. It is still early to draw conclusions on the effects of the vaccination programme. The DH will continue to monitor the disease burden of varicella to assess the impact of universal varicella vaccination on a longer term.

Reference

[1] SCVPD recommendation on varicella vaccination (http://www.chp.gov.hk/files/pdf/recommendations_on_the_use_of_varicella_vaccine_in_cip_r.pdf).

NEWS IN BRIEF

Two cases of human myiasis

In early January 2016, CHP recorded two local cases of human myiasis. The first case affected an 89-year-old female elderly home resident in North district. She was bedbound with multiple medical illnesses and was on Ryle's tube feeding. She was found to have facial swelling and a worm in the oral cavity by elderly home staff on January 2, and was admitted to a public hospital on the same day. The worm collected from the wound was identified to be of species *Chrysomya bezziana*. She was in stable condition and was discharged on January 11.

The second case affected an 88-year-old male resident from another elderly home in Central and Western district. He was bedbound with multiple medical illnesses and was on Ryle's tube feeding. He was found to have worms in his mouth and was admitted to a public hospital on January 3. The worms were identified to be *Chrysomya bezziana* maggots. The patient's condition was stable. Health advice on oral care for Ryle's tube fed residents and environmental hygiene were given to both elderly homes.

A cluster of two cases of typhus

CHP recorded two cases of typhus in November 2015 and January 2016. The first case was a 69-year-old female with good past health. She presented with headache, dizziness, myalgia and bone pain since November 1, 2015. She developed fever on November 3 and generalised skin rash on November 4. She was admitted to a public hospital on November 7 due to persistent symptoms. Paired sera were taken on November 7 and 18 revealed four-fold rise in antibody titre against the "spotted fever group" of rickettsiae. Her condition was stable and was discharged on November 13.

The second case was a 62-year-old female with underlying medical diseases. She presented with fever, malaise and generalised skin rash since December 19, 2015 and was admitted to a public hospital on December 22. Paired sera were taken on December 22 and 31 revealed four-fold rise in antibody titre against the "spotted fever group" and "typhus group" of rickettsiae. Her condition was stable and was discharged on January 2, 2016. Epidemiological investigations found that the two cases lived in two public housing estates which were nearby and situated near to vegetated area. During the incubation period, the first case had hiking in Shenzhen and a country park close to her home; while the second case reported no travel history and no hiking activity during incubation period. Their home contacts were asymptomatic. The Food and Environmental Hygiene Department was informed and investigations are on-going.

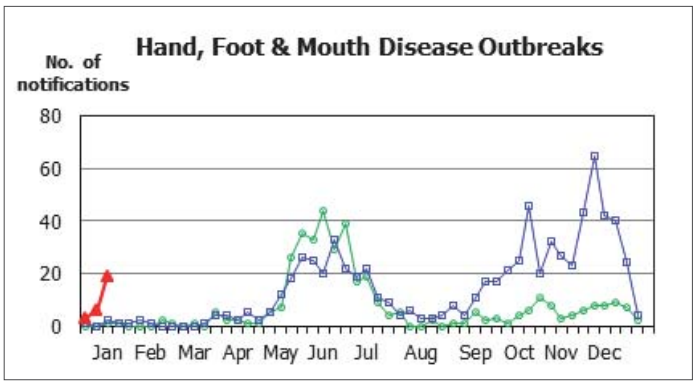
CA-MRSA cases in December 2015

In December 2015, CHP recorded a total of 77 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 44 males and 33 females with ages ranging from 8 months to 70 years (median = 34 years). Among them, there were 49 Chinese, 12 Filipinos, 4 Pakistani, 3 Caucasian, 2 Nepalese, 1 Japanese, 1 Vietnamese and 5 of unknown ethnicity. Isolates of all these 77 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (44) or V (33). All cases presented with uncomplicated skin and soft tissue infections. Among the 77 cases, one case was a nurse working in a public outpatient clinic. Investigation did not reveal any epidemiological linkage to other cases. Besides, six family clusters, with each affecting two to four persons, were identified during this reporting period. Screening and decolonization would be provided to their close contacts.

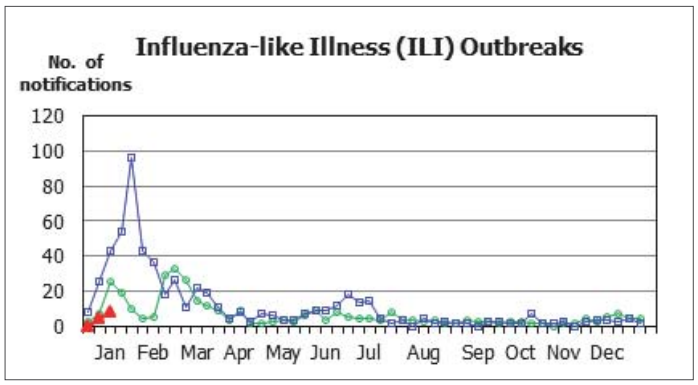
Scarlet fever update (December 20, 2015 – January 16, 2016)

Scarlet fever activity in this reporting period decreased as compared with the previous four weeks. From December 20, 2015 – January 16, 2016, CHP recorded 97 cases of scarlet fever with a range of 17 to 30 cases per week as compared with 155 cases with a range of 33 to 49 cases per week in the previous reporting period (November 22, 2015 – December 19, 2015). The cases recorded in this reporting period included 52 males and 45 females aged between 8 months and 14 years old (median = 6 years). No fatal cases were reported during this reporting period. In the current reporting period, there were five scarlet fever clusters involving 4 kindergartens and one residential home affecting a total of twelve children.

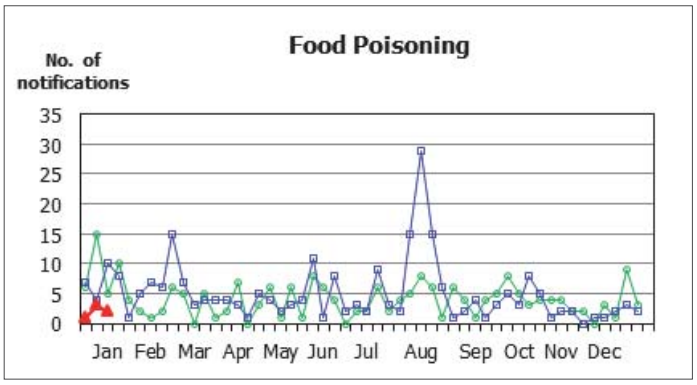
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 2 - WEEK 3)



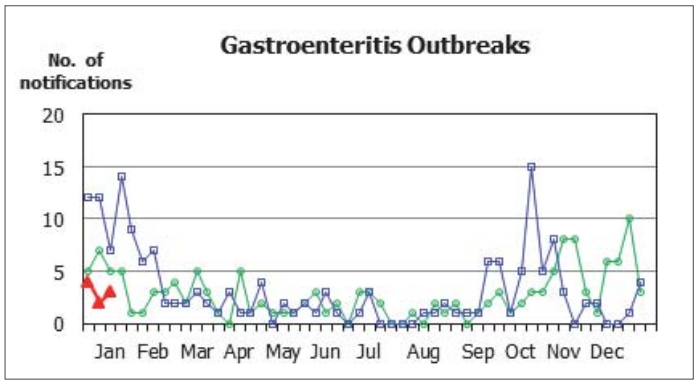
Week 52	4	Week 01	3
Week 02	**6**	**Week 03**	**19**



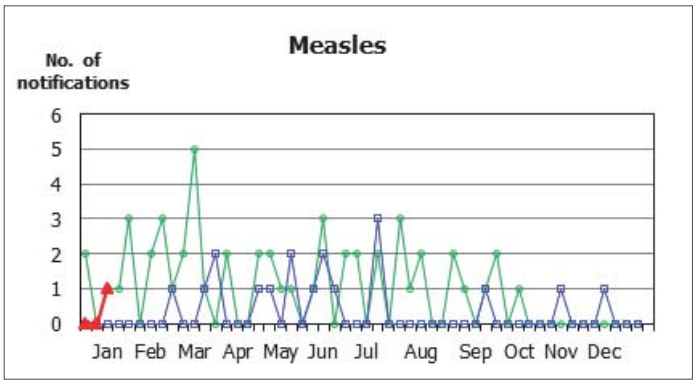
Week 52	1	Week 01	0
Week 02	**4**	**Week 03**	**8**



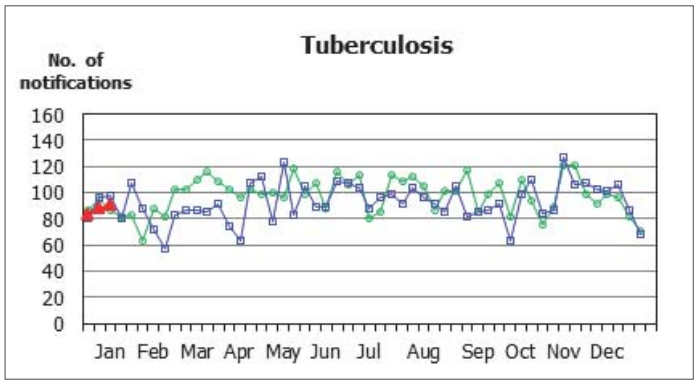
Week 52	2	Week 01	1
Week 02	**3**	**Week 03**	**2**



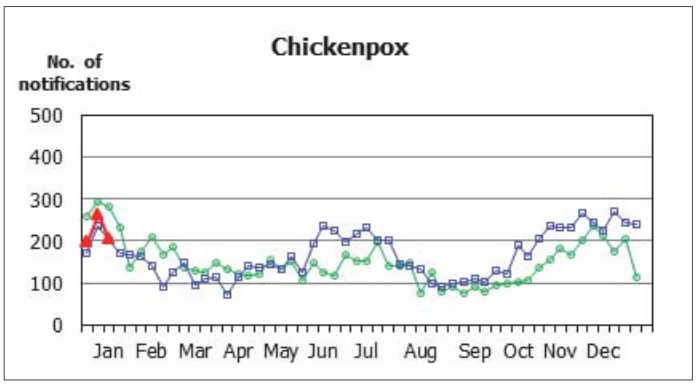
Week 52	4	Week 01	4
Week 02	**2**	**Week 03**	**3**



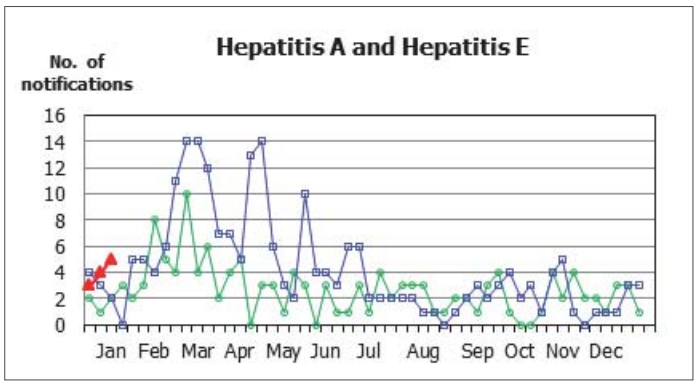
Week 52	0	Week 01	0
Week 02	**0**	**Week 03**	**1**



Week 52	68	Week 01	83
Week 02	**88**	**Week 03**	**90**



Week 52	239	Week 01	197
Week 02	**265**	**Week 03**	**207**



Week 52	3	Week 01	3
Week 02	**4**	**Week 03**	**5**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until January 16, 2016. This information may be updated over time and should therefore be regarded as provisional only.

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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

Update on the Overseas Outbreak of Ebola Virus Disease (EVD)

Reported by Dr Zenith HY WU, Medical and Health Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP

The recent EVD outbreak caused by the Zaire species, began in Guinea in December 2013, was first reported by the World Health Organization (WHO) on March 23, 2014. Since then, cases had been reported in a total of ten countries, including three countries with widespread and intense transmission (Guinea, Liberia and Sierra Leone); and seven other countries which reported sporadic imported cases (Italy, Mali, Nigeria, Senegal, Spain, the United Kingdom and the United States of America) and with subsequently related local clusters (Mali, Nigeria, and the United States of America).

The outbreak had been the largest and most complex Ebola outbreak since the virus was first discovered in 1976. As reported by the WHO[1,2], on January 20, 2016, this outbreak originated in West Africa involved 28 638 cases and 11 316 deaths globally, of which 28 602 cases and 11 301 deaths were reported in Guinea, Liberia and Sierra Leone. (Table 1)

The weak health systems, lack of human and infrastructural resources, and the situation just emerged from long periods of conflicts and instability contributed the rapid spread of the virus in the early phase of the outbreak in these three countries[3]. Cultural burial ceremonies in which the mourners have direct contact with the body of the deceased also play a role in the transmission of the virus.

With the support from WHO and other international organizations in the past two years, the three hardest-hit countries have developed a strong surveillance system, rapid response capacity, effective survivors care and screening system to detect and respond to new cases. All the improvements helped to interrupt the chains of transmission from the original outbreak and control the epidemic.

Health care workers can be infected with EVD through close contact with patients when infection control precautions are not strictly followed. As reported by the WHO[4] on November 4, 2015, there have been a total of 900 confirmed health worker infections which constituted to around 3% of all cases. Among those, 519 (58%) deaths were reported. The overall case fatality rate is estimated to be 40%.

Countries with widespread and intense transmission – Guinea, Liberia, Sierra Leone

On November 7, 2015[5] and December 29, 2015[6], WHO declared Sierra Leone and Guinea free of Ebola virus transmission in the human population respectively after forty-two days (2 incubation periods) were passed since the second negative test of the last laboratory-confirmed case in these two countries (Box 1). Both countries have entered a 90-day period of heightened surveillance since then. The period is designed to ensure no hidden chains of transmission have been missed and to detect any new flare-ups of the disease.

Table 1 - Number of cases and deaths of EVD in countries with widespread and intense transmission, as reported by WHO on January 16, 2016.

Country	Case definition	Cases	Deaths
Guinea	Confirmed	3 351	2 083
	Probable	453	453
	Suspected	0	*
	All	**3 804**	**2 536**
Liberia#	Confirmed	3 160	*(3)
	Probable	1 879	*
	Suspected	5 636	*
	All	**10 675**	**4 809**
Sierra Leone	Confirmed	8 704	3 589
	Probable	287	208
	Suspected	5 131	158
	All	**14 122**	**3 955**
All Countries	**Total**	**28 602**	**11 301**

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).

Criteria for declaring the end of Ebola outbreak[7]

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.

In 2015, Liberia had been declared by the WHO to be free of Ebola virus transmission in the human population on May 9, 2015[8] and September 3, 2015[9], but with flare-up EVD cases confirmed on June 29, 2015[10] and November 19, 2015[11] respectively. The latest flare-up in Liberia was announced by the WHO on November 23, 2015[12] with three new laboratory confirmed cases first identified on November 16, 2015. These three cases from the same family were under care in an Ebola Treatment Unit in Monrovia.

Latest development

This most recent cluster of cases in Liberia was declared by the WHO to have ended on January 14, 2016[13] and it also marked the end of all known chains of transmission in the West Africa. However, the WHO cautioned that the three countries remained at high risk of additional small outbreaks of Ebola and that more flare-ups were anticipated. Meanwhile, on January 15, 2016[14], one day after WHO had declared the outbreak in Liberia have ended, a new case of Ebola was confirmed in Sierra Leone, reflecting the ongoing risk of new flare-ups of the virus in the affected countries.

Since March 2015, WHO has already documented 11 small flare-ups of infection following reintroduction of the virus from survivors and all were rapidly detected and contained[15].

Other countries (Italy, Mali, Nigeria, Senegal, Spain, the United Kingdom and the United States of America)

A total of 36 cases and 15 deaths have been reported in these seven countries. Single sporadic imported case was reported in four countries (Italy, Senegal, Spain and the United Kingdom) while subsequent local clusters were reported in the other three countries (Mali, Nigeria, and the United States of America). The overall case fatality rate is around 42%. (Table 2).

Table 2 - Number of cases and deaths of EVD in countries with an initial case or cases, or with localized transmission, as reported on January 20, 2016

	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%
USA	4	1	25%
Total	**36**	**15**	**42%**

Recent scientific development

According to the latest information of WHO, Ebola virus can persist at various sites in the body for many months in some patients including the inside of the eye, semen, amniotic fluid, the placenta, breast milk and the central nervous system[16]. By combining genomic analysis with epidemiologic data, a recent study[17] provided evidence of sexual transmission of Ebola Virus and evidence of persistence of infective Ebola Virus in semen for 179 days or more after onset of EVD. Study[18] has also showed persistence of Ebola virus RNA in semen and declining persistence with increasing months since the onset of EVD. The risk of sexual transmission of the Ebola virus is still being investigated since cases of suspected sexual transmission of Ebola have been reported albeit rare.

There is no proven treatment available for EVD yet. A range of potential candidates including novel drugs, immune therapies, and blood products are currently being evaluated. Pre-existing medications, e.g. Interferons, are also being considered for re-purposing to treat patients with EVD[19].

At least fifteen vaccines[20] are being developed by various countries, in which four of them were already in various stages of human testing, namely VSV-EBOV, ChAd3-ZEBOV, a prime-boost regimen of Ad26- and MVA-EBOV; and a recombinant particle made of EBOV glycoprotein. The VSV-EBOV vaccine was noted to be highly effective[21] as reflected by early data from the Guinea Phase III clinical trial in July 2015. Conclusive data of VSV-EBOV should be available in the near future as the trial is in its final stages in Guinea and Sierra Leone.

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. As of January 20, 2016, CHP has received notifications of two suspected cases and both were tested negative subsequently.

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

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Winter Influenza Season Underway in Hong Kong

Reported by Dr Albert AU, Senior Medical and Health Officer, and Miss Vera Chow, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Local influenza situation

Summary

After the last summer influenza season occurring in June and July 2015, the seasonal influenza activity in Hong Kong had remained at a low level until mid-December 2015. Since then, the surveillance data collected by the Centre for Health Protection (CHP) of the Department of Health showed a steady increase in the overall influenza activity. The activity has continued to increase with some of the surveillance indicators exceeding the baseline levels since mid-January, indicating the arrival of the winter influenza season. Judging from the seasonality, the influenza activity is expected to increase further in the coming weeks.

Laboratory surveillance

Among respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) of CHP, the weekly percentage tested positive for seasonal influenza viruses has gradually increased from 1.22% in the week ending December 12, 2015 to 9.19% in that ending January 30 (Figure 1). Among the influenza viruses detected in the past two weeks (January 17 - 30), the proportions of A(H1N1)pdm09, A(H3N2), B and C were 68.8%, 4.2%, 21.4% and 5.5% respectively. Unlike the winter and summer seasons in 2015 in which influenza A(H3N2) predominated, influenza A (H1N1)pdm09 has become the predominating virus in this season. Regarding influenza B viruses, based on information on testing of isolates obtained from cell culture of specimens received by PHLSB between December 27, 2015 and January 23, 2016, 55.1% belonged to the Victoria lineage which is included in the quadrivalent seasonal influenza vaccine (SIV) for the 2015/16 season in the Northern Hemisphere, and 44.9% belonged to the Yamagata lineage which is included in both trivalent and quadrivalent SIV.

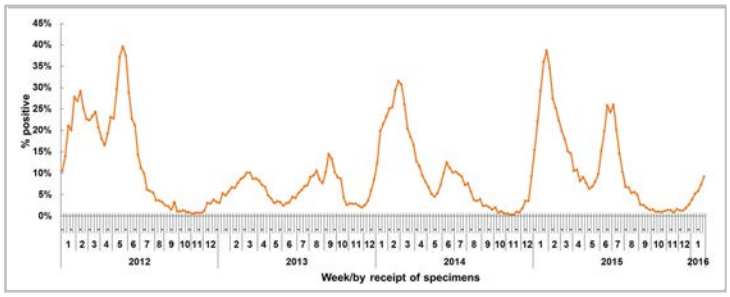
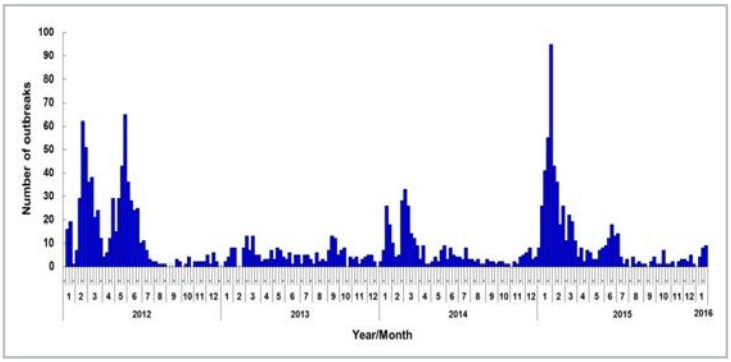


Figure 1 - Weekly percentage of respiratory specimens tested positive for influenza viruses by PHLSB, 2012 - 2016 (as of January 30, 2016)

Outbreaks of influenza-like illness (ILI) in schools and institutions

The number of ILI outbreaks in schools and institutions reported to CHP has started to rise since early January 2016 (Figure 2). In the past four weeks (January 3 - 30), the weekly number of institutional ILI outbreaks ranged from four to 13. A total of 34 institutional ILI outbreaks were recorded and their places of occurrence included 23 primary schools (67.7%), nine kindergartens/child care centres (26.5%), one international school (2.9%), and one residential care homes for people with disabilities (2.9%).



Figures 2 - Weekly number of ILI outbreaks reported to CHP, 2012 - 2016 (as of January 30, 2016)

Influenza associated hospital admissions

In public hospitals under the Hospital Authority (HA), the admission rates with principal diagnosis of influenza have started to increase gradually since late December 2015, particularly among children aged below five years (Figure 3). Among children aged below five years, the admission rate has increased continually from 0.14 (cases per 10 000 population) in the week ending December 19 to 1.49 in that ending January 30. Among persons aged between 5 to 64 years, the rate increased from 0.01 in the week ending December 19 to 0.08 and 0.07 in the recent two weeks respectively. Among elderly aged 65 years or above, the rate ranged from 0.08 to 0.10 during the five weeks between December 13, 2015 and January 16, 2016 and then increased gradually to 0.14 in the following two weeks. In comparison with the last winter season in 2015, the increase in admission rates among young children and adults so far in this season was more prominent than that observed among elderly. This may be accounted by the predominance of influenza A(H1N1)pdm09 in this season, which tends to affect people of younger ages.

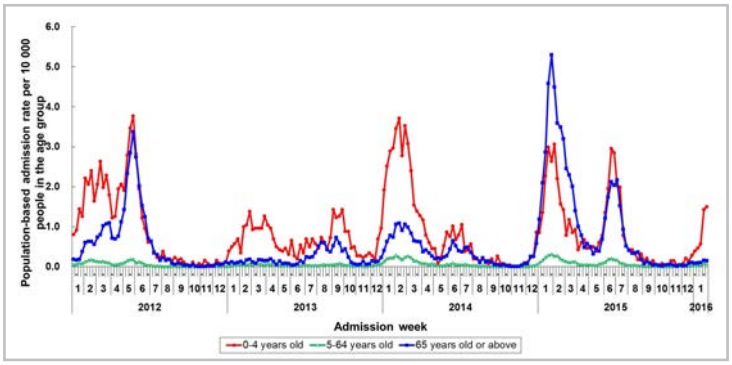


Figure 3 - Weekly admission rates with principal diagnosis of influenza in public hospitals by age groups, 2012 - 2016 (as of January 30, 2016)

Severe cases

As in previous influenza seasons, in order to monitor the severity of influenza infection, CHP has collaborated with HA and private hospitals to reactivate the enhanced surveillance for influenza-associated admissions to intensive care unit (ICU) or deaths among patients aged 18 or above since January 29. Besides, CHP continues to routinely monitor severe paediatric influenza-associated complications or deaths among people aged below 18 years. In the first six days (January 29 – February 3), a total of 12 severe cases including one death were recorded with a range of 0 – 4 cases per day. All had infection with influenza A(H1N1)pdm09. Their ages ranged from 45 to 68 years (median: 59 years).

Influenza situation in northern hemisphere

Summary

Since December 2015, influenza activities in neighbouring and overseas areas in the Northern Hemisphere have been on the rise, including the United States (US), Canada, European countries, Mainland China and Taiwan. Similar to Hong Kong, the predominating virus in most areas currently is influenza A(H1N1)pdm09.

North America

According to the US Centers for Disease Control and Prevention, the influenza activity in US has showed increases since mid-December 2015. In the week ending January 23, 2.2% of patient visits reported through the Outpatient Influenza-like Illness Surveillance Network were due to ILI, which was above the national baseline of 2.1%. However, this level was much lower than that observed in the last season in 2015. In this reporting period, only Puerto Rico reported high ILI activity. Three and five states reported moderate and low activity respectively whereas the majority of states still experienced minimal ILI activity. The majority of positive influenza detections by public health and clinical laboratories were influenza A(H1N1)pdm09.

According to the Public Health Agency of Canada, there has been a steady increase of influenza activity in Canada since late December 2015. The percent positive for influenza increased from less than 1% in early December to 12.4% in the week ending January 23. However, it was below the expected levels (range 13.2% - 29.7%) for the same time of a year. Influenza A(H1N1)pdm09 was the most frequently detected influenza subtype. Among laboratory-confirmed influenza-associated hospitalisations, 36.7%, 21.9% and 20.4% were aged 65 years or above, 45 - 64 years and 0 - 4 years respectively.

Europe

In Europe, the proportion of influenza virus tested positive among sentinel surveillance specimens has risen consistently since early December 2015, and has been over the 10% threshold in the week ending December 20, indicating the start of the influenza season. It has continued to rise to above 40% in the week ending January 23. Increasing influenza activity was reported in northern and eastern Europe, with still low activity in western and southern Europe. Influenza A(H1N1)pdm09 has been the predominant virus detected since the start of the season. This correlates with an increase in cases of severe disease, mainly in people aged 15 – 64.

An elevated influenza activity has also been recorded in the United Kingdom (UK) since late December 2015. The proportion of positive influenza detection has increased to 8.3% in the week ending December 27, which was above the threshold of 7.4% for the 2015/16 season. It has continued to rise to 13.8% in the week ending January 24, with the highest positivity of 21.4% in adults aged between 15 and 44 years. Influenza A(H1N1)pdm09 was the predominating virus.

Mainland China and Taiwan

In Mainland China, the influenza activities have started to increase since mid-December 2015 and the winter influenza season has arrived in early January. Influenza A(H1N1)pdm09, influenza A(H3N2) and influenza B co-circulated in this season. The predominating virus in southern China was influenza A(H1N1)pdm09, while both influenza A(H3N2) and influenza B were the main circulating viruses in northern China.

Influenza activity in Taiwan has also begun to increase since mid-December 2015. Increases in the ILI consultation rates among out-patient clinics and emergency departments have been observed in January. Influenza A(H1N1)pdm09 was the predominating virus.

Characterisation of circulating influenza viruses

Laboratory analyses in the above areas revealed that the majority of influenza viruses characterized so far were antigenically similar to the components of the 2015/16 Northern Hemisphere trivalent and quadrivalent SIV. The influenza A(H1N1)pdm09 and A (H3N2) were similar to A/California/7/2009 and A/Switzerland/9715293/2013 respectively, and the Yamagata and Victoria lineages of influenza B were similar to B/Phuket/3073/2013 and B/Brisbane/60/2008 respectively. For influenza A(H1N1)pdm09, some antigenic drift variants appear to be circulating in UK but the majority of viruses antigenically characterised were similar to the vaccine strain.

Regarding antiviral sensitivity, majority of the recently circulating influenza viruses in major countries in the Northern Hemisphere were susceptible to the neuraminidase inhibitors including oseltamivir and zanamivir. However, sporadic instances of oseltamivir-resistant influenza A (H1N1)pdm09 have been detected in US, UK and Europe, and one oseltamivir-resistant influenza A (H3N2) in UK in the current season.

Prevention of influenza through vaccination

As the influenza activity will continue to increase in the coming weeks, members of the public aged six months or above, except those with known contraindications, are urged to get vaccinated as soon as possible for personal protection. Influenza vaccination remains one of the effective and safe means to prevent the influenza infection, its complications and associated hospitalisation and death.

One of the worries about receiving influenza vaccination is the possible association with the risk of Guillain-Barré syndrome (GBS). Nonetheless, epidemiological studies have shown that, except for the 1976 US national immunisation programme against swine-origin

influenza A(H1N1), influenza vaccine has probably not caused GBS or, if it has, rates have been extremely low (less than one case per million vaccine recipients).[1] Scientific studies over the years have shown an increased risk of GBS following influenza infection, and the magnitude of risk is much greater than that following influenza vaccination.[2]

The incidence of influenza-related GBS was estimated to be 4 – 7 cases of GBS per 100 000 cases of influenza in a French study.[3] This rate is much higher than the reported estimation of one GBS case per million vaccine recipients. A study in UK using General Practice Research Database showed evidence for an 18-fold increased risk of GBS in the two months following ILI and also evidence suggesting a protective effect of influenza vaccination on GBS risk.[4] Another study analysing the same database also found a much higher relative incidence of GBS within 90 days of an ILI than that within 90 days of vaccination (7.35 versus 0.76).[5] A study in Canada showed that the risk of GBS was much greater following medically attended influenza infections than following vaccination exposure, with an attributable risk of 17.2 GBS cases per million influenza healthcare visits versus 1.03 cases per 1 million vaccinations.[6] A recently published modelling study provided further evidence that vaccination reduced GBS risk.[7] In summary, influenza infection poses a much greater risk of GBS than receiving vaccination.

Further information on the latest situation of influenza and the prevention measures can be obtained from CHP's influenza page at (www.chp.gov.hk/en/view_content/14843.html).

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NEWS IN BRIEF

Inclusion of Zika Virus Infection as a notifiable disease

Zika Virus Infection will be included as one of the notifiable diseases under the Schedule 1 to the Prevention and Control of Disease Ordinance (Cap. 599) with effect from February 5, 2016. Zika Virus Infection is a mosquito-borne disease caused by Zika virus, consisting of mild fever, rash, muscle pain, joint pain, headache, retro-orbital pain and conjunctivitis. Medical practitioners should be aware of the possibility of Zika Virus Infection apart from dengue fever and chikungunya fever for travellers returning from affected areas and present with clinically compatible picture. They are required to notify the Department of Health (DH) of confirmed cases. The case definition of Zika Virus Infection will be uploaded to Central Notification Office (CENO) On-line website at: https://cdis.chp.gov.hk/CDIS_CENO_ONLINE/ceno.html.

For the latest health information and advice on Zika Virus Infection, please visit:
DH's Travel Health Service page (http://www.travelhealth.gov.hk/eindex.html); and
Centre for Health Protection (CHP) website's designated page (http://www.chp.gov.hk/en/view_content/43086.html)

Update on a local confirmed case of listeriosis

On January 6, 2016, the Centre for Health Protection (CHP) recorded a case of listeriosis affecting a 79-year-old woman with pre-existing medical conditions. The patient had been staying in a private hospital since September 12, 2015 for her underlying illness. She presented with fever and decreased general condition since January 1, 2016. Her blood specimen collected on January 4, 2016 grew *Listeria monocytogenes*. She was treated with antibiotics and was in stable condition. Investigation revealed that she had consumed high risk food including sandwiches with smoked salmon during the incubation period. Smoked salmon sample and environmental swabs collected from the kitchen of the private hospital were tested negative for *Listeria monocytogenes*. The case has been referred to the Centre for Food Safety (CFS) of the Food and Environmental Hygiene Department for follow-up. CHP issued a press release for the case on January 18.

CFS conducted investigation at the food factory of the supplier of smoked salmon to the private hospital. A total of five smoked salmon samples and 19 environmental samples were collected from the food factory for testing. Test results showed that four of the five smoked salmon samples contained *Listeria monocytogenes* while all environmental samples were negative. Genetic characterisation using pulsed-field gel electrophoresis at CHP's Public Health Laboratory Services Branch showed that the isolates from the patient and three of the food samples from the supplier were indistinguishable. Both epidemiological and laboratory findings support smoked salmon to be the likely source of infection for the patient.

An imported sporadic case of psittacosis

On January 28, 2016, CHP recorded a case of psittacosis affecting a 39-year-old woman with underlying illness requiring long term steroid therapy. She presented with cough, headache, shortness of breath, diarrhoea and vomiting since January 14. She was admitted to a public hospital on January 20 and her chest X-ray showed bilateral consolidation. Her illness was complicated with respiratory failure and acute-on-chronic renal failure. She was transferred to the intensive care unit for further management including mechanical ventilation and haemodialysis. Her nasopharyngeal aspirate collected on January 22 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction. She was treated with antibiotics and is currently in stable condition. During the incubation period, the patient lived with her son in Mainland China and she does not own any birds at home. She has daily visits to markets in Mainland China with live poultry but denied any direct contact with any birds or poultry. Her home contact remained asymptomatic.

A case of wild mushroom amatoxin poisoning

CHP recorded a local domestic case of food poisoning related to consumption of wild mushroom in January 2016, affecting a 53 years old gentleman with good past health. The patient had picked and collected a few pieces of wild mushrooms from the roadside at Tai Mo Shan with his relatives on January 25. He consumed the fried mushrooms with vegetables and meat for dinner on the same day. He developed abdominal pain with repeated vomiting and diarrhoea on January 26 (about 12 hours post-ingestion) and was admitted to a public hospital on the same day. His urine specimen was tested positive for alpha-amanitin and he was diagnosed of having amatoxins poisoning. He was in critical condition initially with grossly deranged liver function and was admitted to the Intensive Care Unit. He was given antidotes and put on hemodialysis. His condition became stable after treatment and was transferred to general medical ward for further management.

All the mushrooms were consumed by the patient and no food remnant was available. The patient's relatives collected some mushrooms from similar location and the species were sent to mycologist for identification. The mushroom was identified to be *Amanita exitialis*, which is an amatoxin-containing white mushroom of genus *Amanita*. Health advice was given to the patient and his family.

Amatoxins is known to be hepatotoxic and would typically cause late onset gastrointestinal symptoms such as nausea, vomiting, and diarrhoea, followed by fulminant hepatic damage and may progress to liver failure. Multi-organ failure and death may ensue in severe poisoning case. Members of the public should not pick wild mushrooms for consumption as it is difficult to distinguish edible mushroom species from inedible ones.

Infection Prevention in Aging Population Across Healthcare Spectrum: from Hospital to Community Institutions

To enhance understanding and knowledge in infection control in long term care facilities (LTCFs), a two-and-half day symposium was organised by Infection Control Branch (ICB) of the Centre for Health Protection (CHP) on January 27-29, 2016. Professor LE Nicolle (Canada), Professor SF Bradley (USA), Professor Lona Mody (USA), and Dr. Vincent Cheng (HK) were invited to share their views and experiences on infection control standard and monitoring, control of multidrug resistance organisms, challenges and to discuss the way forward to enhance infection control in LTCFs in Hong Kong with a panel of local experts. There was also presentations by ICB on the encouraging results of the enhancement programme. The workshop was attended by over two hundred doctors, nurses, related healthcare professionals and staff of Residential Care Homes of Elderly (RCHEs). RCHEs which had joined a three-year infection training programme conducted by ICB named "Enhancement of Infection Control Management of RCHEs in Hong Kong" with outstanding performance were presented awards in recognition of their great efforts at the wrap-up ceremony.

Photo 1 - Group photo of overseas speakers with Controller, CHP, moderators and speakers of the workshop

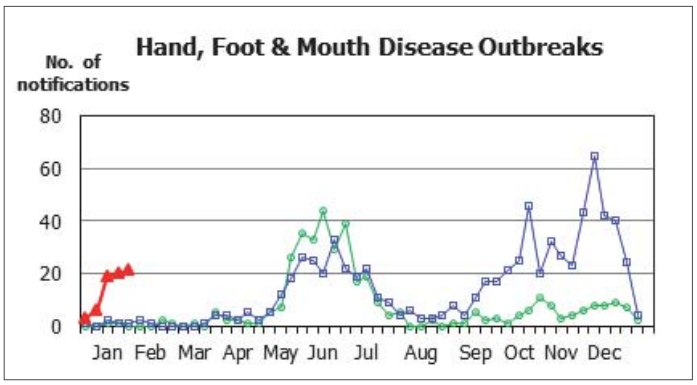
Photo 2 - Award Presentation Ceremony of "Enhancement of Infection Control Management of RCHEs in Hong Kong"

Workshop on Tropical and Travel Medicine

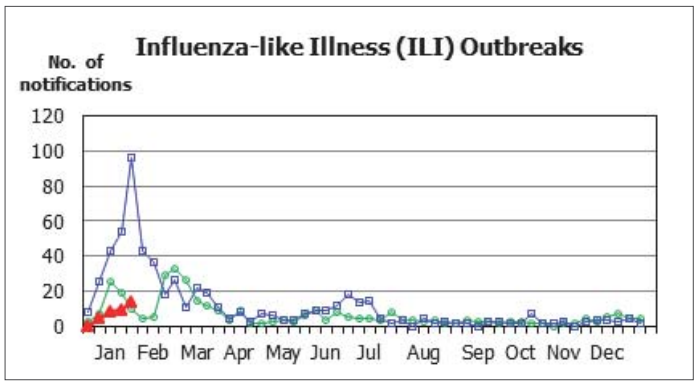
In view of globalization and potentially rapid transmission of diseases worldwide via travel, a "Workshop on Tropical and Travel Medicine" was conducted on January 20-22, 2016. Audience was enlightened on uncommon but important infectious diseases, for example, Ebola, Chikungunya, malaria, typhus and other tropical and parasitic diseases that may be acquired outside Hong Kong during travel. There were fruitful sharing of experiences by overseas experts from UK, Vietnam and the Netherlands and local experts. Travel preparation, especially for immunosuppressed patients was also an important topic that was discussed. Clinical alertness and skills to manage these conditions were stressed. A just-in-time session on "Zika virus outbreak in the Americas" was arranged to arise the vigilance against this emerging infection.

Photo - Group photo of overseas speakers and workshop organization committee on January 21, 2016

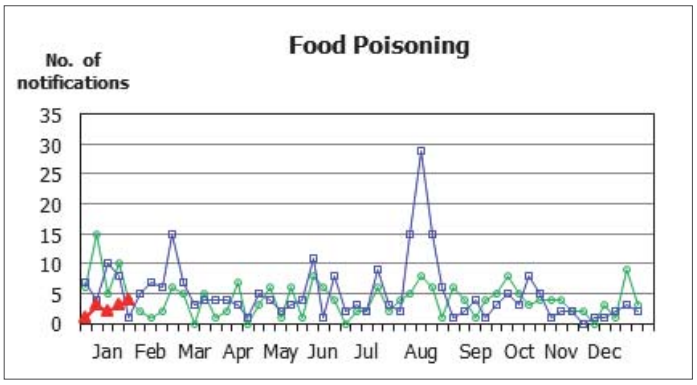
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 4 - WEEK 5)



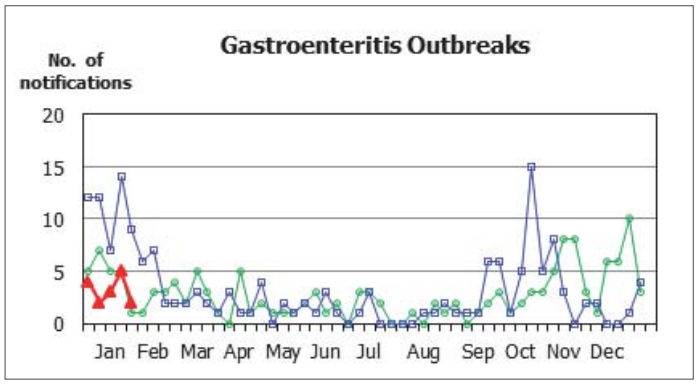
Week 02	6	Week 03	19
Week 04	**20**	**Week 05**	**21**



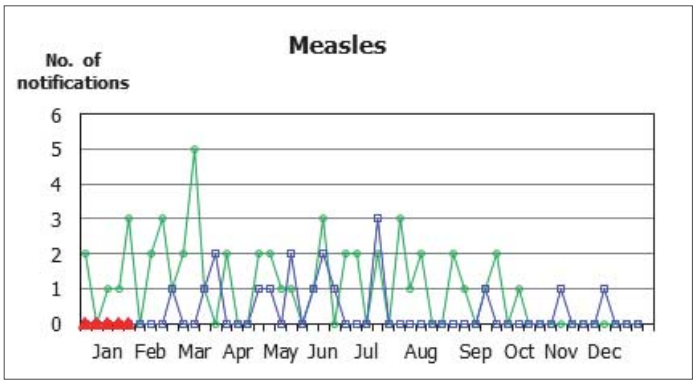
Week 02	4	Week 03	8
Week 04	**9**	**Week 05**	**13**



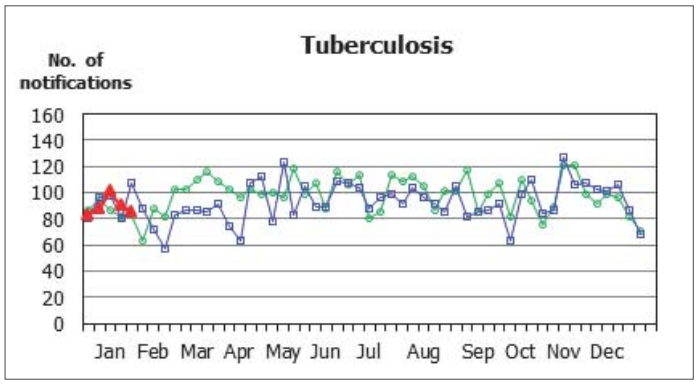
Week 02	3	Week 03	2
Week 04	**3**	**Week 05**	**4**



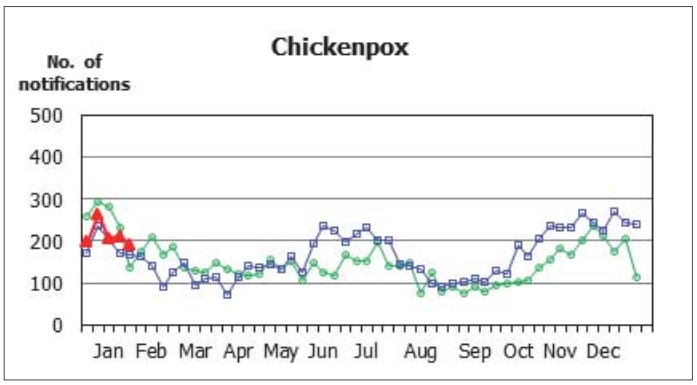
Week 02	2	Week 03	3
Week 04	**5**	**Week 05**	**2**



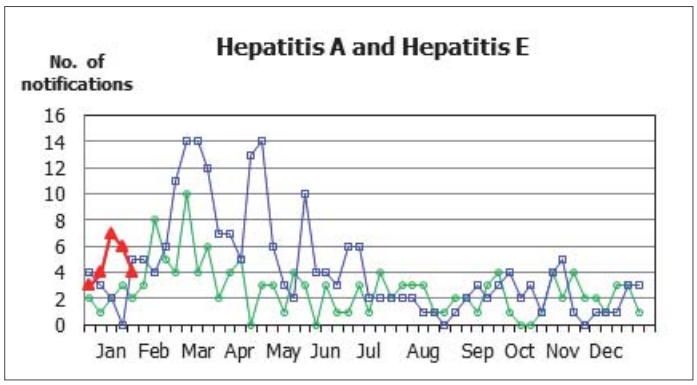
Week 02	0	Week 03	0
Week 04	**0**	**Week 05**	**0**



Week 02	88	Week 03	101
Week 04	**90**	**Week 05**	**86**



Week 02	264	Week 03	206
Week 04	**210**	**Week 05**	**191**



Week 02	4	Week 03	7
Week 04	**6**	**Week 05**	**4**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until January 30, 2016. This information may be updated over time and should therefore be regarded as provisional only.

Jan 31 - Feb 13 2016 WEEKS 6 - 7 VOL 13 ISSUE Nº 4

Communicable Diseases WATCH

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

FEATURE IN FOCUS

2015 Year in Review

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

In this issue, we reviewed communicable diseases and issues of public health concern in 2015...

Avian influenza

In 2015, the Centre for Health Protection (CHP) of the Department of Health (DH) recorded two human cases of avian influenza A(H7N9) with onset of illness in January and February respectively in Hong Kong during the third wave of human infections which lasted from November 2014 to June 2015 in Mainland China. The first case was confirmed on January 23 affecting a 79-year-old man. He had travelled and visited a wet market with live poultry stalls in Dongguan, Guangdong during the incubation period. He recovered and was discharged on January 29, 2015. The second case was confirmed on February 22 affecting a 61-year-old man. He had also travelled and visited a wet market and bought slaughtered chickens in Dongguan, Guangdong during the incubation period. He was admitted in critical condition and subsequently succumbed on March 1, 2015. Epidemiological investigations and contact tracing did not identify any further cases among their contacts.

Together with another case in December 2014, a total of three imported cases from Guangdong were detected in Hong Kong during the third wave. The cumulative number of imported human H7N9 cases detected in Hong Kong so far was 13 including five deaths.

There were four reports of avian influenza A(H5N6) in birds in Hong Kong in 2015. The first report involved the carcass of a peregrine falcon found at a construction site in Yuen Long on April 9. It was the first case of avian influenza A(H5N6) in birds in the territory. The second report involved the carcass of an oriental magpie robin found in Sai Kung on April 29 while the third report involved the carcass of an oriental magpie robin found in Kwai Chung on November 17. The latest report involved the carcass of a great egret found in Wong Tai Sin on December 31. Contact tracing of the persons with unprotected exposure to the birds did not identify any human cases. Both oriental magpie robin and great egret are common resident birds in Hong Kong while peregrine falcons are scarce residents and winter visitors to Hong Kong.

Dengue fever

CHP recorded 114 dengue fever (DF) cases in 2015, which was higher than the annual number of 30 to 112 cases in the past 10 years (Figure 1). Sixty three males and 51 females, with ages ranging from three to 73 years (median: 37.5 years) were affected. Among all cases, fever was the most common symptom (97%), followed by headache (72%), rash (67%), and myalgia (53%). Other symptoms included arthralgia (32%) and eye pain (22%). Ninety two patients (81%) required hospitalisation and one case of severe dengue was recorded. All of the patients recovered and no fatal cases were recorded.

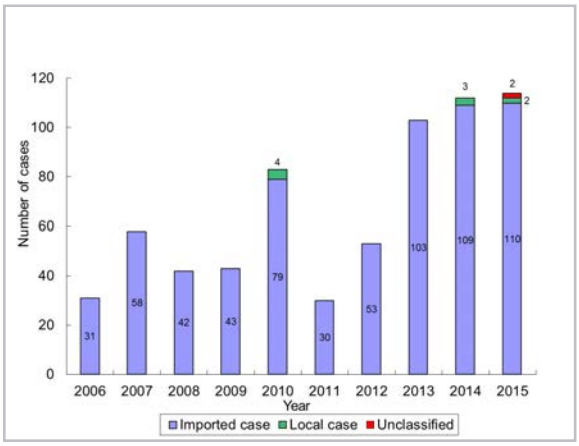


Figure 1 - Annual number of dengue fever cases from 2006 to 2015.

The majority of the cases (110 cases, 96%) were imported infections among which the patients had travelled to countries and areas including the Philippines (20), Thailand (19), Indonesia (15), Malaysia (7), India (6), Singapore (5), Maldives (5), Cambodia (5), Mainland China (5), Sri Lanka (3), Myanmar (2), Vietnam (2), Mexico (1), Mauritania (1) and Cuba (1). Thirteen patients had travelled to multiple countries during the incubation period.

Two local cases and two unclassified cases were recorded in 2015. The first local case recorded in June lived in an estate in Tai Wai, Sha Tin where the patient recalled mosquito bites. The second local case recorded in December was epidemiologically linked with an unclassified DF case recorded in November who had travel history to Dongguan and Shenzhen, Guangdong. Both patients worked in the same construction site near Tai Shui Hang Village, Sha Tin. Another unclassified case was recorded in September. During the incubation period, this patient had a short trip to Huizhou where local DF outbreak have not been reported in 2015.

Hand, foot and mouth disease (HFMD)

Hand, foot mouth disease (HFMD) occurs throughout the year but the disease activity is usually peak from May to July in Hong Kong. There were also smaller winter peaks in past few years but the HFMD activity in 2015 was unusual that it remained at persistently high level since the summer peak and further increased in December (Figure 2).

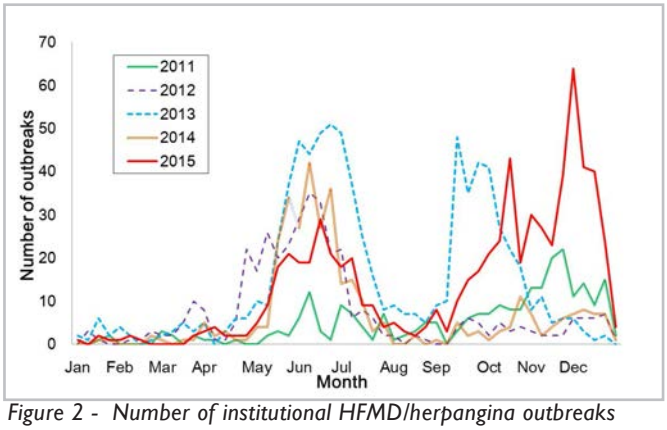


Figure 2 - Number of institutional HFMD/herpangina outbreaks reported, 2011 to 2015.

In 2015, a total of 691 HFMD/herpangina institutional outbreaks affecting about 4 100 persons were recorded (346 and 779 outbreaks in 2014 and 2013 respectively). Four hundred and twelve (59.6%) outbreaks occurred in child care centres/ kindergartens while 136 (19.7%) occurred in secondary schools and 129 (18.7%) in primary schools. The remaining 14 outbreaks occurred in other institutions such as special school, other residential institution/hostel, and playgroup centre etc. The size of outbreaks ranged from 2 to 56 (median: 4). One hundred and five (15.2%) institutional outbreaks had associated causative agents identified by laboratory. Majority were untyped enteroviruses (66.6%), followed by CA6 (17.1%), EV71 (11.4%), CA16 (2.9%), CA2 (1.0%) and mixed agents (1.0%).

The number of EV71 infection in 2015 was lower than that in last year. A total of 56 EV71 infections were recorded in 2015 as compared with 68 cases in 2014. The male-to-female ratio was 1.9:1 and their ages ranged from 28 days to 39 years (median: 2 years). Forty 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). Six 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 last year. There were eight cases of SE in 2015 as compared with 21 cases in 2014. The male-to-female ratio was 1.7:1. The patients' age ranged from 22 days to eight years (median: 0.3 year). 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.

Legionnaires' Disease (LD)

CHP recorded a total of 66 LD cases in 2015. Their ages ranged between 25 and 96 years (median: 67.5 years). Males were predominately affected with a male to female ratio of 4.5:1. The majority (97.0%) were Chinese. Fifty-two (78.8%) and nine (13.6%) cases were classified as local and imported cases respectively, while the places of infection of the remaining five cases (7.6%) could not be ascertained because the patients had stayed both in and outside Hong Kong during the incubation period.

Regarding the clinical features, all patients presented with pneumonia requiring hospitalisation and 25 (37.9%) of them required intensive care. The duration of hospital stay ranged from two days to 125 days (median: 12.5 days). The most common symptoms on presentation included fever (60, 90.9%), cough (53, 80.3%) and shortness of breath (38, 57.6%). Eleven cases (16.7%) died due to LD. Forty-four cases (66.7%) had at least one chronic medical condition predisposing to LD risk including diabetes mellitus, chronic lung disease, chronic kidney disease, malignancy and immunosuppressed states from steroid treatment.

Regarding the initial positive diagnostic test, 58 (87.9%) and seven (10.6%) cases were initially diagnosed by urinary antigen test and polymerase chain reaction of respiratory specimens respectively, and only one case was initially diagnosed by culture of respiratory specimen.

All the cases recorded in 2015 were sporadic cases without epidemiological linkage. The sources of infection could not be confirmed despite extensive environmental investigations. Molecular typing studies were conducted for five cases in which both the respiratory samples and the environmental samples yielded positive results for *Legionella pneumophila serogroup* 1 (Lp1). However, molecular typing studies had not detected the same sequence-based type of Lp1 between the human and environmental samples. Hence, the environmental sites with Lp1 detected were probably incidental findings and unlikely to be the sources of infection for the cases.

Leptospirosis

In 2015, a total of three cases of leptospirosis were recorded, affecting two men and one woman aged from 19 to 57 years. While one man acquired the disease locally, the two other cases acquired the disease from Malaysia and Laos respectively. The two imported cases had exposure of outdoor water-related recreational activities such as rafting or swimming. One of them had also kept domestic pets including cats and dogs as well. Rodents near vicinity of workplace were recalled by patient for the other locally acquired infection. All three patients required hospitalisation and recovered after receiving antibiotic treatment.

Measles

In 2015, a significant drop in the number of measles cases was recorded in Hong Kong. A total of 18 measles cases were recorded in 2015 as compared with 50 cases in 2014 (Figure 3).

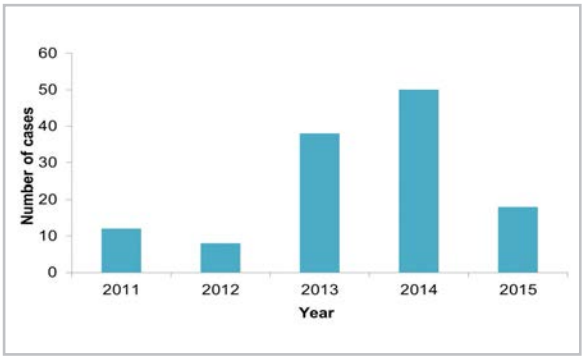


Figure 3 - Number of measles cases by year, 2011-2015

Among these 18 cases, the male-to-female ratio was 3.5:1, with ages ranging from one month to 52 years (median 7 years). Seven cases (39%) were 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. Two cases (11%) were aged one to four years with one dose of MCV received. Among the remaining nine cases, only one had received two doses of MCV while others had unknown vaccination history (Figure 4). Of the 18 cases reported in 2015, two-thirds of the cases were laboratory confirmed. Three cases were imported from Mainland China.

Majority of the cases (72%) were sporadic infection without epidemiological linkage identified. There was one hospital outbreak affecting five persons (four patients aged from one to eleven months and one nurse aged 26 years). Extensive outbreak control measures were carried out that included contact tracing, medical surveillance for the susceptible close contacts, heightened infection control measures and use of post-exposure prophylaxis as appropriate.

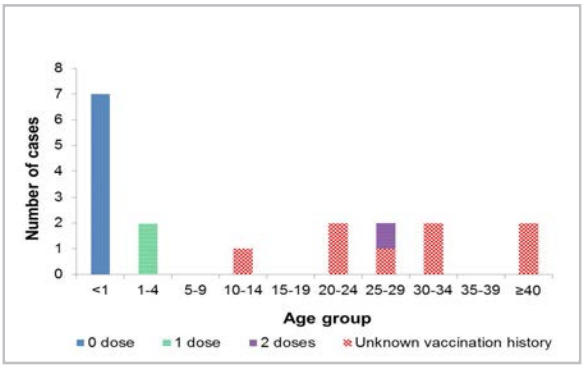


Figure 4 - Number of MCV doses received by measles cases among different age groups in 2015

Pertussis (whooping cough)

Following an upsurge in pertussis cases in 2014, CHP recorded a total of 50 cases in 2015, marking the highest number reported since 1968. The age of the affected persons ranged from 19 days to 89 years (median = 3.5 months), with a male-to-female ratio of 1:1.3 (22 males and 28 females). Forty-two (84%) cases were locally acquired infection while six were imported cases from Mainland China. The source of infection of two cases was undetermined as both patients could not be contacted for their exposure histories (Figure 5). Over half (28 cases, 56%) of the cases occurred among infants under six months of age for whom the primary series of diphtheria, tetanus and pertussis (DTaP) vaccination was not completed. Among them, eleven were under two months old and had not reached the recommended age for the first dose of DTaP vaccine under the Hong Kong Childhood Immunisation Programme. Five children, aged between one and ten years, had received the primary series and subsequent booster vaccination appropriate for their age. For the 17 adult cases (aged 28 years or above), most of them were either unvaccinated or had unknown vaccination status. There were five domestic outbreaks each affecting two to four persons, with majority being infants and their care takers. No fatalities due to pertussis were recorded.

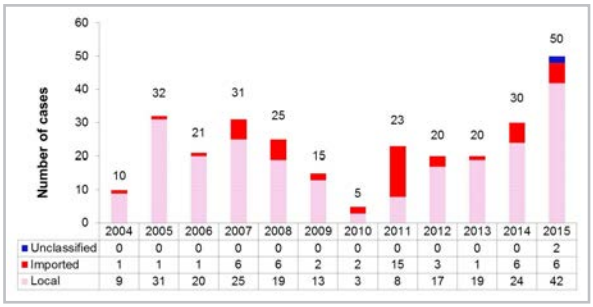


Figure 5 – Pertussis cases recorded in Hong Kong, 2004 – 2015.

Seasonal influenza

There were two influenza seasons in Hong Kong in 2015: the winter and the summer seasons. Both seasons were predominated by influenza A(H3N2) which constituted about 85% to 90% of all positive influenza detections. The remaining were mostly influenza B, while influenza A (H1N1)pdm09 and influenza C detections were at a low level in both seasons. The majority of the H3N2 viruses belonged to the drifted Switzerland strain which was antigenically different from the H3N2 component of the Northern Hemisphere vaccine (a Texas strain), leading to marked decrease in vaccine effectiveness. Due to the predominance of influenza A (H3N2), elderly were particularly affected in both seasons.

The winter season began in January and ended in April, lasting for about 17 weeks. It arrived slightly earlier than previous seasons. The local influenza activity significantly increased in the end of December 2014 and reached the peak in late January to early February 2015. It was apparently more severe than past seasons as reflected by large number of influenza-like illness (ILI) outbreaks in institutions such as residential care homes for the elderly and schools, high hospitalisation rates and large number of severe cases and deaths. Major overseas countries in the Northern Hemisphere also experienced a similar severe winter season in early 2015.

During the enhanced surveillance period of severe cases between January 2 and April 24, 2015, CHP recorded a total of 647 laboratory confirmed influenza cases (including 502 deaths) who required admission to intensive care unit or died among adults aged 18 years or above. About 90% of them involved people aged 65 years or above and most were known to have underlying chronic illnesses. In addition, 18 paediatric cases of severe influenza associated complications/deaths (including one death) were recorded in the same period. The number of severe cases greatly outnumbered those recorded in previous seasons.

The local influenza activity returned a low level in late April but started to rise again since late May. This summer season lasted from mid-June to early August for about eight weeks. It arrived earlier than previous summer seasons but was shorter in duration than the winter season in 2015. Also, it was much milder than the winter season. CHP recorded a total of 185 severe adult cases (including 135 deaths) during the enhanced surveillance between June 12 and August 7. The age distribution of these cases was similar to that reported during the winter season. In addition, four non-fatal paediatric cases of severe influenza associated complications were recorded.

NEWS IN BRIEF

A sporadic case of listeriosis

On February 5, 2016, the Centre for Health Protection (CHP) recorded a case of listeriosis affecting a 64-year-old man with underlying illness. He presented with chest pain on January 25 and was admitted to a public hospital on the same day. He developed fever, confusion and seizure on February 2. His blood culture collected on February 2 yielded *Listeria monocytogenes*. The clinical diagnosis was meningitis and he was treated with antibiotics. His condition deteriorated and he passed away on February 4. Investigation could not identify any high-risk food consumed by him during the incubation period. His household contact remained asymptomatic. Investigations are on-going.

Visit of Dr Keiji Fukuda to the Centre for Health Protection (CHP)

Dr Keiji Fukuda, Assistant Director-General and Special Representative of the Director-General for Antimicrobial Resistance (AMR) of the World Health Organization, visited the CHP on February 5, 2016. He had a meeting on AMR with the Director of Health, the Controller of Centre for Health Protection and services heads and visited the simulation ward of the CHP (Photo 1 - 3).

Photo 1

Photo 2

Photo 3

Interdepartmental Coordinating Committee on Mosquito-borne Disease Meeting

The Interdepartmental Coordinating Committee on Mosquito-borne Diseases (ICC) convened a meeting on February 5, 2016. Eighteen bureaux/departments and organisations attended the meeting and the issue of Zika Virus Infection. The ICC endorsed a co-ordinated response against mosquito-borne diseases among government bureaux/departments and organisations together with their contractors and stakeholders in mosquito control.

Scarlet fever update (January 17, 2016 – February 13, 2016)

Scarlet fever activity in this reporting period remained similar to the previous four weeks. From January 17 – February 13, 2016, CHP recorded 100 cases of scarlet fever with a range of 16 to 34 cases per week as compared with 97 cases with a range of 17 to 30 cases per week in the previous reporting period (December 20, 2015 – January 16, 2016). The cases recorded in this reporting period included 62 males and 38 females aged between one year and 29 years (median = 6 years). There were two scarlet fever clusters involving one primary school and one kindergarten affecting a total of five students. No fatal cases were reported during this reporting period.

CA-MRSA cases in January 2016

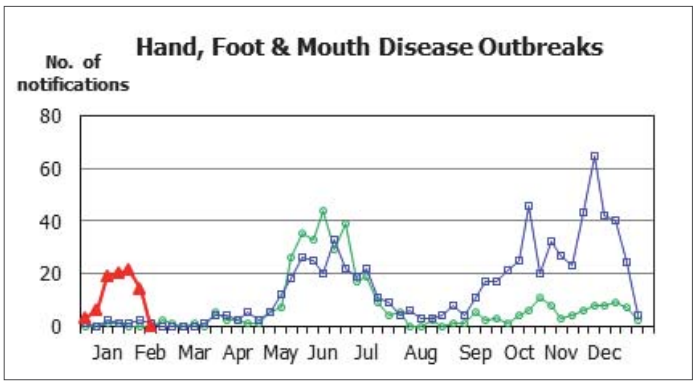
In January 2016, CHP recorded a total of 82 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 44 males and 38 females with ages ranging from 18 days to 80 years (median = 37 years). Among them, there were 53 Chinese, 8 Filipinos, 7 Caucasian, 2 African, 1 Indian, 1 Mongolian, 1 Mixed, 1 Nepalese, and 8 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 (56) or V (26). The isolate of one case affecting a 34 years old man was found to be resistant to mupirocin. The patient presented with groin abscess and recovered after antibiotic treatment.

Eighty cases (97.6%) presented with uncomplicated skin and soft tissue infections while the remaining two cases had invasive CA-MRSA infections. The first invasive case was a 73 years old man with history of laryngeal cancer who presented with fever and cough with purulent sputum on December 23, 2015. He attended the out-patient clinic of a private hospital on December 27 and was admitted for management. He was diagnosed to have pneumonia with a sputum specimen collected on December 29 cultured positive for CA-MRSA. The second case was a 44 years old man with multiple underlying illnesses. He initially presented with headache and malaise on December 31, 2015 and subsequently developed fever, sore throat, urticarial rash and neck stiffness. He was admitted to a private hospital on January 8 and a blood specimen collected on the same day was cultured positive for CA-MRSA. He was diagnosed to have MRSA bacteremia, pneumonia, and central nervous system infection. Both cases were treated with antibiotics and remained in stable condition. Their close contacts were asymptomatic, and screening and decolonization would be provided to them.

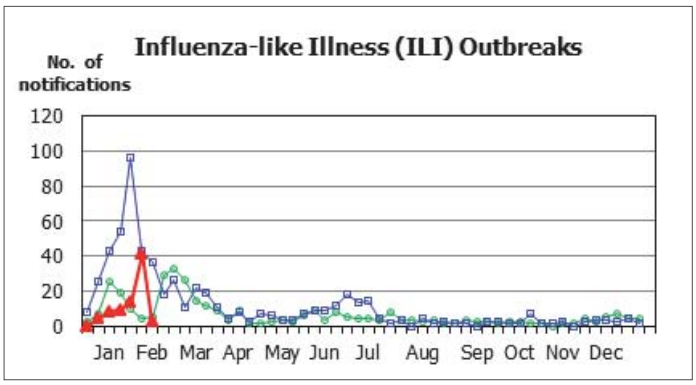
Among the 82 cases, two cases involved healthcare workers who were nurses working in two different public hospitals. One of them was from the same household of a family cluster of three cases reported in December 2015. For the other case, there was no epidemiologically linkage. In addition, four other family clusters, with each affecting two persons, were identified in January 2016. Screening and decolonization would be provided to their close contacts.

(Note: The number of CA-MRSA cases in December 2015 was revised to 76.)

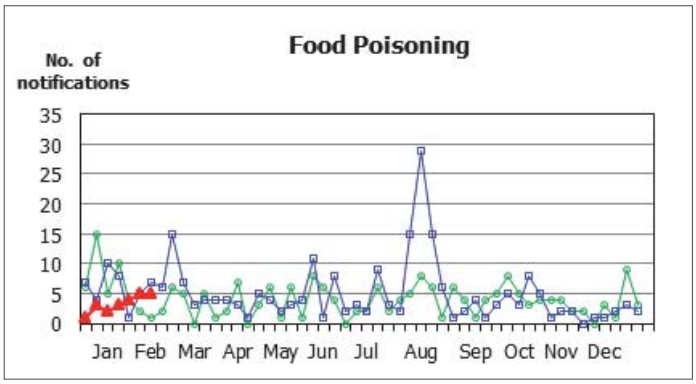
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 6 - WEEK 7)



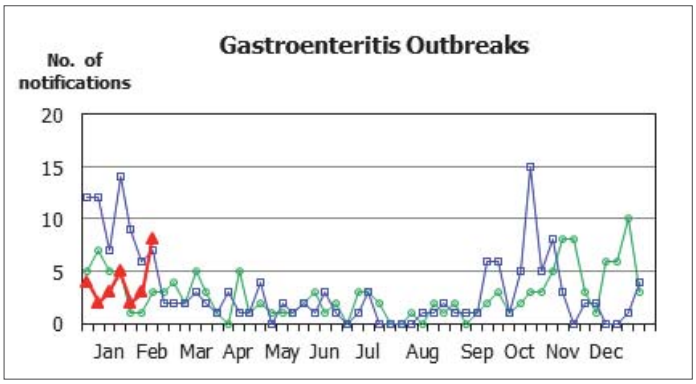
Week 04	20	Week 05	21
Week 06	**14**	**Week 07**	**0**



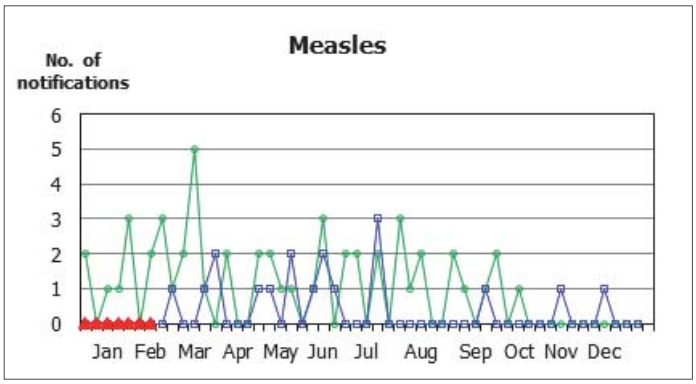
Week 04	9	Week 05	13
Week 06	**41**	**Week 07**	**2**



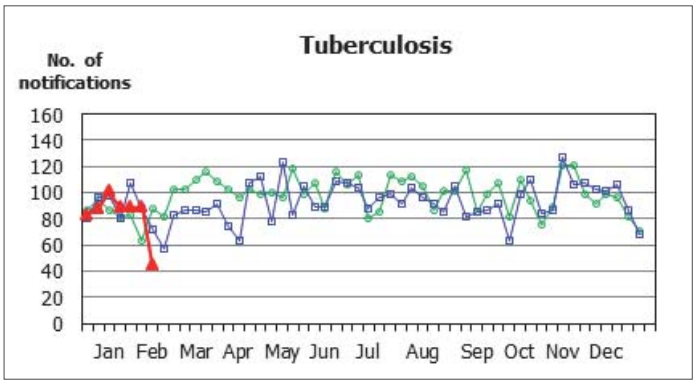
Week 04	3	Week 05	4
Week 06	**5**	**Week 07**	**5**



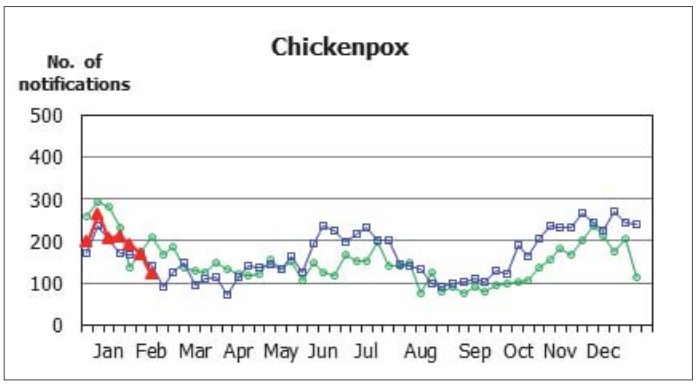
Week 04	5	Week 05	2
Week 06	**3**	**Week 07**	**8**



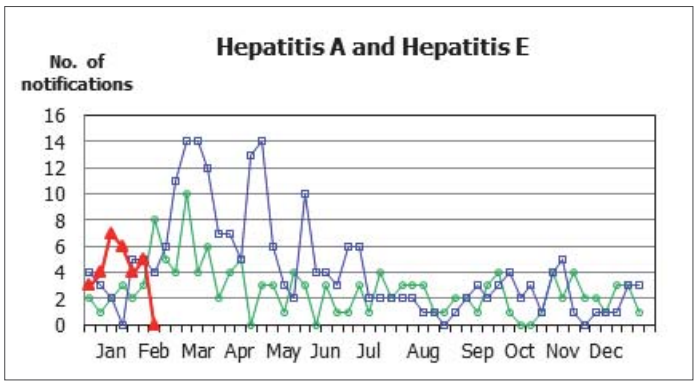
Week 04	0	Week 05	0
Week 06	**0**	**Week 07**	**0**



Week 04	89	Week 05	89
Week 06	**89**	**Week 07**	**45**



Week 04	210	Week 05	191
Week 06	**166**	**Week 07**	**120**



Week 04	6	Week 05	4
Week 06	**5**	**Week 07**	**0**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until February 13, 2016. This information may be updated over time and should therefore be regarded as provisional only.

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FEATURE IN FOCUS

Infections and Pregnancy

Reported by Dr Carol SW YAU, Senior Medical and Health Officer, Dr Billy CH HO, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Infections are of special concern during pregnancy. Some infections, such as influenza, hepatitis E infection, herpes simplex infection, malaria and varicella, may cause more severe illnesses in pregnant women as compared with non-pregnant women. Other infections such as listeriosis, rubella, toxoplasmosis and possibly, Zika Virus Infection, could result in adverse pregnancy outcomes, such as spontaneous abortion, premature labour, birth defects and other long term childhood consequences.

To prevent infections, pregnant women as well as those who are planning to become pregnant, have to take prudent precautions:

Receive appropriate vaccinations before and during pregnancy

A number of vaccine-preventable infections, such as influenza, rubella, varicella, may cause severe illnesses in pregnant women; or are associated with adverse pregnancy outcomes. Women planning for pregnancy should ensure that they are up-to-date with the recommended vaccinations. Certain vaccines can be given during pregnancy to protect the pregnant woman and her baby during first few months of life. However, not all vaccines are safe for use during pregnancy and pregnant women must consult their doctors for advice.

Influenza

Pregnant women are at higher risk for hospitalisation and complications from influenza infection. In the past pandemics, higher mortality was reported among pregnant women when compared with non-pregnant women[1,2]. The physiological changes associated with pregnancy may contribute to the increased risk of severe illness[3].

Vaccination is effective in preventing influenza and its complications. The inactivated influenza vaccine is considered safe by the World Health Organization for use during pregnancy. In Hong Kong, seasonal influenza vaccination is recommended for all pregnant women, for benefits of reduced acute respiratory infection for both mothers and infants, and reduced cardiopulmonary complications and associated hospitalisations in pregnant women[4]. The local winter influenza season usually occurs from January to March. Pregnant women should consult their doctors early for advice on influenza vaccination. (For more information on influenza, please refer to http://www.chp.gov.hk/en/view_content/14843.html).

Rubella

The clinical manifestation of rubella in pregnant women is generally similar to that in non-pregnant women. The illness is usually mild or even asymptomatic. However, infection during pregnancy can cause adverse pregnancy outcomes, such as miscarriage, stillbirths, foetal growth restriction and congenital rubella syndrome (CRS). Risk of CRS is highest if infected during early pregnancy[5]. In Hong Kong, rubella vaccination started in 1978 for primary six schoolgirls. It was later expanded to cover postpartum mothers and women of child bearing age. Universal vaccination of measles, mumps and rubella (MMR) vaccine for children at one year of age started in 1990. CRS is now very rare in Hong Kong, with three cases recorded in the past five years (2011-2015). All mothers of the three cases were born in Mainland China and had no documented rubella vaccination in the past.

Vaccination is the most effective way to prevent rubella infection and CRS. Under the Hong Kong Childhood Immunisation Programme (HKCIP), children are given MMR vaccine when one year old and in primary one. It is important to note that MMR vaccine is contraindicated during pregnancy. Women of childbearing age who are non-immune to rubella should receive MMR vaccine before pregnancy. They should not become pregnant for three months after vaccination. Postpartum women who are non-immune should also get vaccinated. Other household members of pregnant women should also be up to date with their immunisations to reduce the risk of exposure of pregnant women to infections during pregnancy. (For more information on rubella, please refer to http://www.chp.gov.hk/en/content/9/24/40.html).

Varicella

Some studies showed that pneumonia complicates about 10–20% of cases of chickenpox in pregnancy, resulting in a higher mortality and morbidity than in non-pregnant adults[6]. Maternal infection may cause other adverse pregnancy outcomes such as congenital varicella syndrome; and the risk appears to be higher in early pregnancy[7]. The syndrome is thought to be related to reactivation in utero of the virus of previous infection; and not a result of direct foetal infection[8]. Women who develop chickenpox five days before to two days after delivery could result in severe infection in the infant and is related to high infant mortality.

In Hong Kong, chickenpox mainly affects children under 12 years of age. Most women are infected before they become pregnant. In the past five years (2011 to 2015), 87 cases of chickenpox in pregnant women were recorded by the Centre for Health Protection (CHP) of the Department of Health (DH). Around 20% of the recorded cases had infection during the first trimester. Among them, 84 were interviewed and fortunately no maternal complications were reported.

Varicella vaccine is available in Hong Kong. Studies indicated that one and two doses of varicella vaccines in children are 85% and 98% effective against varicella infections[9]. Varicella vaccine has been incorporated into the HKCIP since July 2, 2014. Children born on or after January 1, 2013 are eligible to receive first dose of varicella vaccine at Maternal and Child Health Clinics (MCHCs) of DH when they reach one year old; the second dose of varicella vaccine will be given by DH's School Immunisation Teams when these children reach Primary One.

The vaccine is contraindicated during pregnancy. Non-pregnant women who do not have evidence of immunity to varicella may consult their doctors on vaccination. Following vaccination, women should avoid becoming pregnant for three months. (For more information on Chickenpox, please refer to http://www.chp.gov.hk/en/content/9/24/15.html).

Pay attention to water and food safety

A number of infections, such as listeriosis and hepatitis E infection, which can cause adverse pregnancy outcomes, are food or water borne.

Listeriosis

Listeriosis, primarily caused by eating food contaminated with the bacterium *Listeria monocytogenes*, has a predilection for the placenta and foetus and can cause miscarriage, premature delivery and sepsis. The neonate is prone to neonatal sepsis and death depending on the stage of pregnancy[10]. Invasive listeriosis occurs more frequent among pregnancy women than the general population. Presenting features of listeriosis in pregnant women are fever, chills, and back pain; a nonspecific flu-like illness being the most common presentation[11]. The infection may be mild in most pregnant cases and resolve without therapy, and the diagnosis could be missed if blood cultures are not obtained.

Among the 70 local cases of listeriosis recorded by CHP from January 2013 to December 2015, 17 cases (24.3%) were pregnancy-related, affecting 14 pregnant women and three neonates. The pregnant patients, aged 26 to 42 all had good past health. Ten of them contracted the infection during the second trimester; while four contracted the infection during the third trimester. Concerning their pregnancy outcome, two cases had spontaneous abortion at 17 and 23 weeks respectively. The former case was complicated with retained product of gestation requiring suction and evacuation. The abortus of the latter case showed multiple necrotic foci in liver, spleen and lungs that were consistent with *listeria monocytogenes* infection. One case had stillbirth. One case was reported to have premature delivery at 26 weeks of gestation with neonatal death. The cause of death was unknown at the time of delivery. Concerning the neonatal outcome, two neonates required neonatal intensive care (born at 23 and 27 weeks of gestation respectively) and they developed respiratory distress syndrome and septicemia and died at 46 minutes and at three days respectively. One neonate developed respiratory distress after birth and improved with antibiotics. Seven neonates delivered were found not to be infected with listeriosis.

Listeria monocytogenes can multiply in low temperature refrigerated foods. To prevent listeriosis, pregnant women should take extra precaution and avoid high-risk foods, such as refrigerated ready-to-eat food with a long shelf life (greater than five days), soft cheeses and semi-soft cheeses especially those made from raw or unpasteurised milk, prepared or stored salads, raw or smoked seafoods (for example, smoked salmon), cold meats, smoked ham, deli meats, cold-cuts and pâté, etc.

Hepatitis E

Hepatitis E is transmitted mainly through faecal-oral route by faecal contamination of drinking water; or through ingestion of products derived from infected animals. Other routes of transmission such as transfusion of infected blood products and vertical transmission have also been reported. HEV infection usually results in a self-limited, acute illness. Compared with the general population, pregnant women are more likely to experience severe illness including fulminant hepatitis and death. The disease is typically most severe during the third trimester of pregnancy[12].

To prevent viral hepatitis and other foodborne diseases, pregnant women should be careful with personal and environmental hygiene. They should avoid drinking water of unknown purity, avoid eating raw food or undercooked food, especially shellfish, pork and pig offal.

Adopt precautions to prevent zoonosis and vector borne infections

Malaria

Malaria infection during pregnancy can have adverse effects including miscarriage, foetal growth restriction/small for gestational age infant, preterm birth, low birth weight, perinatal death, and congenital infection, on both the mother and the foetus. Compared to non-pregnant women, pregnant/postpartum women are at increased risk of both acquiring malaria and developing more severe diseases.

Infections in areas with low malaria transmission where women have little acquired immunity, are generally believed to be much more likely to result in symptoms, severe disease, and death of the mother or foetus than in endemic regions[1,3]. Symptoms include intermittent fever, chills, sweating, headache, tiredness, poor appetite and muscle pain. In typical cases, the fever subsides for one to three days and then will come again in a cyclical pattern.

Pregnant women should avoid visiting malarious areas. Those who must travel to those areas should seek medical advice from their doctor six weeks beforehand, to allow enough time for taking anti-malarial drugs for prophylaxis if necessary before the trip. They should strictly follow steps to avoid mosquito bites during the entire trip, and consult and reveal their travel history to their doctors in case symptoms develop after the trip. CHP has published a Guideline for healthcare professionals in their management of potential travellers to areas with malaria risk at http://www.chp.gov.hk/files/pdf/guidelines_on_malaria_chemoprophylaxis_for_travellers_from_hong_kong_r.pdf and also updated and reviewed the global malaria risk in annual basis (http://www.chp.gov.hk/en/sas7/101/110/107.html).

Zika Virus Infection

Recently Brazil health authorities have observed an increased number of babies born with microcephaly in northeast Brazil. While knowledge of the link between Zika Virus infection and birth defects is still evolving, pregnant women and women preparing for pregnancy should defer their trip to affected areas. Those who must travel to any of these areas should seek medical advice from their doctors before the trip, and strictly follow steps to avoid mosquito bites during the trip. After the trip, they should consult and reveal travel itinerary to their doctors if any compatible symptoms develop. In view of the possible sexual transmission, pregnant woman should not have sex with her male partner who had travelled to areas with ongoing Zika Virus transmission, or else condom should be used throughout the pregnancy. Male traveller returning from affected areas should not have sex with his pregnant partner, or else condom should be used throughout the pregnancy. If his female partner is at risk of getting pregnant, he should use condom during sex for at least six months. CHP has set up a thematic webpage on Zika virus infection, http://www.chp.gov.hk/en/view_content/43086.html.

Toxoplasmosis

Toxoplasma gondii is a ubiquitous protozoan parasite transmitted by consuming undercooked meat or by exposure to contaminated soil, or unfiltered water. For zoonotic transmission, cats are found to play a role in the spread of toxoplasmosis. Kittens and cats become infected by eating infected rodents, birds, or other small animals. The parasite is then passed in their feces in an oocyst form, for as long as three weeks after infection.

Pregnant women may acquire toxoplasmosis infection through oral route and transmit the infection to the foetus via the placenta. The foetus and newborn with congenital Toxoplasmosis are at risk of severe complications, particularly retinal disease that can occur into adulthood.

Prevention of primary infection is based upon avoidance of sources of infection. Pregnant women with cats should keep their cats indoors, and should ask someone else to change the litter box daily.

Other precautions

The above list of infections are not exhaustive. Many other infections, such as human immunodeficiency virus, syphilis, herpes simplex, parvovirus, group B streptococcus, can be passed on to the baby during pregnancy or labour, causing severe illness or other adverse pregnancy outcomes. Women who plan to get pregnant and pregnant women should consult their doctor early for advice on prevention and treatment.

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Review of Viral Haemorrhagic Fever

Reported by Dr Eric MY LAM, Medical and Health Officer, Dr Zenith HY WU, Medical and Health Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP

Viral haemorrhagic fever (VHF) is a general term refers to a group of systemic viral infection with clinical pictures range from mild to life-threatening conditions complicated by haemorrhagic syndromes. VHF is a group of febrile illnesses caused by a number of Ribonucleic Acid (RNA) viruses[1]. Four distinct families of virus are Arenaviridae (e.g., Lassa fever, Junin and Machupo), Bunyaviridae (e.g., Crimean-Congo haemorrhagic fever, Rift Valley Fever, and Hantaan haemorrhagic fevers), Filoviridae (e.g., Ebola and Marburg) and Flaviviridae (e.g., yellow fever, dengue, Omsk haemorrhagic fever, and Kyasanur forest disease).

These viruses are usually restricted to certain geographical areas in the world where their natural hosts exist and they are endemic in areas of Africa, South America and Asia. Human VHF cases or outbreaks of viral haemorrhagic fever often occur sporadically[2].

Most of these viruses are zoonotic like Ebola, Lassa and Marburg which human are infected when they come into contact of the animals including rats and fruit bats. Others can be transmitted by ticks like Crimean-Congo haemorrhagic fever and mosquitoes including Dengue fever and Yellow fever.

Initial symptoms of VHF are often mild and non-specific including fever, malaise, dizziness, myalgia, loss of strength, and exhaustion. Severe cases may show signs of bleeding under the skin, in internal organs, or from body orifices like the mouth, eyes, or ears. Some cases may even show shock, nervous system malfunction, coma, delirium, and seizures.

Apart from Ebola, the most concerned VHFs include Lassa, Marburg and Crimean-Congo haemorrhagic fever viruses because of known secondary person-to-person transmission and potential risk of nosocomial infection. In this article, we will briefly review each of these diseases, and advise on their relevant prevention measures.

Lassa fever

Lassa fever is caused by arenavirus which is transmitted to humans via exposure to urine or faeces of infected rodent known as "multimammate rat"[3]. Despite being a zoonotic disease, Lassa fever could be transmitted from person to person after exposure to virus in blood and other body fluids of an infected person. Nosocomial transmission in health care settings is common when inadequate infection control measures were taken.

Lassa fever is endemic in West African countries, including Benin, Guinea, Liberia, Sierra Leone and Nigeria, but probably exists in other West African countries as well[4,5]. Recent outbreaks were reported in Nigeria and Benin in January and February 2016 respectively[6,7]. In Nigeria, 159 suspected cases of Lassa fever, including 82 deaths, were reported between August 2015 and January 2016. The outbreak in Benin was initially detected by reports of unexplained fever within a cluster of health workers who have provided care to a patient suffering from haemorrhagic fever.

The disease has an incubation period ranging from 6 to 21 days. Symptoms are usually mild including slight fever, malaise and headache. In around 20% of infected individuals, the disease may progress to more serious symptoms including hemorrhaging, respiratory distress, vomiting and shock. Although an antiviral drug, Ribavirin, has appeared to be effective when given early in the course of the illness, as is the case for other VHF, treatment of Lassa fever is mainly supportive.

Marburg haemorrhagic fever

Marburg haemorrhagic fever is caused by Marburgvirus of the family of Filoviridae. Marburg virus is transmitted to human from fruit bats of the Pteropodidae family, which is the natural host. Similar to the case in Lassa fever, human-to-human transmission of Marburg haemorrhagic fever is through direct contact with bodily fluid of infected people and with surfaces contaminated with such fluids.

Marburg haemorrhagic fever was first discovered in 1967 when two outbreaks occurred simultaneously in laboratories in Marburg and Frankfurt, Germany, and in Belgrade, Yugoslavia (now Serbia), which involved 31 cases and 7 death[8]. Since then sporadic outbreaks appeared throughout Africa[9], with confirmed cases reported from the Democratic Republic of Congo, Kenya, Angola, Uganda, Zimbabwe and South Africa. Cases of Marburg haemorrhagic fever occurred outside Africa were infrequent, with imported cases reported by the Russia in 1990, and the United States of America and the Netherlands in 2008.

Symptoms of Marburg virus disease include fever, chills, headache, and muscle pain, which are followed by rash that is most prominent on the truck, nausea and vomiting, chest pain, sore throat, abdominal pain and diarrhoea[10]. In severe cases, massive bleeding and other complications may occur as well. The case fatality rates ranged from 24% to 88%. There is no specific treatment for Marburg haemorrhagic fever and management is mainly supportive[11].

Crimean-Congo haemorrhagic fever (CCHF)

Crimean-Congo haemorrhagic fever (CCHF) is caused by the CCHF virus belonging to a tick-borne virus (Nairovirus) of the Bunyaviridae family[12,13]. The virus is primarily transmitted to people from tick bites and livestock animals. Besides, close contact with the blood, secretions, organs or other bodily fluids of infected persons may result in human-to-human transmissions. Nosocomial infections may also occur due to poor infection control practices.

The disease was first described in the Crimea in 1944 and then in the Congo in 1956. The current name for the disease was used according to the two places starting in 1969. CCHF has been found in Eastern Europe, throughout the Mediterranean, in northwestern China, central Asia, southern Europe, Africa, the Middle East, and the Indian subcontinent. The reservoirs include a wide range of wild and domestic animals such as cattle, sheep and goats and the infection in animals is usually not apparent.

People working in the livestock industry are the most at-risk group. The CCHF virus has caused severe viral haemorrhagic fever outbreaks with a case fatality rate of 10% to 40%. The incubation period is usually one to three days after a tick bite and five to six days following contact with infected blood or tissues. The clinical features of CCHF include sudden onset of fever, myalgia, dizziness, neck pain and stiffness, backache, headache, sore eyes and photophobia. There may be nausea, vomiting, diarrhoea, abdominal pain and sore throat early on, followed by sharp mood swings and confusion. Haemorrhagic phenomena may also develop. Currently, there is no safe and effective vaccine available for human use and the treatment is primarily supportive.

Preventive measures

There is currently no effective vaccine against most VHFs except for yellow fever, which is recommended for travellers to endemic areas. Moreover, treatment for most VHFs is primarily supportive and non-specific.

Disease preventive measures therefore mainly depend on avoiding contact with the host species of viruses. As many of the animal reservoir hosts of VHFs are rodents, disease prevention efforts include avoid unnecessary contact with host animals or their tissues in endemic areas and also rodent infestation control.

For those VHFs which are spread by vectors, measures to prevent insect and tick bites including use of insect repellant and window screens, wearing long-sleeve light-coloured protective clothing and appropriate pest control in the community is recommended.

Since person-to-person transmission of some VHFs is possible[14], avoiding close physical contact with infected persons and their body fluids is an important way of controlling disease spread. For healthcare workers, in the management of infected cases in health care settings, strict infection control measures including isolation of infected individuals, wearing protective clothing, proper use, disinfection, and disposal of instruments and equipment used in treating the patients should always be taken.

Local situation

Since July 2008, viral haemorrhagic fever has been made a notifiable disease in Hong Kong. All registered medical practitioners are required to notify the Centre for Health Protection (CHP) of the Department of Health (DH) all suspected or confirmed cases of these diseases. Dengue fever, yellow fever and Hanta virus infections have also been put in the list separately.

Although the widespread transmission of Ebola in West Africa since March 2014 has been largely controlled, sporadic cases of EVD may continue to occur[15]. The World Health Organization has also cautioned that Guinea, Liberia and Sierra Leone still remain at high risk of additional small outbreaks of Ebola in the coming months that more flare-ups were anticipated[16,17].

Moreover, due to extensive international travel nowadays, the risk of importation of severe VHF cases including Ebola, Marburg, Lassa, and Crimean-Congo haemorrhagic fever into Hong Kong still exists.

DH would continue to keep vigilant and monitor the latest developments of overseas situation of VHF diseases. Members of the public should also stay alert and keep abreast of the update given by DH.

To prevent contracting VHF, it is important for the travellers to:

- 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;
- Get yellow fever vaccination before travel to affected areas;
- Take measures on preventing mosquito and insect bites; and
- Travellers who return from VHF affected areas should seek medical advice promptly if feeling unwell, and provide travel details to doctor.

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NEWS IN BRIEF

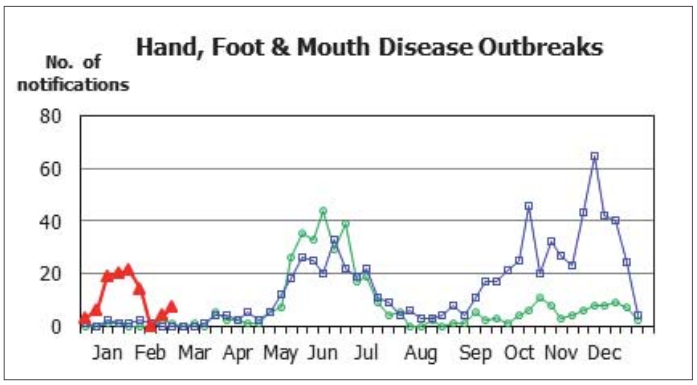
A probable case of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) of the Department of Health (DH) recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on February 23, 2016. The case was a 63-year-old woman with chronic medical illnesses. She presented with nonspecific dizziness in Nov 2015 and developed visual disturbance in mid-December 2015. She was admitted to a public hospital on December 10, 2015. Subsequently, her condition deteriorated and was found to have rapid decrease in cognitive function, poor memory, dysarthria, extrapyramidal dysfunction and walking instability in January 2016. MRI brain in January 2016 was unremarkable. Finding from electroencephalography in February 2016 was suggestive of CJD. She was classified as a probable case of Creutz-Jakob disease. She was currently staying in another public hospital and her condition was stable. She had no known family history of CJD. No risk factors for either iatrogenic or variant CJD were identified.

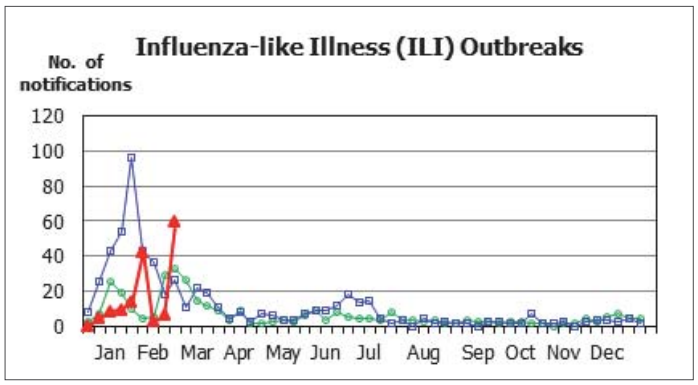
Laboratory surveillance on multi-antimicrobial resistant bacteria (January 2016)

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/1/10/641/695/5182.html.

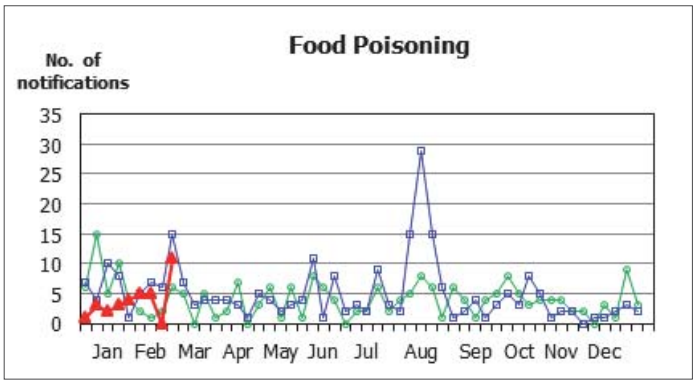
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 8 - WEEK 9)



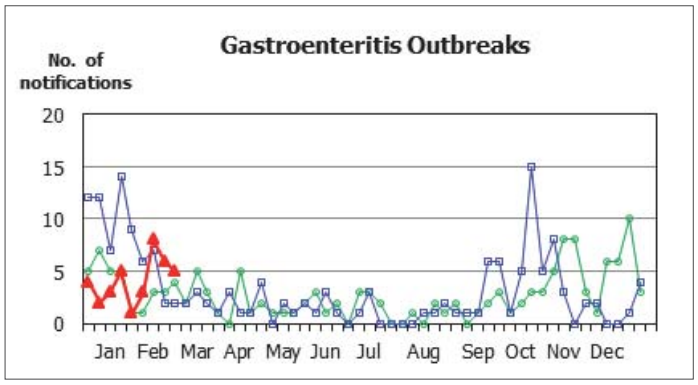
Week 06	14	Week 07	0
Week 08	**4**	**Week 09**	**7**



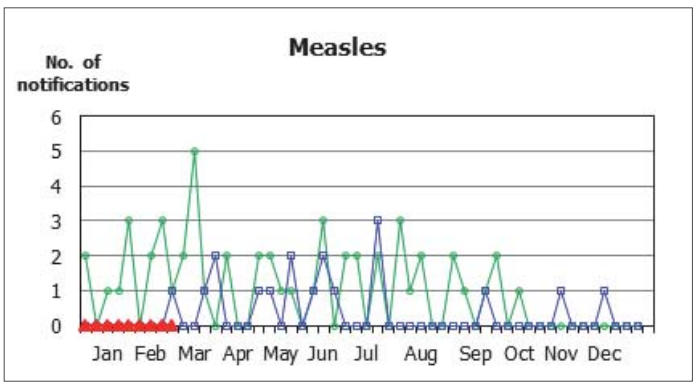
Week 06	42	Week 07	2
Week 08	**6**	**Week 09**	**59**



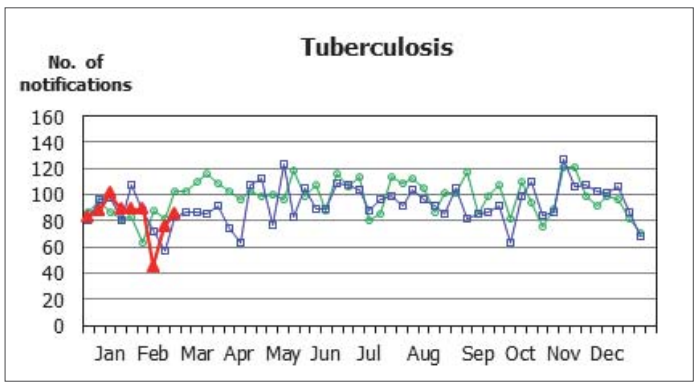
Week 06	5	Week 07	5
Week 08	**0**	**Week 09**	**11**



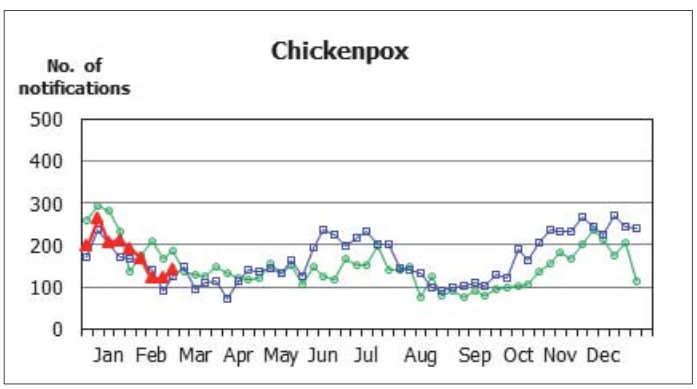
Week 06	3	Week 07	8
Week 08	**6**	**Week 09**	**5**



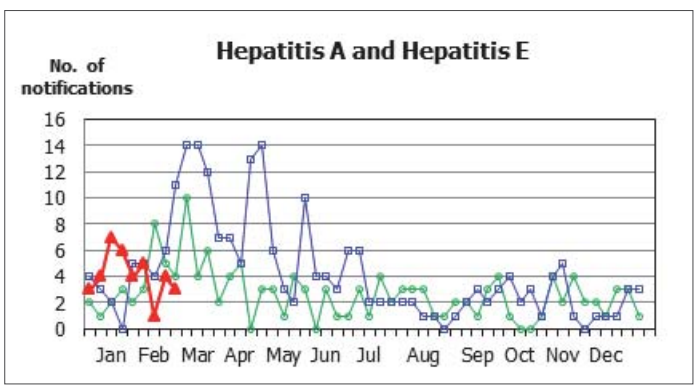
Week 06	0	Week 07	0
Week 08	**0**	**Week 09**	**0**



Week 06	89	Week 07	45
Week 08	**76**	**Week 09**	**86**



Week 06	166	Week 07	120
Week 08	**120**	**Week 09**	**141**



Week 06	5	Week 07	1
Week 08	**4**	**Week 09**	**3**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until February 27, 2016. 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

World TB day 2016

Reported by Dr Eric CC LEUNG, Senior Medical Officer, Dr CM TAM, Consultant i/c, Tuberculosis and Chest Service, CHP.

Mortality among patients with tuberculosis

Tuberculosis (TB) is still a major infectious disease globally. According to World Health Organization (WHO), 9.6 million people were ill with TB and 1.5 million died of TB in 2014. TB also overtook HIV as the top infectious killer in the same year. In Hong Kong, TB notification and mortality rate have been showing an overall downward trend in the past 50-60 years: the notification rate decreased from a peak of 697 per 100 000 population in 1952 to 61.6 per 100 000 population in 2015, while mortality rate decreased from 168.1 to 2.3 per 100 000 population in the same period (Figure 1 & 2) (provisional figures for 2015).

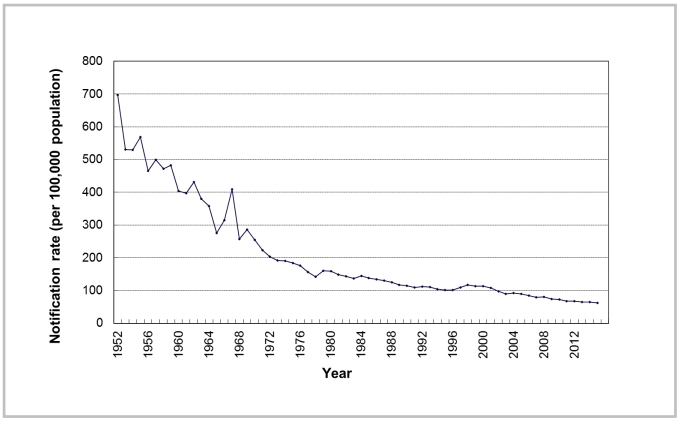

Figure 1 - TB notification rate in Hong Kong, 1952-2015.

In spite of this marked decline in TB notification and mortality rate, the one year all-cause mortality rate in our TB patients remained at around 16-17% (Table 1). In Western Pacific region, the one year mortality rate was 7.5% in Shanghai[2], 16.0% in Taiwan[3,4], and 11.9% in Singapore[5]. Since 2006, WHO has set target to detect at least 70% of TB patients and to successfully treat at least 85% of cases detected[6]. Even in high resource countries, this second target was rarely met because of the high first year mortality rate. In WHO Global TB report 2015, the treatment success rates for WHO American and European regions were both 75%[1].

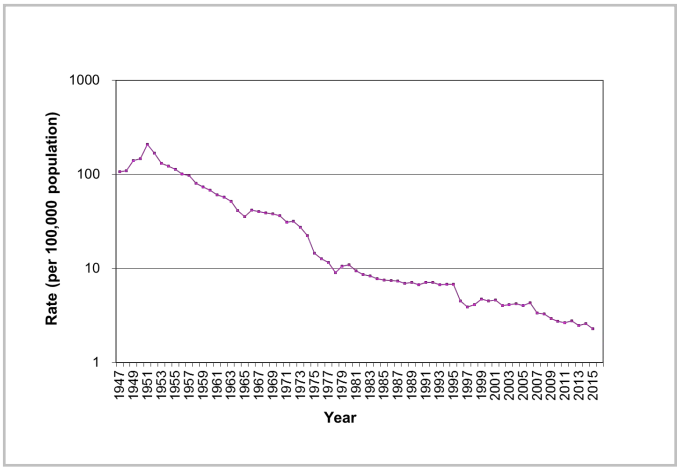

Figure 2 - TB mortality rate in Hong Kong, 1947-2015.

In WHO programmatic management for TB patients, all deaths during treatment were counted, irrespective of the cause[7]. The global case-fatality rates were reported to be between 12% and 44%[2]. Meta-analysis revealed a broad distinction between countries of low TB incidence and HIV prevalence and those of high TB incidence and HIV prevalence. In regions with low TB incidence and HIV prevalence, the highest risk of death is seen among an aging population with non-infective comorbidities as in North America[9] and Western Europe[10]. In high burden countries, patients at risk of death tend to be HIV-positive, sputum smear-negative cases that had clinical or immunological features of advanced immunosuppression as in Eastern Europe[11] and Africa[12].

Table 1 Mortality rate among TB patients in the first year of treatment.

Year of cohort	2008	2009	2010	2011	2012	2013
Total number of patients	5 635	5 193	5 093	4 794	4 842	4 650
Death in first year of treatment (any cause of death)	969	842	844	793	820	748
Case fatality rate	17.2%	16.2%	16.5%	16.5%	16.9%	16.1%

(Data from Appendix 27 of Annual Report, TB & Chest Service, Department of Health)

Although not a formal item in WHO TB programmatic management, the incidence of TB diagnosed after death is an important TB control indicator, as it could signify severe diagnostic delay and potential sources of secondary transmission. In the United States (US) TB Surveillance System, TB diagnosed after death comprised 17% of TB mortality from 1997 to 2005, with increasing age and HIV being significant risk factors[13]. In a recent meta-analysis[14], a median of 24% of recorded TB deaths occurred before treatment in 13 treatment programs. In Taiwan[15], TB reported after death comprised 20% of TB associated mortality from year 2005 to 2010 with increasing age also as a significant risk factor. Local surveillance data also suggest that a substantial proportion of TB-associated deaths occurred before notification. A mortality survey is ongoing to assess the situation.

Even fully treated TB is still associated with substantial mortality risk in some countries. An Israel study showed successfully treated TB patients had a SMR of 3.7 over 11 years of follow-up[16]. Another US study found a SMR of 7.0 in fully treated TB survivors when compared with a similar population with latent TB infection (LTBI)[17]. This is likely due to persistent health deficits such as permanent anatomical changes in the lung[18] and functional impairment[19] found in these fully treated TB patients, especially in situations where treatment has not been initiated at an early stage of the disease. Thus preventive measures comprising treatment of LTBI, and influenza and pneumococcal vaccination for those TB survivors are strongly recommended in that country.

Preventing death is one of the major goals of TB control[20]. This goal is a component of the WHO End TB Strategy that recently released in 2016, namely to reduce TB prevalence by 80% and death rates by 90% in 2030[21]. In an aging population, death due to other co-morbidities might not be entirely preventable. The factors leading to death occurring before diagnosis, during and after TB treatment warrant further studies.

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Review of Invasive Pneumococcal Disease (IPD) and pneumococcal vaccination in Hong Kong

Reported by Mr Desmond CHAN, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Pneumococcal infection is caused by the bacterium *Streptococcus pneumoniae* (also known as pneumococcus), of which there are more than 90 serotypes. Pneumococcus is a common causative agent for acute otitis media and pneumonia, and it also causes various forms of invasive pneumococcal disease (IPD), such as meningitis and septicaemia. The infection can be serious or even life-threatening. IPD can occur in persons of any age but the mortality is substantially higher for people at extremes of age (children under 2 years of age and elders aged 65 years or above). Other at risk groups of severe IPD include persons who have history of clinical IPD, are immunocompromised, have underlying chronic illnesses, or have cochlear implants.

There are two types of pneumococcal vaccines available in the market, namely a 23-valent pneumococcal polysaccharide vaccine (23vPPV) and pneumococcal conjugate vaccines (PCV). 23vPPV consists of pneumococcal capsular polysaccharides for 23 pneumococci serotypes. 23vPPV is recommended for individuals aged 2 or above with high risk conditions of IPD. PCV consists of pneumococcal capsular polysaccharides conjugated to carrier proteins. In Hong Kong, three types of PCV (PCV7, PCV10 and PCV13) consisting of antigens against seven, ten and thirteen pneumococci serotypes are registered. Following Scientific Committee on Vaccine Preventable Diseases (SCVPD) recommendation, PCV7 was incorporated into the Hong Kong Childhood Immunisation Programme (HKCIP) in September 2009[1]. The standard regimen of PCV includes a primary series consisting of three doses given at

the age of two months, four months, and six months and a booster dose given at 12 to 15 months of age. PCV7 was later replaced by PCV10 and PCV13 in the HKCIP in October 2010 and December 2011 respectively. In addition, the government has provided 23vPPV to eligible elders aged 65 years or above through the Elderly Vaccination Subsidy Scheme (EVSS) and the Government Vaccination Programme (GVP) since 2009.

Since 2007, the Department of Health (DH) has set up a laboratory surveillance system to monitor IPD. All microbiology laboratories in public and private hospitals in Hong Kong are requested to send pneumococcal isolates from sterile sites to Public Health Laboratory Services Branch (PHLSB) of Centre for Health Protection (CHP) of the DH for serotyping, antimicrobial susceptibility testing and characterisation. The DH enhanced the surveillance in 2015 by inclusion of IPD as one of the notifiable infectious diseases under the Prevention and Control of Disease Ordinance (Cap 599). Medical practitioners are required to notify the DH of any confirmed cases of IPD.

From 2007 to 2015, there were 1,359 cases of IPD recorded under the laboratory surveillance system and case notification. The overall annual incidence of IPD per 100,000 population varied from 1.7 to 2.9. The incidence was highest among young children (aged under 5 years) and elderly (aged 65 years or above) (Figure 1). A consistent seasonal trend was observed with more cases in the winter months (Figure 2). The overall incidence in Hong Kong were lower or comparable to those in overseas countries that have also introduced PCV in their childhood immunisation programmes such as the U.S.[2], Australia[3], New Zealand[4] and some European countries[5].

Substantial changes in the serotype distribution of pneumococcal isolates were observed since introduction of PCV in HKCIP (Figure 3a). For cases in children (under 18 years of age), serotypes covered by PCV7 (i.e. 4, 6B, 9V, 14, 18C, 19F and 23F) decreased from 55% from 2007 to 2008 to 20% from 2010 to 2015. On the other hand, serotypes covered by PCV13 but not by PCV7 (i.e. 1, 3, 5, 6A, 7F and 19A) increased from 30% from 2007 to 2008 to 64% from 2010 to 2015. The changes were less substantial among elderly 65 years or above, as serotypes covered by 23vPPV remained relatively stable at about 80% (Figure 3b).

Since IPD has been made notifiable in Jan 2015, 162 confirmed cases were recorded. Among these cases, 28 (17%) were children aged under 18 years old while 134 (83%) were adults. Seventy five (56%) of these adults cases were aged 65 years or above. For the 28 paediatric cases, 3 were caused by serotypes not covered by PCV13 (Figure 4). For the remaining 25 cases caused by serotypes covered by PCV13, 23 (92%) were caused by serotype 3. Eleven of these 25 cases (44%) had received 3 or 4 doses of PCV13, while 8 (32%) received none (Table 1). A more diverse serotype distribution is observed in adult cases aged 65 years or above, although serotype 3 was still the predominant serotype (Figure 5). Among the 75 adult cases aged 65 years or above, 59 (79%) were caused by serotypes covered by 23vPPV but most (69%) of them were not vaccinated with 23vPPV. Vaccine effectiveness studies in the U.K. showed that PCV13 and 23vPPV seems to be less effective against IPD caused by serotype 3.

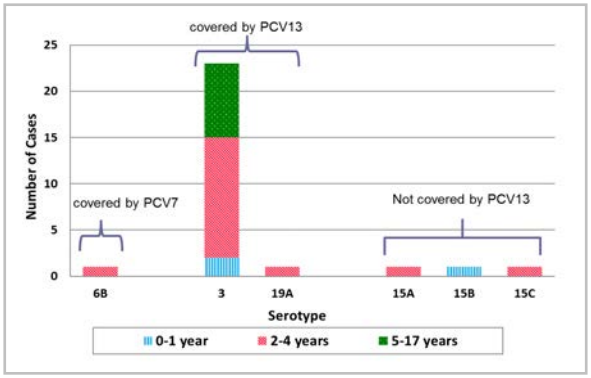


Figure 4 - Serotype distribution of paediatric IPD cases, 2015.

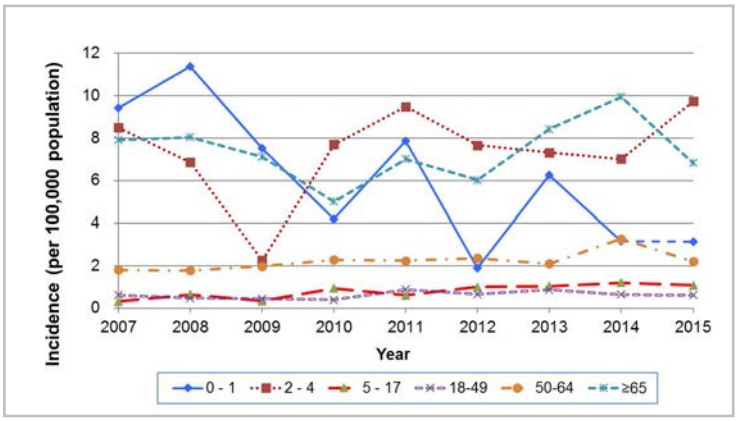


Figure 1 - Age- specific incidence of IPD in Hong Kong, 2007 to 2015.
Note: 2007-2014: PHLSB IPD surveillance quarterly reports (bacterial culture); 2015: IPD case notification (bacterial culture & PCR).

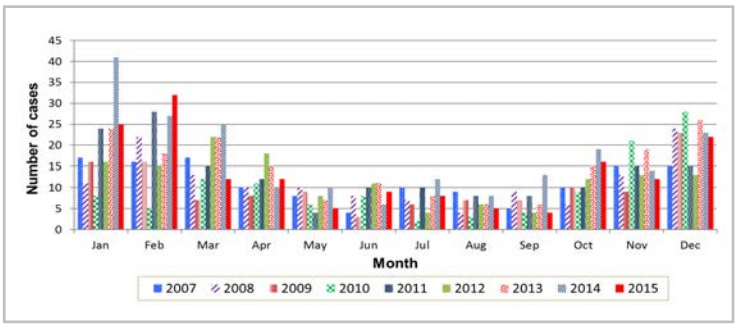
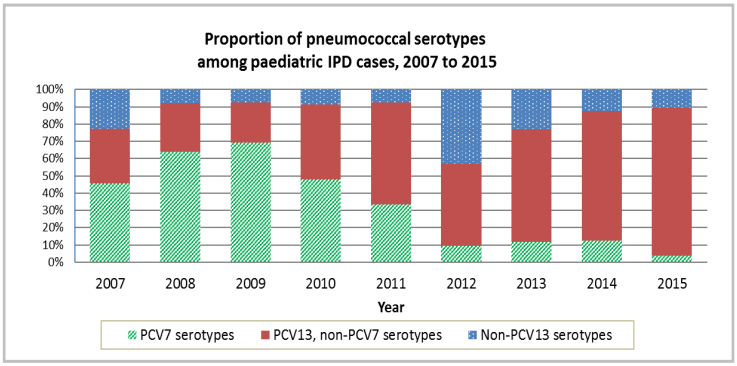


Figure 2 - Number of IPD cases by month, 2007 to 2015.
Note: 2007-2014: PHLSB IPD surveillance quarterly reports (bacterial culture); 2015: IPD case notification (bacterial culture & PCR).



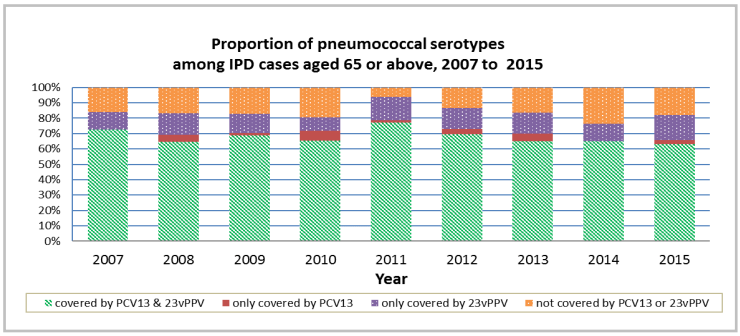


Figure 3a and b - Proportion of pneumococcal serotypes among IPD cases, 2007 to 2015 (top – <18 years; bottom – ≥65 years).
Note:
2007-2014: PHLSB IPD surveillance quarterly reports (bacterial culture);
2015: IPD case notification (bacterial culture & PCR)
1 adult case without specimen for serotyping was not included in the above figure.

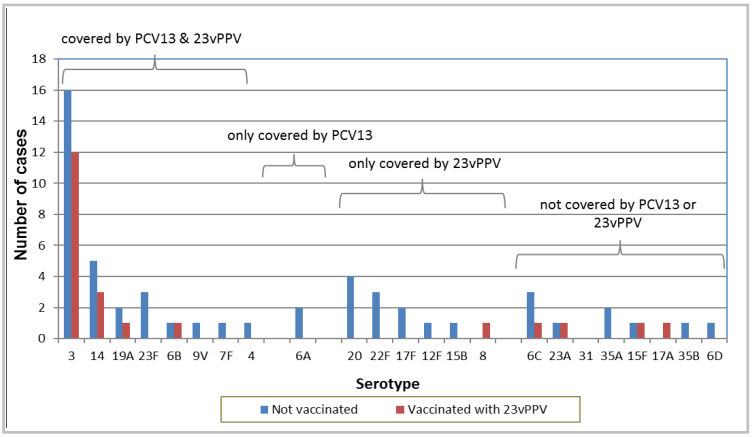


Figure 5 - Serotype distribution and 23vPPV vaccination history of IPD cases aged 65 years or above, 2015.
Note: 1 adult case without specimen for serotyping was not included in the above figure.

Table 1 - PCV13 vaccination history for paediatric cases caused by vaccine serotypes, 2015.

Serotype*	Age group (Years)	PCV 13 dose					Total
		0	1	2	3	4	
3	0 to 1	0	0	0	1	1	2
	2 to 4	3	0	2	0	8	13
	5 to 17	4	3	1	0	0	8
	Sub-total	**7**	**3**	**3**	**1**	**9**	**23**
19A	0 to 1	0	0	0	0	0	0
	2 to 4	1	0	0	0	0	1
	5 to 17	0	0	0	0	0	0
	Sub-total	**1**	**0**	**0**	**0**	**0**	**1**
6B*	0 to 1	0	0	0	0	0	0
	2 to 4	0	0	0	0	1	1
	5 to 17	0	0	0	0	0	0
	Sub-total	**0**	**0**	**0**	**0**	**1**	**1**
Total		8	3	3	1	10	25

**Serotype 6B is covered by PCV7/10/13 while serotypes 3 and 19A are only covered by PCV13.*

IPD can be caused by over 90 serotypes of pneumococci, and serotype replacement is a common phenomenon worldwide. No existing pneumococcal vaccination can confer 100% protection and IPD can occur even in vaccinated individuals. In addition to receiving age-appropriate pneumococcal vaccination, there are other measures in preventing pneumococcal infection. First, personal and environmental hygiene such as maintaining good indoor ventilation, wearing masks when there are symptoms of respiratory tract infection and seek medical attention early should be observed. Second, as preceding infection with influenza will lead to more severe illnesses caused by IPD, members of the public except those with known contraindications should receive seasonal influenza vaccine as recommended by SCVPD[2].

The overall IPD incidence in Hong Kong is considered to be relatively low and current vaccines cannot offer complete protection against IPD. The SCVPD and its Working Group on Pneumococcal Vaccination (WGPV) constantly reviewed the recommendation of pneumococcal vaccination. CHP will continue to monitor the situation through laboratory surveillance and reporting of cases.

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NEWS IN BRIEF

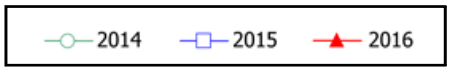
A possible case of sporadic Creutzfeldt-Jakob disease

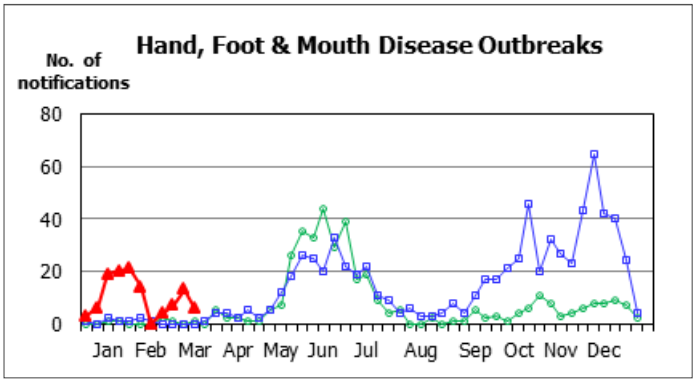
The Centre for Health Protection (CHP) recorded a possible case of sporadic Creutzfeldt-Jakob disease (CJD) on March 7, 2016, affecting a 56-year-old man with good past health. He presented with progressive memory loss, convulsion, tinnitus, blurred vision, disorientation and weakness since Jan 2016. He was admitted to a public hospital on Feb 22. Subsequently, he developed progressive dementia, extrapyramidal signs, visual dysfunction and akinetic mutism. Electroencephalography finding was atypical for CJD. His condition was serious. No risk factors for either iatrogenic or variant CJD were identified. He was classified as a possible case of sporadic CJD.

Scarlet fever update (February 14, 2016 – March 12, 2016)

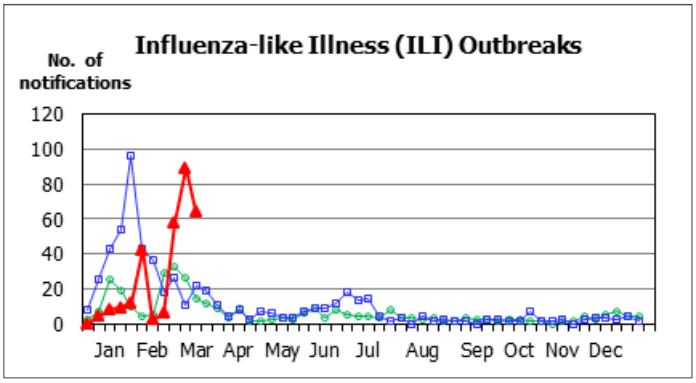
Scarlet fever activity in this reporting period remained similar to the previous four weeks. From February 14 – March 12 2016, CHP recorded 103 cases of scarlet fever with a range of 18 to 34 cases per week as compared with 100 cases with a range of 17 to 34 cases per week in the previous reporting period (January 17 – February 13, 2016). The cases recorded in this reporting period included 62 males and 41 females aged between 8 months and 32 years old (median = 5 years). In the current reporting period, there were four scarlet fever clusters involving two kindergartens, one primary school and one special school affecting a total of 10 students. No fatal cases were reported during this reporting period.

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

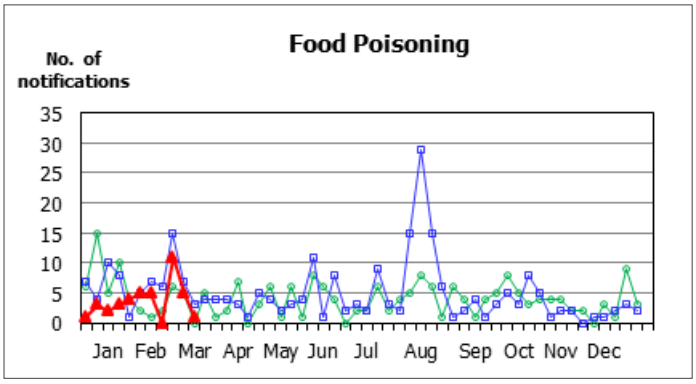




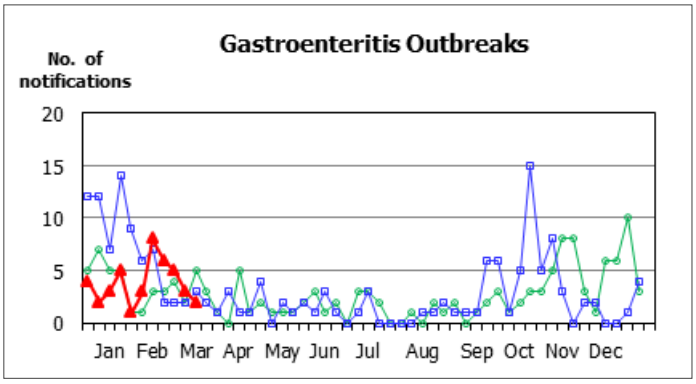
Week 08	4	Week 09	7
Week 10	**13**	**Week 11**	**6**



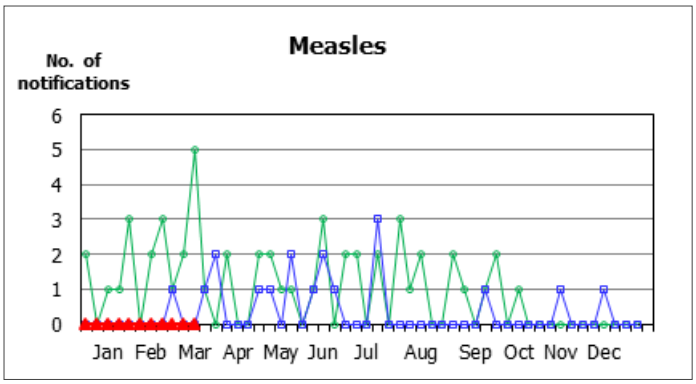
Week 08	6	Week 09	58
Week 10	**89**	**Week 11**	**64**



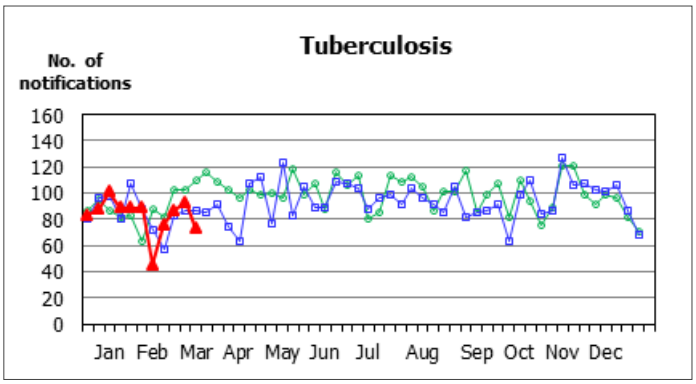
Week 08	0	Week 09	11
Week 10	**5**	**Week 11**	**1**



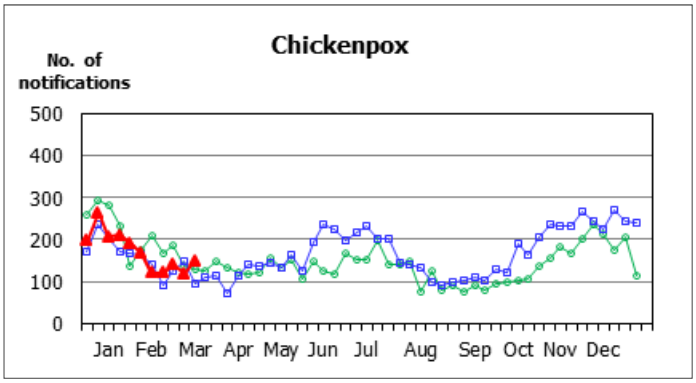
Week 08	6	Week 09	5
Week 10	**3**	**Week 11**	**2**



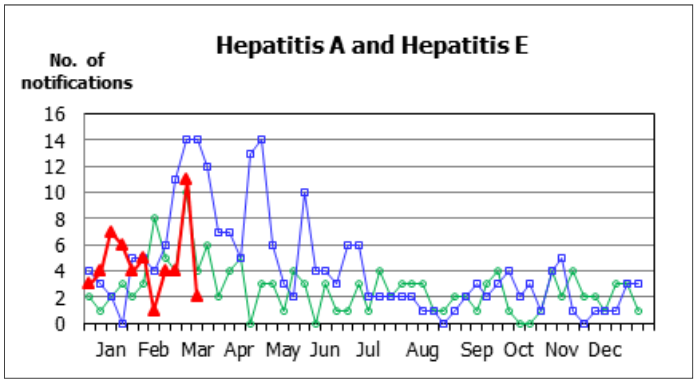
Week 08	0	Week 09	0
Week 10	**0**	**Week 11**	**0**



Week 08	76	Week 09	87
Week 10	**93**	**Week 11**	**73**



Week 08	120	Week 09	139
Week 10	**118**	**Week 11**	**149**



Week 08	4	Week 09	4
Week 10	**11**	**Week 11**	**2**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until March 12, 2016. This information may be updated over time and should therefore be regarded as provisional only.

Mar 13 - Mar 26 2016 WEEKS 12 - 13 VOL 13 ISSUE N⁰ 7

Communicable Diseases WATCH

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

FEATURE IN FOCUS

Update on HIV epidemiology of men who have sex with men in Hong Kong

Reported by Dr. Alfred YW SIT, Medical and Health Officer, Dr. BY SHU, Senior Medical and Health Officer, Dr. KH WONG, Consultant, Special Preventive Programme, Public Health Services Branch, CHP.

The Department of Health (DH) has implemented a voluntary anonymous case-based HIV and AIDS reporting system with input from both clinicians and laboratories since 1984. The cumulative number of HIV and AIDS reports in Hong Kong reached 7 718 and 1 655 cases respectively as of the end of 2015.

The annual number of reported HIV infection has continued to increase in the past five years after a mild drop in 2009 and 2010, and reached a new record high of 725 cases in 2015, which was an 11% increase as compared with 651 cases in 2014.

Similar to previous few years, the HIV situation in Hong Kong was still dominated by men who have sex with men (MSM) infections (homosexual and bisexual contact). In 2015, it accounted for 60% of all newly reported HIV cases, and 74.2% after excluding cases with undetermined route of transmission due to inadequate information. MSM also accounted for a continually expanding proportion in the overall male infected cases, from 41.4% in 2006 to 69.3% in 2015 (Figure 1).

The majority of the MSM reported cases in 2015 were Chinese (89.6%). The median age has been decreasing, from 37 years in 2010 to 31 years in 2015, suggesting that more younger MSM population was affected. In 2015, the age group of 20 to 29 years accounted for the highest proportion among the MSM cases (39.9%), followed by the age group of 30 to 39 years (31.8%) (Figure 2). In 2015, the majority (76.7%) of the reported MSM cases were assessed to have contracted the virus locally, 9.5% in Mainland and 7.6% in other places.

The annual community-based HIV/AIDS Response Indicator Survey (HARiS) continued to be conducted in 2015. Results showed that condom use rates in the last anal sex with emotional relationship partners, regular sex partners and non-regular sex partners were 65.7%, 73.6% and 81.1% respectively. The HIV testing rate within past one year was 60.8%, with another 22.3% never get tested.

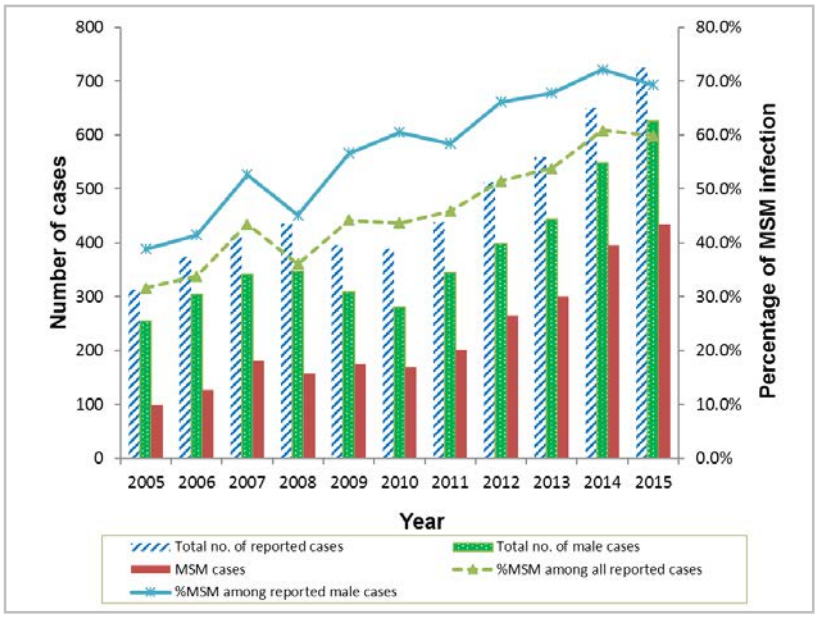
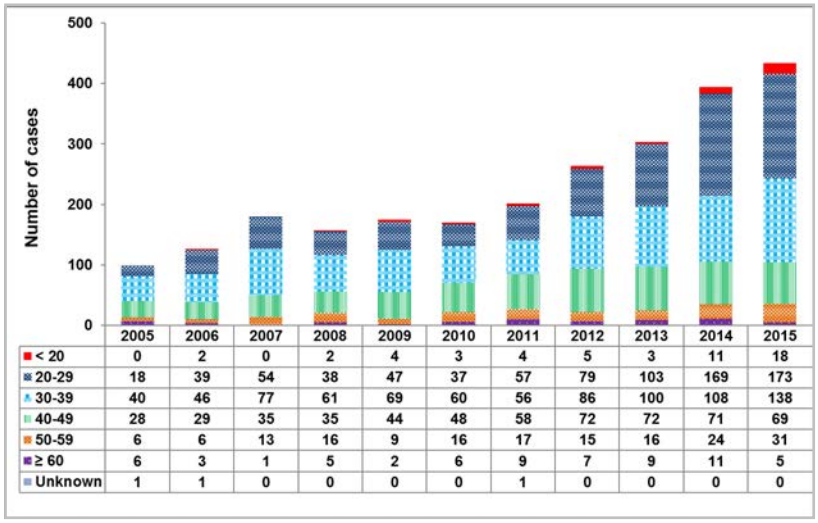


Figure 1 - Proportion of MSM infection among all cases and male cases (2005-2015).



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
< 20	0	2	0	2	4	3	4	5	3	11	18
20-29	18	39	54	38	47	37	57	79	103	169	173
30-39	40	46	77	61	69	60	56	86	100	108	138
40-49	28	29	35	35	44	48	58	72	72	71	69
50-59	6	6	13	16	9	16	17	15	16	24	31
≥ 60	6	3	1	5	2	6	9	7	9	11	5
Unknown	1	1	0	0	0	0	1	0	0	0	0

Figure 2 - Age breakdown of HIV-infected MSM cases (2005 - 2015).

Up till now, condom use remains one of the most effective ways to prevent HIV infection. All sexually-active people are advised to practise safer sex by proper and consistent use of condom. As current HIV treatment (highly active antiretroviral therapy (HAART)) can effectively control HIV replication, reduce risk of onward HIV transmission, reduce disease progression and improve patients' health, all MSM should test for HIV at least once a year irrespective of their sexual practice. They are also advised to repeat the HIV test after the 3-month window period since the last date of unprotected sex. Expanded regular testing of the MSM community would improve early diagnosis, treatment and care for both personal and public health good.

HIV testing services in Hong Kong

People can call DH's AIDS Hotline (Tel: 2780 2211), Gay Men HIV Testing Hotline (Tel: 2117 1069) or contact various AIDS non-governmental organisations (NGOs) for free and anonymous HIV testing and counselling services. They may also attend Social Hygiene Clinics (free for eligible person), or consult their family doctors for HIV testing. More information on HIV testing can be found on www.27802211.com and www.21171069.com (Table 1).

Table 1 - A list of HIV testing services or AIDS Non-governmental Organisations (Services provided may not be limited to MSM).

Department of Health	Website
AIDS Counselling and Testing Service	http://www.info.gov.hk/aids/chinese/hotline/main.htm
Social Hygiene Service	http://www.dh.gov.hk/english/clinictimetable/shc.htm

AIDS NGOs	Telephone Number
A-Backup	3116 7204
AIDS Concern	2394 6677
Project Touch of The Boys' and Girls' Clubs Association	6387 6984
CHOICE	3188 9024
Hong Kong AIDS Foundation	2513 0513
Midnight Blue	2493 4555
Rainbow of Hong Kong	8108 1069
The Society of Rehabilitation and Crime Prevention, Hong Kong	2323 3983 8206 9922

Review of yellow fever

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

Yellow fever is endemic in tropical areas of Africa and Latin America. The World Health Organization (WHO) estimates from the early 1990s indicated 200 000 cases of yellow fever and 30 000 deaths globally each year, with 90% occurring in Africa [1]. A recent analysis of African data sources estimates a burden of 84 000 – 170 000 severe cases and up to 29 000 – 60 000 deaths due to yellow fever in Africa for the year 2013[1].

Over 40 countries in Africa and Latin America are at risk of yellow fever, with a combined at-risk population of over 900 million.[2] In Africa, an estimated 508 million people are at risk. The remaining population at risk are in Latin America, with Bolivia (Plurinational State of), Brazil, Colombia, Ecuador and Peru at greatest risk [1].

Small numbers of imported cases occur in countries free of yellow fever. In the past centuries (17th to 19th), outbreaks of yellow fever were reported in North America (Charleston, New Orleans, New York, Philadelphia) and Europe (France, Ireland, Italy, Portugal, Spain, and the United Kingdom of Great Britain and Northern Ireland) [1].

According to the WHO, an outbreak of yellow fever started on December 5, 2015 in Luanda province of Angola. As of March 21, 2016, a total of 1 132 suspected and confirmed cases and 168 deaths had been reported in Angola [2]. The outbreak is ongoing.

In addition, from March 13 to 24, 2016, a total of six imported cases of yellow fever from Angola were also reported in Mainland China. According to the Mainland health authority, five patients were males and one was female. Their ages ranged from 32 to 50 years (median: 44 years). All of them presented with fever. Other clinical features included general malaise, chills and joint pain. All of them required hospitalisation. Four of them were in serious condition, while two were in stable condition. All six cases had their clinical specimens tested positive for the yellow fever virus.

In Hong Kong, in accordance with the Prevention and Control of Disease Ordinance (Cap.599), yellow fever is a notifiable infectious disease. *Aedes aegypti*, the primary vector for the transmission of yellow fever, is not found locally. The risk of local spread of yellow fever is relatively low. However, due to the large volume of international travel, there is risk of importation of yellow fever into Hong Kong.

As there is no specific drug treatment for yellow fever, it is important to take preventive measures against the disease. Members of the public should avoid mosquito bites by wearing loose, light–coloured, long-sleeved tops and trousers, and using DEET-containing insect repellent on exposed parts of the body and clothing. Additional preventive measures, such as avoiding using fragrant cosmetics or skin care products and re-applying insect repellents according to instructions, should be adopted when performing outdoor activities.

The WHO recommends immunisation for all travellers aged nine months and above, travelling to and from at-risk areas, unless they are contraindicated for vaccination. Travellers who are vaccinated against yellow fever will be given an International Certificate of Vaccination or Prophylaxis. The certificate is valid for life from 10 days after the injection. It takes 10 days for the vaccine to become effective in providing good protection, hence adequate time should be allowed for vaccination before departure.

In Hong Kong, yellow fever vaccination is available at the Travel Health Centres of the Department of Health. In order to avoid unnecessary delay in receiving yellow fever vaccination, travellers are advised to make an appointment with the Travel Health Centres at least six weeks before travel. More information can be found at the Travel Health Service website at: http://www.travelhealth.gov.hk/eindex.html.

Some countries require proof of yellow fever vaccination as a condition of entry or transit for travellers arriving from certain countries. A list of countries with risk of yellow fever transmission and countries requiring yellow fever vaccination can be found on WHO website at http://www.who.int/ith/2016-ith-annex1.pdf?ua=1.

Facts on yellow fever

Yellow fever is an acute infection caused by the yellow fever virus. The virus mainly infects monkeys and humans and is transmitted via the bite of infected mosquitoes, primarily *Aedes aegypti* [3]. The incubation period is about three to six days. The majority of persons infected with yellow fever virus have no symptoms or only mild illness. Some people may develop sudden onset of fever, chills, headache, muscle pain, nausea and vomiting. Most patients improve and their symptoms usually disappear after three to four days after onset. However, about 15% of the symptomatic cases will progress to a more severe form of the disease characterised by high fever, jaundice, bleeding, and eventually shock and failure of multiple organs. Fatality rate among severe cases is about 20 – 50%. There is no specific drug treatment for yellow fever. Management is mainly for symptomatic relief. Preventive measures against yellow fever are vaccination and avoidance of mosquito bites.

References

[1] World Health Organization. Yellow fever. 2016; http://www.who.int/mediacentre/factsheets/fs100/en/. Accessed March 23, 2016.
[2] World Health Organization. Yellow Fever – Angola. 2016; http://who.int/csr/don/22-march-2016-yellow-fever-angola/en/. Accessed March 23, 2016.
[3] Centers for Disease Control and Prevention. Transmission of Yellow Fever Virus. 2015; http://www.cdc.gov/yellowfever/transmission/index.html. Accessed March 23, 2016.

NEWS IN BRIEF

A local sporadic case of listeriosis

The Centre for Health Protection (CHP) recorded a case of listeriosis on March 22, 2016 affecting a 59 year-old female with underlying medical illnesses. She presented with fever on March 18 and was admitted to a public hospital on the same day. Her blood culture grew *Listeria monocytogenes*. She was treated with antibiotic and her condition was stable. Epidemiological investigation revealed that the patient did not travel outside Hong Kong and she denied consumption of high risk food during incubation period. Her family members remained asymptomatic. Investigation is ongoing.

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

CHP recorded a case of necrotising fasciitis caused by *Vibrio vulnificus* on March 15, 2016, affecting a 102 year-old female with underlying illnesses. The patient felt unwell at home on March 12 and was brought to the accident and emergency department of a public hospital where she was diagnosed to have right leg necrotising fasciitis with septic shock. She was subsequently transferred to another public hospital for further management. Her blood specimen collected on March 12 was cultured positive for *Vibrio vulnificus*. She was treated with intravenous antibiotics and emergency right above knee amputation was performed on March 12. She required post-operative intensive care. Her condition deteriorated and passed away on March 14.

Epidemiological investigation revealed that the patient lived alone and was cared by her neighbours. According to her family member, she had no travel history and did not visit wet market nor handled raw seafood during incubation period.

Laboratory surveillance on multi-antimicrobial resistant bacteria (February 2016)

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/1/10/641/695/5182.html.

NEWS IN BRIEF

Workshop on Paediatric Infection Control and Reconstruction

A two-day "Workshop on Pediatric Infection Control" was conducted on February 25-26, 2016. On the first day, a hospital visit to Prince of Wales and Queen Elisabeth Hospitals was arranged.

In addition to the visits, there were useful experience sharing sessions by experts from Australia and the United States. Strategies for surveillance, epidemiology studies, latest updates on immunity and immunisation, oncology and device related infections were highlighted.

On the second day, a roundtable discussion was conducted. In-depth discussion on infection control issues notably construction of a newly designed Paediatric Hospital was shared by the overseas speakers. These experiences would be very useful for the infection control teams in preparing them for construction and redevelopment work of many hospitals in the coming years.

Photo - Group photo of overseas speakers and workshop organising committee on February 26, 2016.

Workshop on Infection Control Aspects in Hospital Reconstruction and Renovation

A "Workshop on Infection Control Aspects in Hospital Reconstruction and Renovation" was conducted on February 23, 2016.

There were fruitful experiences sharing and exchange by Singapore and local experts. Audiences were enlightened on infection control strategies and practices before, during and after hospital reconstruction and renovation.

Finally, the proposed "Guidelines on Infection Control Risk Assessment for Construction and Renovation Work in Hospital" was discussed where useful comments were received from key stakeholders. This would facilitate further refinement of the guidelines before its launching.

Photo - Group photo of overseas speakers and workshop organising committee on February 23, 2016.

CA-MRSA cases in February 2016

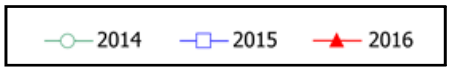
In February 2016, CHP recorded a total of 64 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 33 males and 31 females with ages ranging from 4 months to 83 years (median = 36.5 years). Among them, there were 43 Chinese, 9 Filipinos, 5 Caucasian, 2 Indonesian, 1 Cambodian, 1 Pakistani, and 3 of unknown ethnicity. Isolates of all these 64 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCCmec) type IV (47) or V (17). The isolate of one case affecting a 76 years old man was found to be resistant to mupirocin. The patient presented with buttock abscess and recovered after antibiotic treatment.

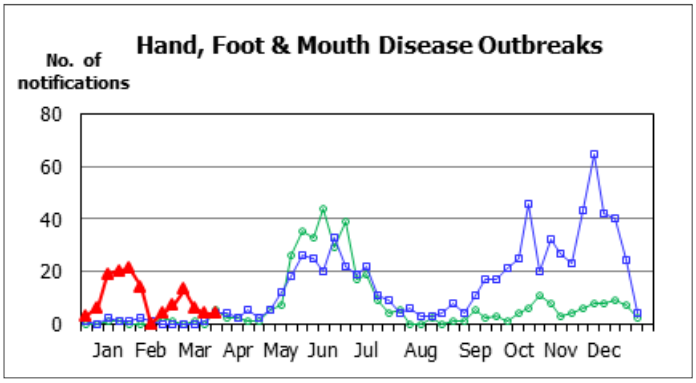
Sixty-two cases (96.9%) presented with uncomplicated skin and soft tissue infections while the remaining two cases had invasive CA-MRSA infections. The first invasive case was a 9-month-old girl with good past health who initially presented with fever on January 15, 2016 and subsequently developed cough, runny nose and shortness of breath. She was admitted to a public hospital on January 20 and was diagnosed to have pneumonia with empyema. Her pleural fluid collected on January 22 was cultured positive for CA-MRSA. She was treated with antibiotics and chest drainage. She was discharged on March 4. The second case was a 53-year-old man with multiple underlying illnesses. He presented with fever, cough, yellowish and blood stained sputum, and shortness of breath on February 7. He was admitted to a public hospital on February 12 and was diagnosed to have pneumonia. His sputum specimen collected on February 13 was cultured positive for CA-MRSA. He recovered after antibiotic treatment and was discharged on February 26. The close contacts of these two cases were asymptomatic, and screening and decolonization would be provided to them.

Among the 64 cases, one was the daughter of another case reported in October 2015. Screening and decolonisation would be provided to their close contacts. Besides, two cases involving healthcare workers were reported in February. One worked overseas and came to Hong Kong for vacation only. The other one worked in a public hospital and investigation did not reveal any epidemiological linkage to other cases.

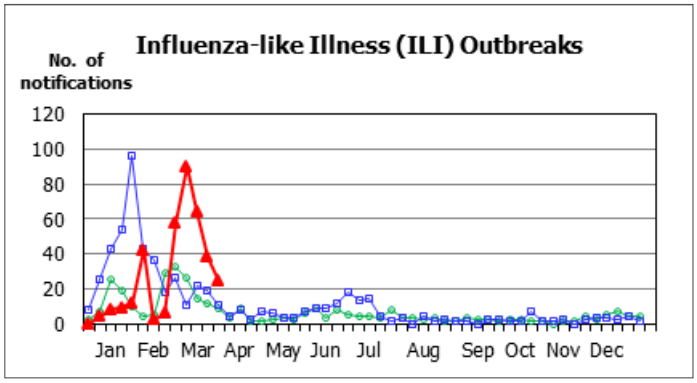
(Note: The number of CA-MRSA cases in January 2016 was revised to 83.)

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

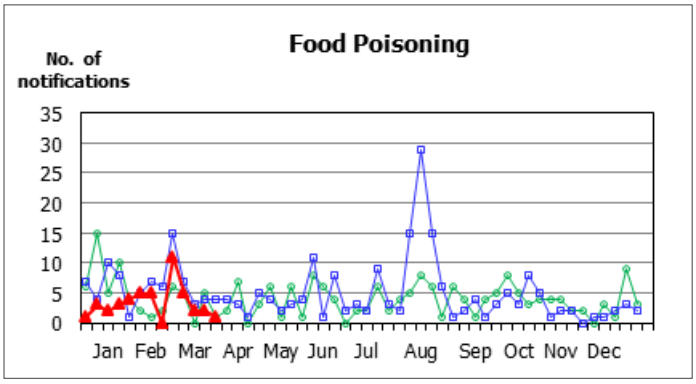




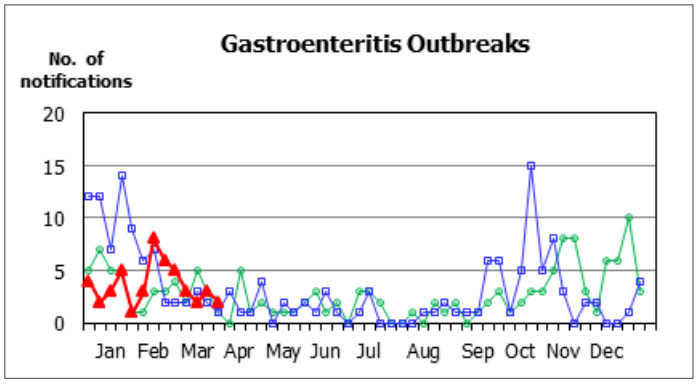
Week 10	13	Week 11	6
Week 12	**4**	**Week 13**	**4**



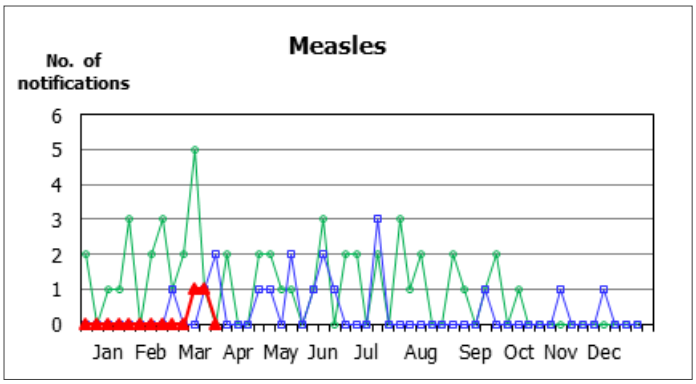
Week 10	90	Week 11	64
Week 12	**38**	**Week 13**	**24**



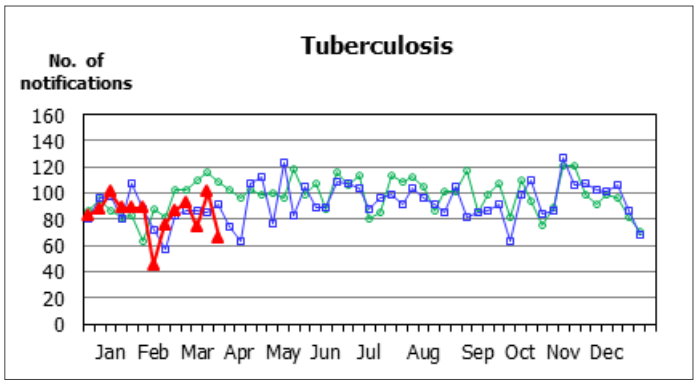
Week 10	5	Week 11	2
Week 12	**2**	**Week 13**	**1**



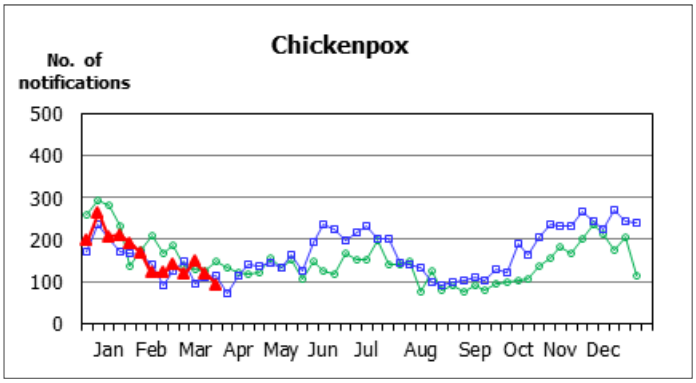
Week 10	3	Week 11	2
Week 12	**3**	**Week 13**	**2**



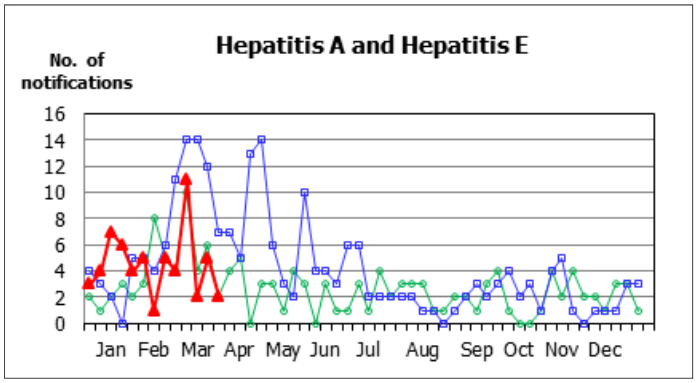
Week 10	0	Week 11	1
Week 12	**1**	**Week 13**	**0**



Week 10	93	Week 11	74
Week 12	**101**	**Week 13**	**66**



Week 10	118	Week 11	148
Week 12	**118**	**Week 13**	**92**



Week 10	11	Week 11	2
Week 12	**5**	**Week 13**	**2**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until March 26, 2016. This information may be updated over time and should therefore be regarded as provisional only.

Mar 27 - Apr 9 2016 WEEKS 14 - 15 VOL 13 ISSUE Nº 8

Communicable Diseases WATCH

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

FEATURE IN FOCUS

A review of hand, foot and mouth disease (HFMD) in Hong Kong

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) occurs throughout the year but the disease activity usually peaks from May to July in Hong Kong and lasted for about three months. There was also a smaller winter peak observed in 2012 and 2014 that lasted for about one to two months. However, the peak season of HFMD in 2015 lasted longer than usual as activity started to increase in May 2015 and further increased in December 2015. The activity only started to decline in January 2016 and returned to baseline in March 2016. The summer peak in 2015 merged with the winter peak and the total duration of high activity lasted for about 10 months (Figures 1 to 3).

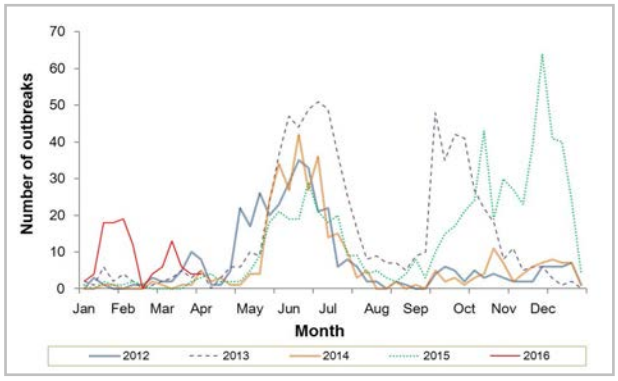


Figure 1- Number of institutional HFMD/herpangina outbreaks reported, 2012 to 2016 (as of April 1, 2016).

The Centre for Health Protection (CHP) of the Department of Health (DH) recorded a total of 773 HFMD/herpangina institutional outbreaks from May 2015 to March 2016 as compared with 337 institutional outbreaks in the corresponding period from 2014 to 2015. From May 2015 to March 2016, an average of 70.3 HFMD/herpangina institutional outbreaks per month (range: 18 to 164) were recorded as compared with 6.8 HFMD/herpangina institutional outbreaks per month (range: 3 to 13) recorded in the non-peak season from January to April 2015. There were 442 (57.2%) outbreaks occurred in child care centres/ kindergartens, 159 (20.6%) in secondary schools and 155 (20.1%) in primary schools. The remaining 17 outbreaks occurred in other institutions such as special schools, other residential institution/hostel, playgroup centre, etc. The size of outbreaks ranged from 2 to 56 persons (median: 4 persons), which was comparable with that in previous few years (size: 2 - 65 persons, median: 4 - 5 persons). The proportion of hospitalization among affected persons was 2.46%, which was comparable to that in previous years (1.90% - 2.26%). One hundred and thirteen (14.6%) institutional outbreaks had positive causative agents identified. The confirmed outbreaks were associated with CA6 (19.4%), followed by EV71 (9.7%), CA16 (2.7%), CA2 (0.9%), mixed agents (0.9%) and untyped enteroviruses (66.4%).

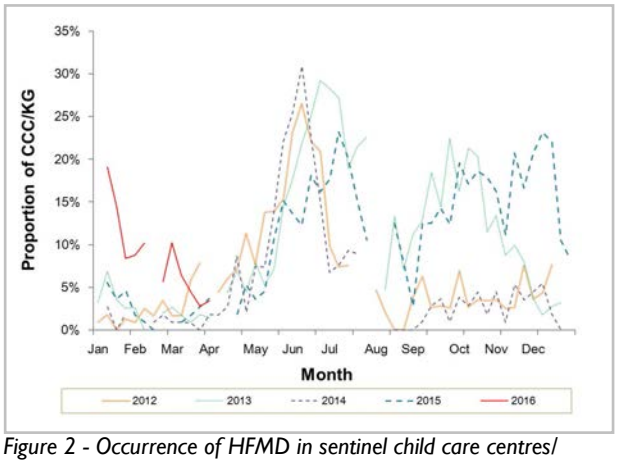


Figure 2 - Occurrence of HFMD in sentinel child care centres/ kindergartens (CCC/KG), under Sentinel Surveillance of Infectious Diseases, 2012 to 2016 (as of April 1, 2016).

A total of 47 EV71 infections were recorded from May 2015 to March 2016 which was fewer than the number of 56 cases in the corresponding period from 2014 to 2015. The male-to-female ratio was 1.8:1 and their ages ranged from 28 days to 39 years (median: two years old). Forty EV71 cases required hospitalisation with a median length of stay of two days (range: discharged on the same day of admission to 14 days). Five cases developed severe complications (e.g. encephalitis and meningitis) while none of them suffered from any long term neurological sequelae. No fatal cases were recorded in 2015 and 2016 so far.

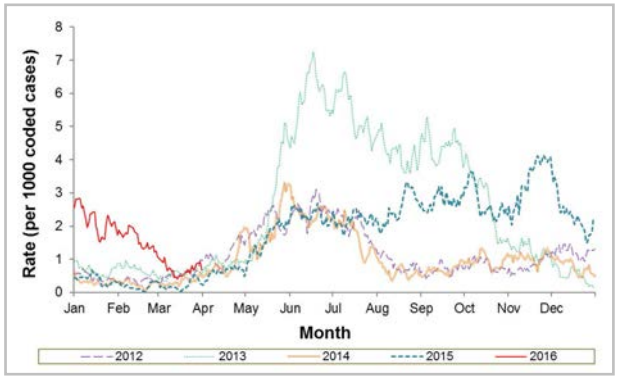


Figure 3 - Accident & Emergency Departments surveillance of HFMD syndrome, 2012 to 2016 (as of April 1, 2016).

There were eight cases of severe paediatric enterovirus infections (SE) other than EV71 and poliovirus from May 2015 to March 2016 which was fewer than the number of 23 cases recorded in the corresponding period from 2014 to 2015. The male-to-female ratio was 1:1. The patients' ages ranged from three months to eight years (median: 1.9 years old). All were inpatients with a median length of stay of five days (range: four days to 14 days). The complications of the SE cases were meningitis (5 cases), encephalitis (1 case), and other central nervous system complications (2 cases). The laboratory results revealed that all SE cases were associated with untyped enterovirus other than poliovirus and EV71.

In summary, the summer peak season of HFMD in Hong Kong in 2015 merged with the winter peak season and lasted longer than usual but the characteristics of the outbreaks were similar to that in previous years.

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, for example, after coughing or sneezing; and
  - ✦ 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 1 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.

Rubella infection in Hong Kong, 2011 – March 2016

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

Rubella is a notifiable disease in Hong Kong. In recent years, incidence continued to decline and remained low. Between 2011 and 2015, a total of 179 rubella cases were recorded, with annual notifications ranging from 12 to 84 (0.16 – 1.20 per 100 000 population)(Figure 1). No rubella cases were reported in the first three months of this year. Majority of the cases were locally acquired infection. Thirteen cases (7.3%) had history of travel outside Hong Kong including mainland China (7), India (3), Indonesia (2), and the United Kingdom (1) during their incubation period. Four outbreaks were reported during 2011 - 2015 each affecting two to twelve persons, one of which involved twelve Indonesian domestic helpers attending a church service while the remaining three occurred in the household and workplace settings. No fatalities due to rubella were recorded in the past five years.

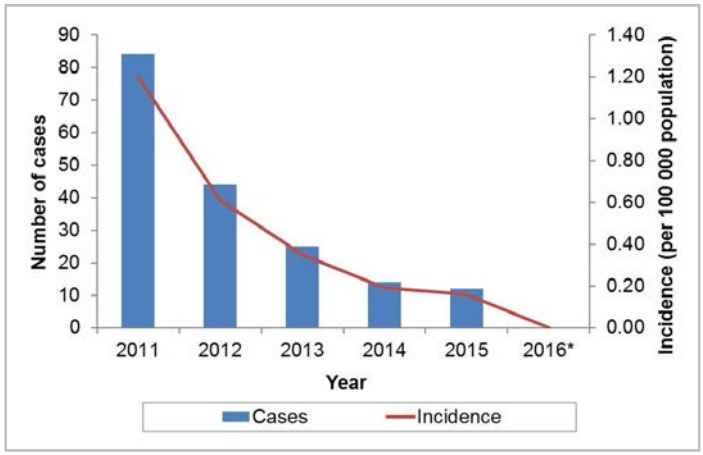


Figure 1 – Rubella notifications in Hong Kong, 2011 – March 2016 (as of March 31, 2016).*

Over half (54%, 97/179) of all cases were laboratory-confirmed with positive serological test for rubella IgM antibody, isolation of rubella virus or positive reverse transcription-polymerase chain reaction (RT-PCR) for rubella virus in clinical specimens.

More males than females were affected (male to female ratio = 1.3:1). The age of the cases ranged from four months to 60 years (median = 28 years). About 70% of the cases had either unknown or undocumented history of rubella vaccination. Six cases (3.4%) were less than one year old and had not reached the recommended age for vaccination. Twenty-three cases (12.8%) reported to have completed two doses of rubella vaccine while 24 (13.4%) received only one dose. Four cases (2.2%) were pregnant at gestation 18 to 38 weeks at the time of diagnosis, two recorded in 2011 and two in 2012. One of them (22 weeks gestation) recalled to have received two doses of rubella-containing vaccine in mainland China. She subsequently delivered a full term normal baby in Hong Kong. One case (18 weeks gestation) with unknown vaccination status returned to mainland China for delivery and the outcome was unknown. Two other pregnant cases (25 weeks and 38 weeks gestation), with no definite vaccination history, had normal deliveries in Hong Kong.

Three cases of congenital rubella syndrome (CRS) were recorded in 2012 affecting a baby boy and two baby girls aged six days to one month. Their mothers were born in mainland China with either uncertain or no history of rubella vaccination. There were no deaths due to CRS since 1985.

Vaccination against rubella, which is effective in preventing rubella infection and CRS, was incorporated into the Hong Kong Childhood Immunisation Programme in 1978. An anti-rubella vaccine was administered in the early years, and the measles, mumps & rubella (MMR) combined vaccine has been in use since 1990. At present, two doses of MMR vaccine are administered to children at age one and Primary One respectively. The coverage for MMR vaccine among children aged two to five years in Hong Kong has been maintained over 95% according to a territory-wide survey conducted in 2012.

Although rubella infection is usually uncomplicated, infection in nonimmune women during early pregnancy can lead to serious outcomes in developing foetus. Childbearing age women who are not immunised should check their immunity status before pregnancy and receive rubella vaccine accordingly. Apart from active immunisation, maintaining personal and environmental hygiene is important in preventing infection and spread of rubella. For more information on rubella and MMR vaccination, please visit the CHP website: http://www.chp.gov.hk/en/content/9/24/40.html.

Rubella, commonly known as "German measles", is a highly communicable viral infection characterised by fever, rash, lymph node swelling and respiratory symptoms. Although rubella infection is often mild in young children, older children and adults are more likely complicated with arthritis, encephalitis and orchitis. Infection in pregnant woman in early gestation may produce anomalies in the developing foetus. Congenital rubella syndrome (CRS), characterised by deafness, blindness, heart malformations and mental retardation, is likely to occur in infant born to woman who got infected during the first three months of pregnancy.

NEWS IN BRIEF

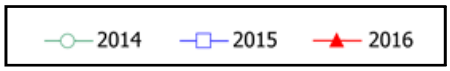
A sporadic case of listeriosis

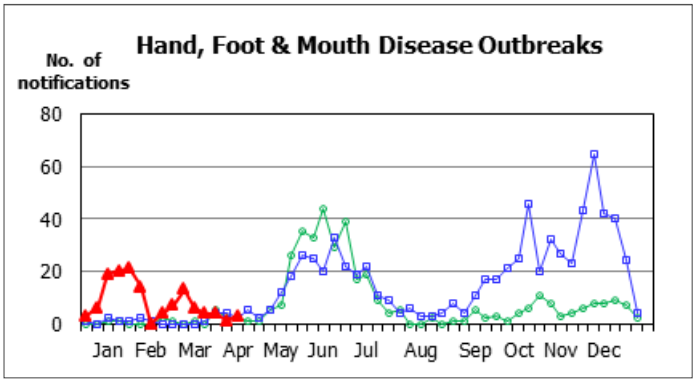
On April 3, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of listeriosis affecting a 58-year-old woman with underlying medical illness. The patient presented with fever and malaise on March 18 and was admitted to a public hospital on March 30. Her blood culture collected on March 30 yielded *Listeria monocytogenes* and the clinical diagnosis was septicemia. She was treated with antibiotics and her condition remained stable all along. Epidemiological investigation revealed that the patient had been to Canada since December 2015 and returned to Hong Kong on March 1, 2016. She had consumed packaged salad bought from supermarket while she was in Canada, otherwise she did not report consumption of other high risk food items during incubation period. Her home contacts remained asymptomatic. Investigation is ongoing.

Scarlet fever update (March 13, 2016 – April 9, 2016)

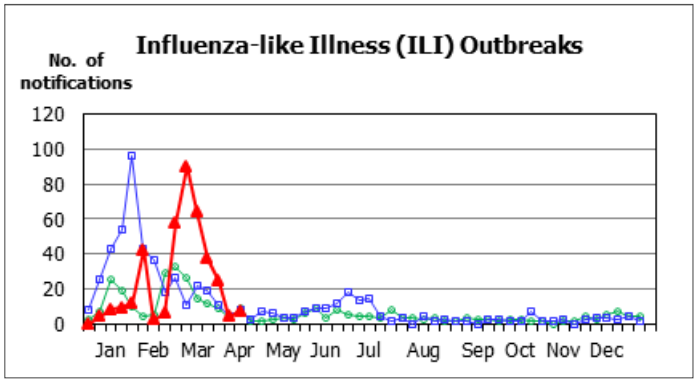
Scarlet fever activity in this reporting period decreased as compared with the previous four weeks. From March 13 – April 9 , 2016, CHP recorded 81 cases of scarlet fever with a range of 15 to 31 cases per week as compared with 103 cases with a range of 18 to 34 cases per week in the previous reporting period (February 14 – March 12, 2016). The cases recorded in this reporting period included 53 males and 28 females aged between 1 and 55 years (median = 6 years). There were no institutional clusters or fatal cases reported in the current reporting period.

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

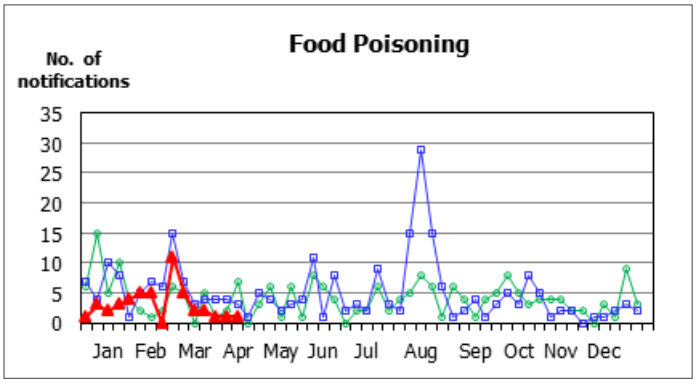




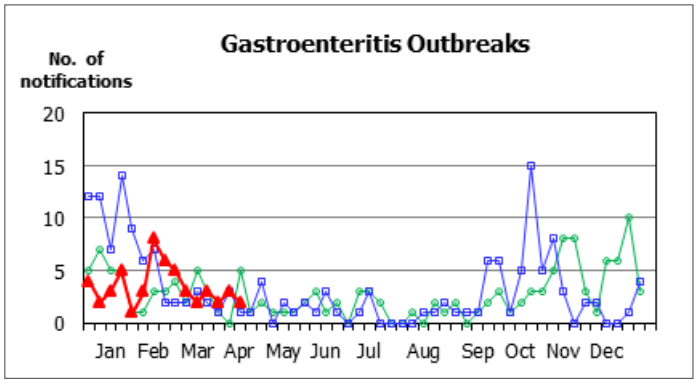
Week 12	4	Week 13	4
Week 14	**1**	**Week 15**	**3**



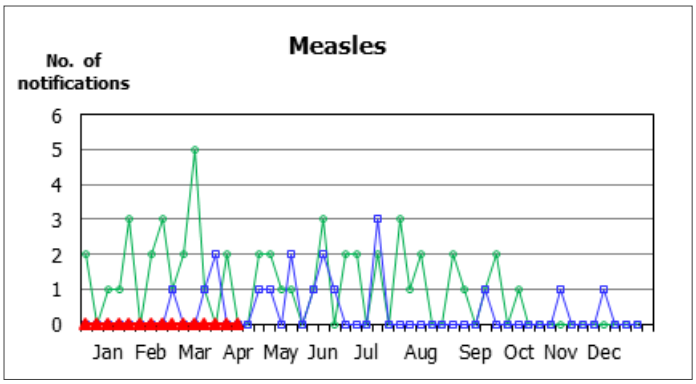
Week 12	37	Week 13	24
Week 14	**4**	**Week 15**	**7**



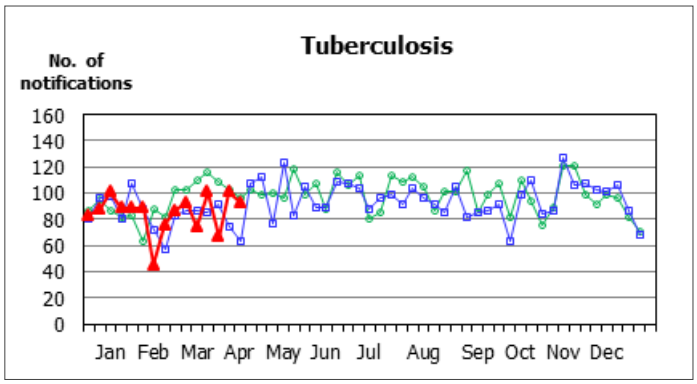
Week 12	2	Week 13	1
Week 14	**1**	**Week 15**	**1**



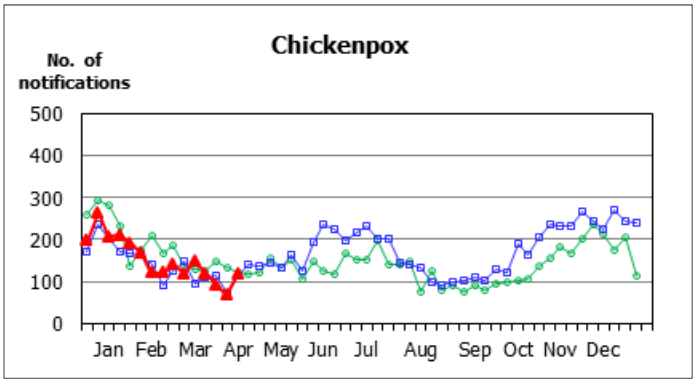
Week 12	3	Week 13	2
Week 14	**3**	**Week 15**	**2**



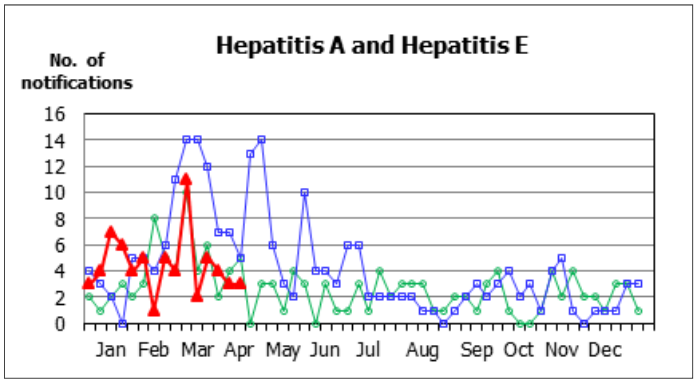
Week 12	0	Week 13	0
Week 14	**0**	**Week 15**	**0**



Week 12	101	Week 13	67
Week 14	**101**	**Week 15**	**93**



Week 12	118	Week 13	92
Week 14	**67**	**Week 15**	**119**



Week 12	5	Week 13	4
Week 14	**3**	**Week 15**	**3**

Data contained within this bulletin is based on information recorded by the Communicable Disease Information system (CDIS) up until April 9, 2016. This information may be updated over time and should therefore be regarded as provisional only.

Apr 10 - Apr 23 2016 WEEKS 16 - 17 VOL 13 ISSUE Nº 9

Communicable Diseases WATCH

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

FEATURE IN FOCUS

Update on 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 (ZVI) is a mosquito-borne disease caused by Zika virus. Zika virus is mainly transmitted to human through the bite of an infected *Aedes* mosquito. Transmission by sexual contact has also been confirmed and transmission through blood transfusion is possible. Most ZVI is asymptomatic. Symptoms typically begin 2-7 days after bite of an infected mosquito. The most common symptom of ZVI is skin rash. Other common symptoms include headache, fever, muscle or joint pain and conjunctivitis. These symptoms are usually mild and last for a few days. The current major concern is the association with adverse pregnancy outcome (microcephaly) and neurological and autoimmune complications such as Guillain-Barré syndrome (GBS). There is no specific medication nor vaccine for ZVI and the mainstay of treatment is symptomatic relief. To prevent ZVI, members of the public are reminded to protect themselves from mosquito bites and help prevent mosquito proliferation.

Latest global epidemiology

Currently, ZVI is mainly affecting the Americas but cases have also been reported in Asia, Africa and the Pacific. The number of areas with ongoing Zika virus transmission is increasing, in particular, it has been expanding rapidly in the Americas since 2015. As of April 20, 2016, Zika virus transmission was documented in more than 60 countries and areas since January 1, 2007. This includes 59 countries and areas reporting mosquito-borne transmission and eight reporting person-to-person transmission other than mosquito-borne transmission, probably through sexual transmission. Microcephaly, other foetal malformations and GBS associated with ZVI have been reported in various countries and areas with majority of them from the Americas region[1].

Latest scientific development

On February 1, 2016, the Director-General of the World Health Organization (WHO) convened a meeting of the Emergency Committee on Zika virus and announced that the recent cluster of microcephaly cases and other neurological disorders reported in Brazil, following a similar cluster in French Polynesia in 2014, constitutes a Public Health Emergency of International Concern (PHEIC). After the second meeting on March 8, 2016, the Committee advised that the clusters of microcephaly cases and other neurological disorders continue to constitute a PHEIC. Later, the WHO confirmed that based on a growing body of research, there is scientific consensus that Zika virus is a cause of microcephaly and GBS[1]. Apart from GBS, acute disseminated encephalomyelitis (a disease of the central nervous system) was recently found to be one of the neurologic manifestations possibly resulted from Zika virus[2]. Moreover, ZVI in foetuses and infants before birth could lead to a range of problems in addition to microcephaly, for instance, defects of the eye, hearing deficits and impaired growth[3].

Regarding non-vector-borne transmission of Zika virus, sexual transmission from infected men to their female sex partners has previously been reported from a number of countries including the United States (US). Zika virus has been detected in human semen from at least two weeks and up to 62 days after symptom onset. However, the duration of persistence of infectious Zika virus in semen remains unknown[4]. Recently, the Centers for Disease Control and Prevention of the US reported the first case of male-to-male sexual transmission of Zika virus, involving a man with recent travel to an area of active Zika virus transmission and his non-traveling male partner[5]. Moreover, transplacental and perinatal transmission of Zika virus is possible as indicated by report of cases of pregnant women with foetuses or new born babies infected with Zika virus and detection of Zika virus genome in the amniotic fluid of two pregnant women in Brazil who had Zika-like symptoms and their foetuses diagnosed with microcephaly[6-10]. Apart from blood and semen, Zika virus has been detected in other human body fluids including breast milk and saliva[11]. However, there are no reports of ZVI acquiring through breastfeeding or kissing so far.

Local situation and control measures

In Hong Kong, ZVI has become a notifiable disease since February 5, 2016 and no confirmed cases have been reported to the Centre for Health Protection (CHP) of the Department of Health (DH) so far.

CHP has been adopting various preventive strategies which are in line with those recommended by the WHO. In view of the public health threat and evolving scientific evidences of ZVI, the Scientific Committee on Vector-borne Diseases (SCVBD) convened two meetings on February 26, and April 19, 2016, respectively. The SCVBD noted that the geographical distribution of Zika virus has steadily expanded due to global warming, urbanisation and globalisation. Major epidemics may occur globally wherever there are suitable environments for mosquitoes to live and breed. Due to extensive international travel, Hong Kong has a high risk of importation of cases. As asymptomatic infection is very common and the mosquito, *Aedes albopictus*, which can potentially transmit the virus to humans, is widely present locally, there is a risk of secondary spread in Hong Kong arising from detected and undetected imported cases. The SCVBD therefore recommended that public health actions should include vector control and enhanced surveillance, public education, health advice, early diagnosis, preparation and preparedness as well as risk communication.

CHP has been maintaining close liaison with the WHO as well as overseas, neighbouring and Mainland health authorities to closely monitor the latest scientific evidence. A high-level tripartite meeting to discuss substantive progress in the prevention and control of Zika virus was held with Guangdong and Macau counterparts in Guangdong on April 20, 2016. At the meeting, the three places discussed measures on surveillance, prevention and control of Zika virus. It was reaffirmed at the meeting that co-operation among the three places should be continued and strengthened in the prevention and control of Zika virus while the ongoing mutual notification system of Zika cases should be maintained.

Besides, CHP has updated the specific health advice for prevention of sexual transmission of ZVI, taking reference to the latest, albeit limited, information available and international recommendations. The DH will continue to monitor closely the latest developments of overseas situation and will modify the local response if necessary. As the scientific evidence of the disease is evolving, members of the public may refer to the latest health advice on the designated page of CHP website at: www.chp.gov.hk/en/view_content/43086.html.

Prevention of Zika Virus Infection

General measures on preventing mosquito-borne diseases

- ☑ Wear loose, light-coloured, long-sleeved tops and trousers, and use DEET-containing insect repellent on exposed parts of the body and clothing.
- ☑ Take additional preventive measures when engaging in outdoor activities:
  - ✦ Avoid using fragrant cosmetics or skin care products; and
  - ✦ Re-apply insect repellents according to instructions.
- ☑ Special notes when travelling abroad:
  - ✦ If going to areas with ongoing Zika virus transmission (affected areas), travellers, especially persons with immune disorders or severe chronic illnesses, should arrange a consultation with doctor at least six weeks before the trip, and have extra preventive measures to avoid mosquito bites;
  - ✦ During the trip, if travelling in rural affected areas, carry a portable bed net and apply permethrin (an insecticide) on it. Permethrin should NOT be applied to skin. Seek medical attention promptly if feeling unwell;
  - ✦ Travellers who return from affected areas should apply insect repellent for 14 days after arrival in Hong Kong. If feeling unwell e.g. having fever, should seek medical advice promptly, and provide travel details to doctor;
  - ✦ Travellers should consider not having sex during travel to affected areas, or else condoms should be used; and
  - ✦ Male travellers returning from affected areas:
    - ◉ Diagnosed with Zika virus infection or with compatible symptoms should not have sex for at least 6 months upon onset, or else the use of condoms should be considered;
    - ◉ Without compatible symptoms should not have sex for at least 2 months upon return, or else the use of condoms should be considered.

Special notes for pregnant women and women preparing for pregnancy

- ☑ Pregnant women and women preparing for pregnancy should consider deferring their trip to affected areas. Those who must travel to any of these areas should seek medical advice from their doctor before the trip, adopt contraception if appropriate, strictly follow steps to avoid mosquito bites during the trip, and consult and reveal their travel history to their doctor if symptoms develop after the trip. Women preparing for pregnancy are advised to continue to adopt contraception for at least 2 months after returning from these areas.

Special notes for prevention of sexual transmission regarding adverse pregnancy outcome*

- ☑ Pregnant lady should not have sex with her male partner who had travelled to affected areas, or else condom should be used.
- ☑ Any male traveller returning from affected areas should:
  - ✦ abstain from sex with his pregnant partner, or else use condoms throughout the pregnancy; and
  - ✦ use condom for at least 6 months if his female partner may get pregnant.

**This is a precaution and may be revised as more information becomes available. Individuals with further concerns regarding potential sexual transmission of Zika virus should contact their doctor for advice.*

Help prevent mosquito 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.

- ☑ Control vectors and reservoir of the diseases:
  - ✦ Store food and dispose of garbage properly.

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Celebrating World Immunisation Week 2016 (April 24 - 30)

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

Designated by the World Health Organization (WHO), the World Immunisation Week (WIW) takes place annually during the last week of April as a global initiative to promote the use of vaccines for protecting people of all ages against diseases. This year, we celebrate the WIW in tandem with the Regional Immunisation Week of the WHO Western Pacific Region (WPR).

Immunisation is considered one of the most successful and cost-effective public health interventions. As with many developed countries, the introduction of universal childhood immunisation in Hong Kong since the 1950s has been remarkably successful at eradicating or reducing the prevalence of many serious diseases, such as smallpox and poliomyelitis. Many other vaccine-preventable diseases such as diphtheria and tetanus likewise have reached historic or near record lows over the last two decades. In 2011, Hong Kong was verified by WHO as having achieved the goal of hepatitis B control, while lately measles is also on the verge of elimination (Figure 1).

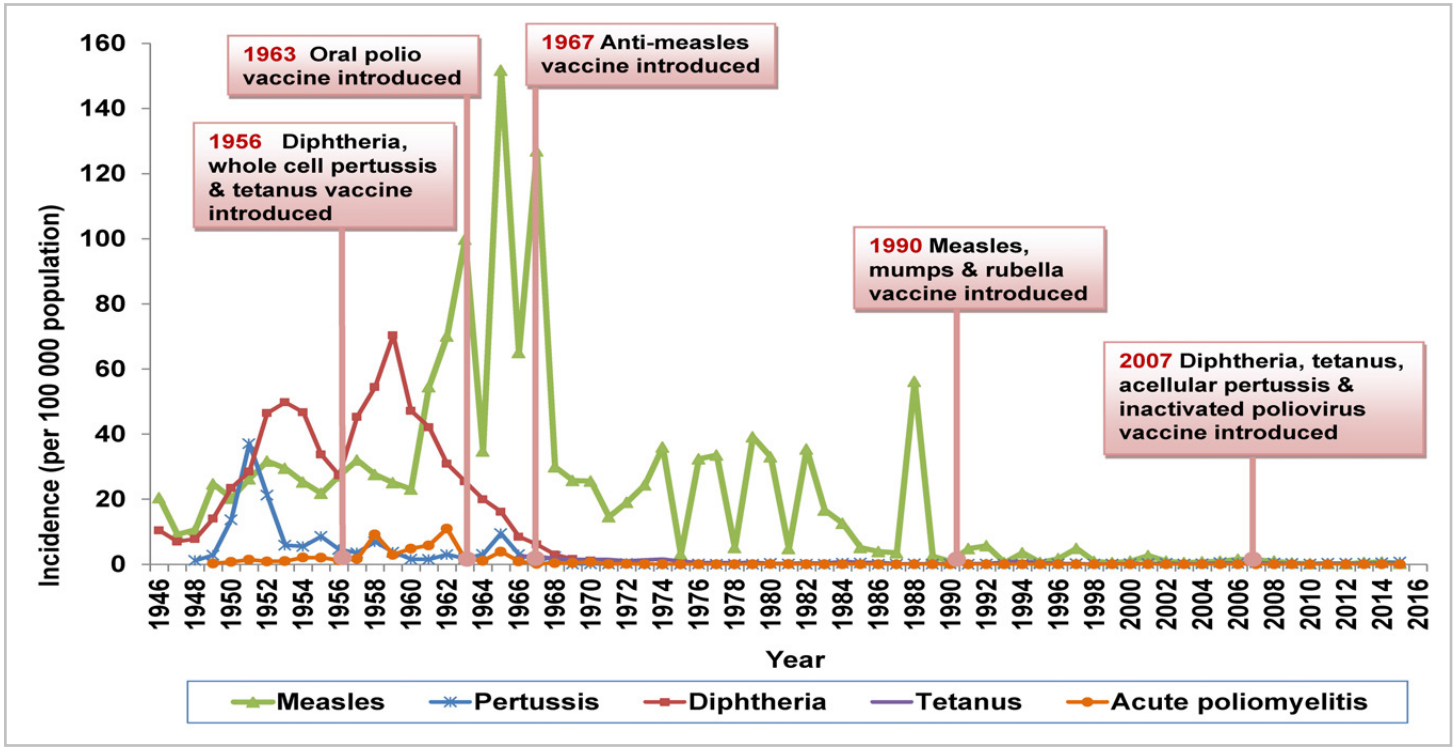


Figure 1 - Year of vaccine introduction into the Childhood Immunisation Programme and incidences of measles, pertussis, acute poliomyelitis, diphtheria and tetanus in Hong Kong, 1946-2015.

The Childhood Immunisation Programme (CIP) in Hong Kong currently provides children with immunisations for eleven infectious diseases, including tuberculosis, hepatitis B, diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, rubella, chickenpox and pneumococcal infection. They are provided free-of-charge to all eligible children in Hong Kong. Vaccines are given at birth in hospitals, during pre-school period by the Maternal and Child Health Centres of the Department of Health (DH) and by DH's outreaching School Immunisation Teams to primary school students. Student Health Service Centres will also provide catch-up immunisations for those enrolled secondary school students who have missed any of the recommended doses.

For many years, Hong Kong has achieved high levels of vaccination coverage (≥95%), which are sufficient to confer herd immunity and mitigate the spread of vaccine-preventable diseases in the community. However, recent resurgence of measles and pertussis suggested that pockets of susceptible populations may exist even in the presence of high vaccination coverage. This could be in part due to the accumulation of susceptible individuals over time, as immunity acquired through vaccination in childhood may wane with increasing age. Moreover, with accelerating cross-border travel and population movement, there is ongoing risk of importation of diseases from countries where immunisation programme is lacking or vaccination uptake is low. Therefore, vulnerable populations such as children, immigrants, overseas students/workers, and travellers are particularly important target groups in need of additional vaccination efforts. Children frequently staying or living in mainland China or other countries and areas should follow the vaccination schedule of their residing country. Catch-up vaccinations should also be considered for any immigrants, overseas students or workers with uncertain or incomplete vaccination status, preferably prior to their arrival. All travellers should make sure their vaccination is up-to-date before going to endemic areas and stay alert to the risk of infection. Further, whenever appropriate, consideration should also be given to any vaccines that may be relevant to one's underlying medical conditions, occupation or lifestyle for personal protection against diseases.

Sustaining high levels of immunisation coverage of vaccine-preventable diseases requires collective efforts of all sectors of the community. DH will continue to engage relevant stakeholders in addressing immunity gaps, with a view to providing wider public health benefits of immunisation for all in Hong Kong. For more information on the WHO's WIW, please visit the website: http://www.who.int/campaigns/immunization-week/2016/en/.

NEWS IN BRIEF

A sporadic case of listeriosis

On April 12, 2016, the Centre for Health Protection (CHP) recorded a case of listeriosis affecting a 60-year-old man with good past health. He was admitted to a public hospital through Accident and Emergency Department on April 10 for fever, vomiting, diarrhoea, neck stiffness, headache and confusion since April 5. The clinical diagnosis was meningitis and his cerebrospinal fluid grew *Listeria monocytogenes*. He was treated with antibiotic and his condition was stable. Investigation revealed that he had consumed cheese overseas during the incubation period. Investigation is on-going.

Field Epidemiology Training Programme (FETP) training course 2016

The Hong Kong FETP of CHP organised a five-day training course for public health professionals on "Outbreak control and investigation" during April 18 - 22, 2016. The objective of the course was to equip participants with knowledge of the principles and logistics of outbreak investigation and skills to analyse outbreak investigation data using relevant computer software packages. The training course included presentations by the facilitators, practical exercises, case studies and hands-on practices on data management using different softwares.

CA-MRSA cases in March 2016

In March 2016, CHP recorded a total of 62 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 33 males and 29 females with ages ranging from 6 months to 95 years (median = 34 years). Among them, there were 47 Chinese, 4 Caucasian, 4 Filipinos, 1 Indian, 1 Indonesian, 1 Nepalese, 1 Pakistani, 1 Thai and 2 of unknown ethnicity. Isolates of all these 62 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (44) or V (18). All cases presented with uncomplicated skin and soft tissue infections.

Among the 62 cases, one case was a healthcare worker working in a public hospital. Investigation did not reveal any epidemiological linkage to other cases. Besides, five family clusters, with each affecting two persons, were identified during this reporting period. Screening and decolonisation would be provided to their close contacts.

(Note: The number of CA-MRSA cases in January and February 2016 were revised to 88 and 66, respectively.)

Notice

Summary of Selected Notifiable Diseases and Outbreak Notifications will cease to be published with effect from the 9th issue of Communicable Diseases Watch on April 28, 2016. For updated information, please visit the CHP website: http://www.chp.gov.hk/en/dns_submenu/10/26.html.

Apr 24 - May 7, 2016 WEEKS 18 - 19 VOL 13 ISSUE N⁰ 10

Communicable Diseases WATCH

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

FEATURE IN FOCUS

Hand Hygiene Awareness Day (May 5, 2016): *See Your Hands – hand hygiene supports safe surgical care*

Reported by Dr Kevin Wong, Medical and Health Officer; Dr. WONG Wai Ying, Senior Medical & Health Officer and Dr TY Wong, Head, Infection Control Branch, CHP.

Colleagues whose support for this important initiative is appealed for:

Proper hand hygiene is the key element to prevent infection not only in health-care settings but also in the community. Since 2005, Hong Kong has pledged support to the World Health Organisation (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 the WHO's newly launched theme is:

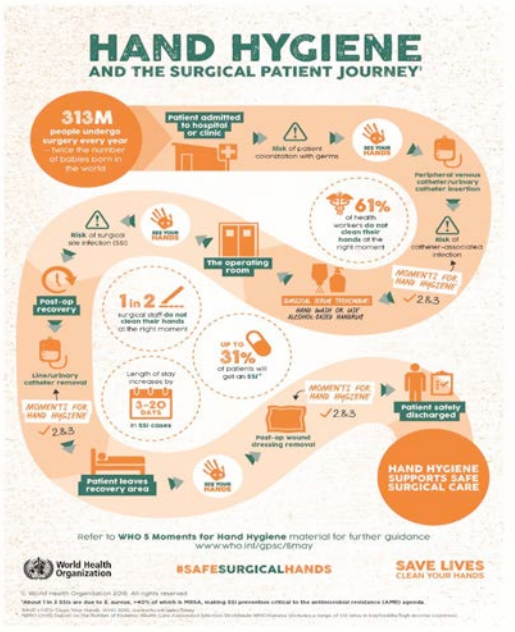
See Your Hands – hand hygiene supports safe surgical care
Practice hand hygiene for surgical patients from admission to discharge

The focus this year goes to the role of hand hygiene in surgical patients. Due to the nature of the treatment received, surgical patients are at risk of health care-associated infections (HAI), in particular surgical site infections (SSI) and device-associated infections, e.g. catheter-associated urinary tract infection (Poster 1). Normal human skin conceals bacteria, usually about 102 to 106 CFU/cm2 (colony-forming unit)[1]. The skin flora, mainly coagulase-negative staphylococci, Propionibacterium spp., and Corynebacteria spp., are rarely responsible for SSI, but in the presence of a foreign body or necrotic tissue, even inocula as low as 100 CFU, can trigger such infection[2]. The introduction of sterile gloves does not render surgical hand preparation unnecessary. Sterile gloves contribute to preventing surgical site contamination and reduce the risk of bloodborne pathogen transmission from patients to the surgical team. However, 18% of gloves have tiny punctures after surgery, and more than 80% of cases go unnoticed by the surgeon. Modern surgery involving foreign bodies including heart valve and joint replacement makes hand hygiene of paramount importance in surgical infection control[2].

This new WHO message has been extensively promulgate to local surgical stream colleagues and we appeal for their support of this meaningful initiative.

Historically, Joseph Lister (1827–1912) demonstrated the effect of disinfection on the reduction of surgical site infections (SSIs). Decades of research have refined the technique of hand hygiene and technology of disinfectant a lot[2].

To help the healthcare facilities to achieve system change and adopt alcohol-based



Poster 1 - WHO poster illustrated the hand hygiene practices in all surgical services through the continuum of care from admission to discharge.
http://www.who.int/gpsc/5may/hh_infographic_A4_EN.pdf

handrubs as the gold standard for hand hygiene in health care, WHO has identified formulations for their local preparation: Formulation I (based on ethanol 80%) and Formulation II (based on isopropyl alcohol 75%). It is the consensus opinion of the WHO expert group that the two formulations can be used for surgical hand preparation. Institutions opting to use the WHO-recommended formulations for surgical hand preparation should ensure that a minimum of three applications are used, if not more, for a period of three to five minutes. For surgical procedures of more than a two hours' duration, ideally surgeons should practise a second handrub of approximately one minute, even though more research is needed on this aspect[2].

Our Hand Hygiene Campaign partners, the hospitals from both public and private sectors are taking measures to promote proper hand hygiene every year, with no exception for this year. In addition to hand hygiene compliance audit, various activities will be organised territory-wide both in public and private hospitals.

Photos of Hand Hygiene (HH) campaign organised by private and public sectors in 2015



Hand Hygiene Relay in Hong Kong Adventist (from left to right).


Hand Hygiene competition and game booth in St Paul Hospital (from left to middle).

Hand Hygiene promotional round in departments of North District Hospital.

To echo with WHO and to remind healthcare workers of making WHO Five Moments for Hand Hygiene a core practice to protect patients, the Centre for Health Protection (CHP) of the Department of Health has developed a series of promotional materials to help to sustain hand hygiene practices among healthcare workers (Poster 2 and 3).

Trivia on hand hygiene:

- Research has shown this six-step hand-hygiene technique recommended by the WHO is superior to a three-step method suggested by the U.S. Centers for Disease Control and Prevention (CDC) in reducing bacteria on healthcare workers hands[3,4], illustrating the importance of proper hand hygiene technique.
- Methanol is a toxic substance that can cause poisoning by ingestion, inhalation or absorption through the skin. It also has a low efficacy as disinfectant. Hence it should not be used in alcohol hand rub preparations[5].

On the community side, we have modified the "5 moments" concept to "二前三後 2 before and 3 after" and encouraged the public to practice hand hygiene (1)before taking medicine/food, (2) before touching eye/nose/mouth and (1) after going to the toilets, (2) after sneezing/coughing and (3) after touching high-touch surface in the public area (Poster 3). Educational resources and workplace reminders are distributed to healthcare staff among hospitals and clinics. Seminars are conducted in various locations in Hong Kong for residential care home for the elderly staff to update their infection control knowledge.

Promoting hand hygiene among general public is also an important focus of hand hygiene day campaign. This year the CHP has further expanded the target audiences from healthcare workers to general public with particular attention to students, aiming to build up hand hygiene awareness since young. Hand hygiene teaching materials are distributed to all kindergartens, primary and secondary schools. Videos promoting 5 moments of hand hygiene will be delivered by MTR in train TV. Media interviews by radio and newspapers will also be conducted. To keep pace with increasing use of social media and internet, the CHP has published the promotional materials on Facebook and YouTube pages for dissemination of these important messages.

Poster 2 - The new poster on Hand Hygiene Technique Rub Hands for 20 seconds.

Like our Facebook page!

Follow our YouTube

Poster 3 - The new poster for promotion to the community.

References

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Communicable Disease Information System

Reported by Ms Cecili KWOK, Contract Project Manager, Dr WK YEUNG, Senior Medical and Health Officer Communicable Disease Information System Office, Surveillance and Epidemiology Branch, CHP

Communicable Disease Information System (CDIS), embracing a vision of serving the Hong Kong community as a whole, is developed by the Centre for Health Protection (CHP) of the Department of Health (DH). In response to the recommendation of the Severe Acute Respiratory Syndrome (SARS) Expert Committee that "an enhanced information management system should be established across the sectors for effective communicable disease control on a permanent basis", CDIS, funded by the Hong Kong Jockey Club Charities Trust, serves to pursue a community- and service-wide information technology strategy in Hong Kong for providing effective communicable disease prevention and control. CDIS was officially launched at the Sentinel Surveillance Conference 2016 cum CDIS Launching Ceremony held on May 6, 2016.

What is CDIS?

CDIS is a comprehensive, enhanced and integrated disease management system, which has been established across various sectors to enforce instantaneous, inclusive and interactive communicable disease control, disease surveillance, outbreak investigation and management, public health response and community communication.

The objectives, scope and functions of CDIS

Objectives

CDIS aims at enhancing the capability of Hong Kong in the prevention and control of communicable diseases for better protection

of the health of Hong Kong people through the effective application of information and communication technologies (ICT).

Scope and Functions

CDIS delivers the following core system components and functions that deal with different facets of communicable disease prevention and control (Table 1 and Figure 1).

Core Value of CDIS

CDIS has been established to implement the specified core values, which are equivalently perceived as facilitating the CHP of DH to fulfil its roles in real-time surveillance, rapid intervention and responsible risk communication pertaining to the prevention and control of communication diseases in the community. The core values of CDIS also reflect the strategic goals of reducing risk of human infection, delivering early detection, giving rapid responses, maintaining emergency preparedness, effecting risk communication, and fostering collaboration with local and international stakeholders involved.

The essence of CDIS

CDIS collects and transforms the source data solicited from different information sources and systems into a wealth of dynamic and timely information. Overall, CDIS facilitates data collection, data storage, data analysis, interpretation and presentation, data sharing and information dissemination pertaining to communicable disease prevention and control. The full commissioning of CDIS will equip the CHP of DH with strengthened emergency preparedness against major outbreaks to stem the spread of disease in collaboration with the public and private medical organisations and community partners.

CDIS will continue to grow

CDIS has laid the foundation for improvements and enhancements in the future. With the continuous collaborations with the stakeholders, CDIS will continue to grow to serve the Hong Kong community in a better way.

Table 1 - Functions of core system components of CDIS that deal with different facets of communicable disease prevention and control.

Disease Notification System (DINS)	DINS automates different aspects of processing disease notifications sent from different sources, including medical practitioners in the public and private sectors, community institutions such as schools and elderly homes, medical laboratories, etc. In this connection, registered medical practitioners in Hong Kong are able to access "CENO On-line", a secure and convenient Internet-based application that has been dedicatedly implemented to facilitate the online submission of notifications of the statutory notifiable communicable diseases, and communicable diseases or other conditions that are of public health concern.
Outbreak Investigation System (INV)	INV provides a suite of functions to support different stages of epidemiological investigations and assessments on sporadic and outbreak cases together with contacts and collaterals involved.
Clinical / Laboratory Data Enquiry System (CLE)	CLE enables instantaneous enquiry of clinical and laboratory data from the Hospital Authority (HA) on both routine and emergency basis for enhancing the efficiency of epidemiological investigations.
Business Intelligence / Statistical / Geographic Information System (BGIS)	BGIS serves to be a central analytic platform developed for dynamic and multi-dimensional scrutiny, interpretation and reporting of intelligence analysis results. A wide array of data and visual analysis and reporting tools are provided to harness the overall business analytic capabilities in the aspects of fulfilling both routine and dynamic query, reporting, dashboard and geospatial analytical requirements, and revealing the essence of business as well as operational intelligence in relation to the epidemiological investigations.
File-based Import and Export System (FIMEX)	FIMEX computerises file-based import and export processes to facilitate data exchanges across different data and information providers.
Electronic Messaging System (EME)	EME serves to be the electronic messaging gateway to facilitate timely communications, and instantaneous data transfers from various data and information providers.
Integrated Sentinel Surveillance System (SENTINEL)	SENTINEL is essential for multi-sectorial monitoring and rapid detection of the trend of communicable diseases, and initiation of timely alerts as well as actions to the general public, various institutions and health professionals in the community.
Sherlock Surveillance System (SHERLOCK)	SHERLOCK utilises the data acquired from the Accident and Emergency Departments (AEDs), Inpatient Discharge (INP) and Laboratory (LAB) under the HA for monitoring of communicable diseases in the community.

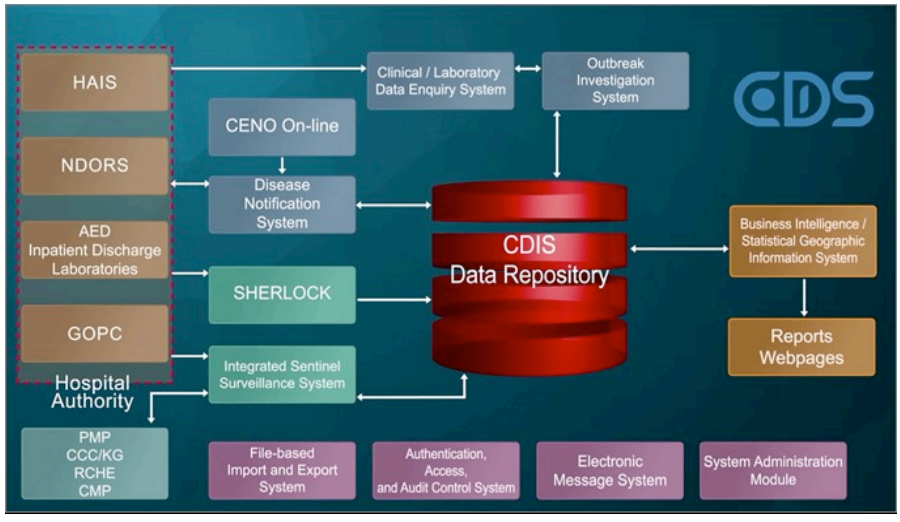


Figure 1 – Core system components of CDIS.

Core Value of CDIS

Instant	Improving real-time connection of relevant data between the information systems of different agencies.
Inclusive	Encompassing links to all health sectors in Hong Kong, including private sector and community institutions.
Interactive	Providing regular feedbacks to information providers, with targeted contents as needed, at a greater frequency.

NEWS IN BRIEF

A fatal case of paediatric invasive pneumococcal infection

The Centre for Health Protection (CHP) recorded a fatal case of invasive pneumococcal infection in May 2016 affecting a 3 year-old boy with underlying medical illness. He was admitted to a private hospital for treatment on December 15, 2015 for fever, cough and shortness of breath but died on the same day. *Streptococcus pneumoniae* serotype 3 was subsequently found in his blood specimen. His blood specimen was also tested positive for *Mycoplasma pneumoniae* while his nasopharyngeal swab tested positive for influenza B by the hospital. Autopsy reported on May 6 concluded that the death to be caused by invasive pneumococcal infection.

A cluster of pneumonia caused by *Mycoplasma pneumoniae*

On May 9, 2016, CHP recorded a cluster of mycoplasma pneumonia in a secondary school. As at May 11, three students (two females/one male, all aged 15 years) with good past health and attending the same class were affected. They presented with fever, sore throat and cough with onset between April 16 to May 2. All three required hospitalisation and recovered with courses of augmentin/clarithromycin. Their sputum and gastric lavage/aspirate were tested positive for *Mycoplasma pneumoniae* by polymerase chain reaction (PCR).

Epidemiological investigation revealed that a brother of the student with earliest onset was also suffered from mycoplasma pneumonia confirmed by PCR in mid April. All four affected children remained stable and were discharged from hospital. Officers of the CHP have visited the concerned school and advised them to adopt necessary measures against respiratory tract infections. The school has been put under medical surveillance. Investigation is ongoing.

A sporadic case of listeriosis

On May 6, 2016, CHP recorded a case of listeriosis affecting a 74-year-old man with pre-existing medical condition. He presented with fever, cough with sputum, shortness of breath and decreased general condition since May 1, and was admitted to a public hospital on the same day. His blood culture yielded *Listeria monocytogenes*. He was treated with antibiotics and his condition was stable. He had not travelled outside Hong Kong recently. He lived in a residential care home for the elderly and the contacts in the institution were all asymptomatic. He denied consumption of any high risk food. Investigations are on-going.

Two local cases of human myiasis

CHP recorded two local cases of human myiasis in April 2016. The first case was an 80-year-old man with underlying illness. The patient presented with chronic left ankle ulcer and noted to have worms over the ulcer on April 20. He was admitted to a public hospital on the same day. Multiple maggots were removed from the wound, which were subsequently identified to be *Chrysomya bezziana*. His condition remained stable. Advice on wound care and environmental hygiene was given to the patient.

The second case was a 95-year-old woman with underlying illness. She lived in a residential care home for the elderly (RCHE). She presented with accidental injury to right big toe on April 23. Multiple worms were found in the wound during wound dressing in RCHE on April 24 and she was sent to a public hospital for further management. The worms were later identified to be *Chrysomya bezziana*. Her condition remained stable and was discharged on May 6. Her contacts in the RCHE were asymptomatic. Health advice on personal care and environmental hygiene was given to the institution.

Epidemiological investigations found that these two cases had no recent travel history outside Hong Kong before symptoms onset. They lived in different blocks of the same public housing estate. The Food and Environmental Hygiene Department was informed for vector survey on the area visited by the cases and necessary control measures. Investigations are on-going.

Scarlet fever update (April 10 – May 7, 2016)

Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From April 10 – May 7, 2016, CHP recorded 94 cases of scarlet fever with a range of 21 to 26 cases per week as compared with 80 cases with a range of 14 to 31 cases per week in the previous reporting period (March 13 – April 9, 2016). The cases recorded in this reporting period included 56 males and 38 females aged between nine months and 36 years (median = 5 years). There were two institutional clusters involving a total of four children. No fatal cases were reported in the current reporting period.

May 8 - May 21, 2016 WEEKS 20 - 21 VOL 13 ISSUE N⁰ 11

Communicable Diseases WATCH

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

FEATURE IN FOCUS

Summary of 2015/16 Winter Influenza Season in Hong Kong

Reported by Ms Vera CHOW, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

In 2016, the winter influenza season started in late January and ended in mid-May, spanning for about 16 weeks. This winter season arrived and ended later than the usual time in previous seasons, which was also observed in other Northern Hemisphere countries. Influenza A(H1N1)pdm09 and influenza B viruses co-circulated in this season. The duration was similar to that of the last winter season in early 2015. In contrast to the last winter season predominated by influenza A (H3N2) where elders were mostly affected, children were particularly affected in this season as reflected by their high hospital admission rates and large number of influenza-like illness (ILI) outbreaks in schools.

Laboratory surveillance

Among the respiratory tract specimens received by the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP), the weekly percentage tested positive for seasonal influenza viruses significantly increased in February and reached the peak level of 26.5% in the last week of February. It then gradually decreased to 8.5% in the week ending May 21. The peak level was lower than the usual range of 30-40% recorded in past winter seasons (Figure 1).

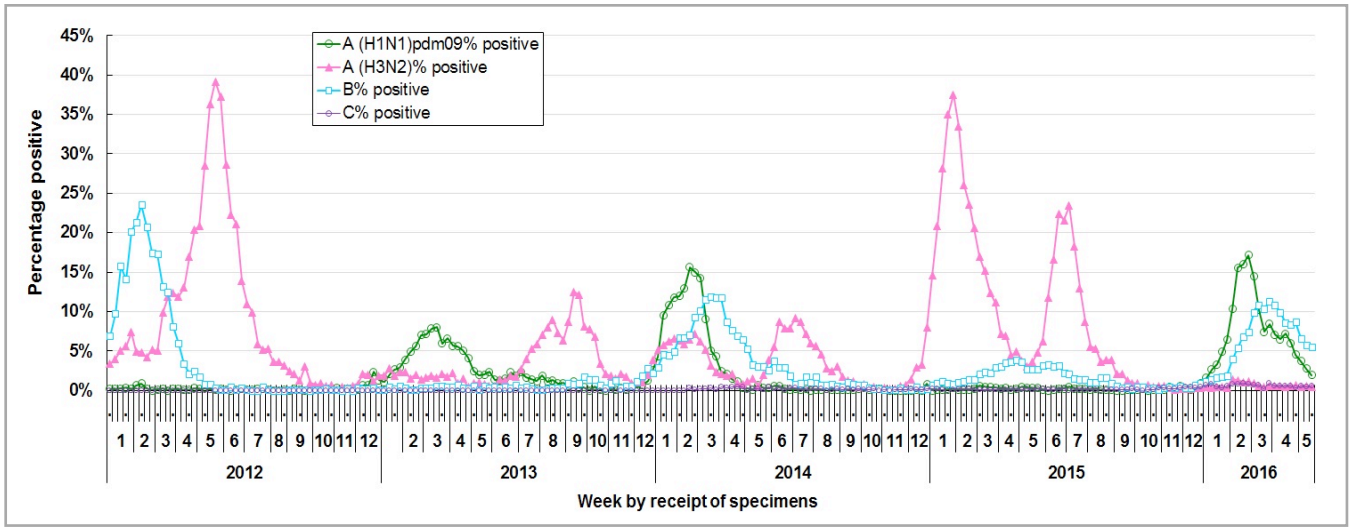


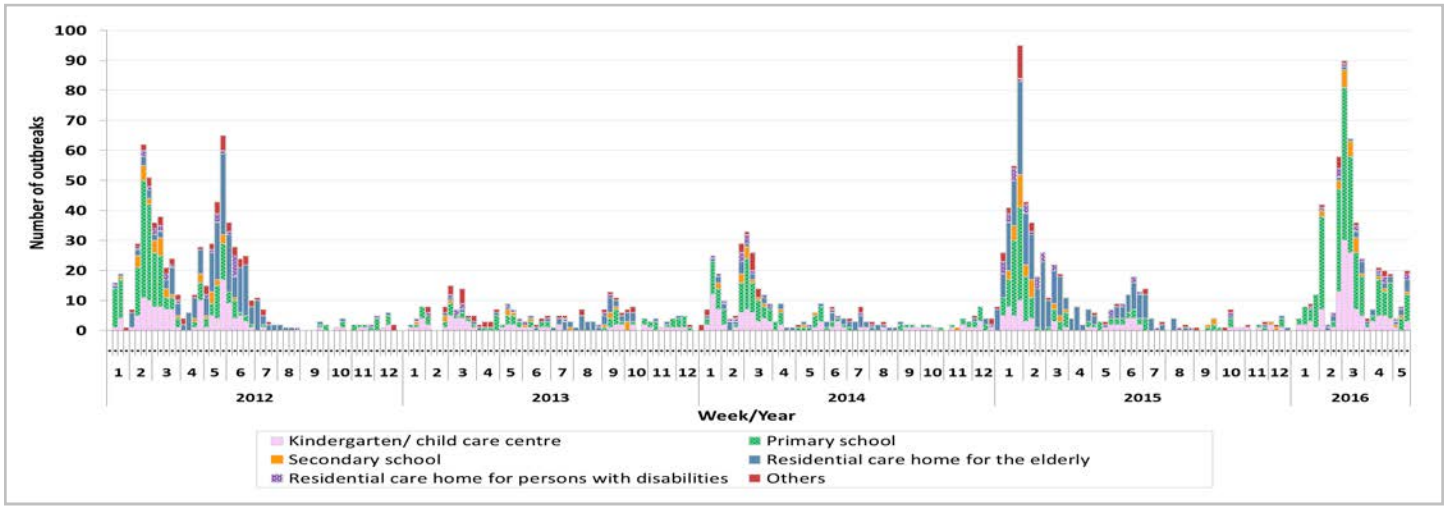
Figure 1 - Weekly percentage of respiratory tract specimens tested positive for influenza viruses by PHLSB, 2012-2016 (as of May 21, 2016).

Among the influenza viruses detected during this season, the proportions of A(H1N1)pdm09, A(H3N2), B and C were 49.1%, 4.0%, 43.5% and 3.4%, respectively. Influenza A(H1N1)pdm09 virus predominated in the initial phase. However, the proportion of influenza B among positive influenza detections had been increasing steadily since February and had overtaken A(H1N1)pdm09 to become the most commonly detected subtype since the week ending March 12. Influenza A(H3N2), which had predominated in the last three seasons (summer in 2014 and both winter and summer in 2015), remained at a very low level throughout this season.

Regarding influenza B viruses, based on information on testing of isolates obtained from cell culture of specimens received by PHLSB between January 24 and May 14, 2016, 49.5% belonged to the Victoria lineage which was included in the quadrivalent seasonal influenza vaccine (SIV) for the 2015/16 season in the Northern Hemisphere, and 50.5% belonged to the Yamagata lineage which was included in both trivalent and quadrivalent SIV.

ILI outbreaks in schools and institutions

The number of ILI outbreaks in schools and institutions reported to CHP had increased markedly after the Chinese New Year holiday, reaching the peak of 90 outbreaks in the first week of March with the majority occurring in schools (Figure 2). A total of 437 ILI outbreaks were recorded by CHP from January 24 to May 21. These outbreaks involved 241 primary schools (55.2%), 112 kindergartens/child care centres (25.6%), 27 secondary schools (6.2%), 27 residential care homes for the elderly (RCHEs) (6.2%), 17 residential care homes for people with disabilities (3.9%) and 13 other institutions (3.0%). The distribution of places of occurrence of the outbreaks was different from the last winter season in which a great proportion (46.3%) of outbreaks occurred in RCHEs (Figure 3).



Figures 2 - Weekly number of ILI outbreaks reported to CHP, 2012 - 2016 (as of May 21, 2016).

Influenza-associated hospital admissions

In public hospitals under the Hospital Authority (HA), the admission rates with principal diagnosis of influenza had started to increase rapidly since mid-January, particularly among children (Figure 4). In comparison with the last winter season in 2015, the increase in influenza-associated admission rates among children in this season was more prominent than that observed among elderly. Among children aged below six years, the admission rate increased from the trough level of less than 0.2 case per 10 000 population in late December 2015 to the peak level of 6.04 in that ending February 27, 2016. The rate among children aged 6-11 years increased from about 0.1 to 1.79 in that ending March 5, 2016. The peak rates in both paediatric groups were higher than that of 1.09 among elderly aged 65 years or above. This observation can be accounted by the predominance of influenza A(H1N1)pdm09 in this season, which tends to affect people of younger ages.

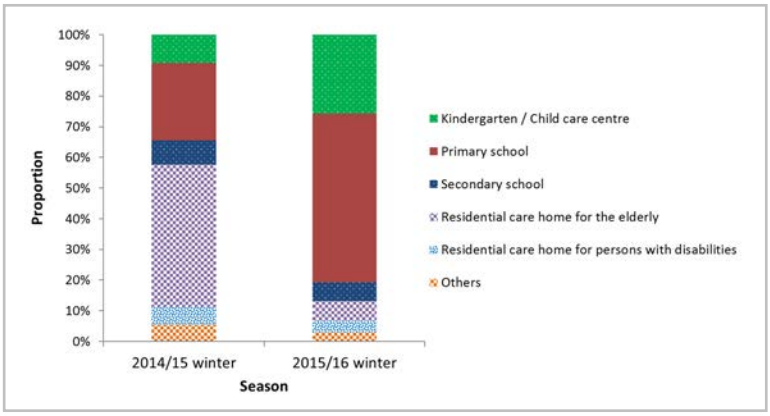


Figure 3 - Distribution of ILI outbreaks reported in 2014/15 and 2015/16 winter influenza seasons.

Of note, the peak admission rates recorded among children below six years and 6-11 years in this season also exceeded those recorded in the same age groups in previous influenza seasons from 2010 to 2015. The peak rate among children aged below six years even reached a level comparable to that recorded during the human swine influenza pandemic in 2009 when the influenza A (H1N1)pdm09 virus emerged.

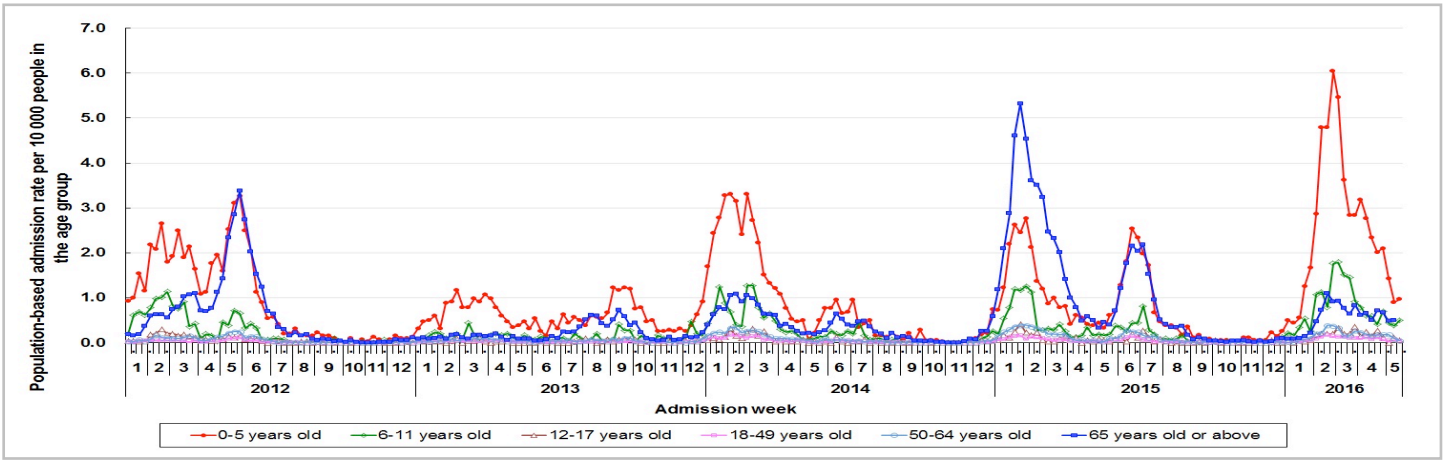


Figure 4 - Weekly admission rates with principal diagnosis of influenza in public hospitals by age groups, 2012 - 2016 (as of May 21, 2016).

Severe influenza cases

In order to monitor the severity of influenza infection, CHP had collaborated with HA and private hospitals to reactivate the enhanced surveillance for influenza-associated admissions to intensive care unit (ICU) or deaths among patients aged 18 or above from January 29 to May 20, 2016. Besides, CHP routinely monitors severe paediatric influenza-associated complications or deaths among people aged below 18 years. Table 1 shows the age distribution of the severe cases.

Table 1 - Age distribution of the severe influenza cases recorded from January 29 to May 20, 2016.

Age group (year)	Number of severe cases (including deaths)	Number of deaths
0 – 5	15 (3.4%)	1 (0.5%)
6 – 11	7 (1.6%)	2 (0.9%)
12 -17	5 (1.1%)	0 (0%)
18 – 49	58 (13.3%)	4 (1.9%)
50 – 64	133 (30.5%)	46 (21.5%)
≥ 65	218 (50.0%)	161 (75.2%)
Total	**436**	**214**

For adults aged 18 years or above, CHP recorded a total of 409 ICU admissions or deaths (including 211 deaths) with laboratory confirmation of influenza through the enhanced surveillance system from January 29 to May 20, 2016. The male to female ratio was 1:0.79. Their ages ranged from 20 to 100 years (median: 65 years). Among the cases aged 18-64 years and elderly aged 65 years or above, 3 (1.6%) and 74 (33.9%) were known to have received the SIV for the 2015/16 season. 327 cases were known to have at least one underlying medical condition, with the commonest conditions being diabetes mellitus (108, 32.7%), cardiovascular diseases (106, 32.4%) and malignant conditions (74, 22.6%).

Separately, 27 paediatric cases of severe influenza-associated complication/death (including three deaths) were reported to CHP among people aged below 18 years in the same period. These included 16 boys and nine girls with ages ranging from 2.5 months to 17 years (median: three years). Only four cases (14.8%) had completed seasonal influenza vaccination in this season. Another 9-month-old case had only received a single dose of SIV for the first time but did not receive the second dose. Eleven cases (40.7%) had preexisting chronic medical conditions or congenital conditions, and another case was suspected to have asthma but did not require follow up. The remaining 15 cases enjoyed good past health.

The three fatal cases included a 17-month-old girl with good past health who had influenza A(H1N1)pdm09 infection complicated with encephalitis, a 6-year-old boy with past history of pneumonia and suspected asthma who had influenza B infection complicated with myocarditis, and a 6-year-old boy with good past health who had influenza A(H1N1)pdm09 infection complicated with encephalitis. All the three cases did not receive SIV in this season.

In total, 436 severe cases (including 214 deaths) with laboratory confirmation of influenza were recorded among all ages in this season. The weekly number of severe cases peaked at round 40-45 cases from mid-February to early March and then started to decrease to about 10-20 cases since late April. In comparison, the number of severe cases reported in the winter influenza season in 2011, 2012, 2013, 2014 and 2015 was 123 (34 deaths), 347 (227 deaths), 78 (29 deaths), 289 (136 deaths) and 665 (502 deaths) respectively. The types of influenza viruses detected among the severe cases were similar to the distribution of types of viruses detected by PHLSB with the majority of the cases having influenza A(H1N1)pdm09 and influenza B infections.

About half of the severe cases and 75% of the deaths affected elderly aged 65 years or above, as compared with 84% and 93% respectively in the last winter season. On the other hand, 44% of the severe cases and 23% of the deaths affected adults aged 18-64 years, as compared with 13% and 6% respectively in the last winter season.

Summary

In summary, this 16-week winter season lasted from late January to mid-May with the activity peaked around late February to early March. Both influenza A(H1N1)pdm09 and influenza B co-circulated in the season. The epidemiological characteristics were similar to other countries in the Northern Hemisphere. Children were mostly affected in this season as reflected by the high influenza-associated hospitalisation rates and the large proportion of ILI outbreaks occurring in kindergartens/ child care centres and primary schools. The number of severe paediatric influenza cases recorded in this season was also the highest since influenza A(H1N1)pdm09 became a seasonal influenza virus after the pandemic. Moreover, adults aged 18-64 years were relatively more affected when compared with the last season as reflected by greater number of severe cases. On the other hand, elderly aged 65 years or above were relatively less affected this time than the last season, as reflected by the relatively lower hospitalisation rates, less outbreaks in RCHEs and fewer numbers of severe and fatal cases among them.

A review of vectors (other than mosquito) and their related vector-borne diseases

Reported by Dr Terence LAM, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Overview on vectors

Vectors are small organisms such as mosquitoes, ticks, mites, fleas and lice that can carry disease from one infected person (or animal) to another person and from place to place. Many of these vectors are blood-sucking and ingest disease-producing micro-organisms during a blood meal from an infected host (human or animal) and later inject it into a new host during their subsequent blood meal. The diseases caused by these vectors are called vector-borne diseases. Below we reviewed some vectors and their related vector-borne diseases.

Photo 1 - Ticks
(Source: FEHD)

Ticks are arachnids that go through four life stages: egg, six-legged larva, eight-legged nymph and adult. After hatching from the eggs, ticks must eat blood at every stage to survive. Ticks can feed on mammals, birds, reptiles and amphibians. Ticks cannot fly or jump, but many tick species wait on leaves and grass. When a host brushes the spot where a tick is waiting, it climbs onto the host. Ticks transmit pathogens that cause disease through the process of feeding. Common tick-borne diseases of public health concern are shown in Table 1. Among them, only spotted fever is commonly reported in Hong Kong. It is mainly transmitted through the bites of infected ticks that are found in habitats where there are dense vegetation and suitable host animals. Infection can also occur when crushed tissues or faeces of the infected ticks get into the breaks in the skin or mucous membranes. The annual number of cases ranged from 8 to 22 in the past ten years.(2006-2015). Most cases were locally acquired infection and less than 1% of cases were fatal.

Table 1- Common tick-borne diseases (Source: World Health Organization).

Common tick-borne diseases
Spotted fever
Crimean-Congo haemorrhagic fever
Lyme disease
Relapsing fever
Q fever
Tick-borne encephalitis
Tularaemia

Photo 2 - Mites
(Source: FEHD)

Mites are arachnids that are closely related to ticks, and also go through the four-stage lifecycle of egg, larva, nymph and adult. There are several types of mites, including the trombiculid mites which transmit scrub typhus. Trombiculid mites are small, only 1-2 millimetres in length, and red in colour. Some wild rodents may carry the larvae of the mites on their bodies. The mite larvae bite and feed on animals, a behaviour conducive to disease transmission. In Hong Kong, the annual number of scrub typhus ranged from 7 to 28 cases in the past ten years.(2006-2015). Most cases were locally acquired infection and less than 1% of cases were fatal.

Photo 3 - Fleas
(Source: FEHD)

Fleas are wingless blood sucking insects with body bilaterally compressed to facilitate movement between hairs and feathers of their hosts. Their powerful hind legs enable them to jump 25cm high and 35cm horizontally. While many species of fleas can feed on human and do not transmit any diseases, some, such as oriental rat flea, are primary vectors for plague and urban typhus. In Hong Kong, the last case of plague occurred in 1929, whereas urban typhus is occasionally reported with an annual number from one to five cases. For urban typhus, humans are infected when the faeces of infected fleas get into the breaks in the skin or mucous membranes. Infection can also occur when dried infective fleas faeces are inhaled.

Photo 4- Lice
(Source: FEHD)

Lice are tiny (2 – 4 mm long), elongated, soft-bodied, light-colored, wingless insects that occur on all orders of birds and most orders of mammals. Most lice feed on skin and other debris found on the host's body, but some species feed on sebaceous secretions and blood. Certain bloodsucking lice are significant vectors of disease agents, for example, body lice are known to transmit epidemic typhus. Humans are infected with epidemic typhus when the crushed tissues or faeces of infected lice get into the breaks in the skin or mucous membranes. Infection can also occur when dried infective lice faeces are inhaled. Epidemic typhus has not been reported locally in the past few decades.

Photo 5- Biting midge
(Source: FEHD)

Biting Midges. Not all biting organisms are vectors. For example, the bites of biting midges cause acute discomfort and irritation, and some species of biting midges are vectors of parasitic disease such as filarial worms to human in areas including Mexico, Panama, the Caribbean, South America, and Africa. According to Food and Environmental Hygiene Department (FEHD), the species of biting midges found in Hong Kong are not documented vector of important human diseases.

Rickettsial disease

Most cases of scrub typhus and spotted fever had history of going to vegetated areas in Hong Kong, for example, hiking areas, vegetated areas near home, outdoor recreational areas, or outdoor workplaces. Spotted fever, scrub typhus, urban typhus, and epidemic typhus all fall into a group of diseases called rickettsial diseases.

Rickettsial diseases in general present with features similar to a bad cold with fever, chills, headache and muscle pains, as well as rash. Scrub typhus and spotted fever are characterised by a punch-out skin ulcer at the site of bite of an infected arthropod. Nearby lymph nodes are also swollen and painful. Rickettsial diseases can cause severe complications and can cause death in severe cases.

Treatments for most rickettsial illnesses are similar. The diseases should be treated by appropriate antibiotics with supportive care. The vectors transmitting scrub typhus and spotted fever are mainly found in the vegetated areas. Therefore, preventive measures should be taken when visiting rural areas to avoid bitten by these vectors.

NEWS IN BRIEF

Sentinel Surveillance Conference 2016 cum Communicable Disease Information System (CDIS) Launching Ceremony

The Sentinel Surveillance Conference 2016 was held together with the CDIS Launching Ceremony at the Centre for Health Protection (CHP) of the Department of Health on May 6, 2016.

The Sentinel Surveillance Conference 2016 was held to mark the continual successful collaboration in infectious diseases sentinel surveillance with sentinel partners, further strengthening partnership and sharing knowledge and experience. About 60 sentinel partners from various sectors (including representatives from private medical practitioners, child care centres/ kindergartens, residential care homes for the elderly and traditional Chinese medicine practitioners) as well as representatives of various medical organisations, Hospital Authority and Social Welfare Department attended the event. The Conference was followed by the Launching Ceremony for the CDIS. Hosted by the Director of Health and Controller of the CHP, the Ceremony was officiated by the Secretary for Food and Health and Steward of the Hong Kong Jockey Club Charities Trust, donor for the development of the CDIS. The CDIS provides a growing and integrated IT platform to enhance the capability of Hong Kong in the surveillance and control of communicable diseases.

Photo 1 – The Sentinel Surveillance Conference 2016 cum Communicable Diseases Information System Launching Ceremony was held at the Centre for Health Protection of the Department of Health on May 6, 2016.

Photo 2 – Dr Yeung Wai-kit, Senior Medical and Health officer of CDIS, introduced the Communicable Diseases Information System to officiating guests and other visitors.

CA-MRSA cases in April 2016

In April 2016, the CHP recorded a total of 87 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 45 males and 42 females with ages ranging from 2 months to 97 years (median = 33 years). Among them, there were 57 Chinese, 15 Filipinos, 3 Indian, 3 Pakistani, 2 Nepalese, 1 Caucasian, 1 Indonesian, 1 Vietnamese 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 (62) or V (25).

Eighty-five cases (97.7%) presented with uncomplicated skin and soft tissue infections while the remaining two cases had invasive CA-MRSA infections. The first invasive case affected a 66-year-old woman who presented with fever, cough with sputum, and shortness of breath on March 26, 2016. She consulted a private doctor on April 1 and was admitted to a private hospital for treatment on the same day. She was diagnosed to have pneumonia. Her sputum specimen collected on April 2 was cultured positive for CA-MRSA. She recovered after antibiotic treatment and was discharged on April 5. She lived alone and no close contact could be identified. The second case affected a 77-year-old woman with multiple underlying illnesses who presented with fever on April 19. She was admitted to a public hospital on April 20 and was later diagnosed to have perianal abscess and sepsis. Her blood and perianal abscess swab specimens collected on April 21 and April 22 respectively were both cultured positive for CA-MRSA. She was treated with antibiotics and remained in stable condition. Her close contacts were asymptomatic, and screening and decolonisation would be provided to them.

Among the 87 cases, two cases involved healthcare workers. One worked in a public hospital, while the other worked in an outpatient clinic under the Department of Health. Investigation did not reveal any cases epidemiologically linked to these two patients. Besides, three family clusters, with each affecting two to four persons, were identified. Screening and decolonisation would be provided to their close contacts.

(Note: The number of CA-MRSA cases in February and March 2016 were revised to 68 and 67, respectively.)

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

The number of human infections with avian influenza A (H7N9) infection in Mainland China has started to increase since October 2015 after a period of low activity during summer in 2015. Besides, there has been increase in sporadic human cases of avian influenza A(H5N6) infection reported in Mainland China since the end of 2015. Likewise, the threat of avian influenza A (H5N1) is ongoing. Below we reviewed the latest global situation of avian influenza.

Avian influenza A(H7N9)

Human H7N9 infections

Since the emergence of human H7N9 infections in Mainland China in early 2013, four distinct waves of infections have been observed so far (Figure 1). In general, most human cases occurred in winter and spring and the disease activity was low during summer and autumn months.

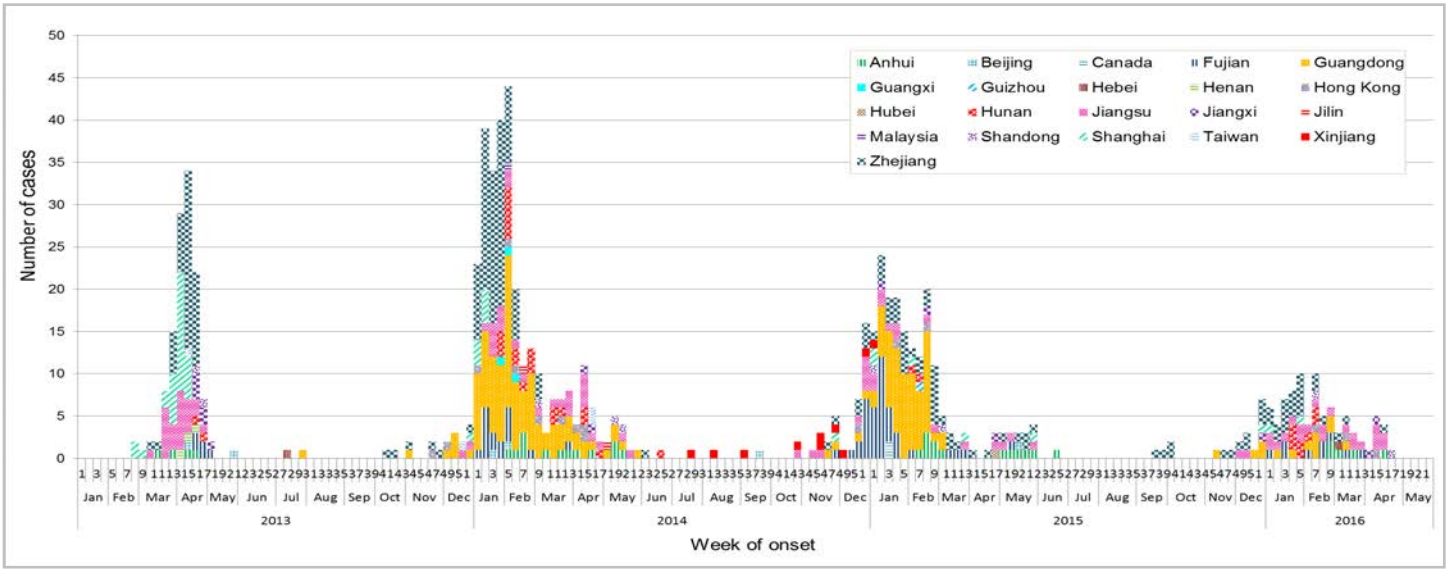

Figure 1 - Weekly number of confirmed H7N9 cases by place of confirmation and onset date since 2013.
Remark: The onset date of 12 cases remained unknown.

There has been increase in the number of human cases of H7N9 infection reported in Mainland China since October 2015, resulting in the current (fourth) wave of human infections. At least 103 human cases with disease onset in or after September 2015 have been reported in 11 provinces in Mainland China (as of June 6), namely Zhejiang (34), Jiangsu (23), Guangdong (14), Fujian (9), Hunan (8), Anhui (5), Jiangxi (3), Shanghai (3), Shandong (2), Beijing (1) and Hubei (1). Their ages ranged from 14 to 91 years (median: 58 years). The majority of the cases had reported exposure to live poultry or markets with live poultry before onset. The latest case in Guangdong was reported on May 26, 2016.

In Hong Kong, three imported H7N9 cases have been confirmed in the current wave. The first case in February 2016 was a 60 years old man who lived and worked in Suzhou, Jiangsu. During his stay in Suzhou, he visited a wet market with live poultry during the incubation period. The second case in March was an 81 years old woman who had travelled to Kaiping, Guangdong during the incubation period. She visited a wet market near her residence in Kaiping and reported contact with slaughtered chicken. The latest case in April was an 80 years old man who had travelled to Dongguan, Guangdong during the incubation period. He also visited a wet market there and bought a live chicken and slaughtered it. All the three patients had recovered.

So far, at least 783 human H7N9 cases have cumulatively been reported globally. There were at least 313 deaths with a case fatality rate of about 40%. The cases included 760 cases in 17 provinces/municipalities in Mainland China especially the eastern part (Figure 2), and 23 cases exported to other countries/areas from Mainland China (16 cases in Hong Kong, 4 cases in Taiwan, 2 cases in Canada and 1 case in Malaysia).

In Hong Kong, so far, 16 human H7N9 infections have been recorded since the detection of the first case in December 2013, and all of them were imported cases. These included nine males and seven females with ages ranging from five months to 85 years (median: 66.5 years). Fifteen cases were imported cases from Guangdong while the remaining case was from Jiangsu. Most cases either had visited wet market or had contact with poultry. Extensive contact tracing did not identify any secondary cases.

Figure 2 - Provinces/municipalities in Mainland China with human H7N9 cases detected since 2013.

H7N9 outbreaks in poultry

H7N9 has become enzootic in poultry in Mainland China. From January 2015 to April 2016, under the national animal H7N9 avian influenza monitoring program of the Ministry of Agriculture, poultry and environmental samples taken from markets in Anhui, Fujian, Guangdong, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Shanghai and Zhejiang were tested positive for H7N9 by virological test. According to reports received by the Food and Agriculture Organization on surveillance activities for avian influenza A(H7N9) viruses in Mainland China, positive samples continue to be detected mainly from live bird markets, vendors and some commercial or breeding farms[1].

Locally, under the routine surveillance programme for avian influenza at markets and fresh provision shops which is commissioned by the Food and Environmental Hygiene Department and conducted by the University of Hong Kong, a sample of faecal droppings of live poultry taken from a poultry stall in Yan Oi Market in Tuen Mun on May 16, 2016 was tested positive for H7N9 virus on June 4. Investigations on the source of the virus are still ongoing. Before this incident, there were two previous episodes of detection of H7N9 viruses in imported live chickens in Hong Kong in January and December 2014 respectively.

Avian influenza A(H5N6)

Human H5N6 infections

Highly pathogenic avian influenza A(H5N6) viruses 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. So far, a total of 14 sporadic human cases, including seven fatal cases, had been reported in Mainland China from Guangdong (6), Hunan (2), Yunnan (2), Anhui (1), Hubei (1), Sichuan (1) and one imported case from Guangdong to Jiangxi. The case fatality rate was 50%. The reported cases included seven males and seven females with ages ranging from 11 to 65 years (median: 40 years). Most cases either had visited wet market or had contact with live poultry. There was no evidence of human-to-human transmission of this virus among the close contacts of the cases. The latest case was reported in June 2016. In Hong Kong, no human case has been detected so far.

H5N6 outbreaks in poultry/wild birds

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, Jiangxi, Sichuan, Tibet, Yunnan and Zhejiang) (Figure 3). In 2015 and 2016, H5N6 outbreaks in birds and poultry have continued to occur in Laos, Vietnam and Mainland China (Guangdong, Guizhou, Hunan, Jiangsu and Jiangxi). The latest outbreak in Mainland China occurred in Jiangxi in March 2016.

Locally, there have been a total of six reports of detection of H5N6 in dead wild birds and dead chicken since the first detection in April 2015. The latest two reports in February 2016 involved chicken carcasses found in Lung Kwu Tan, Tuen Mun and Tai O respectively.

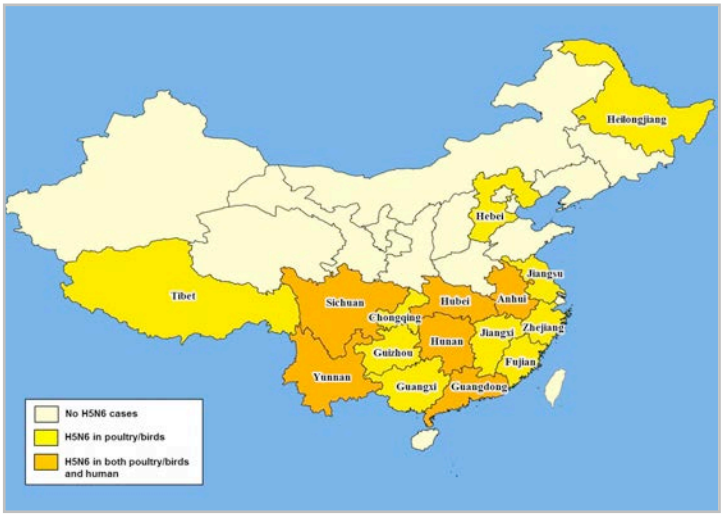

Figure 3 - Provinces/municipalities in Mainland China with detections of H5N6 in poultry/birds and humans since 2014.

[1] http://www.fao.org/ag/againfo/programmes/en/empres/H7N9/situation_update.html

Avian influenza A(H5N1)

Human H5N1 infections

A total of 145 laboratory-confirmed 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 (6), Indonesia (2) and Bangladesh (1). The majority of the cases (93.1%) had onset of illness between January and March 2015 with a peak in February 2015. The number of cases recorded in 2015 was the highest since the emergence of human infections in 1997, which was mainly due to large increase in cases in Egypt in early 2015. According to the WHO, the epidemiological characteristics of the human cases essentially remained unchanged from previous years. In 2016 (as of April 4), four cases with onset of illness between February and March were reported to the WHO from Egypt. Since 2003, a total of 850 human H5N1 cases, including 449 deaths, have been reported from 16 countries cumulatively. Locally, 22 human H5N1 infections had been recorded since the detection of the first case in 1997. The last case in Hong Kong was an imported case reported in June 2012 involving a two years old boy who came to Hong Kong from Guangdong after onset of illness.

H5N1 outbreaks in poultry/wild birds

According to the OIE, there were 121 reports of detection of H5N1 viruses in poultry/birds from 22 countries/areas in 2015, namely Nigeria (38), Vietnam (16), Ghana (13), Israel (6), Mainland China (6), Cote D'Ivoire (5), France (5), Bulgaria (4), Burkina Faso (4), India (4), Russia (4), Turkey (3), Myanmar (2), Palestinian Autonomous Territories (2), United States (2), Bhutan (1), Cambodia (1), Canada (1), Iran (1), Libya (1), Niger (1) and Romania (1). In 2016 (up to June 6), there were 54 reports of detection of H5N1 viruses in poultry/birds from Nigeria (31), France (4), Cote D'Ivoire (3), Ghana (3), Vietnam (3), India (2), Bangladesh (1), Cambodia (1), Mainland China (1), Iraq (1) and Lebanon (1). Locally, H5N1 in birds/chickens was last detected in 2011.

Risk assessment for avian influenza viruses

According to the WHO, most human cases were exposed to avian influenza viruses through contact with infected poultry or contaminated environments, including live poultry markets. Since the viruses continue to be detected in animals and environments, further human infections with viruses of animal origin are expected but the likelihood of sustained human-to-human transmission remains low. Even though small clusters of cases have been reported, including those involving healthcare workers, current epidemiological and virological evidence suggests that avian influenza viruses have not acquired the ability of sustained transmission among humans.

Various subtypes of influenza A(H5) viruses, such as influenza A(H5N1), A(H5N2), A(H5N6), A(H5N8) and A(H5N9), continue to be detected in birds in West Africa, Europe and Asia. These viruses might have the potential to cause disease in humans. Nonetheless, except H5N1 and H5N6, no human infections with other H5 subtypes have been reported so far.

Prevention and control measures

On the prevention side, 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.

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 presented with fever or influenza-like illness. Travel history and relevant exposure history during travel should be obtained from them. Any patients with acute respiratory illness or pneumonia, and with at-risk exposure (such as history of visiting market with live poultry, contact with poultry, etc.) in affected areas within the incubation period (i.e. 10 days before onset of symptoms) should be managed as suspected cases and immediately reported to the Central Notification Office of the CHP for investigation. The reporting criteria have recently been updated to specify visiting markets with live poultry as one of the epidemiological criteria (https://cdis.chp.gov.hk/CDIS_CENO_ONLINE/ceno.html). The list of affected areas is regularly updated and is available from the following webpage of the CHP website: http://www.chp.gov.hk/files/pdf/global_statistics_avian_influenza_e.pdf.

Updated Situation of Middle East Respiratory Syndrome

Reported by Dr Shirley TSANG, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Middle East Respiratory Syndrome (MERS) is a viral respiratory disease caused by the novel coronavirus MERS-coronavirus (MERS-CoV) which was first identified from a patient in the Kingdom of Saudi Arabia (KSA) in 2012. Since then, the spread of MERS within the Middle East has been ongoing with exported cases to some other countries and areas outside the Middle East. Of note, the largest outbreak of MERS outside the Middle East occurred in Korea in June and July 2015, which was triggered by an imported case from the Middle East resulting in large-scale local transmissions with 186 cases and 38 fatalities. In this article, we reviewed the global situation of MERS from August 2015 to May 2016, as well as the updated epidemiological characteristics and scientific findings.

Latest Global Situation

A total of 349 laboratory-confirmed cases of MERS were reported to the World Health Organization (WHO) from August 2015 to May 2016. All cases remained confined to the Middle East except one case was exported from Oman to Thailand without causing any secondary transmission. The majority (325, 93.1%) of the reported cases were from KSA, followed by Jordan (16, 4.6%), Qatar (2, 0.6%), the United Arab Emirates (UAE) (2, 0.6%), and one (0.3%) each in Bahrain, Kuwait, Oman and Thailand. Of note, Bahrain reported the first case in April 2016.

There was a marked increase in cases reported in August and September 2015, which was due to several large hospital outbreaks in KSA and Jordan. The number of cases started to decline after September 2015. Thereafter, MERS cases continued to appear in the Middle East (mainly KSA) at a low level. In March 2016, there was another upsurge of cases due to hospital outbreaks in KSA (Figure 1).

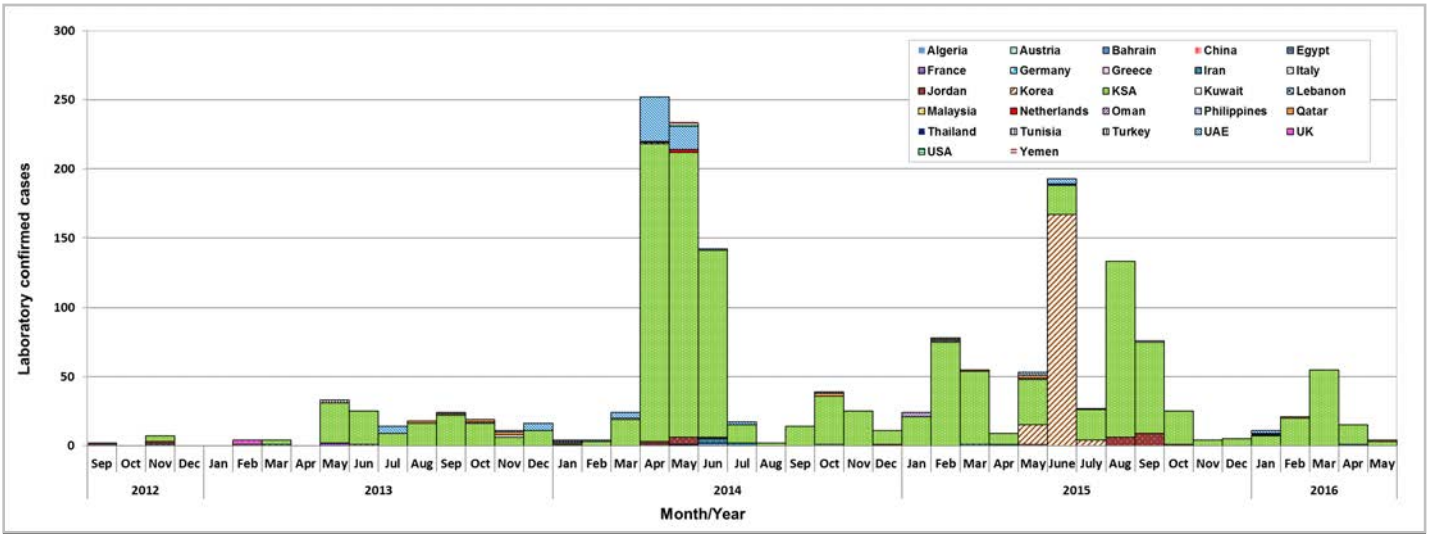

Figure 1- Monthly number of laboratory confirmed MERS cases reported to WHO by reporting country (N = 1 733) (As of May 31, 2016).

Globally, a total of 1 733 MERS cases including at least 628 deaths have been reported to WHO since 2012 (as of May 31, 2016). The majority (1519, 87.7%) of the cases were confirmed in ten Middle East countries, including KSA (1378, 79.5%), UAE (78, 4.5%), Jordan (28, 1.6%), Qatar (15, 0.9%), Oman (7, 0.4%), Iran (6, 0.3%), Kuwait (4, 0.2%), Bahrain (1, 0.1%), Lebanon (1, 0.1%) and Yemen (1, 0.1%) (Figure 2). Another 186 cases were related to the outbreak in Korea in 2015, including 185 cases in Korea and one case exported to Mainland China. The remaining 28 cases were either imported or import-related cases detected in 15 countries outside the Middle East (Table 1). All of them had direct or indirect epidemiological link with the Middle East.

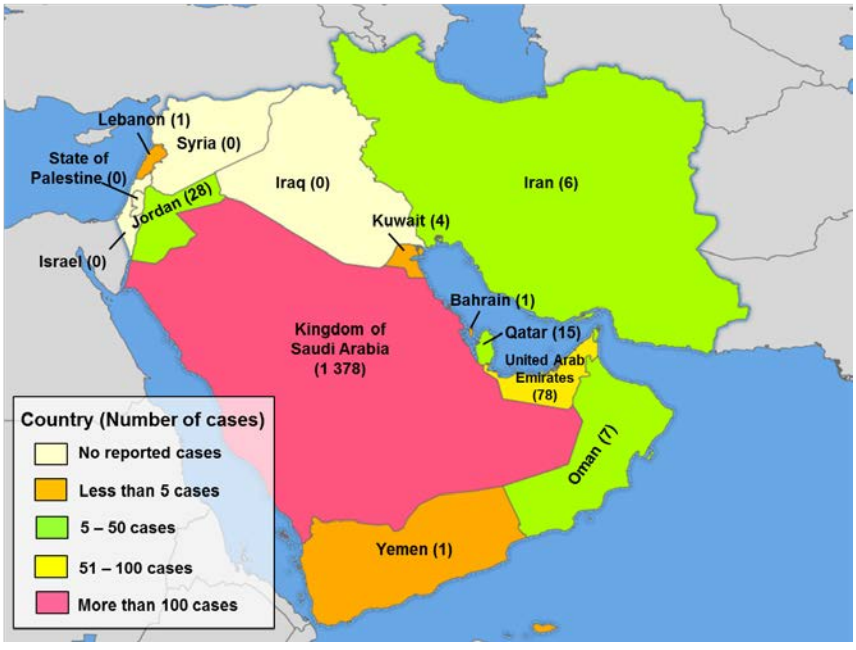

Figure 2 - Cumulative number of MERS cases in the Middle East since 2012 (N=1 519) (as of May 31, 2016).

Epidemiological Characteristics

The epidemiological characteristics of the cases remained similar since the emergence of the disease in 2012. Overall, 1 128 (65.6%) cases were male* and the ages ranged from nine months to 109 years (median: 54 years). Over half of the MERS cases were known to have chronic diseases. Among the 1 201 cases with details released by WHO#, 1 011 patients (84.2%) presented with relatively more severe illnesses such as pneumonia and 116 patients (9.7%) had mild illnesses such as influenza-like illness, while the remaining 74 patients (6.1%) were reported to be asymptomatic. The case fatality rate (CFR) was at least about 36%.

Table 1 - Number of confirmed MERS cases outside the Middle East (N = 214) (as of May 31, 2016).

Reporting country		Cases imported directly from Middle East	Cases subsequently arising from imported cases
Africa	Tunisia	1	2
	Algeria	2	0
	Egpyt	1	0
Asia	Korea	1	184
	Philippines	2	0
	Thailand	2	0
	Mainland China	0	1*
	Malaysia	1	0
Europe	United Kingdom	2	2
	Germany	3	0
	Netherlands	2	0
	France	1	1
	Austria	1	0
	Greece	1	0
	Italy	1	0
	Turkey	1	0
North America	United States	2	0

**Close contact of a case in Korea.*

Scientific Updates on MERS

Sources of MERS-CoV

Dromedary camels serve as an important reservoir for the maintenance and diversification of MERS-CoV and are the sources of MERS-CoV causing human infections. Many seroepidemiological studies demonstrated serological evidence of MERS-CoV infection in dromedary camels in Middle East countries, including Jordan, KSA, Oman, Qatar, UAE and, as well as African countries, including Egypt, Ethiopia, Kenya, Nigeria, Somalia, Sudan and Tunisia, from where most of the camels found in the Middle East have originated[1].

Besides, detections of MERS-CoV by genetic tests in oro-nasal and faecal samples from dromedary camels were reported in multiple locations in the Arabian Peninsula (Egypt, KSA, Oman, Qatar and UAE). Active infection of MERS-CoV in dromedary camels was also demonstrated through documented rises in anti-MERS-CoV antibody titres as well as detection of MERS-CoV by genetic tests in symptomatic camels. There was further evidence of successful experimental MERS-CoV infection of dromedary camels resulting in mild clinical manifestations such as fever and rhinorrhea. The strongest direct evidence of transmissibility of MERS-CoV between dromedary camels and humans was the simultaneous isolation of near-identical MERS-CoV strains from human cases and epidemiologically linked dromedary camels[2,3].

Route of transmission

In a study on dromedary camels at wholesale markets, slaughterhouses, and farms in KSA, MERS-CoV was found to be present in 25% of nasal swab samples, but only 1% of digestive tract specimens, suggesting that respiratory transmission as the most likely route for virus spread to humans[4].

Human-to-human transmissions through close contact with infected cases in both household and hospital settings have been widely reported. A study on household transmission was carried out in KSA after an outbreak occurring in an extended family[5]. Among 79 relatives, 19 (24%) were tested positive for MERS-CoV. Compared with non-infected adult relatives, MERS-CoV-positive adult relatives were older and more likely to be male and have chronic medical conditions. Risk factors for household transmission included sleeping in an index patient's room and touching respiratory secretions from an index patient. Casual contact (e.g., hugging or social kissing) and simple proximity (e.g., cleaning or feeding the index patient) were not associated with transmission.

It is well known that MERS-CoV has a tendency to cause transmissions in healthcare settings. A significant fraction of MERS cases were linked to healthcare settings and large outbreaks of MERS occurring in healthcare facilities have been documented. Similar to SARS,nosocomial outbreaks of MERS were characterised by early nosocomial super-spreading events generating a disproportionately large number of secondary infections[6]. A study revealed that a majority of MERS cases in the Korean outbreak involved patients who sought care in the same facilities as the index case[7].

* 14 cases in KSA with unknown sex were not included in the calculation of percentage.
# Details of individual cases were not available for 532 cases in KSA.

Risk factors for infection

Regarding the risk factors associated with MERS-CoV infection, a case-control study of primary MERS cases in KSA revealed that direct exposure to dromedary camels during the two weeks before illness onset, as well as diabetes mellitus (DM), heart disease, and smoking, were each independently associated with MERS-CoV infection[8].

A cross-sectional population-based, seroepidemiological investigation of MERS-CoV infection in an area in KSA where zoonotic transmission is sustained was carried out in 2013. MERS-CoV antibodies were detected in 0.15% of samples from the general population. Men had a significantly higher proportion of infections (0.25%) than women (0.05%). The seroprevalence of MERS-CoV among individuals exposed to camels (shepherds and slaughterhouse workers) was 15–23 times higher than in the general population. The findings concluded that people who have contact with camels were at risk of acquiring MERS-CoV infection, often without being diagnosed, and might proceed to introduce the virus to the general population in which more severe illness triggers testing for the virus and disease recognition[9].

Clinical severity

The clinical presentations vary widely from no symptoms to mild upper respiratory symptoms such as fever, cough and myalgia to severe pneumonia with multi-organ failure[10]. The virus appears to cause more severe disease in people with immune deficiencies, elderly (>65 years), and those with chronic diseases such as DM, cancer and chronic lung disease[11].

In a study of MERS cases reported in KSA, the CFR was found to increase significantly with age. It ranged from 12.5% in those ≤19 years to 86.2% in those ≥80 years. The study also confirmed the association between severe illness and pre-existing medical conditions[12]. Another study of the outbreak in Korea also revealed that older age and pre-existing health conditions were risk factors for death[13].

Nonetheless, MERS cases may present with mild symptoms and remained undetected. As such, the CFR based on reported cases would potentially be over-estimated. A modeling study in KSA showed that the clinical severity differs markedly between age groups and that many cases likely go undiagnosed[14]. The estimated number of cases was 2.1 times the number reported. The probability of developing symptoms ranged from 11% in persons <10 years to 88% in those ≥70 years. An estimated 22% of those infected with MERS-CoV died, which was lower than the CFR of the reported cases.

The lower CFR of the Korean outbreak (19 %) as compared with that among cases in KSA (42%) was due to the difference in the relative percentages of asymptomatic and mildly symptomatic cases, and patient characteristics such as comorbid conditions[15].

Prevention and Control

In Hong Kong, MERS has been made notifiable since September 28, 2012. The Centre for Health Protection (CHP) of the Department of Health has enhanced surveillance of suspected cases in public and private hospitals since February 22, 2013. For cases of pneumonia with unknown cause, pneumonia cases requiring intensive care, clusters of pneumonia or health-care workers (HCWs) with pneumonia, routine testing for MERS-CoV would be carried out irrespective of travel history. As of May 31, 2016, a total of 660 suspected cases were reported to the CHP and all of them were tested negative for MERS-CoV.

Currently, there is no vaccine or specific anti-viral treatment for MERS. In view of the current situation and the scientific findings, members of the public are reminded to take heed of personal, food and environmental hygiene when travelling to the Middle East to prevent MERS:

- *Avoid going to farms, barns or markets with camels during travel;*
- *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; and*
  - *After returning home: inform doctor of recent travel history during medical consultation.*

People with pre-existing medical conditions (e.g. DM, chronic lung disease, chronic renal disease, immunodeficiency, etc.) are more likely to develop severe infection if they are exposed to the virus. Thus, before travelling to any affected area, they should consult a healthcare provider to review the risk and assess whether the travel is advisable.

It is not always possible to identify MERS patients early because some may have mild or unusual symptoms. HCWs should maintain vigilance and adhere to strict infection control measures while handling suspected or confirmed cases to reduce the risk of transmission to other patients, HCWs or visitors. Besides, HCWs should arrange MERS-CoV testing for travellers returning from the Middle East who develop respiratory symptoms.

For further information on MERS, please refer to the CHP website: http://www.chp.gov.hk/en/content/9/24/26528.html.

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NEWS IN BRIEF

A sporadic case of brucellosis

On May 19, 2016, the Centre for Health Protection (CHP) recorded a case of brucellosis affecting a 51-year-old woman with underlying illnesses. She presented with on and off abdominal pain and fever since April 13, 2016 and was admitted to a public hospital twice from April 18 to 20 and from May 12 to 26, respectively. Her blood specimen collected on May 13 yielded *Brucella melitensis*. She was treated with antibiotics and her condition was stable. She had travelled to Mainland China in mid-March and had a history of preparing soup with lamb placenta and meat during her stay. She had consumed the soup and lamb meat but not the lamb placenta. Her home contacts were asymptomatic. She had no occupational exposure to animals, their carcasses or internal organs. She reported no history of contact with live animals. Investigation is on-going.

Scarlet fever update (May 8, 2016 – June 4, 2016)

Scarlet fever activity in this reporting period increased as compared with the previous four weeks. From May 8 – June 4 2016, CHP recorded 145 cases of scarlet fever with a range of 32 to 39 cases per week as compared with 94 cases with a range of 21 to 26 cases per week in the previous reporting period (April 10 – May 7, 2016). The cases recorded in this reporting period included 76 males and 69 females aged between 1 and 16 years old (median = 5 years). There were four clusters in kindergartens/ child care centres involving a total of 13 children (range: 2-5 students). Among the cases in this reporting period, there was a severe case affecting a 10-year old girl. She had influenza B co-infection complicated with sepsis requiring admission to intensive care unit for management. She recovered after treatment. No fatal cases were reported in the current reporting period.

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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

Scientific Committee's Recommendations on Seasonal Influenza Vaccination and the Arrangement for Seasonal Influenza Vaccination Programmes for 2016/17 season

Reported by Dr Albert AU, Senior Medical Officer, Respiratory Disease Office, Dr Cindy POON, Medical Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, Dr Scarlet CHAN, Medical Officer, Vaccination Office, Programme Management and Professional Development 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 (2016/17).

Given that influenza vaccines are safe and effective and severe cases do occur in previously healthy persons, the SCVPD recommends that all persons aged six months or above except those with known contraindications should receive seasonal influenza vaccine for personal protection. The SCVPD recommends, on top of existing priority groups, that seasonal influenza vaccination should also be prioritised for children aged six years to under 12 years, extended from those aged six months to under six years, after reviewing local epidemiological data, the latest scientific evidence and overseas experiences.

In the 2015/16 winter season predominated by influenza A(H1N1)pdm09 and influenza B, the CHP recorded the highest influenza-associated hospitalisation rates in public hospitals among children aged under 12 years since 2010. In addition, outbreaks of influenza-like illness (ILI) were mainly reported from primary schools, followed by kindergartens and child care centres.

The SCVPD has reviewed the local surveillance data on seasonal influenza collected by the CHP since the 2009 pandemic in which the influenza A (H1N1)pdm09 virus emerged. It was concluded that the risk and burden of influenza among primary school children were significant, especially in seasons predominated by influenza A (H1N1)pdm09 and influenza B.

First, primary school children constituted a major burden of institutional ILI outbreaks. From 2010 to 2016, primary schools were the most common places of occurrence of institutional ILI outbreaks, accounting for 35% of the outbreaks reported to the CHP.

Moreover, their risk of influenza was relatively high in terms of attendance rate at Accident and Emergency Departments (AEDs) and influenza-associated hospitalisation rate in public hospitals as compared with other age groups. The AED syndromic surveillance revealed that the ILI rate among patients attending AEDs were the second highest among children aged 6-11 years, following children aged 0-5 years (Figure 1).

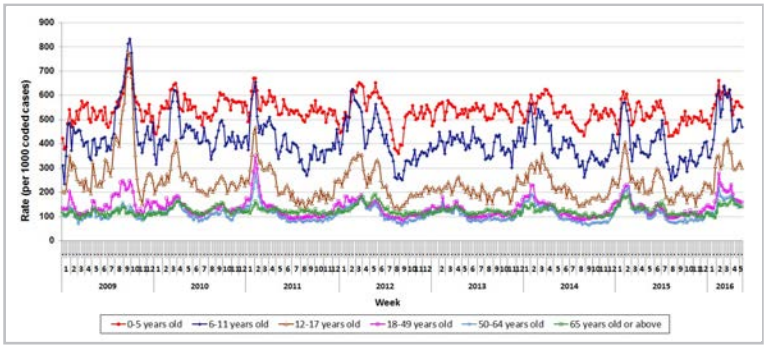

Figure 1 - Weekly ILI rate (ILI cases per 1000 coded cases) by age groups under AED syndromic surveillance.

Regarding the peak influenza-associated hospitalisation rate among children aged 6-11 years, it was also the second highest during influenza seasons predominated by influenza A (H1N1) pdm09 or influenza B (2011 winter, 2012 winter, 2013 winter, 2014 winter and 2016 winter), following children aged 0-5 years and exceeding elderly aged 65 years or above. In seasons predominated solely by influenza A (H3N2) (2010 summer, 2012 summer, 2013 summer, 2014 summer and both winter and summer in 2015), it still ranked the third, following children aged 0-5 years and elderly aged 65 years or above (Figure 2).

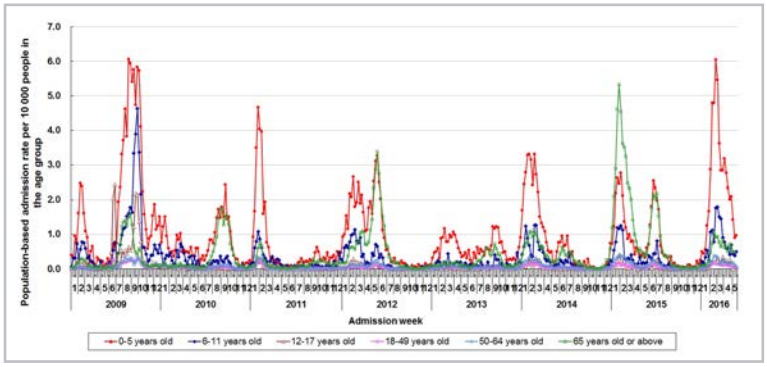

Figure 2 - Weekly admission rates with principal diagnosis of influenza in public hospitals.

Although primary school children constituted only a small proportion of severe influenza cases, about 70% of the severe cases among children aged 6-11 years recorded during influenza seasons from 2011 to 2016 did not have preexisting chronic or congenital conditions.

Apart from surveillance data, local studies have demonstrated moderate to high vaccine effectiveness of seasonal influenza vaccine in preventing hospitalisation in children[1-3]. In addition, overseas studies have shown that vaccinating young school children may potentially reduce school absenteeism[4], as well as provide protection and reduce mortality from influenza among older persons[5].

The SCVPD recommends the following priority groups for seasonal influenza vaccination in 2016/17 season

A. Pregnant women;

B. Elderly persons living in residential care homes;

C. Long-stay residents of institutions for persons with disabilities;

D. Persons aged 50 years or above;

E. Persons with chronic medical problems*;

F. Health care workers;

G. Children aged six months to 11 years (under 12 years);

H. Poultry workers; and

I. 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 2016/17 seasonal influenza vaccine (northern hemisphere winter) comprises an A/California/7/2009 (H1N1)pdm09-like virus, an A/Hong Kong/4801/2014 (H3N2)-like virus and a B/Brisbane/60/2008-like virus. If quadrivalent influenza vaccine is being used, it should contain the above three viruses and a B/Phuket/3073/2013-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 the 2015/16 season are recommended to receive one dose in the 2016/17 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.

In 2016/17 season, the seasonal influenza vaccination programmes will expand to cover more population groups, including, free and subsidised vaccination for children aged six months to under 12 years and all recipients of Disability Allowance (DA), as well as subsidised vaccination for all pregnant women. The new eligible groups in 2016/17 are highlighted below:-

Children aged six months to under 12 years

Vaccinating children can reduce influenza-related complications, hospitalisations and deaths, particularly for school children, which may potentially reduce school absenteeism and influenza transmission in the community. In 2016/17, all children aged six months to under 12 years can receive subsidised vaccination from enrolled private doctors, who can also organise outreach vaccination activities to primary schools. Those from families receiving Comprehensive Social Security Assistance (CSSA) or holding valid Medical Waiver Certificates can receive free vaccination from the DH's Maternal and Child Health Centres (for children aged six months to under six years) or Student Health Service Centres (for children aged six to under 12 years).

Pregnant women

The SCVPD has all along accorded top priority to pregnant women for vaccination to reduce acute respiratory infections for mothers and infants, cardiopulmonary complications and associated hospitalisations. The SCVPD strongly recommended that further incentive should be provided. The CHP will hence expand subsidised vaccination to cover all pregnant women to get vaccinated from enrolled private doctors next year, while those who are CSSA recipients or valid Medical Waiver Certificate holders can continue to receive free vaccination from public clinics and hospitals.

Recipients of Disability Allowance (DA)

As persons with disabilities may be prone to poor self-care and infection, the CHP will expand the vaccination scope next year to all community-living DA recipients regardless of disability, on top of the existing eligible group of persons with intellectual disabilities (PIDs). Current clients of public clinics and hospitals can receive free vaccination during follow-up or stay at hospitals. Other DA recipients can receive subsidised vaccination from enrolled private doctors at private clinics.

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 can be found in the CHP website:
- ❖ SCVPD's 2016/17 seasonal influenza vaccination recommendations: http://www.chp.gov.hk/files/pdf/short_version_of_recommendations_on_seasonal_influenza_vaccination_for_the_2016_17.pdf.
- ❖ Frequently asked question on seasonal influenza vaccine 2016/17 - http://www.chp.gov.hk/en/view_content/45020.html.
- ❖ Eligible groups of Government Vaccination Programme (free vaccination): http://gia.info.gov.hk/general/201606/22/P201606220390_0390_169153.pdf
- ❖ Eligible groups of Vaccination Subsidy Scheme (subsidised vaccination): http://gia.info.gov.hk/general/201606/22/P201606220390_0390_169154.pdf.

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Exercise PEARL tests government response to incident involving biological agent

Reported by Mr Joe SZE Kin-wai, Chief Inspector of Police, Emergency Response and Information Branch, CHP.

On June 20, 2016, the Centre of Health Protection (CHP) of the Department of Health (DH) conducted a multi-agency exercise, code-named PEARL with other government departments and organisations at SuperTerminal 1, Hong Kong Air Cargo Terminals Limited (Hactl) at the Hong Kong International Airport.

The exercise consisted of two parts. Part one was a table-top exercise conducted on June 2, 2016 in which participants from relevant departments and organisations discussed and commanded response measures in a simulated incident with biological agent involved. Part two of the exercise conducted on June 20, 2016 was a ground-movement exercise executing the plans formulated in the discussion in part one.

Over 100 representatives from relevant government departments and organisations, namely the DH, Hong Kong Police Force, the Fire Services Department, the Security Bureau, the Hospital Authority, the Airport Authority Hong Kong, the Civil Aid Service, the Hong Kong Observatory, the Environmental Protection Department, the Food and Environmental Hygiene Department, the Auxiliary Medical Service and Haclt, participated in the exercise.

The primary objectives of the Exercise PEARL is to test on field investigation and control measures with regard to people who have been exposed to the biological agents (suspected Anthrax) released to environment without prior knowledge and assess the effectiveness of HKSAR Government's plans and procedures and the interoperability of governmental departments and agencies in response to incident with biological agent. It also aims at heightening the overall awareness and readiness of relevant stakeholders in prevention and protection of Hong Kong against biological attack.

The Exercise was a practical first response simulation exercise involving the activation and operation of a multi-agency Chemical, Biological, Radiological and Nuclear Incident Advisory Group (RIAG), and the deployment of officers on the ground at the SuperTerminal 1 at Hong Kong International Airport. Participants responded to the incident in accordance with their respective internal procedures and external protocols.

The exercise provided a golden opportunity and a valuable platform for multi-agency collaboration in responding to incident involving biological agents. It also helped to test the preparedness of individual department and identify areas of enhancement in responding to incidents of similar nature.

Photo 1- The Government tested its preparedness for a possible incident with biological agent on June 20, during Exercise PEARL.. Photo shows the Director of Health, Dr Constance Chan (centre right), inspecting the exercise at the SuperTerminal 1, Hong Kong International Airport.

Photo 2 - Under simulation, personnel of Surveillance and Epidemiology Branch conducted epidemiological investigation and interviewed affected persons after decontamination by Fire Services Department.

Photo 3 - Under simulation, officers of Explosive Ordnance Disposal Bureau conducted initial test and field sampling of the suspected anthrax for subsequent laboratory analysis.

NEWS IN BRIEF

A sporadic case of *Streptococcus suis* infection

On June 6, 2016, the Centre for Health Protection (CHP) recorded a case of *Streptococcus suis* infection affecting a 78-year-old woman with good past health. She presented with fever, weakness and suspected fall at home since May 27 and was admitted to a public hospital on the same day. Her blood sample collected on May 28 grew *Streptococcus suis*. Her clinical diagnosis was sepsis and she was treated with antibiotic. She remained in stable condition. She had handled raw pork at home but denied any previous skin wound or contact with pigs. She lived alone.

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

On June 8 and 11, 2016, CHP recorded two cases of necrotising fasciitis caused by *Vibrio vulnificus*. The first patient was a 70-year-old man with history of liver cirrhosis. He presented with fever and bilateral leg pain on June 5 and was admitted to a public hospital on the same day. Bilateral lower limb fasciotomy were performed on June 6. The operative diagnosis was necrotising fasciitis and non-traumatic compartment syndrome. Post-operatively, he was managed in the intensive care unit (ICU) and was treated with antibiotics. He died on June 7. His left leg tissue collected on June 6 subsequently grew *Vibrio vulnificus*. His home contact was asymptomatic. According to the patient's home contact, he visited wet market everyday but had no history of injury or contact with seafood.

The second patient was a 53-year-old man with underlying illnesses including liver cirrhosis. He presented with right foot painful swelling on June 6 and was admitted to a public hospital on June 9. He was diagnosed to have necrotising fasciitis with right above knee amputation done after admission. He was managed in ICU after the operation. His right leg tissue collected on June 10 yielded *Vibrio vulnificus*. He was treated with antibiotics and remained in stable condition. His home contacts were asymptomatic. The patient had consumed hotpot with oyster during the incubation period. He denied visit to wet market and history of injury.

A case of human myiasis

On June 13, 2016, CHP recorded a case of human myiasis affecting a 59-year-old man. The patient was bed-ridden with underlying illnesses, and hospitalised in a public hospital since July 2015. He was noted by nursing staff to have a wound with worms on his right middle finger on June 9. The worms were removed and were identified to be dipteran larvae belonging to the family of *Sarcophagidae*. His condition remained stable. CHP has provided advice on wound care and environmental hygiene to the hospital.

CA-MRSA cases in May 2016

In May 2016, CHP recorded a total of 66 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 43 males and 23 females with ages ranging from 3 days to 89 years (median = 33 years). Among them, there were 43 Chinese, 8 Filipinos, 5 Pakistani, 3 Caucasian, 2 Indian, 2 Nepalese, 1 Indonesian, 1 Thai and 1 of unknown ethnicity. Isolates of all the 66 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (45) or V (21).

All except one case presented with uncomplicated skin and soft tissue infections. The remaining case affected a 6-month-old boy with good past health. He presented with fever, right peri-orbital swelling and right face puffiness on May 4, 2016. He was admitted to a private hospital for management on May 6 and was referred to a public hospital for surgery on May 7. His clinical diagnoses were right peri-orbital abscess, osteomyelitis and sepsis. He required admission to intensive care unit after surgery. His blood specimen collected on May 6 was cultured positive for CA-MRSA. His condition improved after surgeries and antibiotic treatment. He was discharged on June 10. His close contacts remained asymptomatic and screening and decolonisation were provided to them.

Among the 66 cases, one case was an ambulanceman. Investigation did not reveal any epidemiological linkage to other cases. Besides, six family clusters, with each affecting two persons, were identified. Screening and decolonisation would be provided to their close contacts.

(Note: The number of CA-MRSA cases in March and April 2016 were revised to 68 and 93, respectively.)

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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

Communicable Disease Surveillance in Community: Sentinel Surveillance System

Reported by Dr Zenith WU, Medical and Health Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

In Hong Kong, communicable disease surveillance currently encompasses notifiable infectious diseases, communicable diseases of topical public health concern by voluntary reporting, outbreak reporting in institutional settings, community based sentinel surveillance, laboratory surveillance and communicable disease reports from official organisations and in the media, both local and overseas. The following is a review of the sentinel surveillance system.

The sentinel surveillance system was introduced in the 1960s to strengthen the surveillance on influenza-like illnesses (ILI). In 1997, a network of community sentinel points based at private medical practitioners (PMP) and general out-patient clinics (GOPC) was established after the outbreak of human avian influenza A (H5N1). In 1998 and 1999, sentinel surveillance for hand, foot and mouth disease (HFMD) and antibiotic resistance were added respectively. In 2001, the sentinel surveillance system was also extended to cover acute conjunctivitis (ACJ) and acute diarrhoeal diseases (ADD). Nowadays, there are some 110 sentinel GOPCs in the public sector and PMP clinics over all districts in Hong Kong (Figure 1).

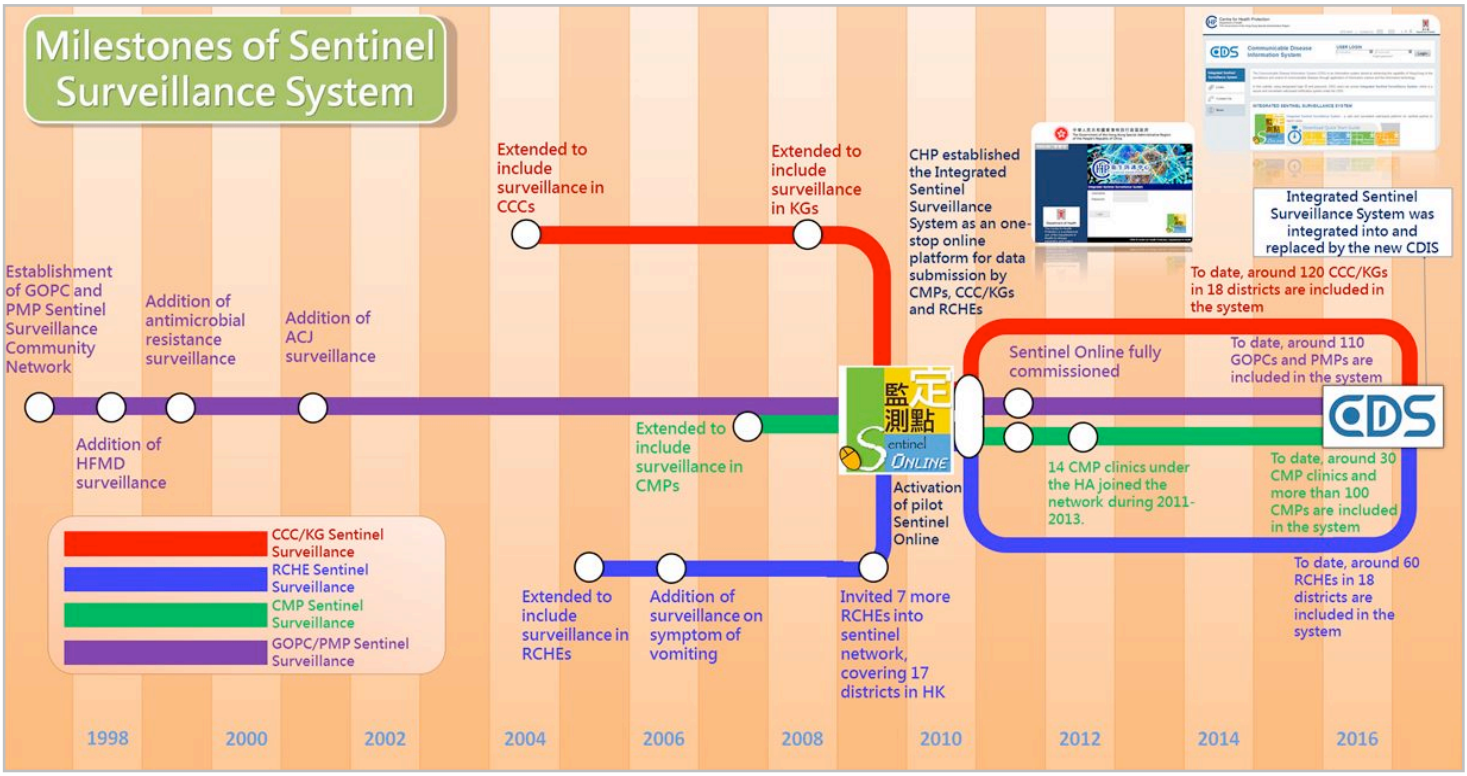

Figure 1 - Milestones of the sentinel surveillance system.

In response to the SARS Expert Committee's recommendation to extend the sentinel surveillance system to other community settings, the sentinel surveillance system was then extended in phases to include about 30 sentinel clinics of Traditional Chinese Medicine practitioners (CMP) in 2007 and all Accident and Emergency Departments (AED) in public hospitals under the Hospital Authority (HA) in 2012. Currently, the trends of ILI, HFMD, ACJ and acute gastroenteritis (AGE) syndrome groups are monitored by AED while the disease trends of ILI and ADD are monitored by CMP. The trends of fever, acute diarrhoea and vomiting among institutionalised elders are monitored by around 60 sentinel residential care homes for the elderly (RCHE). Another system based at around 120 kindergartens and child care centres (CCC/KG) is to monitor trends of symptoms (including fever, cough, diarrhoea and vomiting), absenteeism, ACJ and HFMD.

Through the continuous support and active participation of our sentinel partners, the sentinel surveillance system has been

generating pertinent and timely information for the monitoring of trends and detection of unusual upsurge of communicable diseases of public health importance in the community. Adverse impacts of such diseases can then be minimised through timely initiation of alerts and actions.

Disease Trends in 2015

Influenza-like illness

In 2015, the sentinel systems recorded elevated ILI activities during the winter influenza season from January to April and the summer season from June to July, respectively. The highest level was observed in February during the peak of the winter season while another smaller peak was observed in June during the peak of the summer season which arrived earlier than previous years. The pattern observed in the sentinel systems generally correlated with the influenza surveillance data recorded by other surveillance systems such as institutional ILI outbreaks and influenza-associated hospitalisation rates.

Acute diarrhoeal diseases

In 2015, higher consultation rates for ADD were observed in January and March for both the PMP and GOPC sentinel systems but in general the consultation rates for ADD remained stable in 2015 without any prolonged upsurge. The winter upsurge correlated with the activity of AGE as reflected by the number of institutional outbreaks recorded by the Centre for Health Protection (CHP) of the Department of Health (DH) in 2015.

Hand, foot and mouth disease

The peak season of HFMD in 2015 lasted longer than usual as activity started to increase in May and further increased in December with the summer peak merged with the winter peak. The HFMD activity pattern in 2015 recorded by the sentinel systems correlated well with the number of HFMD institutional outbreaks recorded by CHP.

Acute conjunctivitis

The activity of ACJ fluctuated at the baseline in 2015 without any prolonged upsurge detected.

New Developments

With the fully commissioned Communicable Disease Information System (CDIS) being launched in May 2016, surveillance, disease control, emergency preparedness, outbreak investigation and management can now be integrated and managed on one platform. The monitoring and timely alerts that have all along been provided by the sentinel surveillance system are now further strengthened by the "instant", "inclusive" and "interactive" functions which characterise the CDIS.

Regular feedback can be provided by the CDIS to our sentinel partners, further facilitating the effective exchange of intelligence on disease surveillance. Relevant parties are then able to make appropriate arrangements in response to possible risks as situations arise. The active participation and contribution of data by our collaborative sentinel partners, including the HA, PMPs, CMPs, RCHEs and CCC/KGs, is of paramount importance to the CHP's smooth work in drawing up effective sentinel strategies against infectious diseases.

Global Situation of Leishmaniasis

Reported by Dr Terence LAM, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Leishmaniasis is a parasitic disease found in parts of the tropics, subtropics and part of Europe. Leishmaniasis is caused by a protozoa parasite from over 20 *Leishmania* species[1]. It is mainly transmitted to humans by the bite of infected female phlebotomine sandflies[2] (Photo 1). Sandflies become infected when sucking blood from an infected person or animal, such as rodents or dogs. Only a small proportion of infected persons eventually develop the disease. Some *Leishmania* species may be transmitted via needle sharing, blood transfusions or congenital transmission.

Photo 1 -Vector sandfly, Phlebotomus papatasi. (Source: US Centers for Disease Control and Prevention.)

According to the World Health Organization (WHO), leishmaniasis is prevalent in 98 countries and three territories on five continents[3]. There are about 1.3 million new cases annually. Three hundred thousand cases are visceral leishmaniasis, and 90% of these occur in Bangladesh, Brazil, Ethiopia, India, Nepal, South Sudan and Sudan. One million cases are cutaneous and mucosal leishmaniasis. The former occurs mainly in Afghanistan, Algeria, Brazil, Colombia, the Islamic Republic of Iran, Pakistan, Peru, Saudi Arabia, the Syrian Arab Republic and Tunisia, while the latter occurs mainly in Brazil, Peru and the Plurinational State of Bolivia. Deaths due to visceral leishmaniasis are estimated to range from 20 000 to 50 000 annually. The exact burden remains unclear as reporting is mandatory in only 34% of the endemic countries.

The distribution of leishmaniasis has expanded in the past two decades. Risk factors contributing to the spread include poor socioeconomic conditions, malnutrition, climatic and environmental changes, increased population movement, conflicts, immunosuppressive conditions such as HIV coinfection and, in some areas, rapid urbanisation or establishment of new settlements.

There was an epidemic in South Sudan from 2009 to 2012, which resulted in more than 28 000 cases and 850 deaths. In Brazil and Ethiopia, an increasing trend in the rate of HIV–visceral leishmaniasis coinfection has been reported. Outbreaks in other endemic countries, such as Algeria and Morocco, have been under control. For example, Algeria reported more than 30 000 cases in 2005 but only 6 428 in 2013, and in Morocco, the number of zoonotic cutaneous leishmaniasis decreased from 6 700 cases in 2010 to 537 cases in 2013. For Bangladesh, India, and Nepal, the incidence of reported cases in 2013 decreased by 37%, 33%, and 50% as compared to the figures in 2012.

However, in Syrian Arab Republic and surrounding areas in the Middle East, the number of cutaneous leishmaniasis cases increased

sharply due to wars, which caused collapsed health care infrastructure and population displacement[4]. In Syrian Arab Republic, between 2004 and 2008, the number of cases annually was estimated to be 23 000. In 2012, the number of cases increased to 53 000, and 41 000 cases were reported in the first half of 2013 alone. Similar risk in Libya and Yemen has been indicated but there was not much documentation on the exact figures.

Leishmaniasis has different clinical manifestations, such as the cutaneous, mucosal, and visceral forms, which result from infection of macrophages in the dermis, in the naso-oropharyngeal mucosa, and throughout the reticuloendothelial system, respectively[5]. All these forms can range from asymptomatic to severe infection.

Cutaneous leishmaniasis is the most common form of leishmaniasis (Photo 2). It causes skin lesions which usually develop within several weeks or months of sandfly bite, but occasionally can present years later when precipitated by local trauma or immunosuppression. The lesions usually evolve from papules to nodular plaques and may proceed to ulcerative lesions that look like a volcano with a raised edge and central depression, which can be covered by scab or crust. The lesions are usually painless but can be painful if the ulcerative lesions become infected or if the lesions are near a joint. Healing can take months or years, and typically results in atrophic and disfiguring scarring. Quite commonly the patient may develop more than one primary lesion, satellite lesions, regional lymphadenopathy, and / or nodular lymphangitis.

Photo 2 - Ulcerative skin lesion, with the classic morphologic characteristics of erythematous and nodular interior surrounded by a raised border, on a patient with cutaneous leishmaniasis. (Source: US Centers for Disease Control and Prevention.)

Mucosal leishmaniasis is the metastatic sequela of New World cutaneous leishmaniasis caused by some *Leishmania* species in parts of Latin America. It results from the dissemination of parasites from the skin to the naso-oropharyngeal mucosa, and usually become noticeable years, sometimes decades, after the original cutaneous lesions. It usually presents as persistent and unusual nasal symptoms, such as stuffiness or bleeding, but sometimes oral or pharyngeal symptoms come first. It can progress to ulcerative destruction of the naso-oropharyngeal mucosa if left untreated. Similar to the cutaneous form, mucosal leishmaniasis can also result in disfiguring scars. The best way to reduce the risk of mucosal leishmaniasis is to ensure adequate systemic treatment of cutaneous leishmaniasis.

Visceral leishmaniasis, also known as kala-azar, affects internal organs such as spleen, liver and bone marrow. It encompasses a broad spectrum of severity and manifestations. It usually presents weeks to months after bitten by the infected sandfly, but asymptomatic infection can become clinically evident years to decades after exposure in people who become immunocompromised for other medical reasons, such as HIV infection. The typical manifestations include fever, weight loss, hepatosplenomegaly, pancytopenia, and hypergammaglobulinemia with a low albumin level. Lymphadenopathy may also be present. For HIV-coinfected patients, gastrointestinal tract and other organ systems may be affected too. If left untreated, severe cases of visceral leishmaniasis are typically fatal.

Some patients of visceral leishmaniasis may develop post kala-azar dermal leishmaniasis (PKDL). It presents as macular, popular or nodular rash which appear on the face, upper arms and trunk during or after therapy for visceral leishmaniasis. Persons with chronic PKDL act as reservoir hosts in the anthroponotic transmission cycle.

The treatment of leishmaniasis depends on several factors including type of disease, concomitant pathologies, parasite species and geographic location. Treatment is possible by antiprotozoal agents like pentamidine, sodium stibogluconate or meglumine antimonite. All patients diagnosed as with visceral leishmaniasis require prompt and complete treatment. People should consult their doctor early even if their skin lesions have already healed. No vaccines for leishmaniasis are available. It is possible to have cutaneous leishmaniasis more than once.

The vector sandflies are insects of the order Diptera. Mosquitos and biting midges belong to the same order but are under other families. Sandflies are most active from dusk to dawn, but they may still bite during the hottest time of the day if they are disturbed by, for example, person brushing up against sites where sandflies are resting, such as the trunk of a tree. Sandflies do not make any noise and they are as small as only about one third the size of typical mosquitoes. Their bites can be painless or painful. Of the 500 known species of sandflies, only 30 of them have been positively identified as vectors of leishmaniasis[6], but none of these are found in Hong Kong so the chance of locally transmission of this disease is minimal.

In Hong Kong, leishmaniasis is not a notifiable disease. Members of the public should remain vigilant against the disease especially when travel aboard. When travelling to endemic areas of leishmaniasis, the best way to prevent the disease is by avoiding sandfly bites:

- ❖ Stay in well-screened or air-conditioned areas. Use bed net with fine-mesh (at least 10 holes per cm) that has been treated with permethrin;
- ❖ Avoid outdoor activities or visit forest areas, especially from dusk to dawn; and
- ❖ While outdoors, wear long-sleeved clothing and use insect repellents containing DEET (for children keep DEET concentration below 20%) on exposed body parts.

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NEWS IN BRIEF

A sporadic imported case of psittacosis

On June 30, 2016, the Centre for Health Protection (CHP) recorded a case of psittacosis affecting a 63-year-old man with underlying illnesses. He presented with cough, myalgia and fever on June 19 and was admitted to a public hospital on June 23. His chest X-ray showed right middle zone consolidation and the diagnosis was pneumonia. His nasopharyngeal aspirate collected on June 24 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction (PCR). He remained stable and was discharged on July 2. Investigation revealed that the patient resided alone in Shenzhen all along. He had no history of contact of birds or bird droppings during the incubation period. He occasionally stayed with his family in Hong Kong and his family members were all asymptomatic.

A sporadic case of *Streptococcus suis* infection

On June 28, 2016, CHP recorded a case of *Streptococcus suis* infection affecting a 55-year-old man with good past health. He presented with headache, cough with sputum, vertigo, tinnitus and hearing loss on June 22 and was admitted to a public hospital on June 24. His blood and cerebrospinal fluid sample collected grew *Streptococcus suis*. He was treated with antibiotics and his condition was stable. He worked as a butcher in a wet market who had handled raw pork during the incubation period. He recalled an abrasion injury over his right middle finger a few days before illness onset. His home contacts and colleagues were asymptomatic.

Two cases of sporadic Creutzfeldt-Jakob disease

CHP recorded two cases of sporadic Creutzfeldt-Jakob disease (CJD) in late June 2016.

The first case was a 79-year-old woman with underlying illnesses. She presented with progressive dementia, blurred vision and incoordination since May 2016. She was admitted to a public hospital on June 3. Subsequently, she was found to have myoclonus, progressive bilateral upper limb dystonia and contracture. Electroencephalography (EEG) finding was atypical for CJD. Her condition was stable. She was classified as a possible case of sporadic CJD.

The second case was a 73-year-old woman with underlying illnesses. She presented with on and off dizziness since early April and was admitted to a public hospital on May 5. Subsequently, she was found to have progressive dementia, myoclonus, cerebellar disturbance, extrapyramidal dysfunction and mutism. Findings from magnetic resonance imaging of the brain and EEG were compatible with CJD. Her condition was stable.

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

A sporadic local confirmed case of human myiasis

On June 28, 2016, CHP recorded a case of human myiasis affecting a 67-year-old female. The patient was wheelchair-bound with underlying illnesses. She presented with chronic bilateral lower limbs ulcers and she was noted to have a worm over her left foot ulcer on June 28, 2016. She was admitted to a public hospital on the same day with one maggot removed from the wound, that was subsequently identified to be dipterous larvae belonging to the family of Sarcophagidae. Her condition remained stable. The patient lived alone and she had no recent travel history. Health advice on wound care and environmental hygiene was given to the patient.

Scarlet fever update (June 1 - June 30)

The activity of scarlet fever has been increasing since May 2016. CHP recorded 179 cases of scarlet fever in June as compared with 149 cases in May. Increased activity of scarlet fever had also been observed in May and June in the past three years. A total of 731 cases have been recorded so far in 2016 (as of June 30). The cases recorded in June included 108 males and 71 females aged between 1 and 43 years old (median = 6 years). There were five institutional clusters in three kindergartens/child care centres and two primary schools involving a total of 12 children. No fatal cases were reported in June.

To prevent scarlet fever, the public is advised to maintain good personal and environmental hygiene. Persons who develop symptoms of scarlet fever should consult a doctor promptly and take antibiotics according to doctor's advice. Scarlet fever cases should also refrain from school or child care settings until fever is down and have been treated with antibiotics for at least 24 hours.

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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

Progress of Poliomyelitis Eradication

Reported by Ms Anna WONG, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Poliomyelitis is a highly infectious disease caused by poliovirus. The virus spreads primarily through the faecal-oral route and infection can be recognised by acute onset of flaccid paralysis. In 1963, Hong Kong introduced the polio vaccination and the cases dropped significantly since then. The last case of poliomyelitis due to wild type polio virus was reported in 1983 and the last case of vaccine-associated poliomyelitis occurred in 1995. In October 2000, Hong Kong was certified polio-free with other countries in the Western Pacific Region.

Meanwhile, the World Health Organization (WHO) has been committing to global polio eradication since 1988. In *Polio Eradication and Endgame Strategic Plan 2013-2018* (The Plan) developed in 2013, it outlines the major milestones in polio eradication and it describes specific steps to take to successful eradication. The Plan has four objectives as described in Figure 1.

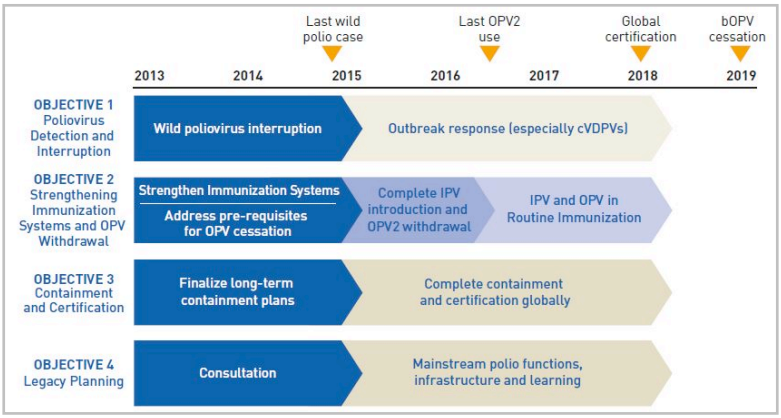

Figure 1 - The four objectives of the Polio Eradication and Endgame Strategic Plan 2013-2018 and target dates for completion. (Source: WHO)

Polio detection and interruption

Since the launch of global polio eradication efforts in 1988, the polio cases has significantly dropped more than 99% from an estimated of 350 000 in 1988 to 223 in 2012. However, number of polio cases had increased by 86% in 2013 (416 cases compared with 223 cases) with a majority (60%) were resulted from the international spread of wild poliovirus type 1 (WPV1). In view of the situation, WHO declared the international spread of wild poliovirus a Public Health Emergency of International Concern (PHEIC) for which a coordinated international response is essential in May 2014. With the effort of the member states concerned, strong progress has been made by countries toward interruption wild poliovirus transmission. The global cases due to wild poliovirus significantly decreased to 416 cases in 2013, 74 cases in 2015 and 19 cases in 2016 (up to July). All cases in 2015 and 2016 were caused by wild poliovirus type 1 and reported by Afghanistan and Pakistan.

Oral polio vaccine (OPV) withdrawal

Another milestone in the Plan is the withdrawal of the use of type 2 oral polio vaccine (OPV2) globally. The use of OPV2 caused over 90% of circulating vaccine-derived poliovirus (cVDPV) after the eradication of wild polio virus type 2 (WPV2) in 1999. Therefore, on October 20, 2015, the Strategic Advisory Group of Experts (SAGE) on Immunization reviewed the global situation and announced the global synchronised switch to bivalent OPV in all countries using trivalent OPV should occur between April 17 and May 1, 2016. In Hong Kong, the Centre for Health Protection of the Department of Health (DH) had updated the Childhood Immunisation Programme (CIP) in 2007 by replacing the OPV with inactivated poliovirus vaccine to eliminate the risk of vaccine-associated paralytic poliomyelitis.

Containment and certification

In 2015, in order to minimise poliovirus facility-associated risk after type specific eradication of wild poliovirus and sequential cessation of OPV use, WHO requested member states to update the laboratory inventory on keeping any infectious or potentially infectious materials related to polioviruses, including wild poliovirus, vaccine-derived poliovirus (VDPV) or sabin-type. In response to the request, DH had conducted a laboratory survey on the possession of the above mentioned materials in accordance to the timeline required by WHO.

Way forward

Hong Kong will continue to devote its utmost effort to support WHO in its polio eradication. The National Committee for the Certification of Wild Poliovirus Eradicating in Hong Kong (NCC)

#Performance indicator of AFP surveillance:

- Percentage of all expected monthly reports that were received: target ≥90%
- Annualised non-polio AFP rate per 100 000 children under 15 years of age: target ≥1/100 000
- Percentage of AFP cases investigated within 48 hours: target ≥80%
- Percentage of AFP cases with two adequate stool specimens collected 24-48 hours apart and ≤14 days after onset: target ≥80%
- Percentage of specimens arriving at the laboratory in good condition: target ≥80%
- Percentage of specimens arriving at a WHO-accredited laboratory within three days of being sent: target ≥80%
- Percentage of specimens for which laboratory results sent within 28 days of receipt of specimens: target ≥80%

was established in 1997. NCC reviews the performance of acute flaccid paralysis (AFP) surveillance and polio immunisation activities in Hong Kong. Acute flaccid paralysis (AFP) surveillance is the gold standard for detecting polio cases. Our AFP surveillance system has been functioning effectively to fulfill the performance indicators# set by WHO. Polio immunisation coverage remains high across the population. Hong Kong has been working closely with WHO and overseas and neighboring health authorities to monitor the latest developments. Hong Kong will uphold its vigilance in all aspects of polio eradication and sustaining polio-free status.

High Level Steering Committee on Antimicrobial Resistance

Reported by Dr Jonathan NGAI, Medical and Health Officer and Dr TY WONG, Head, Infection Control Branch, CHP.

Antimicrobial Resistance (AMR) is now a burning public health issue. Globally, about 700 000 deaths may be caused each year by AMR[1]. Patients infected by resistant bacteria will require longer treatment, more aggressive antimicrobial therapies and additional laboratory tests. Morbidity and mortality caused by these strains of microorganisms are estimated to be two to three times of the non-resistant strains[1,2]. Healthcare cost and societal cost due to loss of productivity will also be much increased. If no effective strategies are put in place, this toll will exceed 10 million each year by 2050 and cost the world over 100 trillion US dollar in lost output[3].

The World Health Organization (WHO) and WHO Regional Office for the Western Pacific (WPRO) have issued Global Action Plan on AMR and Action Agenda for AMR in Western Pacific Region in 2015 respectively. Both Action Agenda and Global Action Plan emphasised the importance of incorporation of "One-Health"* approach in formulation and implementation of anti-AMR measures.

In recognition of the major threat posed by AMR to public health, the Government of Hong Kong Special Administrative Region announced in the 2016 Policy Address to set up a High Level Steering Committee on Antimicrobial Resistance (HLSC) to formulate strategies in collaboration with the relevant sectors to tackle the threat. The HLSC is chaired by Dr Ko Wing-man, the Secretary for Food and Health and comprises members from academic sector, institutions and the government. .

Members of the HLSC had their first meeting on June 27, 2016. It was agreed that the principles of WHO Global Action Plan would be adopted as the main strategies to tackle AMR in Hong Kong. A comprehensive territory-wide action plan would be formulated based on the Global Action Plan.

An Expert Committee would also be formed under the HLSC to provide science-based advice in the formulation of AMR containment framework and measures, review of relevant standards in light of international practices, trends and developments, as well as risk communication strategies. It will be chaired by Professor Yuen Kwok-yung of the Department of Microbiology of the University of Hong Kong and will include experts in clinical microbiology, infectious disease, veterinary medicine, public health, food science and pharmacy from local and overseas academia, government departments and relevant industries to provide practical advice on minimising the risk of AMR under the "One-Health" approach.

**"One-Health" is an integrated approach to health that focuses on the interactions between animals, humans and their diverse environments. It encourages collaborations, synergies and cross-fertilisation of all professional sectors and actors in general whose activities may have an impact on health. Further information is available from http://eeas.europa.eu/health/index_en.htm.*

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NEWS IN BRIEF

A case of necrotising fasciitis caused by *Vibrio vulnificus*

On July 5, 2016, the Centre for Health Protection (CHP) recorded a case of necrotising fasciitis caused by *Vibrio vulnificus* affecting a 59-year-old woman with underlying illnesses. She presented with left leg pain, redness and fever on July 3 and was admitted to a public hospital on the same day. Surgical debridement of wound was performed on the same day and the operative diagnosis was necrotising fasciitis. She required postoperative intensive care. Her wound swab collected on July 3 yielded *Vibrio vulnificus*. She was treated with antibiotics and her condition was stable along. She was transferred back to general ward on July 6. She had handled raw fish during food preparation and her left leg was injured by fish fins on July 2. Her home contact was asymptomatic.

A probable sporadic case of Creutzfeldt-Jakob disease

On June 29, 2016, CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) affecting a 76-year-old man with underlying illnesses. He presented with dementia, unsteady gait and slow verbal response on June 1 and was admitted to a public hospital on June 15. He was found to have cerebellar signs, extrapyramidal dysfunction and myoclonus. Electroencephalography finding was compatible with CJD. His condition was stable. He had no known family history of CJD and there was no risk factor for iatrogenic CJD. He was classified as a probable case of sporadic CJD.

CA-MRSA cases in June 2016

In June 2016, CHP recorded a total of 87 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 48 males and 39 females with ages ranging from 9 months to 80 years (median = 36 years). Among them, there were 67 Chinese, 8 Filipinos, 4 Indian, 2 Caucasian, 2 Pakistani, 1 Nepalese, and 3 of unknown ethnicity. Isolates of all the 87 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (61) or V (26).

Eighty-six cases presented with uncomplicated skin and soft tissue infections. The remaining was an invasive case affecting a 46-year-old woman with good past health. She presented with painful swelling on left forearm since the end of April 2016. She was admitted to a private hospital on June 7. Magnetic resonance imaging of left forearm showed osteolytic bone lesion. Ultrasound-guided biopsy of the lesion was performed and she was discharged on June 8. The biopsy tissue sample was subsequently cultured positive for CA-MRSA. She was readmitted to the private hospital on June 11 and was treated with antibiotics for infective osteomyelitis of left forearm. Her condition remained stable and was transferred to a public hospital for further management on June 17. Her close contacts remained asymptomatic and screening and decolonisation would be provided to them.

Among the 87 cases, two cases involved health care workers working in two public hospitals. Investigation did not reveal any cases epidemiologically linked to these two patients. Besides, two household clusters affecting two and four persons respectively were identified. Screening and decolonization would be provided to their close contacts. (Note: The number of CA-MRSA cases in April and May 2016 were revised to 96 and 71, respectively.)

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FEATURE IN FOCUS

Preventive measures against Zika virus infection for athletes and travellers going to Rio 2016 Olympic and Paralympic Games

Reported by Dr Lilian CHIANG, Port Health Officer, Port Health Office, Department of Health.

The 2016 Olympic and Paralympic Games will be held on August 5-21 and September 7-18, respectively, in four competition venues located in Barra, Copacabana, Deodoro and Maracanã in Rio de Janeiro of Brazil. Football matches will be held in five other cities in Brazil, namely Belo Horizonte, Brasília, Manaus, Salvador, and São Paulo.

In view of the current situation of Zika virus infection in Brazil, the Department of Health (DH) would like to remind athletes, their supporting teams, reporters and other travellers who are travelling to Brazil to take precautionary measures to ensure a smooth competition and journey.

Before the trip

Rio de Janeiro is located at the southeastern coastal region of Brazil. The risk of mosquito-borne diseases including Zika virus infection exists throughout the city. Because of the association between Zika virus infection and adverse pregnancy outcome (microcephaly), DH advises that pregnant women and women preparing for pregnancy should not travel to areas with ongoing Zika virus transmission.

All travellers, especially elderly and those with chronic illnesses, should arrange a pre-travel consultation for assessment of possible health risks at least six weeks before departure.

During the trip

At present, there is no effective vaccine against Zika virus infection. To prevent Zika virus infection, travellers are reminded to protect themselves from mosquito bites.

The personal protection measures include:

- Wear loose, light-coloured, long-sleeved tops and trousers;
- Use DEET-containing insect repellents on exposed parts of the body and clothing;
- Avoid using fragrant cosmetics or skin care products;
- Re-apply insect repellents according to label instructions;
- Rest in air-conditioned or well-screened rooms;
- Use aerosol insecticide indoor and use bed nets if sleeping areas are not air-conditioned or screened; and
- If travelling in rural areas, carry a portable bed net and apply permethrin (an insecticide) on it as well as to clothes. Permethrin should not be applied to skin. Seek medical attention promptly if feeling unwell.

Since Zika virus has also been found in human semen and transmission by sexual contact has been confirmed, travellers should consider not having sex during travel to affected areas, or else condoms should be used.

Pregnant women and women preparing for pregnancy should not travel to affected areas. Those who must travel to any of these areas should seek medical advice from their doctor before the trip, adopt contraception if appropriate, and strictly follow steps to avoid mosquito bites during the trip.

After the trip

Travellers who return from affected areas should apply insect repellent for at least 21 days after arrival in Hong Kong. If symptoms develop, for example, fever, headache, the traveller should seek medical advice promptly, and provide travel details to his/her doctor.

Travellers returning from affected areas should consider abstinence from sex for at least two months upon return, or else condoms should be used. If diagnosed with Zika virus infection or have compatible symptoms, they should consider abstinence from sex for at least six months upon onset, or else condoms should be used.

Women preparing for pregnancy are advised to continue to adopt contraception for at least two months after returning from affected areas if they have no symptoms of Zika virus infection, or six months if one or both members of the couple are symptomatic.

In addition, precautionary measures should be taken for prevention of sexual transmission regarding adverse pregnancy outcome. Any traveller returning from affected areas should abstain from sex with pregnant partner, or else use condoms throughout the pregnancy; the traveller should use condoms for at least six months if the female partner may get pregnant. Individuals with further concerns regarding potential sexual transmission of Zika virus should contact their doctor for advice.

Review of Rift Valley fever

Reported by Dr KONG Wai Chi, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

According to the US Centers for Disease Control and Prevention (US CDC), Angola is listed as one of the countries in Africa that reports few cases/periodic isolation of virus or serologic evidence of Rift Valley fever (RVF) infection[1]. Of note, the first imported case of RVF from Angola was reported in Mainland China on July 23, 2016. According to the Mainland health authority, the patient was a 45-year-old male who developed fever, headache, joint and muscle pain on July 14 in Angola. On July 21, he returned to Beijing and his condition was serious. He was admitted to a hospital for isolation and RVF was confirmed on July 23.

RVF is a viral zoonosis that primarily affects animals but can also infect humans. The majority of people acquire the infection through direct or indirect contact with the blood or organs of infected animals (such as cattle, buffalo, sheep, goats, and camels). The virus can be transmitted to humans through the handling of animal tissue during slaughtering or butchering, assisting with animal births, conducting veterinary procedures, or disposing animal carcasses or foetuses. People may also become infected with RVF by ingesting the unpasteurised or uncooked milk of infected animals. Besides, human infections have also resulted from the bites of infected mosquitoes, most commonly the *Aedes* mosquitoes (e.g. *Aedes albopictus* which is commonly found in Hong Kong). Transmission of RVF virus by blood-feeding flies is also possible but blood-feeding flies commonly known to associate with vector-borne disease, such as tsetse flies and sandflies have not been found in Hong Kong. No human-to-human transmission of RVF has been documented[2].

RVF is an acute infection caused by the RVF virus. The incubation period of RVF is about two to six days and can cause several different disease syndromes. Most patients with RVF have either no symptoms or a mild illness such as sudden onset of flu-like fever, muscle pain, joint pain and headache. Some patients also develop neck stiffness, sensitivity to light, loss of appetite and vomiting. A small percentage of patients develop a more severe form of the disease: eye disease, meningoencephalitis or haemorrhagic fever. The case fatality rate varies widely among different epidemics but the overall case fatality was less than 1%[2].

RVF was first reported in livestocks in Kenya's Rift Valley in the early 1910s and RVF virus was first identified in 1931. According to the US CDC, RVF is now found in regions of eastern and southern Africa (including Angola, South Africa, Namibia, Kenya, Tanzania, etc.) but the virus also exists in most of sub-Saharan Africa (including west Africa and Madagascar)[1,3] (Figure 1).

Large outbreaks of RVF have been reported in the past decade. Outbreaks of RVF were reported in Kenya, Somalia and the United Republic of Tanzania from December 2006 to April 2007. In Kenya, a total of 684 cases reported (including 155 deaths) from November 30, 2006 to March 12, 2007. In Somalia, a total of 114 cases were reported (including 51 deaths) from December 19, 2006 to February 20, 2007. In the United Republic of Tanzania, a total of 290 cases were reported (including 117 deaths) from January 13 to May 8, 2007[4].

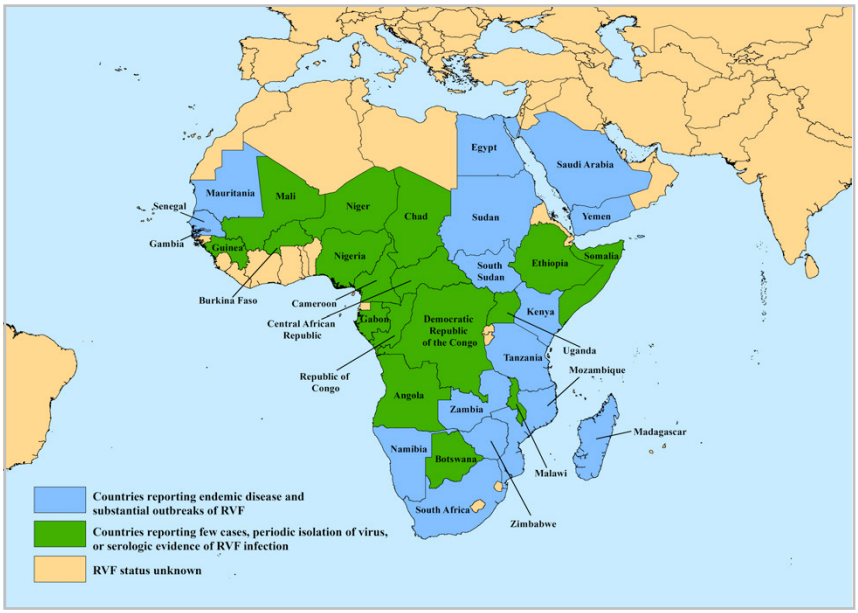

Figure 1 - Rift Valley fever distribution map.

In February 2010, South Africa's National Institute of Communicable Diseases (NICD) reported a RVF outbreak affecting both animals and humans in seven provinces in that country. A total of 172 human cases of RVF (including 15 deaths) were reported. Occupation data for 139 of the 172 showed that 81% had direct contact with animals through their work with RVF-infected ruminants[5].

In Hong Kong, under the Prevention and Control of Disease Ordinance (Cap.599), RVF is a notifiable infectious disease under the disease group viral haemorrhagic fever. Medical personnel managing suspected RVF patients could liaise with the Public Health Laboratory Services Branch of the Centre for Health Protection, Department of Health, on laboratory investigations. No cases of RVF have been recorded in Hong Kong so far. However, due to the large volume of international travel, there is risk of importation of RVF into Hong Kong. The vector (i.e. *Aedes* mosquito) for the transmission of RVF was found in Hong Kong, there is a potential risk of local spread of RVF from imported cases.

Prevention and Management

An inactivated vaccine has been developed for human to experimentally protect veterinary and laboratory staff with high risk of exposure to RVF. However the vaccine is not licensed in the commercial market. There is no specific drug treatment for RVF. The mainstay of treatment of RVF is supportive.

Members of the public should stay vigilant to RVF when travelling to areas with transmission of RVF virus by adopting the following measures:

- Wear gloves and other appropriate protective clothing and take care when handling sick animals or their tissues or when slaughtering animals;
- Cook all animal products (blood, meat and milk) thoroughly before eating in epizootic regions; and
- Protect against mosquito bites by using impregnated mosquito nets, personal insect repellent, wearing light-coloured clothing (long-sleeved shirts and trousers) and avoiding outdoor activity at peak biting times of the vector species.

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NEWS IN BRIEF

A sporadic case of brucellosis

On July 19, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of brucellosis affecting a 66-year-old woman with good past health. She presented with influenza-like symptoms, on-and-off low grade fever and weight loss since January 2016. She sought medical advice from several general practitioners. She was admitted to a private hospital on July 12 for further investigation. Her blood specimen collected on July 12 yielded *Brucella melitensis*. Her clinical diagnosis was brucellosis. She was treated with courses of antibiotics and her condition was stable. She was discharged on July 23. The patient reported no contact with internal organs or carcasses of animals, and denied any history of consuming unpasteurised dairy products, raw or undercooked animal products. Her home contacts were asymptomatic. Investigation is on-going.

A sporadic case of listeriosis

On July 27, 2016, CHP recorded a case of listeriosis affecting a 24-year-old pregnant woman at 25 weeks of gestation with good past health. She presented with fever, headache, abdominal pain and vomiting since July 23 and was admitted to a public hospital on July 24. Her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics. The patient and her foetus remained in stable condition. She had travelled to Okinawa, Japan on May 24 to 31 with her parents, sisters and two daughters. She lived with her husband and two daughters. Her home contacts and travel collaterals were asymptomatic. She had consumed sushi, sashimi and ice cream during the incubation period. Investigations are on-going.

A sporadic case of psittacosis

On July 29, 2016, CHP recorded a case of psittacosis affecting a 79-year-old man with underlying illnesses. He presented with fever and cough on July 18 and was admitted to a public hospital on July 21. His chest X-ray showed left upper lobe consolidation and the diagnosis was pneumonia. His nasopharyngeal aspirate collected on July 22 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction. His condition was stable. He was treated with antibiotics and was discharged on July 27. The patient had no recent travel history. He did not report any contact history with birds during the incubation period. His family members were asymptomatic.

Challenges of yellow fever in Africa

The outbreak of yellow fever in Angola is currently ongoing and has not yet been controlled. The disease has spread from Angola to the Democratic Republic of the Congo (DRC) with extensive local transmission. The unprecedented scale of outbreaks may due to urbanisation, dense populations of non-immune people, heavy infestations with mosquitoes, poor infrastructures and shortage of yellow fever vaccine in Africa. The World Health Organization (WHO) recommends immunisation for all travellers aged 9 months and above, travelling to and from at-risk areas, unless they are contraindicated for vaccination. Some countries require proof of vaccination as a condition of entry or transit for travellers arriving from certain countries. A list of countries with risk of yellow fever transmission and countries requiring yellow fever vaccination can be found on WHO website (http://www.who.int/ith/2016-ith-annex1.pdf?ua=1). In Hong Kong, in accordance with the Prevention and Control of Disease Ordinance (Cap.599), yellow fever is a notifiable disease. Vaccination is available at the Travel Health Centres of the Department of Health. Travellers who are vaccinated against yellow fever will be given an International Certificate of Vaccination or Prophylaxis.

Scarlet fever update (July 1, 2016 – July 31, 2016)

Scarlet fever activity in July decreased as compared with that in June. CHP recorded 96 cases of scarlet fever in July as compared with 177 cases in June. A total of 824 cases have been recorded so far in 2016 (as of July 31). The cases recorded in June included 53 males and 43 females aged between 7 month and 30 years old (median = 5 years). There were two institutional clusters in two kindergartens / child care centres involving a total of six children. No fatal cases were reported in the current reporting period.

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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

Review of Botulism in Hong Kong

Reported by Miss Doris CHOI, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Botulism is a rare but serious and potentially fatal paralytic disease. It is caused by a potent neurotoxin called botulinum toxin (BTX), which is excreted by an anaerobic and spore-forming bacterium, *Clostridium botulinum* (*C. botulinum*) found in the environment, soil and contaminated food. There are seven recognised types of BTX from type A to type G but only types A, B, E and rarely F can cause human botulism. These toxins interfere with neural transmission by blocking the release of acetylcholine at the neuromuscular junction, causing muscle paralysis. At the early stage of infection, patients usually present with marked fatigue, weakness and vertigo, followed by blurred vision, dry mouth and difficulty in swallowing and speaking. Gastrointestinal symptoms such as vomiting, diarrhoea, constipation and abdominal swelling may also occur. The disease can progress to weakness in the neck and arms, after which the muscles of the lower body and respiratory muscles are affected causing breathing difficulty. Symptoms usually appear within 12 to 36 hours (within a minimum and maximum range of four hours to eight days) after exposure. According to the Center for Disease Control and Prevention (CDC), human botulism is classified into four subtypes based on the source of infection (Table 1).

Table 1 - Subtypes of human botulism based on the source of infections.

Subtypes	Source of infection
Foodborne botulism	Caused by consumption of foods containing pre-formed botulinum toxin.
Wound botulism	Caused by toxin produced in a wound infected with *C. botulinum*.
Infant botulism	Found in persons less than one year of age and is caused by consumption of spores of *C. botulinum*, which then grow and release toxins in the intestines.
Other botulism	The route of transmission is unknown and the patient is not an infant, and has no history of ingesting a suspect food, and has no wounds. It also includes iatrogenic botulism*, which is caused by an accidental overdose of botulinum toxin, and adult intestinal colonisation botulism.

*(Source: National Botulism Surveillance, CDC, available from http://www.cdc.gov/nationalsurveillance/botulism-surveillance.html; Central Notification Office, Center for Health Protection, Department of Health, Hong Kong, available from https://cdis.chp.gov.hk/CDIS_DINS_ONLINE/document/downloadDocumentWithDocName?Dockey=CaseDefinition, where * is defined as "the spread of BTX beyond injection site following injection of BTX for therapeutic or cosmetic purposes, and the patient develops symptoms of botulism such as generalised weakness, dysphagia, aspiration pneumonia, flaccid paralysis, respiratory muscle paralysis, autonomic neuropathy etc".)*

Global situation

Botulism has been reported worldwide. In Europe, it is uncommon and the disease trend declined from 0.02 - 0.03 per 100 000 population between 2008 and 2011 to 0.01 per 100 000 population in 2012[1]. In the United States (US), an average of 145 confirmed botulism cases was reported annually from 2010 to 2014, ranging from 112 to 161 cases. Over 70% of botulism cases reported were infant botulism, all of which were sporadic and no fatal cases were reported. An average of 14 cases of foodborne botulism was reported in the US in the five years, ranging from 2 to 25 cases. Fatal cases were recorded in 2012 (1 case), 2013 (1 case) and 2014 (2 cases), respectively. An average of 14 cases of wound botulism was reported in the period, ranging from 8 to 17 cases annually, with one fatal case reported in 2014. Other botulism was relatively rare in the US with one to five cases reported annually and no fatal cases reported during the five-year period (Table 2)[2].

Table 2 - Annual summary of botulism reported in the US, 2010-2014.

Number of cases	Foodborne Botulism (Death)	Infant Botulism (Death)	Wound Botulism (Death)	Other Botulism (Death)	Total
2010	9 (0)	85 (0)	17 (0)	1 (0)	112
2011	20 (0)	102 (0)	13 (0)	5 (0)	140
2012	25 (1)	122 (0)	8 (0)	5 (0)	160
2013	2 (1)	135 (0)	14 (0)	2 (0)	153
2014	15 (2)	128 (0)	16 (1)	2 (0)	161

(Source: Annual Summaries of Botulism Surveillance Reported to Council of State and Territorial Epidemiologists, Centers for Disease Control and Prevention.)

Botulism is uncommon in Asia as well. In Japan, the incidence is low, with a total of 11 cases reported between 2010 and 2014. More than half of them were infant botulism (6 cases), two cases were foodborne botulism and the source of infection was unknown in three cases. No wound and adult intestinal colonisation were reported in the period[3]. From 2011 to 2015, nine sporadic cases of botulism were reported in Taiwan, most of them were suspected to be food-borne. Large outbreaks of botulism had been reported. An outbreak of foodborne botulism was reported in northern Thailand in 2006, in which a total of 209 persons from approximately

330 villagers were affected after consuming contaminated home-canned bamboo shoots at a festive gathering. Of those affected, 134 were hospitalised and 42 required mechanical ventilation. No deaths were reported[4].

Reporting of iatrogenic botulism is uncommon in literature worldwide. While most are therapeutic-related, there was a case-series published, detailing four adults who were suspected to have developed botulism following cosmetic injections with an unlicensed, highly concentrated Botulinum preparation[5].

Local situation

Botulism has been a notifiable infectious disease in Hong Kong under the Prevention and Control of Disease Ordinance (Cap. 599) since July 14, 2008. In May 2016, as suspected botulism cases related to injection of BTX were reported to the Centre for Health Protection (CHP) of the Department of Health, the clinical criteria of botulism were revised and adopted, in which, iatrogenic botulism was included as one of the categories of botulism besides foodborne, infant, wound and other botulism. Iatrogenic botulism was defined as "the spread of BTX beyond injection site following injection of BTX for therapeutic or cosmetic purposes, and the patient develops symptoms of botulism such as generalised weakness, dysphagia, aspiration pneumonia, flaccid paralysis, respiratory muscle paralysis, and autonomic neuropathy etc".

So far, 11 probable cases of iatrogenic botulism were reported from May 27 to August 4, 2016 to CHP, affecting 11 women aged from 21 to 47 years (median = 39 years). The duration of symptoms onset ranged from two to 31 days after injections (median = 3 days) and the presenting symptoms ranged from neck weakness and dysphagia to generalised muscle weakness and breathing difficulty. Antitoxin was administered to three patients as they developed generalised weakness and had difficulty in breathing or swallowing to prevent further deterioration. All of them were in stable condition. Nine required hospitalisation in Hong Kong and all have been discharged. None of the cases required mechanical ventilation. Investigation revealed that nine of them had history of BTX injection in different beauty centres in the Mainland, while two claimed that they had received injection in Hong Kong at a commercial premise in Mong Kok and at home, respectively. Both cases receiving injection in Hong Kong had been referred to the Police for necessary action and investigation. The latter case was found to have the injection in Shenzhen after investigation by the Police and thus 10 imported cases were recorded. For the cases receiving injection in the Mainland, relevant information was provided to the Mainland health authority for their follow-up investigations and measures.

Protect yourself against botulism

Foodborne botulism

- Remember to boil home-canned food for at least 10 minutes before eating because botulism toxin can be destroyed by high temperatures;
- Avoid consumption of food from containers (e.g. canned food) that appear to be damaged, bulged or spoilt;
- The "5 Keys to Food Safety" are five simple and effective keys for people to follow when handling food to prevent foodborne botulism:
  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).

  Please refer to the Centre for Food Safety website via the link below for more practical tips:
  http://www.cfs.gov.hk/english/consumer_zone/consumer_zone_5_Keys_to_Food_Safety.html.

Infant botulism

- As honey may contain the bacteria that cause infant botulism hence infant should not be fed with honey.

Wound botulism

- Should promptly seek medical care for infected wounds; and
- Should not inject street drugs.

Iatrogenic botulism

- Injections of BTX should ONLY be performed by locally registered doctors. Those who must receive injections outside Hong Kong should pay special attention to ensure that practitioners are qualified or registered with the relevant jurisdictions. If in doubt, stop receiving it immediately. Promptly consult qualified healthcare professionals if feeling unwell after injection. For more details, please refer to: http://www.dh.gov.hk/english/useful/useful_medical_beauty/files/2_Botulinum_Toxin_Injection_Eng_2015.pdf.

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JOURNAL PUBLICATION HIGHLIGHTS

Effectiveness of chlorine dioxide-based coating on environmental contamination in long-term-care facilities

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The role of environmental contamination in multidrug resistant organisms (MDROs) transmission is evident. Hydrogen peroxide vapor fumigation is promising for environmental disinfection but it cannot prevent subsequent microbial recontamination. Chlorine dioxide provides long-term disinfection of surface up to 28 days in vitro through sustained release of gaseous chlorine dioxide from a polymer-microencapsulated liquid coating.

The authors evaluated the clinical efficacy of this coating in reducing surface microbial loads and vancomycin-resistant enterococci (VRE) contamination in the environment by carrying out a controlled before-and-after study in the room environment of three VRE carriers in three long-term-care facilities (facility A – C) in the period from October 2012 to March 2013. The environmental surfaces were cleaned twice daily with chorine based solution in the 7-week pre- and post-intervention periods. During the 10-week study, chlorine dioxide coating was wiped weekly in the room environment of the VRE carriers. In addition to the weekly chlorine dioxide coating, daily cleaning with chorine-based solution was applied in Facility A and twice daily cleaning with tap water in Facility B, and daily cleaning with diluted chlorine dioxide coating in Facility C.

Results showed that the median of total aerobic count of the chlorine dioxide-coated environmental surface was similar to that of the uncoated surfaces. Only the coated light switches of Facility C showed significantly reduced microbial burden by 17 times. The presence of VRE on frequently touched surfaces might cause cross-transference of VRE if proper hand hygiene was not practiced. Although chlorine dioxide coating showed a trend of reducing the prevalence of VRE contamination by 54%, this did not reach statistical significance (p=0.16). The authors concluded that application of chlorine dioxide coating was potentially advantageous for patients harbouring MDROs in reducing the environment contamination.

Am J Infect Control. 2015 Mar 1;43(3):309-11.
http://www.sciencedirect.com/science/article/pii/S0196655314013595

International Health Regulations (2005) facilitate communication for in-flight contacts of a Middle East respiratory syndrome case, Hong Kong Special Administrative Region, 2014

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This article illustrates how prompt notification and information sharing under the International Health Regulation (IHR) (2005) mechanism facilitates implementation of public health measures. In brief, a symptomatic MERS case travelled on a flight from Qatar to Austria on September 22, 2014 and was confirmed to be a MERS case by the Austrian health authorities on September 29. Three days later, the World Health Organization Western Pacific Regional Office informed through the IHR mechanism of Hong Kong Special Administrative Regions (SAR) that a Hong Kong SAR citizen who had been seated within two rows of the index case on the flight. The passenger list included an additional 42 passengers with Hong Kong SAR as their points of origin and they were considered as other contacts. Public health authority of Hong Kong SAR, through communication with the relevant health authorities using the IHR mechanism, conducted contract tracing, medical surveillance and implementation of control measures. The authors concluded that timely information sharing and communication under the IHR mechanism are crucial for effective contact tracing and prompt control measures.

WPRO. 2015; 6(1): 62-65.
http://ojs.wpro.who.int/ojs/index.php/wpsar/article/view/297/458

Prevalence of infection among residents of residential Care Homes for the Elderly in Hong Kong

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This study is a point prevalence survey that explored the epidemiology of common infections and their associated factors among residents in Residential Care Homes for the Elderly (RCHE) in Hong Kong. A total of 100 RCHE were selected by stratified single-stage cluster random sampling. The overall response rate was 46%, of which, 3 857 residents aged 65 years or above participated the study in the period from February to May, 2014. Infection in this study was defined as (1) presence of symptoms and/or signs of infection that developed in the 24 hours preceding the survey day, that fulfilled the surveillance criteria of the Canadian Consensus Conference or (2) infection diagnosed by a locally registered physician or (3) consumption of antimicrobial agents on the survey day for a specific infection. Other information such as demographic and health information including medical history, immunisation record, antibiotic use and activities of daily living (ADL) that measured by Barthel Index were collected to determine any associated factors. Among the recruited residents, 105 had at least one type of infection. The

overall prevalence of all infections was 2.7% (95% Confidence interval, 2.2% - 3.4%) and the most common infections were respiratory tract infection (1.3%; 95% confidence interval, 0.9% -1.9%), skin and soft tissue infection (0.7%; 95% confidence interval, 0.5% - 1.0%) and urinary tract infection (0.5%; 95% confidence interval,0.3%-0.9%). Besides, residents with ADL dependency, presence of a wound or stoma or co-morbidities including cardiovascular diseases and respiratory diseases were significantly associated with the presence of infection. These findings provided information about infections among residents in RCHE in Hong Kong and the burden of infections and formulate targeted measures for prevention.

Hong Kong Med J. 2016. 22 (4):347-355.
http://www.hkmj.org/abstracts/v22n4/347.htm

Surveillance and response of hepatitis B virus in Hong Kong Special Administrative Region, 1988-2014

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Most Member States in the World Health Organization (WHO) Western Pacific Region (WPR) have an estimated chronic HBV infection proportion of more than 8% in their adult population, which is the highest worldwide. The WHO Office for WPR has adopted the hepatitis B control ultimate goal to reduce chronic HBV infection rate of less than 1% prevalence. In July 2011, Hong Kong was verified by the WPRO as having successfully achieved the goal of hepatitis B control. This study aimed to review surveillance data of HBV infection in Hong Kong from 1988 to 2014 and to discuss the responses and existing gaps to achieve the WHO goal in the local context. HBV-specific data extracted from acute HBV infection notification data for the period 1988 to 2014 and hepatitis B surface antigen (HBsAg) seroprevalence data from 1990 to 2014 from various sources were analysed. A downward trend for both acute and chronic HBV infections was observed; the reported number of acute HBV infections decreased steadily from 250 cases in 1988 to 41 cases in 2014 and the rate of chronic HBV infections in new blood donors dropped from 8.0% in 1990 to 0.8% in 2014. The falling trend was also observed less prominently in antenatal women (11.3% in 1990 to 6.2% in 2014), pre-marital/pre-pregnancy screening clients (9.6% in 1990 to 5.5 in 2014) and police officers (6.1% in 1996 to 2.6% in 2014). In populations with apparent HBV risk, the HBsAg seroprevalence was 9.5% in 2000 and 7.5% in 2014 in HIV/AIDS patients and was 6.8% in 1995 and 7.2% in 2011 in female sex workers. The results demonstrated that Hong Kong evolved from a region of high-intermediate to intermediate-low hepatitis B endemicity from 1988 to 2014. The decrease is probably due to concerted preventive efforts applied since the late 1980s, including community-based vaccination, public awareness programmes and measures such as antiviral subsidies and specialist referral for treatment, institution-based infection control to prevent occupational exposure and methadone treatment programmes for drug users to prevent infection of blood-borne pathogens. The authors concluded that specific interventions should be conducted targeting the at-risk groups (including health-care workers, injecting drug users, patients undergoing dialysis, and household contacts and sexual partners of persons with chronic hepatitis B) and that more robust territory-wide HBV infection data should be collected and analysed for disease control.

WPSAR. 2016; 7(1): 24-27.
http://www.info.gov.hk/hepatitis/doc/2016_01.pdf

NEWS IN BRIEF

A sporadic case of acute Q fever

On August 3, 2016, the Centre for Health Protection (CHP) recorded a case of acute Q fever infection affecting a 62-year-old woman with underlying medical conditions. She presented with fever, chills, cough and lethargy on July 9 and was admitted to a public hospital on July 14. Her paired sera collected on July 15 and July 22 showed more than four-fold rise in antibody titre to *Cosiella burnetii* phase II antigen. Her fever subsided after courses of antibiotics and she was discharged on July 25. Epidemiological investigation revealed that she had no travel history during incubation period. She had adopted a number of stray dogs from the street for a few years. She denied history of consumption of high risk food. Her husband had symptoms of upper respiratory infection on July 18 and recovered uneventfully. Health education was given to the patient. Investigation is ongoing.

A probable sporadic case of Creutzfeldt-Jakob disease

On August 11, 2016, CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) affecting an 80-year-old woman with underlying illnesses. She presented with rapidly progressive dementia with confused speech since October 2015. She was initially admitted to a public hospital in May 2016 for deterioration of symptoms. Subsequently, she was admitted to another public hospital in July 2016 and was found to have myoclonus, dysphasia and akinetic mutism. Electroencephalography and imaging findings were compatible with CJD. Her condition was stable and she had been discharged. She had no known family history of CJD and there were no reported risk factors for iatrogenic or variant CJD. She was classified as a probable case of sporadic CJD.

An imported case of leptospirosis

On August 4, 2016, CHP recorded a case of leptospirosis affecting a 41-year-old man with good past health. He presented with fever, cough with sputum, generalised bone pain, jaundice and conjunctivitis on July 8. He was admitted to a public hospital on July 13 and blood tests revealed mild liver and renal impairment. His fever subsided after treatment with doxycycline and he was discharged on July 15. The patient had on and off fever after discharge and was admitted to another public hospital from July 23 to 26 and was treated with another course of doxycycline. His condition was stable all along. Paired sera on July 13 and 25 subsequently showed more than four-fold increase in antibody titre against *Leptospira* by microscopic agglutination test. The patient had travelled to Sabah, Malaysia, from June 21 to 26 where he had rafting and swimming in a river. He sustained an abrasion wound over his hand during rafting. His home contact, who was also his travel collateral, was asymptomatic.

Two local sporadic cases of brucellosis

On August 5 and 8, 2016, CHP recorded two cases of brucellosis. The first case was a 73-year-old man with good past health. He presented with fever and headache on Jun 25 and was admitted to a public hospital on Jun 27. His clinical diagnoses were pneumonia, aseptic meningitis and pyrexia of unknown origin. Paired sera on July 8 and 28 showed more than four-fold increase in antibody titre against *Brucella abortus*. He was treated with antibiotics and his condition was stable. The patient had prepared and consumed pig hearts during the incubation period. No other risk factors were identified. He had no recent travel history.

The second case was a 48-year-old woman with unremarkable past health. She presented with on and off fever with chills and rigor since June 30. She was admitted to a public hospital on July 23. Her blood specimen collected on July 29 grew *Brucella melitensis*. She was treated with antibiotics and her condition was stable. The patient had prepared and consumed mutton during the incubation period. No other risk factors were identified. She had history of travel to Mainland on June 1 to 2.

The two cases were not epidemiologically linked. In both cases, their home contacts were asymptomatic. Investigations are on-going.

Three sporadic cases of listeriosis

CHP recorded three cases of listeriosis in August 2016. The first case was a 20-year-old woman with pre-existing medical conditions. She presented with fever and chills on July 28 and was admitted to a public hospital on July 29. Her blood culture collected on the day of admission yielded *Listeria monocytogenes*. She was treated with antibiotics and her condition remained stable all along. Investigation revealed that during incubation period, she had consumed packaged cheese, ice-cream and sushi containing raw seafood. She had been to Mainland from June 28 to July 9. Her home contacts remained asymptomatic.

The second case was a 79-year-old male with underlying illnesses who lived in a residential care home for the elderly (RCHE). The patient was admitted to a public hospital on June 15 for his underlying illnesses. He was transferred to another public hospital for rehabilitation on June 21. He developed fever and chest infection on August 1. His condition deteriorated and was transferred back to the original public hospital for management on August 6. His blood specimen collected on August 5 grew *Listeria monocytogenes*. He was treated with antibiotics and his condition was critical. He had no history of consumption of high risk food. There were no related cases in the RCHE and the public hospitals that the patient had stayed during the incubation period.

The third case was a 56-year-old male with end stage renal failure on continuous ambulatory peritoneal dialysis (CAPD). He presented with fever, abdominal pain and turbid peritoneal dialysate on August 4. He was admitted to a public hospital on August 5. The clinical diagnosis was CAPD peritonitis. His peritoneal dialysate collected on August 6 grew *Listeria monocytogenes*. He was treated with antibiotics. His clinical condition remained stable. He consumed ice-cream during the incubation period. He travelled to Macau in July 31 to August 2. His home contacts remained asymptomatic.

Investigations for the three cases are on-going. So far, no epidemiological linkages have been identified among these three cases.

CA-MRSA cases in July 2016

In July 2016, CHP recorded a total of 99 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 55 males and 44 females with ages ranging from 1 month to 77 years (median = 36.5 years). Among them, there were 70 Chinese, 13 Filipinos, 3 Caucasian, 3 Pakistani, 2 Indian, 1 Indonesian, 1 Japanese, 1 Korean, 1 Nepalese, 1 Vietnamese, 1 mixed (Indonesian and Chinese) and 2 of unknown ethnicity. Isolates of all the 99 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (69) or V (30).

Ninety-seven cases (98%) presented with uncomplicated skin and soft tissue infections while the remaining two cases had invasive CA-MRSA infections. The first invasive case affected a 46-year-old woman with diabetes mellitus who presented with left hip pain, polydipsia and polyuria since mid-June 2016. She attended the accident and emergency department (AED) of a public hospital on July 14 and was admitted for further management on the same day. She was diagnosed to have diabetic ketoacidosis, sepsis and left hip abscess. Incision and drainage of her left hip abscess was performed and she was put on intravenous antibiotics. Her blood collected on July 14 was cultured positive for CA-MRSA. She remained in stable condition. The second case affected a 49-year-old man with multiple underlying illnesses who presented with wound infection and blister at right foot since July 5, 2016. He attended AED of a public hospital on July 11 and was admitted for management. He was diagnosed to have diabetic ketoacidosis and necrotising fasciitis and required admission to intensive care unit. Right foot wound debridement was performed on July 11 and July 14. He was also put on intravenous antibiotics. His blood and necrotic tissue collected on July 11 were both tested positive for CA-MRSA. His condition was stable. The household contacts of both patients remained asymptomatic and screening and decolonisation would be provided to them.

Among the 99 cases, five household clusters, with each affecting two persons, were identified. Screening and decolonisation would be provided to their close contacts. No cases involving healthcare worker were reported in July.

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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

Stay Vigilant Against Communicable Diseases in the New School Year

Reported by Dr Philip WONG, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Office, Surveillance and Epidemiology Branch, CHP.

Child care centres, kindergartens and schools are gathering places where children learn, play and spend a significant amount of time in their daily life. They are vulnerable places to transmission of infectious diseases as some children may relatively young to take proper personal care and this facilitates the spread of communicable diseases through the close person-to-person contact.

Respiratory viral infections, hand-foot-mouth disease (HFMD) and chickenpox are common infections that cause outbreaks in school settings.

Respiratory infections

Respiratory infections are infectious diseases commonly spread among school children. The main route of transmission is through the respiratory tract, either by droplet spread, direct contact with infected secretions or through contact with articles recently contaminated by infectious secretions. Coughing and sneezing help the spread of infection by dispersing the infectious droplets. Although influenza activity and that of respiratory infections in general currently remain at low levels, surveillance data of the Centre for Health Protection (CHP) of the Department of Health in the past showed that influenza activity usually shows two peak seasons yearly with one occurring during summer, which may extend well into September. Schools and parents should thus continue to stay vigilant against influenza as although to most influenza is a self-limiting disease, it can cause serious illness even in healthy children.

Hand-foot-mouth disease

Hand, foot and mouth disease (HFMD) is a common disease in children caused by enteroviruses such as coxsackie viruses and enterovirus 71 (EV71). In Hong Kong, the usual peak season for HFMD and EV71 infection is from May to July. A smaller winter peak also occurred from October to December in 2012 to 2014. In 2015, the summer peak season of HFMD lasted longer than usual and extended to the winter peak season. The activity only started to decline in January 2016 and returned to baseline in March 2016. The activity of HFMD started to increase again in May 2016, peaked in late June and early July and has been declining since August. As of mid-August this year, the number of reported cases of EV71 infection and severe enterovirus infections (SE) other than EV71 and poliovirus were less than that in the same period of last year. It is expected that some sporadic institutional outbreaks of HFMD may occur after the start of new school year (Figure 1).

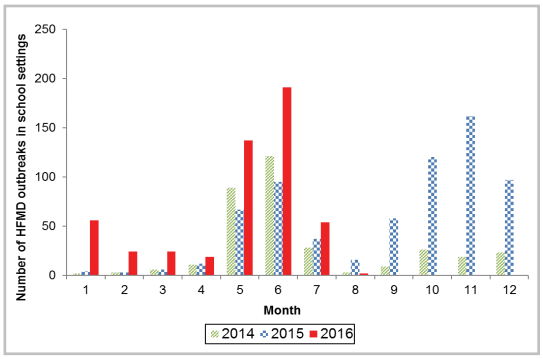

Figure 1 - Number of HFMD outbreaks in school settings from 2014 to 2016 (as of August 21, 2016).

Chickenpox

Chickenpox is a common childhood viral infection and is highly contagious. It spreads mainly through droplets or air. It can also spread through direct or indirect contact with the discharges from vesicles and mucous membranes of infected person. In Hong Kong, chickenpox outbreaks in school settings showed a substantial increase from September onwards till November following the seasonal trend in the past few years (Figure 2).

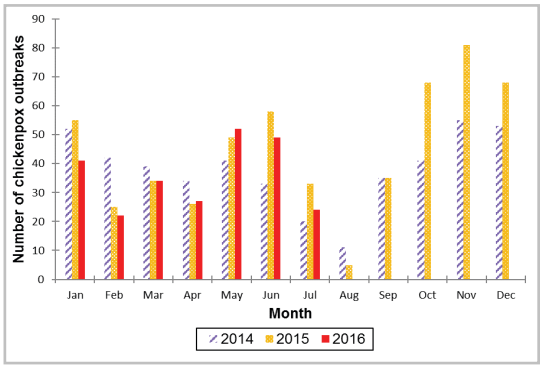

Figure 2 - Number of chickenpox outbreaks in school settings from 2014 to 2016 (as of August 16, 2016).

As chickenpox is highly infectious, it is important to maintain good personal and environmental hygiene to prevent transmission. Chickenpox vaccine is available in Hong Kong and has been incorporated in the 'Hong Kong Childhood Immunisation Programme'. Eligible children should follow the recommended schedule for vaccination.

Early detection of the occurrence of clusters of communicable disease in schools helps to prevent the diseases' spread:

- Child care centres, kindergartens and schools should:
  - report suspected/confirmed outbreaks of communciable diseases among children/staff to the CHP timely via fax: 2477 2770 or telephone: 2477 2772 for epidemiological investigation and outbreak control;
  - keep personal health record and body temperature for every child properly;
  - keep sick leave records of staff properly;
  - ensure adequate hand washing facilities and personal protective gear in the schools/ centres; and
  - communicate closely with the parents/guardians to get their support to implement infection control measures.
- Children, students or staff members with symptoms of fever, influenza-like illness, diarrhea, vomiting, skin rash etc should not attend school.
- Parents are encouraged to seek medical advice if their children are sick and to report any sickness or hospital admission to the school promptly.

The "Guideline on Prevention of Communicable Diseases in Schools/Kindergartens/Kindergartens-cum-Child Care Centres/Child Care Centres" can be assessed at: http://www.chp.gov.hk/files/pdf/guidelines_on_prevention_of_communicable_diseases_in_schools_kindergartens_kindergartens_cum_child_care-centres_child_are_centres.pdf.

Besides, child care centres, kindergartens and schools should conduct regular inspection, eliminate any pocket of stagnant water and maintain good environmental hygiene to prevent mosquito breeding and the possible transmission of mosquito borne diseases such as dengue fever, chikungunya and Zika Virus Infection.

With the collaborative support from child care centres, kindergartens and schools in the prevention of communicable disease outbreaks in school settings, we can together safeguard a healthy and supportive learning environment for our children.

Vibrio parahaemolyticus food poisoning outbreaks linked to buffets served at a local restaurant

Reported by Dr Carol YAU, Senior Medical and Health Officer, and Dr Clara SIN, Medical and Health Officer, Epidemiology Section, Surveillance and Epidemiology Branch, CHP.

In June 2016, the Centre for Health Protection (CHP) of the Department of Health recorded a total of 22 clusters of food poisoning outbreaks related to buffet meals served at the same local restaurant from June 25 to 26. Below we summarise the epidemiological investigation findings and actions taken.

We defined a case as any person who developed diarrhoea and/or vomiting after the buffet at Restaurant A from June 25 to June 26. A total of 180 persons were exposed in the 22 clusters and CHP had successfully interviewed 142 persons. A total of 108 cases were identified with an overall attack rate of 77%. The cluster size ranged from two to 10 cases with a median of 4.5 cases.

The 108 cases comprised of 44 males and 64 females and their ages ranged from one to 89 years (median=45 years). They presented with diarrhoea (106 cases, 98%), abdominal pain (88 cases, 81%), vomiting (59 cases, 54%) and fever (36 cases, 33%). They had the buffet meal at the restaurant on either June 25 or June 26. The incubation period ranged from 1.5 hours to 30.5 hours (median=12.5 hours) (Figure 1).

Among the 108 cases, six cases required hospitalisation, with a median duration of hospital stay of 1.5 days (range: 1 to 2 days). Twelves cases attended Accident and Emergency Departments and did not require hospitalisation. Fifty-three sought treatment from private practitioners or out-patient clinics, while 37 cases did not seek medical attention. A total of six stool specimens were available, and all were tested positive for *Vibrio parahaemolyticus* (VP).

The buffet meals consisted of assorted dishes in Western, Chinese and other Asian styles. Among food items consumed by at least half of the cases, seafood that were served cold; including lobsters (OR: 18.3; 95% CI 5.5-61.0) and salmon sashimi (OR: 5.1; 95% CI 1.7-15.7) served on June 25; crab legs (OR: 5.4; 95% CI 1.3-22.3), and shrimps (OR: 5.8; 95% CI 1.5-23.0) served on June 26; were significantly associated with illness.

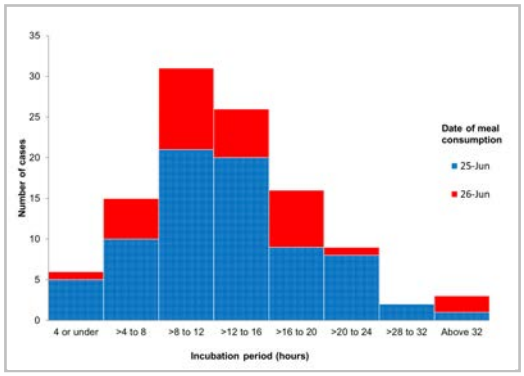

Figure 1 - Epidemic curve of the food poisoning outbreak (Number of cases by incubation period).

The information, once available, was passed to the Centre for Food Safety/ Food and Environmental Hygiene Department (CFS/FEHD) for further investigations and follow up actions. Field investigation was conducted by CFS/FEHD promptly. Health advice on food, environmental and personal hygiene was given to the restaurant operators and their staff. Follow up visits were also conducted to ensure proper implementation of food safety measures. All the 22 clusters had consumed food at the restaurant before the control measures instituted by CFS/FEHD and there was no additional cluster reported with the date of consumption thereafter.

The clinical, epidemiological and microbiological findings were compatible with food poisoning caused by VP. Investigation indicates some seafood items served at the buffets were possible illness sources. Cross-contamination during food preparation may have contributed to the outbreak.

VP is a common bacterium that can cause food poisoning and is often found in the marine environment and seafood. Locally, it was the most common causative agent of food poisoning cases, accounting for 39% of all confirmed food poisoning cases reported from 2006 to 2015. Cross-contamination and inadequate cooking were the most common contributory factors among these cases.

During food preparation, we can effectively prevent food poisoning by following the five keys to food safety as promulgated by World Health Organization. For instance, raw seafood should be stored and handled separately with other ready-to-eat food to prevent cross-contamination. It should also be thoroughly cooked before consumption. Other measures include sourcing safe raw materials from reliable suppliers and store ready-to-eat food under proper temperature (at or below 4°C or above 60°C).

In response to the incident, CHP has issued three press releases from June 26 to 28, to update the public about the investigation findings of the incident and to remind the public to observe personal and food hygiene in order to prevent food poisoning. For more information on food poisoning, please visit the CHP's website: www.chp.gov.hk.

NEWS IN BRIEF

A sporadic case of leptospirosis

On August 26, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of leptospirosis affecting a 30-year-old man with pre-existing medical conditions. He presented with headache on August 7, fever and arthralgia on August 8 and he was admitted to a public hospital on August 10. His blood tests showed thrombocytopenia, lymphopenia, and renal and liver impairment. His paired serum samples collected on August 12 and August 17 for *Leptospira* Microscopic Agglutination Test (MAT) detected a four-fold rise in titre of antibody against *Leptospira Sejroe*. He was treated with antibiotics and he remained stable all along. He was discharged on August 17. Investigation revealed that the patient had travelled to Ipoh of Malaysia from July 22 to July 27, where he had participated in rafting. His travel collateral and home contacts remained asymptomatic. Investigation is ongoing.

A sporadic case of psittacosis

On August 15, 2016, CHP recorded a sporadic case of psittacosis affecting a 61-year-old woman with pre-existing medical conditions. She presented with fever, headache, cough with sputum and running nose on July 29 and was admitted to a public hospital on August 2. Her chest X-ray taken showed left middle zone consolidation and the diagnosis was pneumonia. Her nasopharyngeal aspirate collected on Aug 2 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction (PCR). She was treated with antibiotics and she remained stable all along. She was discharged on August 5. Investigation revealed that the patient had joined a tour to Dongguan between July 24 and 25 with her husband and six friends. She denied any contact with poultry or bird droppings during the incubation period. Her home contacts and other tour members remained asymptomatic.

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FEATURE IN FOCUS

Updated Situation of 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 (ZVI) is a mosquito-borne disease caused by Zika virus. Zika virus is mainly transmitted to human through the bite of an infected *Aedes* mosquito. Transmission by sexual contact has also been confirmed and transmission through blood transfusion and perinatal transmission are possible. Most ZVI is asymptomatic. Symptoms include skin rash, fever, conjunctivitis, muscle or joint pain and general malaise and typically begin two to seven days after the bite of an infected mosquito. These symptoms are usually mild and last for a few days. The World Health Organization (WHO) has concluded that ZVI during pregnancy is a cause of congenital brain abnormalities, including microcephaly. Zika virus is also a trigger of Guillain-Barré syndrome (GBS). There is no specific medication or vaccine for ZVI and the mainstay of treatment is symptomatic relief. To prevent ZVI, members of the public are reminded to protect themselves from mosquito bites and help prevent mosquito proliferation.

Overview of the global situation

Outbreaks of ZVI have been recorded in Africa, the Americas, Asia and the Pacific. The number of countries and areas with ongoing Zika virus transmission is increasing and Zika virus continues to spread geographically to areas where competent vectors are present. According to WHO, as of September 8, 2016, mosquito-borne Zika virus transmission was documented in 72 countries or areas since 2007 while 12 have reported evidence of person-to-person transmission, probably by sexual contact. The geographic expansion of Zika virus has somewhat increased in July and August 2016 after slowing down from April to June 2016, likely due to increased activity of the mosquito vector in the Northern Hemisphere in the warmer summer months. In addition, there is increasing number of countries and areas reporting microcephaly, other central nervous system malformations and GBS associated with ZVI and majority of them are from the Americas region[1].

The fourth meeting of the Emergency Committee under the International Health Regulations (2005) regarding microcephaly, other neurological disorders and Zika virus was convened on September 1, 2016. The Committee advised that ZVI and its associated congenital and other neurological disorders continued to constitute a Public Health Emergency of International Concern due to continuing geographic expansion and considerable gaps in understanding of the virus and its consequences.

Emerging Zika cases in Southeast Asian countries

Local cases of ZVI have been reported in several Southeast Asian countries in close proximity to Hong Kong. In Singapore, the first local case of ZVI was reported on August 27, 2016. Since then, there has been persistent and rapid increase in the number of local ZVI cases. According to the Ministry of Health and National Environment Agency of Singapore, as of 12pm September 11, 2016, 329 confirmed local cases were recorded, with seven clusters identified. Recently, the results from the sequencing analysis of cases in Singapore indicate that the virus causing the current outbreak belongs to the Asian lineage and likely evolved from the strain that was previously circulating in Southeast Asia. The recent cases in Singapore do not appear to be the result of imported virus from South America.

In Southeast Asia, there had been virological and/or serological evidence of ZVI in the past, signifying possible circulation of Zika virus in these places. In this regard, WHO has already categorized Indonesia, Malaysia, the Philippines, Thailand and Vietnam as countries with possible endemic transmission or evidence of local mosquito-borne Zika infection in 2016 with the reporting period beginning in 2007. Of note, according to the Malaysian health authority, the first local case of ZVI was recorded on September 2 this year involving a 61-year-old man who subsequently died due to other illness. In Thailand, the ZVI cases were dispersed in all regions across the country since 2012. The Ministry of Public Health of Thailand had announced earlier on August 30, 2016 that ZVI cases are reported from 12 districts in six provinces. The outbreaks among these countries are ongoing.

Local situation and control measures

In Hong Kong, ZVI has become a notifiable infectious disease under the Prevention and Control of Disease Ordinance (Cap. 599) since February 5, 2016. The first imported case of ZVI was reported on August 25, 2016 involving a 38-year-old female patient who had onset of symptoms since August 20, 2016. She had travelled to Saint Barthelemy in the Caribbean from August 6 to 20, 2016 and returned to Hong Kong on August 22, 2016. The patient was isolated in a public hospital since August 25, 2016 and her condition was all along stable. She was discharged on August 26, 2016 with negative blood test for Zika virus. She and her travel collaterals were put under medical surveillance. As of September 14, 2016, no other confirmed cases were reported.

The Centre for Health Protection (CHP) of the Department of Health (DH) has been adopting various preventive strategies which are in line with those recommended by WHO. In view of emerging local Zika cases in neighbouring countries and areas with high volume of travel and the confirmation of the first imported case in Hong Kong, there is a high risk of the introduction of Zika virus to Hong Kong. Early identification of any unusual clusters or linkages among patients with suspicious symptoms is regarded as key to controlling possible local transmission. Doctors are therefore reminded to conduct prompt laboratory investigation in case of patients clinically suspected of ZVI and extra caution is warranted for those with travel history to affected areas.

CHP has been maintaining close liaison with WHO as well as overseas, neighbouring and Mainland health authorities to closely monitor the latest scientific evidence. In view of the recent evidence on sexual transmission of Zika virus which includes sexual transmission from asymptomatic males to their female partners, symptomatic female to their male partner and longer shedding of Zika virus in semen, CHP has updated the health advice on prevention of sexual transmission. The length of time for safer sex practices or abstinence for males and females returning from areas with active Zika virus transmission should be at least six months, regardless of whether they are showing symptoms. The DH will continue to monitor closely the latest developments of overseas situation and will modify the local response if necessary. As the scientific evidence of the disease is evolving, members of the public may refer to the latest health advice on the designated page of CHP website at www.chp.gov.hk/en/view_content/43086.html.

The most important strategies to prevent ZVI are still vector control and prevention of mosquito bites. Both the public and private sectors should carry out all-out efforts to prevent and control mosquito breeding and individuals should take heed of personal protection measures to prevent mosquito bite.

Reference

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Sexually Transmitted Infections in Social Hygiene Clinic Attendees in Hong Kong in 2015

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

Comprehensive data concerning sexually transmitted infections (STI) is not available in Hong Kong. Social Hygiene Service (SHS) of the Centre for Health Protection (CHP) of the Department of Health operates walk-in clinics, social hygiene clinic (SHC), providing free of charge clinical STI services and counselling to all eligible persons. Screening, diagnosis, treatment of STI, sexual health counselling and partner notification are integral elements of services provision[1]. Data collected in SHS is an important regular data source for the monitoring of the local situation of STI. New cases of the five most frequent STI (here also including non-gonococcal urethritis [NGU] and non-specific genital tract infection [NSGI], conditions defined by clinical assessment and on-site microscopy in male and female respectively, and genital *Chlamydial trachomatis* [CT] infections) remained stable from 10 209 to 10 983 in 2011 and 2015 respectively in SHCs.

The distribution of STI recorded by SHS in 2015 is shown in Figure 1 and the age distribution of the five most common STI is shown in Figure 2. The trend and gender distribution of the five most common STI in the past five years are shown in Figure 3. NGU/NSGI was the commonest STI and accounted for almost half of all new diagnoses captured in the past five years.

The total number of CT remained stable at 1 036 (Male: 508; Female: 528) in 2015. It was the most common specific STI in attendees aged 19 or below. More detail analysis of genital CT infection from 2010 to 2014 was reported in previous issue of Communicable Diseases Watch (CD Watch)[2].

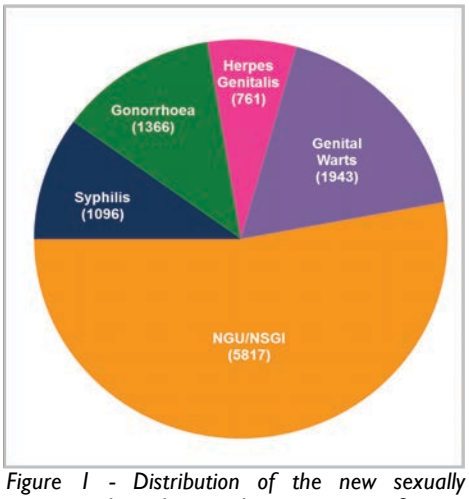


Figure 1 - Distribution of the new sexually transmitted and reproductive tract infections recorded by Social Hygiene Clinics of Social Hygiene Service of CHP in 2015. (Note: Five most frequent sexually transmitted and reproductive tract infections include NGU/NSGI (genital Chlamydia trachomatis is also grouped under this diagnosis), Genital Warts, Gonorrhoea, Syphilis and Herpes Genitalis. NGU: Non Gonococcal Urethritis; NSGI: Non Specific Genital Infection. STI including trichomonas, pubic lice and others are not shown in the current analysis.)

The total number of syphilis remained stable at 1 096 in 2015 and the age and gender distribution was similar to 2014. Syphilis contributed to a higher proportion of STI in those aged 40 or above as compared with the other age groups. This might be due to a higher rate of opportunistic testing when the older people presented to various health care facilities for various medical reasons. Detail analysis revealed that most of the syphilis cases in this age group were pertained to late latent syphilis i.e. asymptomatic patients who acquired infection more than one or two years before serological testing. Early syphilis is the more sensitive indicator for disease incidence. A slow creeping of early syphilis was observed in recent five years from 166 in 2011 to 354 in 2015. As reported in the previous issue of CD Watch, in those early syphilis cases there was higher odds of them being men who have sex with men (MSM) and in particular those young MSM[3]. In 2015, about 45% male newly diagnosed syphilis patients reported themselves to be MSM.

The number of gonorrhoea in SHC reached historic nadir of slightly less than 1 000 in 2010 and followed by slow creeping up to 1 366 in 2015. The increase in number was mainly contributed by male aged less than 40 in recent years. Comparing to 2014, more cases were found in male with age 30 to 39. In 2015, male aged from 20 to 39 years composed of 63.5 % of all cases of gonorrhoea diagnosed in SHC. Of these males, about 33% reported themselves to be MSM.

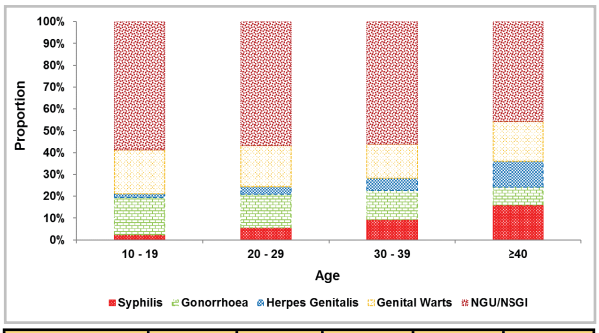
With respect to genital herpes and warts, because of the long and variable time lag of infection due to their clinical disease course – latency, relapsing without definitive cure, to presentation for medical care, the numbers recorded by SHS may not be indicative of new cases occurred or disease prevalence within a community.

In 2015, among those male STI cases, 1 088 (14.5%) reported themselves to be MSM. Apart from having higher odds of being MSM in attendees with syphilis, and a relatively higher number of male gonorrhoea cases report themselves to be MSM, a study involved 158 MSM conducted from June 2014 to May 2015 in SHS revealed that the prevalence of asymptomatic CT or *Neisseria gonorrhoeae* infections from any of the three sites (oropharynx, lower rectum and anterior urethra) was 19.6% (Chau CT, et al, in press). 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.

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 who suspect themselves to have been infected should come forth to have STI assessment and testing.

As a significant portion of STI would be asymptomatic, the figures reported in this article do not actually fully describe the STI scenarios in the local community. Provided the help seeking behaviour and testing protocol in SHC remain stable, these figures may describe the overall trends of STI in Hong Kong.

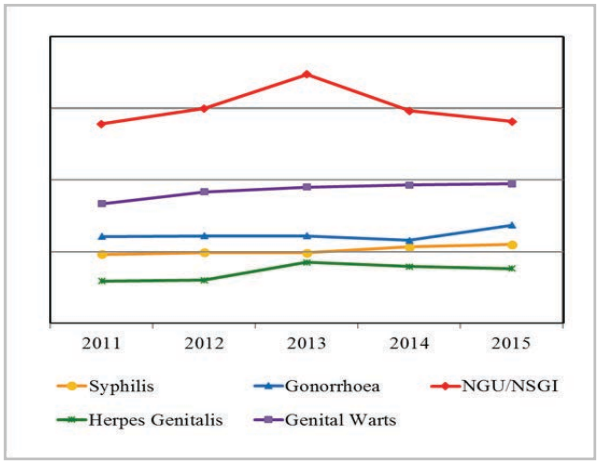
The above analysis has its limitations as data collected by SHS are only indicative of those who attended SHS for STI care and thus is likely the tip of an iceberg.



Age group	10-19	20-29	30-39	≥40	Total
Number of diagnoses recorded	515	3 666	3 011	3 791	10 983

Figure 2 - Distribution of the five most frequent STI and reproductive tract infections recorded by SHS according to age group in 2015 (Source of data: Social Hygiene Clinic).*

**Note: No cases were found under age 10 in 2015.*



	2011	2012	2013	2014	2015
Syphilis	962	986	981	1 066	1 096
Gonorrhoea	1 210	1 216	1 217	1 156	1 366
Herpes Genitalis	589	601	847	792	761
Genital Warts	1 665	1 831	1 900	1 925	1 943
NGU/NSGI	5 783	5 997	6 475	5 963	5 817
Total diagnoses reported	10 209	10 631	11 420	10 902	10 983
Diagnoses reported from male	6 491	6 731	7 352	7 066	7 407
Diagnoses reported from female	3 718	3 900	4 068	3 836	3 576

Figure 3 - Trend of the five most common STI diagnoses from 2011 to 2015.

References

[1]Ho KM. Clinical sexually transmitted infection (STI) service of the social hygiene clinics in the public sector. HK Medical Diary 2015; 20(8):29-31. (Accessed August 1, 2016 at http://www.fmshk.org/database/hkmd/mdaugfullpage23july.pdf.)
[2]Ho KM. Sexually transmitted infections in adolescents. Communicable Diseases Watch 2015;12(22):107-8. (Accessed July 31, 2016 at http://www.chp.gov.hk/files/pdf/cdw_compendium_2015.pdf.)
[3]Ho KM. Syphilis in Hong Kong. Communicable Diseases Watch 2015;12(15):69-71. (Accessed July 31, 2016 at http://www.chp.gov.hk/files/pdf/cdw_compendium_2015.pdf.)

NEWS IN BRIEF

A sporadic case of listeriosis

On August 27, 2016, the Centre for Health Protection (CHP) recorded a case of listeriosis affecting a 70-year-old woman with pre-existing medical condition. She presented with fever on August 23 and was admitted to a private hospital on August 25. Her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics and was discharged on August 29. She had not travelled recently. She had consumed salad containing raw vegetables during the incubation period. Her home contacts were asymptomatic. Investigations are on-going.

Two sporadic cases of brucellosis

On August 30, 2016, CHP recorded two cases of brucellosis. The first case was a 78-year-old woman with underlying illness. She presented with fever, cough with sputum, anorexia and sustained a fall on August 19. She was admitted to a public hospital on the same day. She was found to have chest infection and septic shock and was treated with inotropes and antibiotics. She was discharged on August 24. On August 29, her blood specimen collected on August 19 was reported to be culture positive for *Brucella melitensis*. She was readmitted for further management. Her current condition is stable. She had no recent travel history. She reported no consumption of high risk food or exposure to risk factors. Her home contact remained asymptomatic.

The second case was a 52-year-old man with good past health. He presented with cough, myalgia, decreased appetite and weight loss since July 10. He consulted general practitioners but his symptoms persisted. He attended the Accident and Emergency Department of a public hospital on August 10 and 24. He was admitted on August 24. His blood collected on August 24 grew *Brucella melitensis*. He was given antibiotics and his current condition is stable. The patient worked in a wet market selling fresh fish. He lived alone with a dog. He had travelled to Shenzhen and Guangxi during incubation period. During the trip he had consumed cooked pig liver and intestines. His co-workers and travel collaterals remained asymptomatic. The two cases were not epidemiologically linked. Investigations are on-going.

A sporadic case of *Streptococcus suis* infection

On August 31, 2016, CHP recorded a case of *Streptococcus suis* infection affecting a 58-year-old man with good past health. He presented with fever, abdominal pain, vomiting and diarrhoea since August 25 and was admitted to a public hospital on August 28. His blood sample collected on August 28 grew *Streptococcus suis*. His clinical diagnosis was sepsis. He was treated with antibiotic and he remained in stable condition. He had a wound over right hand but had no history of handling raw pork or contact with pigs. He lived with his wife and son. They were asymptomatic.

A probable case of sporadic Creutzfeldt-Jakob disease

CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on September 1, 2016, affecting a 90-year-old lady with underlying illness. She presented with progressive dementia and recurrent convulsion since June 2016. She was admitted to a private hospital on August 25 and was transferred to a public hospital on August 26. Subsequently, she developed pyramidal and extrapyramidal signs, myoclonus and akinetic mutism. Electroencephalography finding was compatible with CJD. Her condition was stable. No risk factors for either iatrogenic or variant CJD were identified. She was classified as a probable case of sporadic CJD.

Field Epidemiology Training Programme (FETP) training course 2016

The Hong Kong FETP of CHP organised a five-day training course for public health professionals on "Surveillance" during September 5 to 9, 2016. The objective of the course was to equip participants with knowledge of the principles of surveillance, how to set up and evaluate surveillance systems, and skills to analyse surveillance data using relevant IT tools. The training course included presentations by the facilitators, practical exercises, case studies and hands-on practices on data analysis using different softwares.

CA-MRSA cases in August 2016

In August 2016, CHP recorded a total of 99 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 46 males and 53 females with ages ranging from one year to 92 years (median = 37 years). Among them, there were 68 Chinese, 14 Filipinos, 7 Caucasian, 6 Pakistani, 1 Indian, 1 Indonesian, 1 Nepalese, and 1 of unknown ethnicity. Isolates of all the 99 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCCmec) type IV (64) or V (35). The isolate of one case affecting a one-year-old boy was found to be resistant to mupirocin. The patient presented with umbilical abscess and recovered after antibiotic treatment.

Ninety-six cases (97%) presented with uncomplicated skin and soft tissue infections while the remaining three cases had invasive CA-MRSA infections. The first invasive case affected a 71-year-old woman with good past health. She presented with fever since July 22 and was admitted to a private hospital on July 27. A blood sample collected on the day of admission was cultured positive for CA-MRSA. She was diagnosed with pneumonia and sepsis and was treated with antibiotic. She remained stable and was discharged on August 3. The second case affected a 22-month-old Pakistani girl with history of cystic fibrosis, failure to thrive and global developmental delay. She had a previous episode of pneumonia caused by CA-MRSA in September 2015. She recovered after treatment with decolonization done. This time, she was diagnosed to have pneumonia again upon admission to a public hospital for management of her pre-existing medical conditions on July 18. A bronchoalveolar lavage sample collected during bronchoscopy performed on August 4 was cultured positive for CA-MRSA. She was put on antibiotics and was clinically stable. She was discharged on August 24. The third case affected a 34-year-old man with history of diabetes mellitus, fatty liver and obesity. He had history of scalp abscess caused by CA-MRSA in February 2015 with decolonisation completed. This time, he presented with persistent low back pain since July 23 and fever and blurred vision since August 5, and was admitted to a public hospital on August 7. He developed septic shock and required admission to intensive care unit on August 8. Imaging showed multiple abscesses at lower back, retropharyngeal area and thigh. He was treated with intravenous antibiotics and drainage of the abscesses. Specimen from his back abscess and blood were cultured positive for CA-MRSA. He was in critical condition. Screening and decolonisation would be provided to the household contacts of the cases upon their consent.

Among the 99 cases, one was a healthcare worker in a residential care home for the elderly (RCHE). No other staff or residents were found to have CA-MRSA infection in this RCHE. Besides, eight family clusters, with each affecting two persons, were identified. Screening and decolonisation would be carried out for the close contacts of these 16 cases.

Scarlet fever update (August 1, 2016 - August 31, 2016)

Scarlet fever activity in August decreased as compared with that in July. CHP recorded 44 cases of scarlet fever in August as compared with 95 cases in July. A total of 866 cases have been recorded so far in 2016 (as of August 31). The cases recorded in August included 30 males and 14 females aged between 10 months and 25 years old (median = 5 years). There were no fatal cases. No institutional clusters were reported in the current reporting period.

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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

Hong Kong achieves measles elimination

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

Following the global eradication of smallpox in 1980 and eradication of poliomyelitis in the Western Pacific Region in 2000, Hong Kong has been verified as having eliminated measles by the World Health Organization (WHO) on September 21, 2016, joining other countries/areas in the Western Pacific Region that have achieved this status[#].

The WHO defines that measles elimination can be verified when there is documentation that shows interruption of endemic measles virus transmission for a period of at least 36 months, in the presence of high-quality surveillance and supportive genotyping evidence. Based on this WHO verification framework, a National Verification Committee (NVC) for Measles Elimination in Hong Kong was established in July 2012 to monitor progress towards elimination. The NVC convened meetings on a regular basis to assess the progress achieved with regard to elimination goals and submitted annual report to the Regional Verification Commission for Measles Elimination in the Western Pacific.

In Hong Kong, measles vaccination was first introduced into the Childhood Immunisation Programme in 1967, after which annual notifications remarkably dropped from the peak of over 5 000 cases in 1965 to less than 400 cases in the 1990s (Figure 1). With the implementation of the two-dose regimen in 1996 and a highly successful mass vaccination of over one million children aged 1-19 years in 1997, the number of measles cases further declined to low levels during 1998-2015 (8-79 cases annually), reaching a historic low of eight cases in 2012. Although measles viruses were detected throughout the years, majority of the reported cases were related to multiple importations or following limited transmission from an imported source. There were occasional small outbreaks (size ranged from two to five persons) but all were rapidly interrupted within weeks, indicative of the absence of sustained endemic transmission within the population.

Over the years, the long-standing Childhood Immunisation Programme has ensured high, stable coverage of over 95% in children two to five years of age for the first dose of measles-containing vaccine, achieving effective herd protection for the general population. Local serological surveys conducted by the Public Health Laboratory Services Branch of Centre for Health Protection of the Department of Health (DH) also showed seropositivity for measles IgG antibodies in over 95% of the population during the period 2010-2014, demonstrating high population immunity. On top of this, DH has been working in collaboration with Immigration Department and Labour Department to intensify efforts in addressing immunity gap by improving disease awareness and advocating the benefits of vaccination among susceptible groups such as foreign domestic helpers and individuals born outside Hong Kong.

In addition to routine immunisation, Hong Kong maintains a robust case-based surveillance system, backed by timely epidemiologic and laboratory investigation, for rapid response to measles cases and outbreaks. An enhanced surveillance system for fever and rash was also in place for improving sensitivity in case detection. In the past five years, Hong Kong has achieved all the target measles surveillance performance indicators for elimination set by the WHO (Table 1).

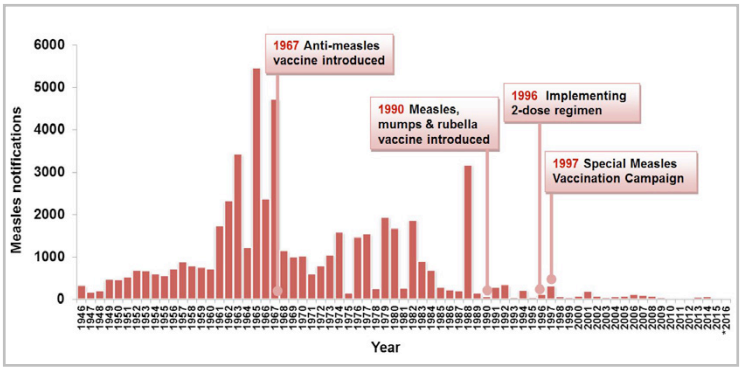

*Figure 1 – Measles notifications and important vaccination initiatives in Hong Kong, 1946- 2016 (*as of September 25, 2016).*

Indicators adopted by WPR	Target	2011	2012	2013	2014	2015
National reporting of discarded measles case	≥ 2 per 100 000 population	3.1	2.5	2.5	2.1	2.1
Percentage of suspected cases with adequate investigation within 48 hours of notification	>80%	98.2%	92.0%	94.2%	100%	98.8%
Percentage of suspected cases with adequate blood specimens	>80%	98.3%	97.3%	91.1%	93.7%	97.7%
Percentage of specimens with results within four days of receipt	>80%	NA	NA	91.5%	93.6%	89.1%
National measles laboratory that is WHO-accredited?	Yes	Yes	Yes	Yes	Yes	Yes
Percentage of outbreaks with sufficient samples for virus detection	>80%	100%	100%	NA	100%	100%

Table 1 – Hong Kong's measles epidemiologic and laboratory surveillance performance, 2011-2015.

[#]Countries/areas that have been certified measles-free include Australia, Brunei Darussalam, Cambodia, Japan, Korea and Macao SAR.

Despite the success to date, real challenges remain to sustain current progress and maintain measles-free status. The achievement of elimination does not mean the complete absence of the disease in the territory as there are continued opportunities for measles to enter the local population. The increasing frequency and ease of international travel amplifies the risk of transmission across borders, facilitating the importation of measles virus from countries/areas where the disease is prevalent or immunisation is lacking. Moreover, because of the highly infectious nature of the disease, such importations may lead to infection among individuals who are not immune and result in local transmission if not promptly controlled.

With ongoing measles activity in other regions of the world, Hong Kong's elimination status will continue to be challenged. Sustaining measles-free status will require continuing efforts to maintain high population immunity with two doses of measles-containing vaccines, effective case-based surveillance, timely response to outbreaks, and the need to close immunity gaps among susceptible populations. DH will spare no efforts to achieve this end with the NVC, local communities and regional partners to ensure elimination can be maintained in the years ahead.

Updated situation on Chikungunya Fever

Reported by Dr Zenith WU, Medical and Health Officer, Enteric and Vector-borne Office, Surveillance and Epidemiology Branch, CHP.

First described during an outbreak in Tanzania in 1952, Chikungunya fever (CF) is an acute viral disease caused by the Chikungunya virus. The virus is a mosquito-borne RNA alphavirus that can be transmitted to human by the bites of infected female *Aedes* mosquitoes. The clinical presentation of CF is characterised by an abrupt onset of fever and frequently joint pain, which is often very debilitating and lasts for a few days or up to few weeks. Other common symptoms include muscle pain, headache, nausea, fatigue and skin rash. Most patients recover fully. In some cases, joint pain may persist for several months.

Global situation

CF has caused periodic outbreaks in Asia and Africa since the 1960s after its first identification in early 1952. It has now been identified in over 60 countries in Asia, Africa, Europe and the Americas. During 2005 to 2006, a major outbreak was recorded in the Indian Ocean islands of Réunion and Mauritius, affecting more than 272 000 people. *Aedes Albopictus* was the presumed vector for this outbreak. In 2006, more than 1 500 000 CF cases were identified in India as well. In 2007, an outbreak involving 197 cases was reported in a coastal village in Italy. The infection was believed to be introduced by migration of infected people[1]. The first documented outbreak of CF with local transmission in the Americas occurred in December 2013, when France reported two laboratory-confirmed autochthonous cases in the French part of the Caribbean island of St. Martin[2]. Since then, local transmission had been documented in various parts of the Americas.

In 2016, over 187 000 suspected and 67 000 confirmed autochthonous transmission cases were reported in the Americas as of September 9, 2016 according to the World Health Organization (WHO)[3]. In 2016, an outbreak was identified in Delhi of India. 1 724 CF cases were reported in Delhi as of September 11, 2016, which is 27 times higher than the annual figure of Delhi of 2015[4]. Kenya and Argentina have also reported CF outbreaks to the WHO, which affected 1 792 cases (as of June 30, 2016)[5] and 55 cases (as of February 27, 2016)[6] in 2016, respectively.

Local situation

CF is a notifiable disease in Hong Kong since March 6, 2009. The Centre for Health Protection (CHP) of the Department of Health (DH) has not recorded any locally acquired cases. A total of 16 confirmed sporadic imported cases have been recorded by CHP so far (Figure 1). They were seven males and nine females with age ranging from 25 to 77 years (median=49.5 years). All the cases had history of travel within the incubation periods, among which six had travelled to Indonesia, five to India, two to the Philippines and one to Singapore. The other two patients had travelled to multiple countries (namely Singapore, Malaysia and Thailand, as well as Indonesia and Thailand, respectively) during the incubation period. The majority of the cases presented with fever (94%), joint pain (88%) and rash (56%). Eleven out of the 16 cases had positive Chikungunya virus genomic sequences detected in serum samples by polymerase chain reaction and five cases were confirmed by a four-fold or greater rise in antibody titres to Chikungunya virus antigen in paired serum samples. Fourteen patients (88%) required hospitalisation. All 16 cases recovered.

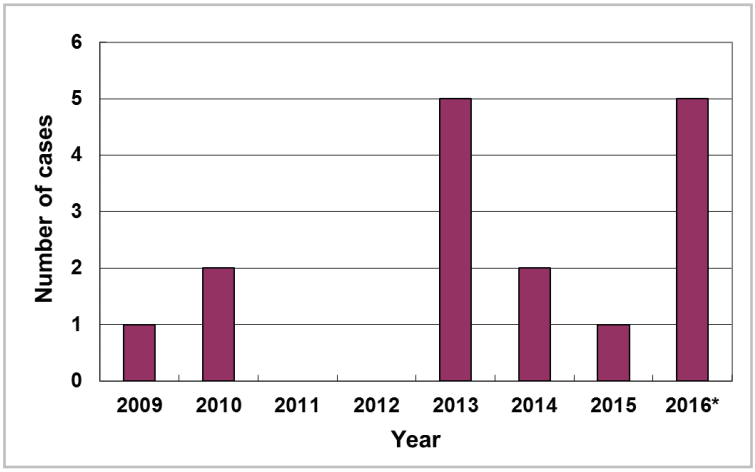

*Figure 1 – Number of CF cases in Hong Kong from March 6, 2009 to 2016 (*as of September 26).*

Prevention

At present, there is no effective vaccine against CF. The best way to prevent CF is to prevent mosquito bites when travelling to endemic areas. Members of the public are advised to wear loose long-sleeved clothes and long trousers light in colour, use insect repellent containing DEET over the exposed parts of the body and clothes, use mosquito screens or nets when the room is not air-conditioned and place mosquito coil or electric mosquito mat / liquid near possible entrance, such as window, to prevent mosquito bites. For details about the use of insect repellents, please refer to 'Tips for using insect repellents' at the following link: http://www.chp.gov.hk/en/view_content/38927.html.

If falling sick on return from endemic areas, travellers should seek medical advice immediately and inform the doctor of their travel history for prompt medical management, epidemiological investigation and control actions.

Moreover, the vector for CF, *Aedes albopictus*, is present in Hong Kong and could transmit not only CF, but also Dengue Fever and Zika Virus Infection. Mosquito prevention and control is important to prevent such mosquito-borne diseases. Public should prevent accumulation of stagnant water, and control vectors and reservoir of the diseases by:

- Changing the water in vases once a week;
- Clearing the water in the saucers under potted plants every week;
- Covering water containers tightly;
- Ensuring air-conditioner drip trays are free of stagnant water;
- Putting all used cans and bottles into covered dustbins; and
- Storing food and dispose of garbage properly.

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NEWS IN BRIEF

Two confirmed 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 mid-September 2016.

The first case was an 83-year-old man with underlying illnesses. He presented with left elbow pain and swelling with fever since September 17, 2016 and was admitted to a public hospital on the same day. Culture of left hand dorsum aspirate collected on September 17 grew *Vibrio vulnificus*. His clinical diagnosis was necrotising fasciitis. He was treated with antibiotic but developed septic shock and was finally succumbed on September 20. Family members of the patient could not be contacted for exposure details. According to the clinician, the patient had no recent travel history and his home contacts were asymptomatic.

The second case was a 78-year-old woman with pre-existing medical conditions. The patient presented with right leg pain preceded by a fish sting injury when she bought a fresh fish in a wet market on September 14. She subsequently experienced increase in pain and developed chills, dizziness, generalised malaise, vomiting and diarrhoea on September 16, and was admitted to a public hospital on the same day. She was noted to have septic shock on admission, and was transferred to Intensive Care Unit for further management. The diagnosis was necrotising fasciitis. She was treated with antibiotics, and excisional wound debridement was done on September 17 and September 20. Wound swab collected on September 17 grew *Vibrio vulnificus*. Her condition was stabilised after treatment, and was transferred back to general ward on September 21. The patient had no recent travel history. Her home contacts remained asymptomatic.

The two cases were not epidemiologically linked. Investigations are on-going.

A sporadic case of psittacosis

On September 15, 2016, CHP recorded a case of psittacosis affecting a 56-year-old man with underlying illness. He presented with cough with sputum, shortness of breath and decrease in general condition on September 8. He attended the Accident and Emergency Department (AED) of a public hospital on the same day. He was subsequently intubated and transferred to Intensive Care Unit for further management. The clinical diagnosis was pneumonia, sepsis, shock and type 2 respiratory failure. His nasopharyngeal aspirate collected on September 8 was tested positive for *Chlamydophila psittaci* DNA by Public Health Laboratory Services Branch (PHLSB), the CHP. He was treated with antibiotics and his current condition was stable. Investigations revealed that he did not keep birds at home. He denied any contact of birds or bird droppings during the incubation period. His family members remained asymptomatic. He did not have travel history during incubation period. Investigation is on-going.

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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

Vaccination Subsidy Scheme for Seasonal Influenza 2016/17

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

In order to lower the risk of serious complications and hospitalisation from seasonal influenza infection, the Government has been providing subsidised seasonal influenza vaccination (SIV) to specified target groups annually under Vaccination Subsidy Scheme (VSS) in addition to free vaccination by the Government Vaccination Programme (GVP). The VSS will be launched on October 20, 2016, while the GVP in early November 2016 in phases.

New Arrangement for VSS 2016/17

The Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the Centre for Health Protection (CHP) of the Department of Health (DH) has expanded the priority group of children for vaccination in 2016/17 from "the age of six months to under six years" to "the age of six months to 11 years (under 12 years)", after reviewing local epidemiological data, the latest scientific evidence and overseas experiences.

Taken into consideration of the recommendations of the SCVPD, the Government will provide, in addition to the eligible groups from previous year, subsidised seasonal influenza vaccination for pregnant women, children aged six months to under 12 years, as well as Persons receiving Disability Allowance (PDA) for better coverage in 2016/17 season. The eligible groups for subsidised SIV in 2016/17 are detailed in Table 1 below.

Priority groups recommended by Scientific Committee on Vaccine Preventable Diseases	2015/16 ($160/dose)	2016/17 ($190/dose)	New beneficiaries in 2016/17
1. Pregnant women	Nil	All pregnant women	Expanded to cover all pregnant women
2. Children aged 6 months to under 12 years	All children aged 6 months to under 6 years	All children aged 6 months to under 12 years	Extended to cover children aged 6 to under 12 years
3. Persons with chronic medical problems#	Community-living persons with intellectual disabilities (PIDs)	Community-living PIDs and persons receiving Disability Allowance (PDA)	Expanded to cover PDA, regardless of disability, i.e. disabled physical, mental, intellectual or other conditions
4. Persons aged 50 or above	All elders aged 65 or above		

Persons with chronic medical problems mainly refer to: those with chronic cardiovascular (except hypertension without complication), lung, metabolic or kidney diseases; obesity (Body Mass Index 30 or above); the immunocompromised (i.e. weakened immune system due to diseases such as Human Immunodeficiency Virus infection or Acquired Immune Deficiency Syndrome, or treatment such as cancer treatment); children and adolescents (aged 6 months to 18 years) on long-term aspirin therapy; and those with chronic neurological conditions that can compromise respiratory functions or the handling of respiratory secretions or increase the risk for aspiration, or those who lack the ability to take care of themselves.

Table 1 - Eligible groups of Vaccination Subsidy Scheme for subsidised SIV.

Moreover, the Government has increased the subsidy level for seasonal influenza vaccination to $190 per dose in 2016/17.

The list of participating doctors and their service fees are available on the CHP website and updated regularly. VSS enrolled doctors will also display the VSS scheme logo at their clinic entrance and price poster at clinic waiting hall.

Promotion of SIV in the Community

Press briefing was conducted on June 22, 2016 to announce the expansion of influenza vaccination coverage to new target groups in 2016/17.

During the preparation, the Government has been closely working with the medical profession, education sector including primary schools and parent groups, social and welfare sector including institutions and organisations serving the elderly and the

disabled and community partners on the VSS. Briefings to relevant stakeholders have been held prior to the launch to solicit their support to promote the vaccination.

Information about the vaccination will be promoted through a series of publicity activities, e.g. press briefing, broadcast of APIs (TV and radio), media interviews, distribution of publicity materials/ health education tools targeting at children and their parents, elders, pregnant women, healthcare workers, poultry and pig related industry worker, to encourage them to receive seasonal influenza vaccination.

DH has set up a 24-hour Health Education Hotline (2833 0111) to provide more information about the VSS, and uploaded the information onto CHP website (http://www.chp.gov.hk/en/view_content/46107.html). A hotline (2125 2125) is also set up for public enquiry.

Vaccination at Non-clinic Settings

There had been community-based vaccination activities organised for eligible persons under VSS. Community groups, personnel and health care professionals should give due consideration to safety and liability issues when organising vaccination service in non-clinic settings.

When planning or organising vaccination in non-clinic setting, relevant parties are advised to refer to the Guideline for organisers to arrange vaccination activities at non-clinic settings and the Doctors' Guide. Both guides have been enhanced on information regarding vaccine storage and handling, emergency management of adverse event following immunisation, etc. and are available on the CHP website. Those parties who are interested in organising outreaching vaccination activities are requested to carefully read the guides. Staff of the Vaccination Office conduct site inspection to ensure the guidelines are being followed.

Vaccination Period

As it takes about two weeks after influenza vaccination for antibodies to develop in the body, members of the public are encouraged to get vaccinated early before the arrival of the influenza season to ensure protection. Given that SIV is safe and effective in the prevention of seasonal influenza, members of the public are recommended to get SIV as soon as possible for better protection in the coming season. In addition, they are encouraged to observe good personal and environmental hygiene and maintain a healthy lifestyle to prevent influenza.

More information can be found on the CHP website:

- SCVPD's 2016/17 seasonal influenza vaccination recommendations (http://www.chp.gov.hk/files/pdf/short_version_of_recommendations_on_seasonal_influenza_vaccination_for_the_2016_17.pdf);
- Seasonal influenza (http://www.chp.gov.hk/en/content/9/24/29.html);
- Frequently Asked Question on Seasonal Influenza Vaccine 2016/17 (http://www.chp.gov.hk/en/view_content/45020.html);
- Vaccination Subsidy Scheme (http://www.chp.gov.hk/en/view_content/46107.html);
- Guidelines for Organisers to Arrange Vaccination Activities at Non-clinic Settings (http://www.chp.gov.hk/files/pdf/flow_chart_for_outreaching_vaccination_activity_en_14072016.pdf); and
- Doctor's Guide on VSS (http://www.chp.gov.hk/en/view_content/45838.html).

Update on influenza A(H3N2) variant virus

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

Overview

Swine influenza is a respiratory disease of pigs caused by influenza A viruses. Swine influenza viruses circulate and cause outbreaks in pigs. These zoonotic viruses are distinct from human seasonal influenza viruses. Influenza A(H3N2) viruses circulating in swine were first detected in the United States (US) in 2011. They were called "variant viruses" in order to distinguish them from human A(H3N2) seasonal viruses[1]. In this article, we reviewed the latest situation and characteristics of A(H3N2)v infection.

Emergence

In the US, a novel influenza A virus caused by reassortment of swine-origin influenza A(H3N2) viruses and influenza A(H1N1) pdm09 virus (i.e. the human seasonal influenza virus emerged in the 2009 pandemic) was first detected in humans in August 2011[2]. The first two cases involved two children (aged below 5 years), both presented with febrile respiratory illness and recovered after treatment. There was no epidemiological link between them. One of them had visited an agricultural fair where she had direct exposure to swine and other animals. Virus isolation revealed that seven of the eight gene segments, including the haemagglutinin and neuraminidase genes, were similar to other swine-origin influenza A(H3N2) viruses identified from previous human infections with swine–origin influenza viruses since 2009 and those circulating among pigs in the US, but were unique in that one of the eight gene segments (the M gene) was from the human influenza A(H1N1)pdm09 virus.

Subsequently, more cases were identified in the US. A total of 12 confirmed cases were reported in five states from August to December 2011 and 11 of them affected children. Six of the 12 patients had no identified exposure to swine before illness onset[3].

Latest Situation in the US

In 2012, there was a marked increase in the number of infections of A(H3N2)v reported in the US. Between July and September 2012, multiple outbreaks of A (H3N2)v occurred in various states (especially Indiana and Ohio) resulting in 309 cases being reported. The number of cases declined in the following years, but sporadic infections with A(H3N2)v continued to be reported (Figure 1). So far, a total of 364 cases with H3N2v infections have been recorded by the US Centers for Disease Control and Prevention (CDC) since 2011. Most commonly, these infections occurred in people with exposure to infected pigs at agricultural fairs that take place primarily during the summer months and into early fall.

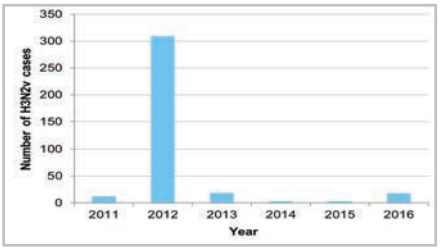

Figure 1 – Annual number of H3N2v infections reported to the US CDC, 2011 – 2016.

In 2016 (as of September 30), 18 cases of human infection with A(H3N2)v viruses have been recorded (12 in Michigan and six in Ohio) and all were reported in August. Sixteen of them were aged under 18 years with seven being less than five years old (median age=seven years). All of the cases have been associated with exposure to swine exhibited at agricultural fairs during the week preceding illness onset and no human-to-human transmission has been identified. Swine influenza A(H3N2) virus was identified from at least one respiratory sample collected from pigs at each of the associated fairs. All A(H3N2)v viruses were closely related to A(H3N2) viruses currently circulating in swine populations in the US[4,5].

Besides in the US, according to the World Health Organization (WHO), one non-fatal human case of A(H3N2)v virus infection was retrospectively detected in Vietnam. The case had onset of disease in June 2015 with unknown exposure history. This virus was genetically related to viruses circulating in Vietnamese swine with haemagglutinin gene segments being derived from human seasonal A(H3N2) viruses circulating in humans during 2003-2004.

Clinical Features

Infection due to A(H3N2)v is indistinguishable by clinical features from seasonal influenza. Epidemiological investigation of cases and outbreaks in the US revealed that most patients experienced mild and self-limiting influenza-like illness. Symptoms may include fever, cough, sore throat, runny nose, muscle pain, fatigue and headache. Some patients may also have vomiting and diarrhoea. As with seasonal influenza, it is possible that complications may lead to hospitalisation and even death. In the outbreaks in 2012 in the US, the proportion of cases requiring hospitalisation was around 5%[6]. According to the latest figures from the US CDC, among the 364 cases recorded so far, 24 (6.6%) required hospitalisation and only one case reported in 2012 died (case fatality rate 0.3%)[7]. The death occurred in a 61-year-old woman with diabetes, congestive cardiomyopathy, hypertension, and a past history of lymphoma who reportedly had direct exposure to pigs in a fair setting[8].

Regarding the risk factors for infection, human A(H3N2)v cases had mostly been associated with direct or indirect exposure to swine (either occupational or recreational) prior to disease onset, with most swine exposure occurred at agricultural fairs. Limited human-to-human spread of this virus has been detected but there was no sustained person-to-person transmission or community spread[6,9]. Similar to seasonal influenza, certain groups were also at higher risk for complications and death including young children, elderly, pregnant women, and people with chronic medical conditions like asthma, diabetes, heart disease, weakened immune systems and neurological or neurodevelopmental conditions[10].

Risk Assessment

According to WHO's risk assessment, A(H3N2v) virus does not seem to transmit easily between humans and tends to result in mild clinical disease, therefore the current likelihood of community-level spread and public health impact of this virus is considered low. Since swine influenza viruses can circulate among swine throughout the year, further human cases or outbreaks could occur. Outbreaks will most likely occur during the late fall and winter months similar to outbreaks of seasonal influenza in humans[11].

Local Situation

Novel influenza A infection, including A(H3N2)v and other variant influenza A viruses, is a notifiable disease under the Prevention and Control of Disease Ordinance (Cap. 599). Apart from laboratory confirmed cases, doctors are required to report any suspected cases fulfilling the reporting criteria (see https://cdis.chp.gov.hk/CDIS_CENO_ONLINE/ceno.html) to the Central Notification Office of the Centre for Health Protection (CHP) of the Department of Health for investigation. So far, no human infection with A(H3N2)v virus has been detected in Hong Kong since it became notifiable on August 17, 2012. CHP will continue to closely monitor the development of influenza globally.

Prevention

Members of the public should pay attention to the following measures to prevent infection with A(H3N2)v or other swine origin variant influenza viruses:

- During travel, avoid visits to settings where pigs are present (e.g. farms, barns, or agricultural fairs);
- Wear protective clothing, gloves and masks to cover mouth and nose if contact with pigs is unavoidable. Wash hands thoroughly with liquid soap and water immediately after exposure to pigs;
- Even though there is no evidence to suggest that the virus is transmissible to people through eating pork or other products derived from pigs, it is important to make sure pork has been thoroughly cooked before consumption;
- Observe good personal hygiene. Keep hands clean, wash hands frequently with liquid soap and water, and cover the mouth and/or nose with tissue paper when coughing or sneezing;
- People with high risk of developing serious complications from influenza should not have contact with pigs and visits to swine farm or barns; and
- Individuals who develop influenza like symptoms should seek medical advice. Tell medical personnel about any high risk factor and exposure history to pigs.

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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 September 22, 2016, affecting a 60-year-old man with underlying medical illnesses. He presented with progressive dementia, visual and motor disturbance since March 2014. He was admitted to a public hospital in June 2014 and was later discharged for home care. Findings from magnetic resonance imaging of the brain were suggestive of CJD. His cerebrospinal fluid was tested positive for 14-3-3 protein. 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 June 24, 2016.

A local sporadic case of leptospirosis

On September 30, 2016, CHP recorded a local sporadic case of leptospirosis affecting a 21-year-old male with unremarkable past health. He presented with fever, headache, vomiting, sore throat and generalised bone pain on September 11 and was admitted to a public hospital on September 14. Blood tests showed derangement of liver function and pancytopenia. He was treated with antibiotics and was all along stable. He was discharged on September 20. Paired sera on September 15 and 20 showed more than four-fold increase in antibody titre against *Leptospira* by microscopic agglutination test. Epidemiological investigation revealed that the patient had hiking and swimming at a water fall near Tai Tam reservoir with two friends on September 1. He denied any skin wound, or contact with rodent or animals. His two friends and family members remained asymptomatic. Investigations are ongoing.

Two sporadic cases of listeriosis

CHP recorded two sporadic cases of listeriosis in early October 2016. The first case was a 63-year-old man with a haematological illness preparing for autologous peripheral blood stem cell transplant. He was clinically admitted to a public hospital on September 23 for peripheral blood stem cell harvest. He had subjective fever, chills, mild headache and tiredness on September 30. The stem cells harvested for culture on September 30 grew *Listeria monocytogenes*. He was treated with antibiotics and his condition remained stable. The patient recalled history of frequent consumption of salad during the incubation period.

The second case was a 29-year-old pregnant woman at 15 weeks of gestation with good past health. She presented with fever, chills and headache on September 29 and was admitted to a public hospital on October 1. Her blood culture yielded *Listeria monocytogenes*. She was treated with antibiotics. The patient and her foetus remained in stable condition. She reported no history of high risk food consumption during the incubation period.

The household contacts of the two cases remained asymptomatic. So far, no epidemiological linkage has been identified among the two cases. Investigations are on-going.

Two sporadic cases of psittacosis

On October 7, 2016, CHP recorded two sporadic cases of psittacosis. The first case was a 69-year-old female with good past health. She presented with headache, cough with sputum, and shortness of breath on September 18. She was admitted to a public hospital on September 27 and her chest X-ray (CXR) showed bilateral bronchopneumonia. Her condition deteriorated and was transferred to the intensive care unit requiring mechanical ventilation. She was treated with antibiotics and her condition was serious. Her nasopharyngeal aspirate (NPA) collected on September 28 was tested positive for *Chlamydophila psittaci* DNA. She had no recent travel history and was classified as a locally acquired infection. She had no history of contact with birds or their excreta. Her home contacts remained asymptomatic.

The second case was a 69-year-old male with underlying illnesses. He presented with fever, cough and myalgia on September 27. He came to Hong Kong and was admitted to a public hospital on September 28. His CXR showed left lower zone hazziness. He was treated with antibiotics and was discharged on October 3. His condition was all along stable. His NPA collected on September 28 was tested positive for *Chlamydophila psittaci* DNA. The patient lived alone in Shenzhen. He visited a park in Shenzhen on September 16 and recalled that he had close contact with a goose. He was classified as an imported infection.

Scarlet fever update (September 1, 2016 - September 30, 2016)

Scarlet fever activity in September increased as compared with that in August. CHP recorded 79 cases of scarlet fever in September as compared with 43 cases in August. A total of 943 cases have been recorded so far in 2016 (as of September 30). The cases recorded in September included 47 males and 32 females aged between one and 17 years old (median = 5 years). There were two institutional clusters in a kindergarten / child care centre and a primary school, involving a total of 5 children. No fatal cases were reported in the current reporting period.

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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 seasonal influenza in Hong Kong

Reported by Ms Vera CHOW, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

The 2015/16 winter influenza season had ended in mid-May 2016 and the local influenza activity had remained at a low level from mid-May to mid-August. Influenza surveillance data of the Centre for Health Protection (CHP) of the Department of Health showed that the local influenza activity started to increase in late August. It further increased in September but has started to decrease since late September. The latest surveillance data showed that it has largely returned to baseline. The total duration of this delayed summer influenza season lasted about five weeks.

Laboratory surveillance

Among respiratory specimens received by CHP's Public Health Laboratory Services Branch (PHLSB), the percentage positive for seasonal influenza viruses increased from a level below 5% before mid-August to a range about 7-8% between late August and early September. It has further increased to about 12-14% in the four weeks between September 11 and October 8, and then decreased to 10.4% and 9.0% in the week ending October 15 and 22 respectively (Figure 1). The peak level of positive percentage (i.e. 14.2% recorded in the week ending September 17) was significantly lower than that observed in the winter season in early 2016 (26.5%). The vast majority of the influenza viruses detected in this summer season were influenza A(H3N2), unlike the winter season in early 2016 where influenza A(H1N1)pdm09 and influenza B viruses predominated with influenza A(H3N2) constituting a very small amount.

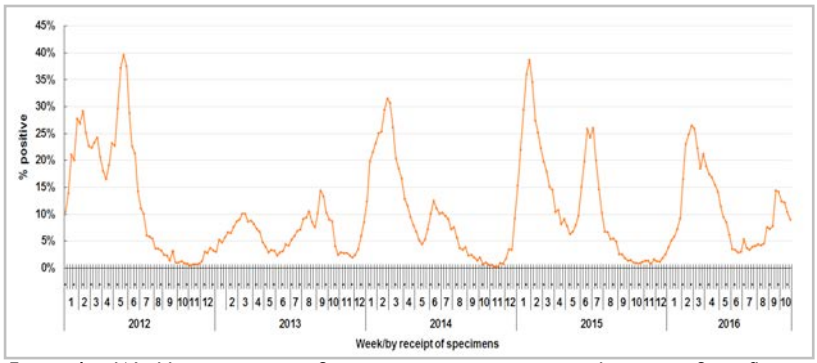

Figure 1 - Weekly percentage of respiratory specimens tested positive for influenza viruses, 2012-2016 (as of October 22, 2016).

Influenza-like illness outbreaks in schools and institutions

Influenza-like illness (ILI) outbreaks in schools and institutions started to rise in early September. The weekly number of ILI outbreaks increased from six in the week ending September 10 to a range of 13-17 in the four weeks between September 11 and October 8. It then decreased to five and six in the week ending October 15 and 22 respectively. A total of 76 ILI outbreaks were reported to CHP from September 4 to October 22. They mainly occurred in residential care homes for the elderly (42%), primary schools (22%) and kindergartens/child care centres (16%).

Influenza-associated hospital admissions

The admission rates with principal discharge diagnosis of influenza in public hospitals also started to increase in late August and reached the peak levels around mid to late September. The peak rate (admissions per 10 000 population in the age group) among children aged below five years, children aged between five and nine years and elderly aged 65 years or above was 1.48, 0.61 and 1.19 respectively (Figure 2). Of note, the peak rate in children aged below five years was comparable with that in elderly aged 65 years or above, which is the usual pattern for a season predominated by influenza A(H3N2). In contrast, the peak rates in children were

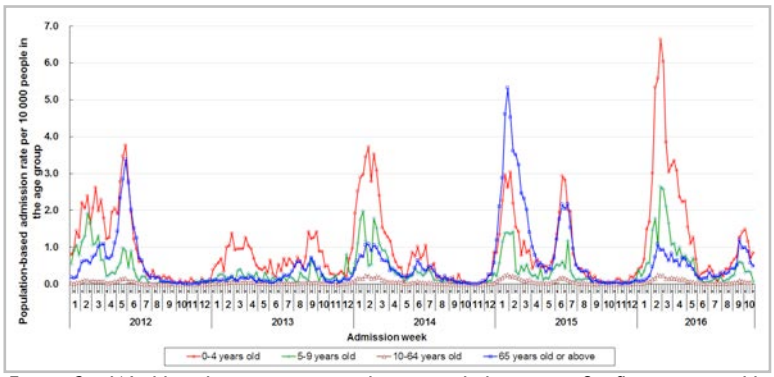

Figure 2 - Weekly admission rates with principal diagnosis of influenza in public hospitals by age groups, 2012-2016 (as of October 22, 2016).

much higher than that in elderly in the winter season in early 2016 predominated by influenza A(H1N1)pdm09 and influenza B.

Severe influenza cases

To monitor the severity of admitted influenza cases, CHP has collaborated with the Hospital Authority and private hospitals to reactivate the enhanced surveillance system of severe seasonal influenza since September 23, 2016 to collect information on influenza associated intensive care unit (ICU) admissions or deaths among patients aged 18 years or above. Besides, CHP routinely monitors severe paediatric influenza-associated complications or deaths among children aged below 18 years. From September 23 to October 25, CHP recorded 53 ICU admissions or deaths (including 36 deaths) with laboratory confirmation of influenza among patients aged 18 years or above. No paediatric severe cases were recorded in the same period (Figure 3).

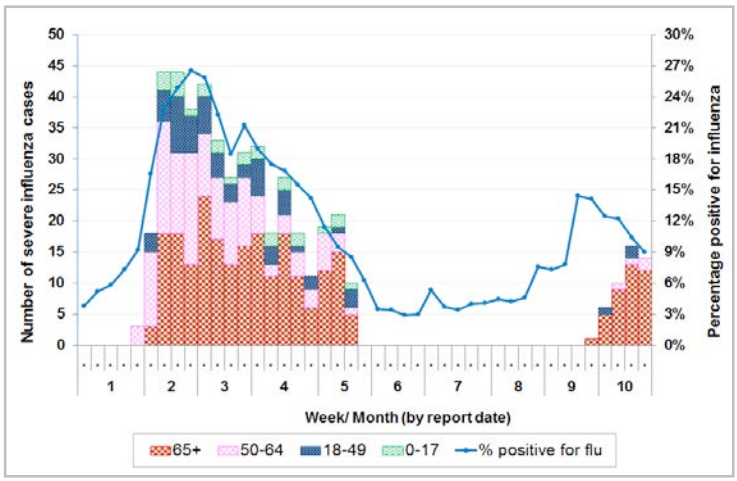

Figure 3 - Weekly number of severe influenza cases and percentage positive for influenza among respiratory specimens tested by PHLSB in 2016 (as of October 22, 2016).
Remark: The enhanced surveillance system for severe cases among patients aged 18 years or above was only activated intermittently during influenza seasons.

Among the 53 adult severe cases, 24 cases (45%) were male. Their ages ranged from 19 to 106 years (median=82 years). Most of them (46, 87%) aged 65 years or above. Forty-four patients had infection with influenza A(H3N2), two patients with influenza B, one patient with influenza C and six patients with influenza A pending subtype.

Summary

In summary, the local seasonal influenza activity started to increase in late August. It remained at a level above the baseline in September but started to decrease since late September. The duration of increase in seasonal influenza activity was relatively short and the intensity was mild. This upsurge of seasonal influenza activity occurred at a later time than the usual summer influenza seasons in the past, which typically arrived in June to July. CHP will continue to closely monitor the influenza activity.

Be vigilant against scrub typhus

Reported by Dr Terence LAM, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

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, which are mainly rodents although birds and reptiles can act as hosts. Humans are accidental hosts. As ectoparasites, chiggers attach to animal hosts via their mouthparts, usually on soft or thin skin down hair follicles or pores, and feed on the host skin cells digested by their salivary secretion. 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, neck, or where clothing is tight against the skin, such as around the waist or the ankles. 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 (commonly 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.

Scrub typhus is a statutorily notifiable disease in Hong Kong. In the past ten years (2006 to 2015), seven to 28 cases each year were recorded by the Centre for Health Protection (CHP) of the Department of Health (DH). On average, more 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 2016.

As of October 18, 2016, CHP recorded a total of 15 cases of scrub typhus in 2016. The male-to-female ratio was 1:1.5 and the median age was 53 years (range: 8 years to 76 years). The most common symptoms were fever (100%), headache (67%), and rash (60%). Eschars were found in 33% of the patients and 67% recalled a history of bite by arthropod during the incubation period. All

patients required hospitalisation, and length of stay ranged from three to 25 days, with a median of seven days. While majority of cases were discharged uneventfully, six cases (40%) developed severe complications* including pneumonia (3 cases), septic shock (3 cases), acute renal failure (2 cases), acute cholecystitis (1 case), and haematological complications (1 case). Among the 15 cases in 2016, one patient with multiple underlying medical illnesses died of scrub typhus.

All cases in 2016 were locally acquired infections. Eleven (73%) patients recalled history of visit to vegetated areas during the incubation period. The most common kind of exposure to vegetated areas# was hiking areas (64%), followed by outdoor workplaces (36%), outdoor recreational areas (18%), and vegetated areas near home (9%). All cases in 2016 were sporadic infections with no epidemiological linkage observed.

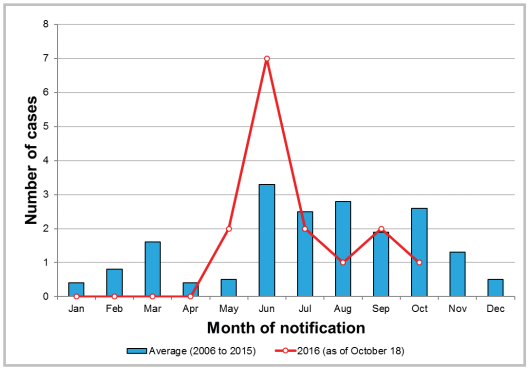

Figure 1 – Monthly number of scrub typhus cases recorded by CHP, 2006 to 2016 (as of October 18, 2016).

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.

Moreover, 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.

Prevention

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.

*Some patients may develop more than one severe complications.
#Some patients may have been exposed to more than one kind of vegetated areas.

NEWS IN BRIEF

Two imported cases of leptospirosis

The Centre for Health Protection (CHP) recorded two imported sporadic cases of leptospirosis in October 2016. The first case was recorded on October 14 affecting a 21-year-old female tourist with unremarkable past health. She presented with fever, headache, malaise, runny nose and skin rash on September 15. She was admitted to a public hospital on September 26. Blood test showed deranged renal function. She was treated with antibiotics and was stable all along. She was discharged on September 29. Paired sera on September 26 and 28 showed four-fold rise in antibody titre against *Leptospira* by microscopic agglutination test (MAT). The patient had travelled to Thailand and Laos and had history of hiking with fresh water exposure there during the incubation period.

The second case was recorded on October 19 affecting a 22-year-old woman with good past health. She presented with upper respiratory tract symptoms on September 15 then developed fever, headache, dizziness, muscle pain and arthralgia on September 19. She was admitted to a public hospital on September 24. The patient later developed deranged liver function, disseminated intravascular coagulopathy, acute renal failure and septic shock requiring intensive care. Her condition improved gradually and she was discharged on September 30. Paired sera collected on September 25 and October 14 showed four-fold rise of antibody titre against *Leptospira* by MAT. Investigations revealed that the patient had travelled to Chiang Mai of Thailand with friends from September 6 to September 11 where she had participated in fresh water rafting. Her three travel collaterals reported fever and influenza-like symptoms after the trip and all recovered with symptomatic treatment. Her family members remained asymptomatic.

Two sporadic cases of listeriosis

CHP recorded two cases of listeriosis in October 2016. The first case was recorded on October 17, affecting a 34-year-old woman with underlying medical illness. The patient presented with vomiting, fever and headache on October 13. She attended the Accident and Emergency Department of a public hospital on October 14 and was admitted on the same day. Her blood specimen collected on October 14 grew *Listeria monocytogenes*. The diagnosis was septicaemia. She was treated with antibiotics and her current condition was stable. She did not report consumption of high risk food during incubation period. Her home contacts remained asymptomatic.

The second case was recorded on October 22, affecting a 71-year-old woman with underlying illness. The patient was admitted to a public hospital for her underlying illness on October 12 and she developed fever and confusion on October 19. Her blood specimen collected on October 19 grew *Listeria monocytogenes*. The diagnosis was septicaemia and she was treated with antibiotics. However, her condition deteriorated and she succumbed on October 25. She lived in a residential care home for the elderly. Epidemiological investigation found no other cases from the institution and did not reveal consumption of any high risk food during her incubation period. Investigation is on-going.

Both patients did not travel outside Hong Kong during incubation period. No epidemiological linkage has been identified for these two cases so far.

The 16th Tripartite Meeting on Prevention and Control of Infectious Diseases

The 16th Tripartite Meeting on Prevention and Control of Infectious Diseases hosted by the Department of Health (DH) was successfully held in Hong Kong on October 20, 2016. More than 60 public health and medical experts from Guangdong, Hong Kong and Macau Special Administrative Regions attended the meeting.

The participants had in-depth discussion and experience sharing in various issues of communicable diseases in the three places including the prevention and control of Zika virus infection, measles elimination, combating antimicrobial resistance, the latest situation of topical communicable diseases, and mutual experiences in implementing and promoting vaccination.

Guangdong, Hong Kong and Macau reviewed the co-operation and preparedness of the three places against communicable diseases and reached consensus at the meeting to further enhance the tripartite co-operation and communication on various aspects of communicable diseases.

CA-MRSA cases in September 2016

In September 2016, CHP recorded a total of 99 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 54 males and 45 females with ages ranging from six days to 91 years (median = 33 years). Among them, there were 72 Chinese, 16 Filipinos, 5 Caucasian, 2 Pakistani, 1 Burmese, 1 Indian, 1 Nepalese and 1 of unknown ethnicity. Isolates of all the 99 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (73) or V (26).

Ninety-eight cases (99%) presented with uncomplicated skin and soft tissue infections while the remaining case had invasive CA-MRSA infection. The invasive case affected a 64-year-old woman with pre-existing medical conditions. She presented with fever, cough with sputum, and shortness of breath since September 16, 2016. She was admitted to a private hospital on September 20. Both chest x-ray and CT thorax performed showed left lower lobe consolidation. Sputum collected on September 21 yielded CA-MRSA. She was diagnosed with pneumonia and was treated with antibiotics. She remained stable and was discharged on October 1. Screening and decolonisation would be provided to the household contacts of the case.

Besides, five household clusters, with each affecting two persons, were identified. Screening and decolonisation would be carried out for their close contacts. No cases involving healthcare worker were reported in September.

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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

Antimicrobial resistance (AMR) situation in Hong Kong

Reported by Dr Jonathan NGAI, Medical and Health Officer and Dr Ken NG, Consultant (AMR), Infection Control Branch, CHP.

Antimicrobial resistance (AMR) is an important public health challenge which is threatening both human and animal health. It leads to prolonged illness and hospital stay, use of more aggressive treatment, increased deaths, loss of productivity, and increased healthcare and social costs. In Hong Kong, the number of community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) cases notified has increased five-fold in the past nine years, with approximately 1 000 notifications annually in the recent three years (Figure 1). Data from the Hospital Authority showed that the number of carbapenemase-producing *Enterobacteriaceae* (CPE) cases increased from 36 in 2012 to 134 in 2015, and the number of methicillin-resistant *Staphylococcus aureus* blood-stream infections (MRSA BSI) increases from 0.138 MRSA bacteraemia episodes in acute beds/1 000 acute patient days in 2012 to 0.146 MRSA bacteraemia episodes in acute beds/1 000 acute patient days in 2015. Figure 2 below shows the number of MRSA bacteraemia episodes in acute beds in HA general acute hospitals with 24 hours A&E service (Group 1 hospitals) since 2008.

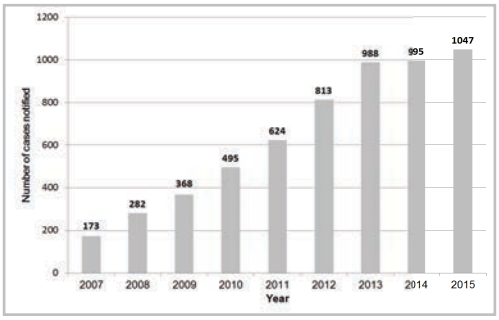

Figure 1 - Number of CA-MRSA cases reported to the Department of Health mandatory notification system in HKSAR (2007-2015).

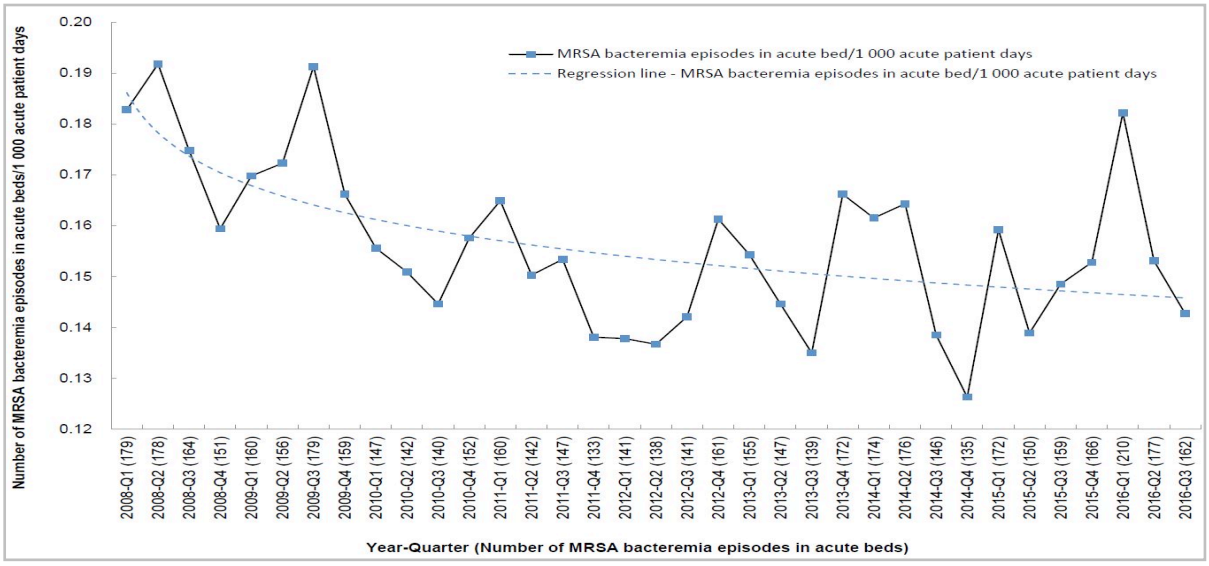

Figure 2 - MRSA bacteremia in acute beds in HA Group 1 hospitals since 2008. (Source: HA MRSA Surveillance System, CDARS.)

The emergence and dynamics of antimicrobial resistance genes in bacteria circulating between animals, the environment and humans are not entirely known. Nonetheless, the international consensus is that the selective pressure by antibiotics on the microbiota (the ecological community of commensal, symbiotic and pathogenic microorganisms that share our body space) of animal and human, and their associated environments, sewage systems and soil are likely to confer survival advantages upon bacteria with antimicrobial resistance genes. The increasing and spreading AMR problem can be attributed to inappropriate and excessive use of antimicrobial agents in animals and human, and the non-compliance to hygienic or infection control procedures from farm to dining table, in healthcare facilities and the community.

The *One Health* approach is a major element of control and prevention strategies by international agencies. The rising threat of AMR should be addressed by a comprehensive framework adopting a multi-sectoral and whole-of-society approach. Different sectors including human and veterinary medicine, agriculture, food, environment and pharmaceutical industry as well as well-informed consumers should take collective actions.

In recognition of the major threat posed by AMR to public health, a global action plan on antimicrobial resistance was adopted by Member States of the World Health Organization (WHO) at the Sixty-eighth World Health Assembly and supported by the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) in May and June 2015. The goal of the global action plan is to ensure, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them. On September 21, 2016, a high-level meeting on antimicrobial resistance at the United Nations General Assembly was convened to summon and maintain strong national, regional and international political commitment in addressing antimicrobial resistance comprehensively and multi-sectorally, and to increase and improve awareness of antimicrobial resistance. In Hong Kong, the Government has set up a High Level Steering Committee on Antimicrobial Resistance (HLSC) as announced in the 2016 Policy Address, to formulate strategies in collaboration with the relevant sectors to tackle the threat.

An Expert Committee was also formed under the HLSC to provide science-based advice in the formulation of AMR containment framework and measures. Local, Mainland and overseas experts from public health, microbiology, infection prevention and control, food industry, livestock industry and innovation and technology and government departments met on November 1, 2016 to discuss principles and approaches to contain AMR in Hong Kong. The Expert Committee will continue to review the local situation in light of international practices, trends and developments, and advise the High-level Steering Committee on practical and scientific initiatives for formulating strategies and action plans against AMR.

Review of institutional outbreaks of scabies in Hong Kong, 2013 to 2016

Reported by Ms Chloe POON, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Scabies is a skin infestation caused by the ectoparasite *Sarcoptes scabiei*. It typically presents with intensely itchy rash. It is highly transmissible and outbreaks of scabies in institutions occur from time to time.

Between 2013 and 2016 (as of October 31, 2016), the Centre for Health Protection (CHP) of the Department of Health recorded 237 reports of scabies outbreaks in institutions, affecting a total of 816 persons. The annual number of outbreaks in the previous three years ranged from 46 to 72 (Figure 1). There were more outbreaks reported in summer than winter (Figure 2). The majority (229, 96.6%) of the outbreaks occurred in residential care homes for the elderly, followed by residential care homes for the disabled (5, 2.1%) and hospitals (3, 1.3%). Most of the scabies outbreaks (92%) were reported by the affected institutions and the remaining were reported by healthcare professionals providing care for the affected persons. One hundred and four outbreaks (43.9%) had laboratory confirmation by microcopy of tissue scraping collected from the affected persons.

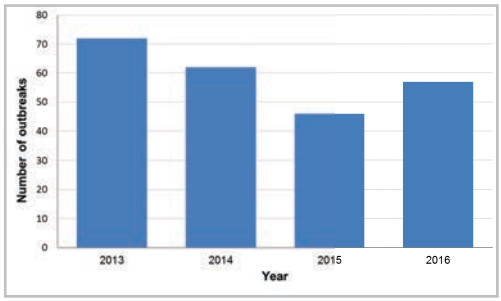

Figure 1 – Annual number of institutional outbreaks of scabies reported to CHP, 2013-2016 (as of October 31, 2016).

The number of persons affected in each outbreak ranged from two to 26 with a median of three persons. The male-to-female ratio of the affected persons was 1 to 1.8. Among the affected persons, 96% involved residents/in-patients while the remaining 4% involved staffs working at the institutions.

To prevent scabies outbreak in institutions, it is important for staff to recognise residents with symptoms of scabies promptly and to arrange medical treatment for them as early as possible, as well as to implement necessary control measures for prevention of further spread. The affected residents should preferably be isolated until treatment has been completed. Their clothing, towels and bed-linen must be washed in hot water (60°C or above) for not less than 10 minutes to get rid of the mites and eggs, and should be washed separately from those of other residents. All non-washable personal items such as shoes, mattress, etc. should be placed in a plastic bag and sealed up for at least 14 days before they can be cleaned and used as usual. Any cluster of residents and/or staff with symptoms of scabies should be reported to CHP for epidemiological investigation and control.

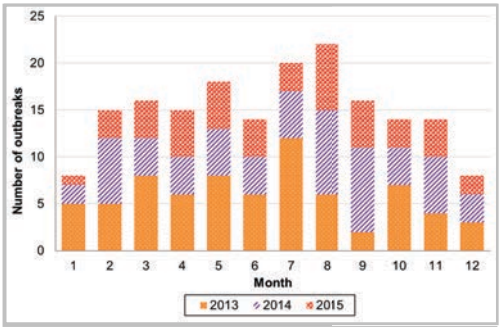

Figure 2 – Monthly number of institutional outbreaks of scabies reported to CHP, 2013–2015.

Facts on scabies

Sarcoptes scabiei is a parasite that can cause scabies in people of all ages by residing and reproducing in human skin. Scabies can be transmitted through direct skin contact with affected persons and also with their clothing and bedding which carry the mites/eggs. The incubation period ranges from two to six weeks for people with new infestation. For people who have previously been infested with scabies, symptoms usually develop earlier, usually within one to four days after re-exposure.

The typical presenting symptoms include intense itching, rash, thread-like lesions or vesicles. The itch is usually more severe at night or after a bath. The commonly affected areas are finger web, wrist, elbow, armpit, nipple, lower abdomen, buttock and groin. Face and scalp are usually not affected. However, persons with weakened immunity, elderly, disabled or debilitated persons may rarely develop a more severe form of scabies called Norwegian scabies or crusted scabies in which the skin lesions appear as widespread scale and crust without significant itching and face and scalp can also be affected. This type of scabies is highly contagious because an infested person may harbour thousands of mites, as compared with only 10 to 15 mites present in classical scabies.

Diagnosis of scabies is mainly based on history and typical clinical features. Scabies can be confirmed by microscopic examination of skin scraping for mites and eggs. The infested persons can be treated by topical medicated lotion (e.g. benzyl benzoate emulsion) which kills the mites. Their family members, inmates and other close contacts should also seek medical advice and receive treatment at the same time. More information is available on the CHP website: http://www.chp.gov.hk/en/content/9/24/39.html.

NEWS IN BRIEF

A sporadic case of brucellosis

On October 31, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of brucellosis affecting a 51-year-old man with multiple chronic illnesses. He presented with fever, sweating, fatigue, weight loss, headache, arthralgia and generalised aching since mid-August. He was admitted to a public hospital on August 17. His blood specimens collected on August 22 and October 6 showed a four-fold and more than four-fold rise in titres for *Brucella abortus* and *Brucella melitensis,* respectively. His clinical diagnosis was brucellosis. He was treated with courses of antibiotics and his condition was stable. The patient reported no exposure to internal organs or carcasses of animals, and denied any consumption of unpasteurised dairy products, raw or undercooked animal products. His home contact was asymptomatic. Investigation is on-going.

A sporadic case of human myiasis

On October 31, 2016, CHP recorded a case of human myiasis affecting a 46-year-old woman with underlying illnesses. She lived with family in a private housing estate in Tuen Mun. Since mid-October, she attended a general outpatient clinic regularly for dressing of right breast wound. Worms were found in the wound on October 28 and she was admitted to a public hospital for further management on the same day. The worms were later identified as *Chrysomya bezziana*. Her condition remained stable and she was discharged on November 3. There was no recent travel history and her home contacts remained asymptomatic. Health advice was given to the family.

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

On October 31, 2016, CHP recorded a case of necrotising fasciitis caused by *Vibrio vulnificus*. The patient was a 74-year-old woman with underlying illnesses who lived in Shenzhen. Her right little finger was bitten by a fish while slaughtering it on October 25. She developed fever and painful right little finger on the same day. She went to Hong Kong and was admitted to a public hospital on October 25. Wound exploration and debridement were done on October 30. Necrotising fasciitis was the operative diagnosis. She was managed in the intensive care unit postoperatively and was treated with antibiotics. Her right little finger superficial wound swab grew *Vibrio vulnificus*. Her condition was serious. Her home contacts in Shenzhen were asymptomatic.

A sporadic case of acute Q fever

On November 1, 2016, CHP recorded a case of acute Q fever affecting a 48-year-old man with underlying illness. He presented with fever, chills, rigor and dry cough on September 26 and was admitted to a public hospital on October 9. Blood test showed deranged liver function and abdominal ultrasound found splenomegaly. He was treated with antibiotics and was discharged on October 15. His paired sera collected on October 9 and October 14 showed more than four-fold rise in antibody titre against *Coxiella burnetii* phase II antigen. He had no recent travel history and had no history of direct contact with animals or consumption of high risk food. His family members were asymptomatic.

Seminar on Management of Antimicrobial Resistance - One Health

A seminar, entitled "Management of Antimicrobial Resistance – One Health", jointly organised by CHP of the Department of Health, the Centre for Food Safety of the Food and Environmental Hygiene Department and the Agriculture, Fisheries and Conservation Department, was held on November 2, 2016. Around 200 stakeholders including local, Mainland and overseas experts, academics and government representatives including medical, veterinary, pharmacy, nursing and laboratory professionals as well as infection control personnel from public and private hospitals had attended the meeting.

With the aim of raising community awareness to the threat that antimicrobial resistance (AMR) imposes on public health, the seminar provided a platform for participants to grasp the latest situation of AMR under the "One Health" approach, to learn from overseas experts on their actions and measures, and to seek and discuss effective solutions to control antimicrobial use.

From left, the Controller of the Centre for Health Protection of the Department of Health, Dr Leung Ting-hung; Mainland member of the Expert Committee on Antimicrobial Resistance (ECAMR), Dr Xu Shixin; ECAMR overseas member, Professor Mary Barton; the ECAMR Chairman, Professor Yuen Kwok-yung; the Director of Health, Dr Constance Chan; ECAMR overseas member, Professor Peter Borriello; ECAMR Mainland member, Dr Guo Fusheng; Consultant (Community Medicine) (Risk Assessment and Communication) of the Centre for Food Safety of the Food and Environmental Hygiene Department, Dr Ho Yuk-yin; and the Deputy Director of Agriculture, Fisheries and Conservation Department, Dr So Ping-man, pictured on November 2, 2016 at the Management of AMR - One Health seminar.

Scarlet fever update (October 1, 2016 – October 31, 2016)

Scarlet fever activity in October increased as compared with that in September. CHP recorded 121 cases of scarlet fever in October as compared with 79 cases in September. A total of 1 064 cases have been recorded so far in 2016 (as of October 31, 2016). The cases recorded in October included 70 males and 51 females aged between one and 17 years (median=five years). Among them, a four-year-old girl required admission to paediatric intensive care unit for management. She initially presented with fever and vesicular rash and was diagnosed to have chickenpox. She subsequently developed scarlet fever and was complicated with myocarditis and toxic shock syndrome. Her blood sample and throat swab were cultured positive for *Streptococcus Pyogenes*. Her condition improved with antibiotic treatment and was discharged. No fatal cases were reported during this reporting period. In the current reporting period, there were three institutional clusters involving two kindergartens and a primary school, affecting a total of seven children.

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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

World Health Organization Regional Action Plan for Viral Hepatitis in the Western Pacific 2016-2020, and Programme on Prevention of Viral Hepatitis in Hong Kong

Reported by Dr Ada Lin, Senior Medical and Health Officer, Special Prevention Programme, Public Health Services Branch, CHP.

Viral hepatitis is an important cause of morbidity and mortality worldwide. The Western Pacific Region bears a significant disease burden from viral hepatitis, accounting for almost 40% of global mortality due to hepatitis[1]. Majority of these deaths are from hepatitis B and C. Endorsed by the Western Pacific Member States at the Regional Committee Meeting in October 2015, the World Health Organization (WHO) has launched the Regional Action Plan for Viral Hepatitis in the Western Pacific 2016-2020, which provides a systematic approach to priority areas for action by countries to reduce the impact of viral hepatitis[1].

Figure 1 - DH hosted a three-day meeting titled "First Meeting of Hepatitis Programme Focal Points from High Burden Countries in Asia" organised by WHO Western Pacific Office on June 22 to 24, 2016 in Hong Kong. Approximately 60 overseas and local delegates participated in the meeting.

The vision of this regional action plan is a region free of new hepatitis infections, and where people living with chronic hepatitis have access to care as well as affordable and effective treatment. With a focus on hepatitis B and C, there are five priority areas for action, including advocacy, policy, strategic information, stopping transmission and treatment, with proposed 2017 milestones and 2020 targets. To promote and support Member States to implement the regional action plan, WHO organised a meeting titled "First Meeting of Hepatitis Programme Focal Points from High Burden Countries in Asia" on June 22 to 24, 2016 in Hong Kong. Hosted by the Department of Health (DH), the meeting was officiated by Dr Ko Wing-man, BBS, JP, Secretary for Food and Health and Dr Shin Young-soo, Regional Director, WHO in the Western Pacific Region. Over 60 overseas and local delegates participated in the meeting and made detailed operational recommendations to specify actions as outlined in the regional action plan.

In the meeting, representatives from Hong Kong shared local response in prevention and control of viral hepatitis. With concerted preventive efforts in the past three decades, Hong Kong has evolved from a region of high to intermediate endemicity on hepatitis B from 1998 to 2014[2]. As for hepatitis C, the endemic remains in at-risk population namely injecting drug users whereas the seroprevalence in the general population remains very low. In 2014, the anti-HCV seroprevalence in new blood donors was low at 0.08%. Local programmes for prevention and control of viral hepatitis include community-based vaccination, surveillance, prevention in the healthcare setting, harm reduction services, raising public awareness and treatment programmes, all of which are within the priority areas of action as set in the regional action plan. In July 2011, Hong Kong was verified by the WHO Regional Office for the Western Pacific as having successfully achieved the goal of hepatitis B control of <1%, after a local survey by DH in 2009 revealing hepatitis B surface antigen (HBsAg) seroprevalence of 0.78% among 1 913 children aged 12 to 15 years[3].

Hepatitis B vaccination is one most important element of hepatitis B control in Hong Kong. Since its implementation in 1988, the universal neonatal hepatitis B immunisation programme continues to record a high birth dose coverage rate beyond 99% in the past five years. For neonates of mothers with chronic hepatitis B, hepatitis B immunoglobulin would also be given at birth to further reduce the risk of perinatal infection. According to a survey on immunisation coverage by DH in 2012, the percentage of children aged two to five years who have completed three doses of hepatitis B vaccine exceeded 98.5%. Furthermore, a supplementary hepatitis B vaccination programme for primary six students was introduced in 1998, and the coverage rate of three-dose hepatitis B vaccination among these students each year was consistently high at 99% in the past decade[3]. On the other hand, hepatitis B immunisation programme was in place for other prioritised adult populations including healthcare workers and attendees of methadone clinics.

As for surveillance, viral hepatitis has been a statutory notifiable disease in Hong Kong since 1974. The reported cases are classified by viral etiology, namely hepatitis A, hepatitis B, hepatitis C, hepatitis E and hepatitis (not elsewhere classified). In addition, the epidemiology of chronic infection is gauged by collation and analysis of data obtained from various sources including service statistics, seroprevalence studies, cancer registry and research studies, and all these strategic information is compiled in the annual report of Surveillance of Viral Hepatitis in Hong Kong by DH[3].

Regarding prevention in the healthcare setting, blood donated in Hong Kong is intensively screened for hepatitis B, C and other blood-borne pathogens with most-up-to-date technologies to ensure blood safety. In addition to the promulgation of standard precautions and other infection control measures with local guidelines[4], the use of disposable needles and sharps in the healthcare setting has been a standard practice. Besides, infrastructure for occupational postexposure management of blood-borne pathogens including viral hepatitis is in place for prompt intervention when needed.

Methadone treatment programme, introduced in Hong Kong since mid-1970s, provided unrestricted access of opiate replacement therapy in different districts in the territory. As of November 2016, there are 19 methadone clinics providing services to reduce injection-related complications and impact of blood-borne pathogens in this marginalised population. As for treatment programme, antivirals for hepatitis B and C are available and heavily subsidised in the public sector in Hong Kong under specialist care.

Last but not the least, the Viral Hepatitis Preventive Service of DH provides health education on viral hepatitis through various channels including telephone hotline, internet webpage, printed materials, health talks and annual seminar. To echo WHO World Hepatitis Day on July 28, advocacy and publicity activities were carried out regularly around the time of and planned to extend beyond annual World Hepatitis Day.

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Exercise "Beryl" tests government response to Middle East Respiratory Syndrome

Reported by Emergency Response and Information Branch, CHP.

The Centre for Health Protection (CHP) of the Department of Health (DH), in collaboration with other government departments and organisations, tested its preparedness for a possible detection of Middle East Respiratory Syndrome (MERS) on November 16, 2016 during an exercise code-named "Beryl" at the Ho Tung Lau Depot of the MTR Corporation Limited (MTRCL).

About 100 participants from relevant government departments and organisations took part in the exercise, including more than 20 experts from the Mainland and Macau who participated as observers. The exercise was aimed at assessing the effectiveness of the Government's plans and procedures and the interoperability of government departments and agencies in response to the detection of a communicable disease on-board an MTR Intercity Through Train, as well as heightening the overall awareness and readiness of relevant stakeholders in preventing the spread of communicable disease.

The exercise consisted of two parts. The first part was a table-top exercise conducted on November 9, 2016, in which relevant departments and organisations discussed and supervised the response required in the simulated scenario of a MERS patient travelling from the Mainland to Hong Kong via train (Photo 1).

The second part was a ground movement exercise. Under the exercise simulation, a passenger was found sick on an MTR Intercity Through Train heading to Hung Hom Station. He presented with shortness of breath, fever and vomiting. Meanwhile, DH was notified by its Mainland counterpart that a confirmed MERS patient was taking an MTR Intercity Through Train to Hong Kong. Subsequently, it was confirmed that the case subject was the sick passenger.

DH activated the emergency response mechanism immediately and co-ordinated with relevant departments and agencies, disciplinary services and the MTRCL to formulate and implement response measures before the train's arrival.

Upon the train's arrival, DH arranged for a Public Health Team to conduct an on-board assessment and epidemiological investigation (Photo 2); arrange for the Fire

Photo 1 - Dr Wong Ka-hing, Controller, Centre for Health Protection, gave an opening speech during the table-top exercise conducted on November 9, 2016.

Photo 2 - Personnel from the Port Health Office of DH conducted epidemiological investigation of a passenger who was the confirmed MERS patient.

Photo 3 - The sick passenger was transferred from the train cabin to the ambulance by FSD officers.

Services Department (FSD) to transfer the MERS patient to hospital (Photo 3); identify collaterals and potential contacts; and instruct the MTRCL to disinfect the affected areas (Photo 4).

The exercise provided a valuable opportunity for relevant government departments and organisations to strengthen their preparedness and identify areas for improvement. It also helped enhance the preparedness of relevant stakeholders in response to inbound travellers with a communicable disease.

Photo 4 - Under the supervision of personnel from the Port Health Office of DH, MTRCL staff conducted cleansing and disinfection work in the affected train cabin.

NEWS IN BRIEF

A sporadic case of human myiasis

On November 9, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of human myiasis affecting a 91-year-old woman with pre-existing medical conditions. She presented with a foul-smelling right big toe skin ulcer on October 29. She was brought to the Accident and Emergency Department of a public hospital and was admitted on the same day. Maggots collected over the wound were identified as *Sarcophaga* species. Her clinical condition remained stable and was currently under rehabilitation. The patient resided in a residential care home for the elderly (RCHE) in Tuen Mun and she requires assistance in daily activities. She had no recent travel history. Her contacts in the RCHE were asymptomatic. Health advice on personal care and environmental hygiene was given to the RCHE.

A sporadic case of psittacosis

On November 11, 2016, CHP recorded a case of psittacosis affecting a 70-year-old female with underlying illness. She presented with fever, productive cough, shortness of breath, vomiting, diarrhoea and dizziness on October 30. She was admitted to a public hospital on November 7 and her chest X-ray showed bilateral consolidation. Her clinical diagnosis was atypical pneumonia. Her condition deteriorated requiring management in intensive care unit. Subsequently, she was transferred to another public hospital from November 9 to 17 for extracorporeal membrane oxygenation therapy. Her current condition is stable. Her endotracheal aspirate collected on November 7 was tested positive for *Chlamydophila psittaci* DNA. She had no recent travel history. She did not report any contact history with birds or their excreta during the incubation period. Her home contacts remained asymptomatic.

A sporadic case of *Streptococcus suis* infection

On November 11, 2016, CHP recorded a sporadic case of *Streptococcus suis* infection affecting a 70-year-old woman with pre-existing medical conditions. She presented with neck and back pain on November 1 and was admitted to a public hospital on November 4. She was treated with antibiotics and her condition was stable. Blood culture collected on November 8 grew *Streptococcus suis*. She had handled raw pork at home during the incubation period and her home contacts were asymptomatic.

A sporadic case of necrotising fasciitis due to *vibrio vulnificus* infection

On November 14, 2016, CHP recorded a sporadic case of necrotising fasciitis due to *Vibrio vulnificus* infection affecting a 72-year-old male with underlying illnesses. He sustained right foot injury after slip and fall on November 8. He presented with progressive swelling and redness over the foot then subsequently developed spike of fever. He attended the Accident and Emergency Department of a public hospital on November 12 and was admitted on same day. The patient developed hypotensive shock and cardiac arrest upon admission. He was transferred to intensive care unit for further management. The clinical diagnosis was necrotising fasciitis. Incision and drainage of right foot was performed on November 13, and above-knee-amputation of right leg was performed on November 14. His blood culture taken on November 12 grew *Vibrio vulnificus*. His condition remained critical. Epidemiological investigation revealed that the patient lived with his wife and son who remained asymptomatic. He did not have recent travel history. The patient occasionally went to wet market but recalled no history of contact with fish or ate any undercooked/raw seafood during incubation period. Investigation was ongoing.

CA-MRSA cases in October 2016

In October 2016, CHP recorded a total of 82 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 43 males and 39 females with ages ranging from 13 days to 80 years (median=40 years). Among them, there were 58 Chinese, 9 Pakistani, 6 Filipinos, 4 Caucasian, 2 Nepalese, 1 Japanese, 1 mixed and 1 of unknown ethnicity. Isolates of all the 82 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (48) or V (34).

Eighty-one cases presented with uncomplicated skin and soft tissue infections while the remaining case had invasive CA-MRSA infection. The invasive case affected a 41-year-old man who had history of psoriasis and eczema. He presented with fever and multiple abscesses over left hand and bilateral lower limbs and was admitted to a public hospital for management on October 13, 2016. His blood specimen and wound swab were cultured positive for CA-MRSA. Incision and drainage for abscesses was performed and his condition remained stable. He was discharged on October 31. Screening and decolonisation would be provided to the household contacts.

Among the 82 cases, two cases involved healthcare workers who were nurses working in different wards in a private hospital. Investigation did not reveal any epidemiological linkage to other cases. Besides, two household clusters, with each affecting two persons, were identified. Screening and decolonisation would be carried out for their close contacts.

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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

Risk of HIV infection and substance use in Hong Kong MSM

Reported by Dr Alfred SIT, Medical and Health Officer, Dr SHU Bo-yee, Senior Medical and Health Officer, Special Preventive Programme, Public Health Services Branch and Dr WONG Ka-hing, Controller, CHP.

The Department of Health (DH) has implemented a voluntary anonymous case-based HIV and AIDS reporting system since 1984. In the past 32 years, the annual number of reported HIV infection has continued to rise and reach a record high of 725 in 2015, which was 11% up compared with 651 cases in 2014. Hong Kong's HIV epidemic was still dominated by men who have sex with men (MSM) infections (homosexual and bisexual contact). In 2015, it accounted for 60% of all newly reported HIV cases, and 74.2% if excluding cases with undetermined route of transmission due to inadequate information. MSM also accounted for a continually expanding proportion of the overall male infected cases, from 41.4% in 2006 to 69.3% in 2015 (Figure 1).

Risky sexual behaviours related to HIV infection in MSM

DH has conducted annual community-based HIV/AIDS Response Indicator Survey (HARiS) for MSM since 2013 to monitor their HIV-related risky behaviours. The survey recruited around 800-1000 participants every year. Results showed that multiple sexual partners were very common among MSM, with more than 50% having two or more partners in the last six months (Table 1). Condom use rates at their last anal sex were unsatisfactory; and it was particularly low when they had sex with emotional relationship partners (63.7% to 65.7%).

Substance use is significantly associated with HIV infection

Substance use (drug use) among MSM was commonly reported from the surveys in the past few years. Consistently, 11% to 12% of MSM reported to have used drugs before or during sex (chemsex), and 22% to 28% had used alcohol (Table 2). Poppers (street name) is the commonest one to be used (55%-71%), followed by methamphetamine (Ice) (17%-25%). Medicine for treating erectile dysfunction, such as Viagra and Celius, were often used by MSM together with poppers and Ice to increase their sexual performance.

During HARiS 2014, assessment of HIV sero-prevalence was included in the survey by testing urine specimen. The overall HIV prevalence was found to be 5.85% in the participants.

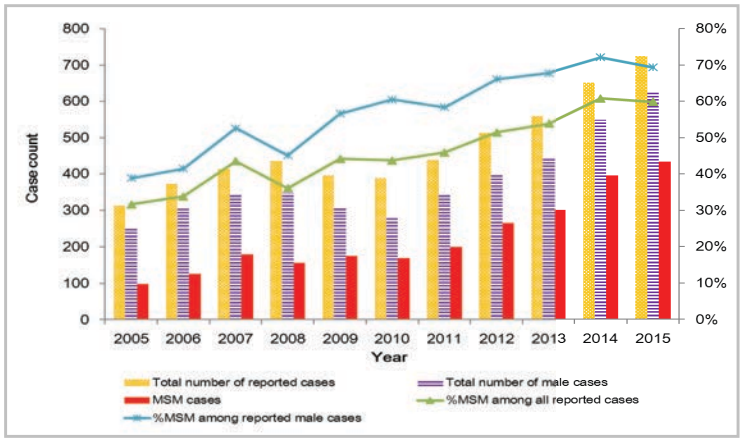

Figure 1 - Proportion of MSM infection among all cases and male cases (2005-2015).

	2013 N=853	2014 N=1 026	2015 N=1 091
With two or more sex partners in past six months	--	54.3%	53.4%
Condom use at last anal sex in past six months with :			
- Emotional relationship partner	63.7%	65.0%	65.7%
- Regular sex partner	76.7%	70.3%	73.6%
- Non-regular sex partner	79.5%	80.6%	81.1%
- Commercial sex partner	69.9%	89.1%	96.1%
HIV testing rate in past 12 months	57.0%	62.3%	60.8%

Table 1 - Sexual behaviours and HIV testing behaviours among MSM (HARiS 2013-2015).

Types of substance use		2013	2014	2015
Alcohol		--	22.6%	27.7%
Drugs		--	11.1%	11.8%
1	*Poppers*	71%	55.3%	71%
2	*Methamphetamine (Ice 冰)*	17%	25.4%	20.2%
3	*Gamma-Hydroxybutyric acid (GHB/ G水)*	--	--	12.4%
4	*Marijuana (大麻)*	11%	11.4%	7.0%
5	*MDMA (Ecstasy/E仔)*	27%	5.3%	5.4%
6	*0*號膠囊/*1*號膠囊	--	--	4.7%
7	*Foxy*	--	--	3.9%
8	*Ketamine (K仔)*	20%	5.3%	3.0%
9	*Cocaine (可卡因)*	6%	2.6%	2.3%
10	*Triazolam/Midazolam/Zopiclone (TMZ /白瓜子/藍精靈，Five 仔/安眠藥)*	5%	1.8%	0.7%
Viagra / Celius / Levitra (V仔)*		24%	52.6%	42.6%

Table 2 - Alcohol and substance use before and during sex in the last six months among MSM (HARiS 2013-2015).
*(*Viagra, Celius, and Levitra are medicines used for treating erectile dysfunction and are not regarded as drugs, but they are often taken by MSM together with other drugs for recreational purposes.)*

Further analysis showed that drug use was strongly associated with HIV infection (Odds ratio: 7.98, Confidence Interval: 3.82-16.68, p<0.001). Drugs can have the effects of altering judgement, raising mood, increasing energy, enhancing libido and prolonging sexual intercourse. Overseas studies have already shown that drug use is associated with increase in the number of sexual partners, increase in unprotected sex and sexually transmitted infections, and therefore putting drug users at higher risk of HIV infection. Fortunately, drug injection is uncommon among MSM in Hong Kong (1%), which might otherwise further increase the risk of HIV infection if injection equipment was share-used.

HIV testing and related services

MSM are strongly advised to receive at least annual HIV-testing irrespective of their individual risk assessment for HIV infection. Free and anonymous HIV testing and counselling services are provided by DH. People can call DH's AIDS Hotline (Tel: 2780 2211), Gay Men HIV Testing Hotline (Tel: 2117 1069) for appointment. A list of HIV testing services provided by AIDS Non-governmental organisations can be found at www.27802211.com and www.21171069.com. Referral to drug rehabilitation and treatment services could be provided for people who need the services. More information can be found at https://www.21171069.com/tc/stay_safe_love_life/addicted.html.

Review of cholera in Hong Kong

Reported by Dr YU Wing-man, Medical and Health Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Cholera is an acute intestinal infection caused by ingestion of food or water contaminated by the bacterium *Vibrio cholerae* (*V. cholerae*). There are many serogroups of *V. cholerae*, but only two serogroups, O1 and O139 cause outbreaks. It remains a global threat especially in countries where access to safe drinking water and satisfactory sanitary conditions is unavailable or insufficient. Most people infected with *V. cholerae* are asymptomatic but the bacterium can be shed in their faeces for one to 10 days which poses a risk of infecting other people[1]. Among people developing symptoms, 80% present with mild to moderate acute watery diarrhoea, while the other 20% develop severe dehydration leading to deaths if left untreated[2].

Local situation

In Hong Kong, cholera is a notifiable infectious disease and data have been available since 1946. The incidence of cholera in Hong Kong was once 33.16 per 100 000 population in 1946 and markedly declined to 0.34 per 100 000 population in 1947. No cases were recorded for the next 13 years until the resurgence in 1960s with incidence ranged from 0 to 3.36 per 100 000 population. Yet, with the improvement in sanitation and heightened awareness of personal hygiene, the incidence has declined since then and was stable over the past decade, ranging from 0 to 0.13 per 100 000 population. Nowadays, cases are mainly imported from other countries, though local cases were also present. From 2006 to 2016 (as of December 6, 2016), the Centre for Health Protection (CHP) of the Department of Health (DH) recorded a total of 31 cases of cholera with zero to nine cases annually (Figure 1) affecting patients aged from eight months to 66 years (median=31 years) with a male-to-female ratio of 1:1.2. A peak number of cases in August was observed (Figure 2). About two-thirds of the cases (21 cases) were imported infection while eight patients acquired the disease locally. The source of infection could not be determined for two cases who had stayed in both Mainland China and Hong Kong during the incubation period. Among the imported cases, the countries and area involved included India (10 cases), Indonesia (2 cases), Nepal (2 cases), Pakistan (2 cases), Bangladesh (1 case), Mainland China (1 case), Myanmar (1 case), Singapore (1 case) and the Philippines (1 case).

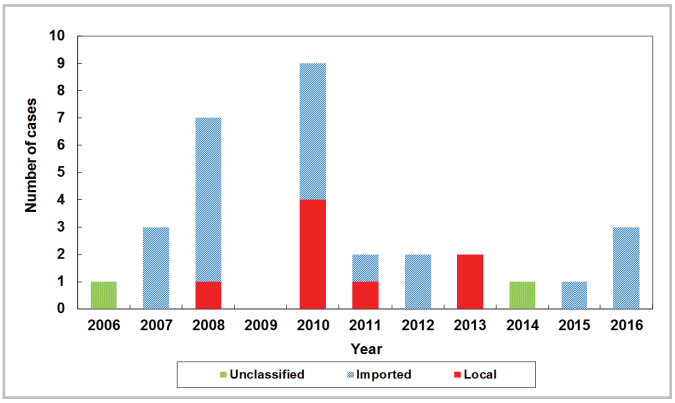

Figure 1 - Annual number of cases recorded by CHP, 2006–2016 (as of December 6, 2016).

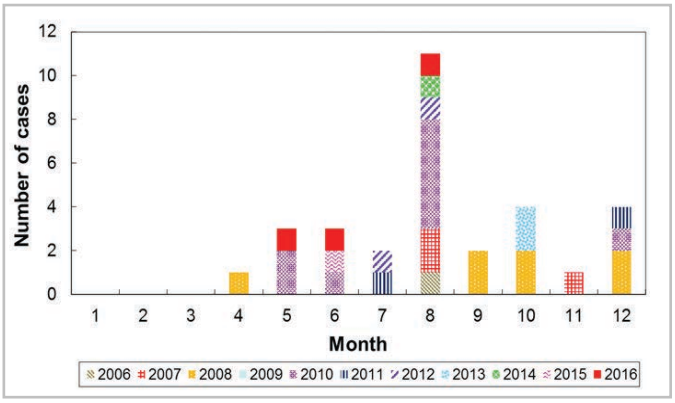

Figure 2 - Number of cases recorded by month, 2006–2016 (as of December 6, 2016).

The majority of the patients (26 cases, 84 %) presented with watery diarrhoea with mild to moderate severity. Other symptoms included vomiting (12 cases, 39 %), fever (3 cases, 10 %) and nausea (2 cases, 6 %). Five patients suffered from complications included hypokalaemia (4 cases), impaired renal function (2 cases) and dehydration (1 case). All patients were admitted to hospital for isolation and management. The length of stay ranged from three days to 19 days with a median of nine days. All of them recovered subsequently and no fatal case was recorded.

In Hong Kong, those with clinically compatible illness characterised by acute painless watery diarrhoea with or without vomiting and fulfilling the laboratory criterion with isolation of toxigenic *V. cholerae* O1 or *V. cholerae* O139 from stool or rectal swab culture are reported to the CHP. All 31 cases recorded were caused by *V. cholerae* O1 and among them, *V. cholerae* El Tor Ogawa caused the majority of cases (26 cases, 84 %), followed by El Tor Inaba (5 cases, 16 %). The majority of the patients infected by *V. cholerae* El Tor Ogawa serotype acquired the disease from other countries (19 cases, 73 %). For El Tor Inaba serotype, only two out of the five cases (40%) reported were imported cases.

Most cases were sporadic in nature (23 cases, 74 %). Four clusters, each affecting two persons, were recorded. Among these four clusters, two were imported from India and Indonesia, respectively. The cluster imported from India affected two family members while the cluster imported from Indonesia affected two female domestic helpers who lived together in a hostel in both Indonesia and Hong Kong, respectively. They could not recall consumption of high risk food or provide details of the meals consumed during the incubation period and thus the source of outbreak could not be determined in both clusters. The other two clusters were locally acquired infections. One cluster affected two female friends who had several common meals in various restaurants. The other cluster affected two family members who shared one common meal with seafood including fresh mud crabs and fresh

clams bought from a market and cooked at home. It was possible that inadequate cooking had contributed to the outbreak. Nevertheless, the source of the outbreak could not be ascertained in both local clusters.

Epidemiological investigation revealed that around 40% of the cases recalled consumption of seafood during the incubation period. In particular, two patients recalled consumption of raw shrimps locally. On the other hand, two patients recalled drinking unboiled filtered water or iced fruit juice in Nepal and India, respectively.

Provision of safe water, proper sanitation, personal, food and environmental hygiene are the mainstay of preventing cholera. The public are advised to wash hands properly with liquid soap and water before eating or handling food, after toilet or changing diapers and after handling garbage. Moreover, avoid handling food when having symptoms of vomiting or diarrhoea. Travellers should take precautions against cholera and mindful of what they eat abroad. Distribution map of cholera is available in the International travel and health website of the World Health Organization: http://www.who.int/ith/en/ while more health information is available in the CHP website: http://www.chp.gov.hk/en/content/9/24/16.html.

References

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NEWS IN BRIEF

A sporadic case of brucellosis

On November 25, 2016, the Centre for Health Protection (CHP) recorded a sporadic case of brucellosis affecting an 88-year-old woman with underlying medical illness. She presented with fever, chills, rigor, runny nose and fatigue since October 8, 2016. She was admitted to a public hospital on October 15. Her blood specimens collected on October 15 and November 9 showed a more than four-fold rise in titres for *Brucella abortus*. She was treated with courses of antibiotics and her condition was stable. The patient reported no exposure to internal organs or carcasses of animals, and denied any consumption of unpasteurised dairy products, raw or undercooked animal products. Her home contacts were asymptomatic. Investigation is on-going.

A sporadic case of leptospirosis

On November 28, 2016, CHP recorded a sporadic case of leptospirosis affecting a 53-year-old man with good past health. He presented with chills, headache and myalgia since October 28, 2016. He was admitted to a public hospital on October 30. His blood specimens collected on November 5 and November 19 showed a more than eight-fold rise in titres for *Leptospira* serogroup *Batavia*. The clinical diagnosis was leptospirosis. He was treated with courses of antibiotics; his condition improved and was discharged on November 11. The patient reported no exposure to rodents, stray dogs or other animals, and he denied any high risk activities such as hiking, visiting to farm, gardening or fresh water recreational activities. His home contacts were asymptomatic. Investigation is on-going.

Two sporadic cases of listeriosis

CHP recorded two sporadic cases of listeriosis in late November 2016. The first case was a 62-year-old man with underlying illnesses. He attended the Accident and Emergency Department of a public hospital on September 9 for his underlying illness and was admitted on the same day. He developed on and off fever since mid-September. His blood culture collected on November 17 yielded *Listeria monocytogenes*. He was treated with antibiotics and his condition remained stable. He reported no history of consumption of high risk food during the incubation period.

The second case was a 35-year-old woman with underlying illness and was in her third-trimester of pregnancy. She presented with vomiting, diarrhoea and headache on November 14. She attended an antenatal follow up appointment at a public hospital on November 24 and was found to have fever. She was admitted to the public hospital on the same day. Her blood culture collected on November 25 yielded *Listeria monocytogenes*. She delivered her twins by emergency caesarean section on November 25. The patient and her twins were treated with antibiotics and remained in stable condition. She reported no history of consumption of high risk food during the incubation period. Both patients had no recent travel history and their home contacts were asymptomatic. Investigations are ongoing.

World Antibiotic Awareness Week 2016 (November 14 to 20, 2016)

CHP launched the Antibiotic Awareness Week 2016 (AAW 2016) on November 14 to 20, 2016 to tie in with the second World Antibiotic Awareness Week initiated by the World Health Organization to increase awareness of global antibiotic resistance (AMR) through various activities. The highlight of the AAW 2016 activities was the AMR public talk cum award presentation ceremony which was held on November 17 for schools and groups participating in the one-minute video competition under the theme "Use antibiotic wisely. Prevent antimicrobial resistance". The list of awardees will be announced on the CHP webpage (http://chp.gov.hk/en/view_content/41461.html). Meanwhile, the "I Pledge" campaign has been extended from healthcare workers to the general public, inviting participants to sign the "I Pledge" certificate. Furthermore, an episode of Education Television programme with interesting animation to raise awareness of AMR will be launched for secondary schools shortly.

Photo - Group photo for the World Antibiotic Awareness Week 2016 (November 14-20, 2016).

Scarlet fever update (November 1, 2016 – November 30, 2016)

Scarlet fever activity in November increased as compared with that in October. CHP recorded 185 cases of scarlet fever in November as compared with 120 cases in October. A total of 1 248 cases have been recorded so far in 2016 (as of November 30, 2016). The cases recorded in November included 110 males and 75 females aged between one and 33 years (median=five years). In November, there were five institutional clusters involving three kindergartens and two primary schools, affecting a total of 17 children. No fatal cases were reported during this reporting period.

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

There has been increase in the activity of avian influenza viruses in neighboring areas and overseas countries in the recent two months. New cases of human infections with avian influenza A (H7N9) and avian influenza A (H5N6) started to occur after a period of quiescence in summer and autumn. Besides, outbreaks of highly pathogenic avian influenza (HPAI) in poultry and birds have been detected in many places of the world since November 2016. Below we reviewed the latest global situation of avian influenza.

Avian influenza A(H7N9)

Human H7N9 infections

No human H7N9 cases were reported between August and October 2016. Since November, eight human H7N9 cases have been reported in Mainland China (five in Jiangsu, and one each in Fujian, Guangdong and Zhejiang). Six (75%) of them had history of exposure to live poultry or market with live poultry before onset. In addition, the first human H7N9 case in Macau was reported on December 14, 2016. The case involved a 58-year-old poultry wholesaler who had contact with silky fowls with samples tested positive for avian influenza A(H7). He was asymptomatic but his respiratory specimen was tested positive for H7N9.

Locally, the first imported human H7N9 case in this winter was confirmed on December 19 affecting a 75-year-old man with chronic obstructive airway disease and secondary polycythemia. The patient travelled to Changping in Dongguan, Guangdong alone from November 28 to December 9. He visited a wet market in Sukeng, Changping, where he had bought dressed chicken. He had chest discomfort, cough with sputum, shortness of breath and runny nose while in Changping. He returned to Hong Kong on December 9 for treatment and was admitted to North District Hospital. A nasopharyngeal swab collected on December 9 was tested positive for enterovirus/rhinovirus but negative for influenza virus. On December 17, his condition deteriorated with development of fever and oxygen desaturation. A nasopharyngeal aspirate collected on December 19 was tested positive for avian influenza A(H7N9) virus. Cumulatively, 17 imported human H7N9 cases (including five deaths) have been confirmed in Hong Kong since December 2013.

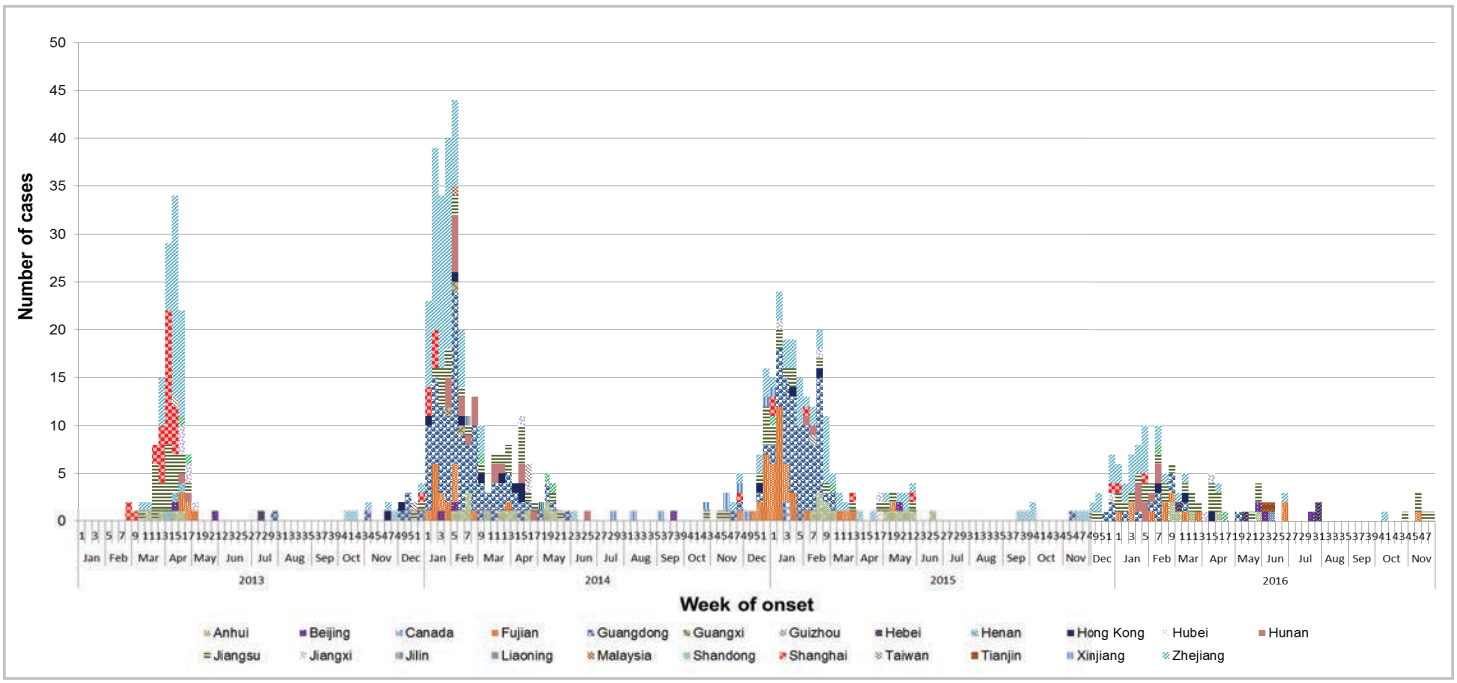

Figure 1 - Weekly number of confirmed human H7N9 cases by place of confirmation and onset date since 2013. (Remark: The onset date of 12 cases remained unknown. The case in Macau confirmed on December 14, 2016 was asymptomatic.)

Four distinct waves of human H7N9 infection have been observed from the emergence of human infection in early 2013 to July 2016 (Figure 1). Of note, most human cases occurred in winter and spring while the disease activity was low during summer and autumn months. So far, at least 808 human H7N9 cases have been reported globally. Their ages ranged from five months to 91 years (median=58 years). There were at least 324 deaths with a case fatality rate of about 40%. Except the case in Macau, all the cases acquired the infection in Mainland China, including 24 cases exported to other countries/areas (17 cases in Hong Kong, four cases in Taiwan, two cases in Canada and one case in Malaysia). A total of 19 provinces/municipalities in Mainland China ever reported human H7N9 cases with 18 located in the eastern part (Figure 2). The age and sex distribution, and exposure history of human H7N9 cases in Mainland China reported during the fourth wave from late 2015 to mid-2016 were similar to those in the previous three waves. Among all the reported cases, about 85% reported exposure to live poultry[1].

Figure 2 - Provinces/municipalities in Mainland China with human H7N9 cases detected since 2013.

Epidemiology and virology data from the fourth wave suggest no evidence of increased transmissibility of the H7N9 virus from poultry or environmental exposures to humans, or of sustained human-to-human transmission. The proportion of persons identified within clusters in the fourth wave was similar to that in the previous waves combined. So far, there were 26 clusters involving a total of 55 cases (23 with two cases and three with three cases). Twenty-three were family clusters and three were hospital clusters. The 29 secondary cases resulted from possible human-to-human transmission (18), exposure to a common infectious source (3), or undetermined exposures (8)[1].

H7N9 outbreaks in poultry

H7N9 has already become enzootic in poultry in Mainland China. Since January 2015, under the national animal avian influenza H7N9 monitoring program of the Ministry of Agriculture, poultry and environmental samples taken from markets in Anhui, Fujian, Guangdong, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Shanghai and Zhejiang were tested positive for H7N9 virus by virological tests[2]. According to reports received by the Food and Agriculture Organization on surveillance activities for H7N9 viruses in Mainland China, positive samples continue to be detected mainly from live bird markets, vendors and some commercial or breeding farms[3].

Apart from Mainland China, samples taken from a consignment of silky fowls in a wholesale poultry market in Macau were tested positive for A(H7) on December 13, 2016. The affected silky fowls were imported from Mainland China.

Avian influenza A(H5N6)

Human H5N6 infections

Since November 2016, two human cases of avian influenza A (H5N6) have been reported in Hunan and Guangxi Zhuang Autonomous Region of China respectively. Globally, a total of 16 sporadic human H5N6 cases have been reported since its first occurrence in 2014, and all were recorded in Mainland China (Figure 3). These included seven males and nine females with ages ranging from 11 to 65 years (median=40 years). Eight of them were fatal cases giving a case fatality rate 50%. Most cases either had visited wet market or had contact with live poultry. There was no evidence of human-to-human transmission of the H5N6 virus among their close contacts. In Hong Kong, no human H5N6 case has been detected so far.

Figure 3 - Provinces/municipalities in Mainland China with detections of H5N6 in poultry/birds and humans since 2014.

H5N6 outbreaks in poultry/wild birds

According to the World Organisation for Animal Health, HPAI A(H5N6) viruses emerged in 2014 causing outbreaks in poultry in Laos, Vietnam and Mainland China. During 2015 and 2016, HPAI A(H5N6) outbreaks have continued to occur in different parts of Mainland China (Figure 3). In November 2016, H5N6 outbreaks were reported in Japan and Korea for the first time. In Japan, H5N6 viruses were detected in dead black swans in a zoo and also caused outbreaks in farms in a number of areas. In Korea, H5N6 outbreaks have occurred in farms in many areas of the country.

Locally, faecal droppings of birds taken from Mai Po Nature Reserve on November 25 and 30, 2016 were tested positive for H5N6. Before these two reports, there were six previous reports of detection of H5N6 in chicken carcasses wild birds/dead chickens from April 2015 to February 2016.

Avian influenza A(H5N8)

In recent months, HPAI A(H5N8) viruses have been rapidly spreading in Asia and Europe, and causing deaths in wild birds and outbreaks in domestic poultry (chickens, ducks and turkeys, etc.). The spread was most likely through wild migratory birds. Since November 2016, 16 European countries (Austria, Croatia, Denmark, Finland, France, Germany, Hungary, Netherlands, Poland, Romania, Russia, Serbia, Sweden, Switzerland, Ukraine and United Kingdom), as well as Egypt, India, Iran, Israel, Nigeria and Taiwan reported H5N8 outbreaks in domestic poultry or detections in wild or zoo birds[4]. No human cases of influenza A(H5N8) have been documented so far.

Risk assessment for avian influenza viruses

According to the World Health Organization, most human cases were exposed to avian influenza viruses through contact with infected poultry or contaminated environments, including live poultry markets. Since the viruses continue to be detected in animals

and environments, further human cases are expected to occur from time to time. Even though small clusters of A(H5) and H7N9 infections have been reported previously including those involving healthcare workers, current epidemiological and virological evidence suggests that A(H5) and H7N9 viruses have not acquired the ability of sustained transmission among humans, thus the likelihood of human-to-human transmission of avian influenza viruses is low.

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 the past few years, most imported human H7N9 cases were detected in the Hong Kong in the first quarter of a year. In view of the heavy trade and travel between Mainland China and Hong Kong, further sporadic human cases and affected poultry imported to Hong Kong every now and then are expected, especially in the coming few months. Nonetheless, with oseltamivir prophylaxis and medical surveillance of the close contacts of any confirmed cases, the risk of secondary spread from cases imported into Hong Kong is considered to be low at the present moment provided that the avian influenza viruses still have not acquired the ability of efficient human-to-human transmission.

Prevention and control measures

On the prevention side, 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.

Travellers returning from affected areas with fever or respiratory symptoms should wear a mask, seek medical attention and reveal their travel and exposure history (especially history of contact with live poultry or visiting live poultry market) to doctors. Healthcare professionals should pay special attention to patients who presented with fever or influenza-like illness. Travel history and relevant exposure history during travel should be obtained from them. Any patients with acute respiratory illness or pneumonia, and with at-risk exposure (such as history of visiting market with live poultry, contact with poultry, etc.) in affected areas within the incubation period (i.e. 10 days before onset of symptoms) should be managed as suspected cases and immediately reported to the Centre for Health Protection of the Department of Health for investigation.

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NEWS IN BRIEF

Field Epidemiology Training Programme (FETP) training course 2016

The Hong Kong FETP of the Centre for Health Protection (CHP) of the Department of Health organised a five-day training course on "Scientific writing and presentation skill" during December 12 to 16, 2016. The objective of the course was to equip participants with skills and knowledge on writing scientific articles for submission to peer-reviewed journals. The training course included instructions and technical advices given by the facilitators and hands-on practices on manuscript development. A total of 11 public health professionals attended the course and it was well received by the participants.

CA-MRSA cases in November 2016

In November 2016, CHP recorded a total of 100 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 66 males and 34 females with ages ranging from five months to 95 years (median=34.5 years). Among them, there were 74 Chinese, 7 Filipinos, 7 Pakistani, 3 Indian, 2 Caucasian, 1 African, 1 Thai, 1 Vietnamese and 4 of unknown ethnicity. Isolates of all the 100 cases exhibited the Panton-Valentine Leukocidin gene and were tested positive for either Staphylococcal Cassette Chromosome *mec* (SCC*mec*) type IV (63) or V (37). All cases presented with uncomplicated skin and soft tissue infections.

Among the 100 cases, three cases involved health care workers working in three public hospitals. Investigation did not reveal any cases epidemiologically linked to these three patients. Besides, ten household clusters, with each affecting two to three persons, were identified. Screening and decolonisation would be carried out for their close contacts.

Dec 18 - Dec 31, 2016 WEEKS 52 - 53 VOL 13 ISSUE N⁰ 27

Communicable Diseases WATCH

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FEATURE IN FOCUS

Survey on Use of Antibiotics among Medical Doctors in Hong Kong (2011/12) - Report of Findings

Reported by Dr John SHUM, Medical and Health Officer, Dr WONG Wai-ying, Senior Medical & 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, imposing heavy burden on society. The World Health Organization has all along been promoting global awareness of the problem, starting from the World Health Day in April 2011 towards the second Antibiotic Awareness Week in November 2016. Being prescription-only medications, the judicious use of antibiotics among doctors becomes an essential step to control AMR, and an understanding of the prescription practice would be valuable.

A commissioned cross-sectional survey on use of antibiotics among medical doctors in Hong Kong was performed during the period of December 5, 2011 to March 4, 2012 to help formulate the intervention strategies of the Department of Health (DH). All doctors registered with the Medical Council of Hong Kong (N=11 910; as of February 2011) were invited to participate in the survey and convenience sampling was employed. The survey aimed mainly at measuring the attitude and practice of prescribing antibiotics for upper respiratory tract infections (URTIs) among medical doctors and their awareness of AMR and understanding their use of antibiotics in treating patients with URTIs.

Main Findings

Attitude and behaviours towards prescribing antibiotic for treatment of URTI

Among the questionnaires received from 1 766 respondents, 1 743 were valid for data analysis. Around half (47%) were in private practice and over two fifths (44%) worked in the Hospital Authority (HA). The survey revealed that 94% of respondents had prescribed antibiotics to patients in the past one year, resulting in an average of 18% of consultations prescribing antibiotics. For treatment of "URTIs", "cold" or "flu", 5% and 46% of doctors believed antibiotics were "useful" and "occasionally usefully", respectively (Figure 1). Only 8% of doctors stated they "always"/"very often"/"often" prescribed antibiotics to patients with URTIs/cold/flu while another 62% stated that they "sometimes" did so (Figure 2). This survey also found that the elderly patients were most likely to receive antibiotics with URTIs (Figure 3).

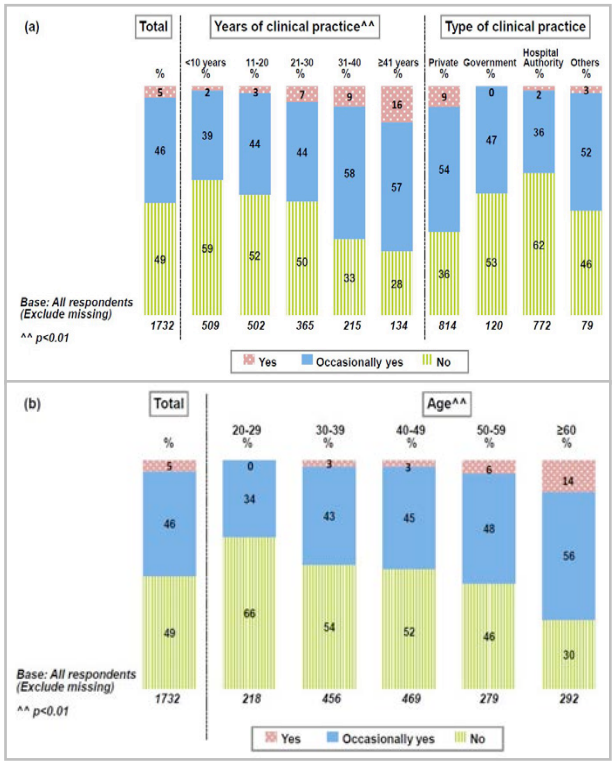

Figure 1 - Whether antibiotics are useful in treating patients with upper respiratory tract infections (URTIs)/cold/flu. (a) by years of clinical practice and types of clinical practice of doctors; (b) by ages of doctors.

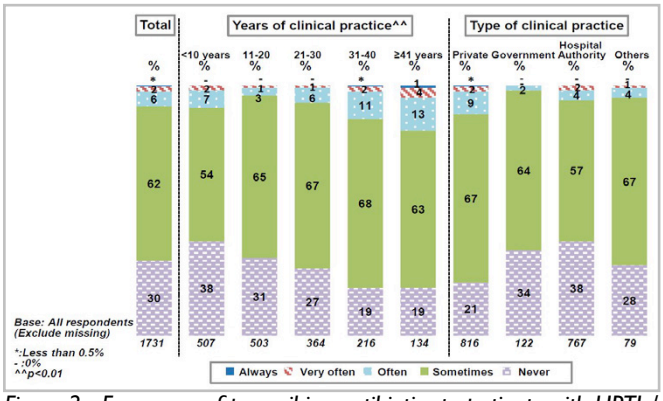

Figure 2 - Frequency of prescribing antibiotics to patients with URTIs/ cold/flu, by years of clinical practice and types of clinical practice of doctors.

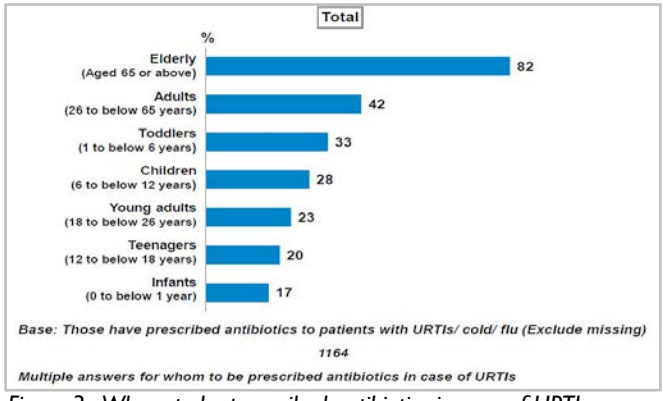

Figure 3 - Whom to be prescribed antibiotics in case of URTIs.

Who were more likely to prescribe

The type of practice sector and seniority of the doctor were associated with the readiness to prescribe antibiotics to patient with URTIs. Seventy-nine percent of the practitioners working in private sector stated that they prescribed antibiotics in the previous year, including 67% of those who claimed prescribing on a "sometimes" basis (Figure 2). Doctors practising in the public sector (government and HA) tended not to consider antibiotic to be useful in treating patients with URTIs (Figure 1a) and were the least likely to prescribe antibiotics to patients with URTIs (Figure 2). Doctors of younger age also inclined not to consider antibiotic to be useful in treating patients with URTIs (Figure 1b) and doctors with shorter years of clinical practice were the least likely to prescribe antibiotics for URTIs (Figure 2).

Reasons for prescribing

For reasons behind the prescription, doctors who expressed they had ever prescribed antibiotics to patients with "URTIs" mostly because of diagnostic uncertainty (66%), followed by the second visit of the same episode of URTI (40%). Other important factors affecting the likelihood of prescribing antibiotic to URTI patient include (Figure 4):

1. Clinical features suggestive of bacterial infection or superinfection and persistent/deteriorated symptoms; and
2. Satisfaction of the patient or his carer.

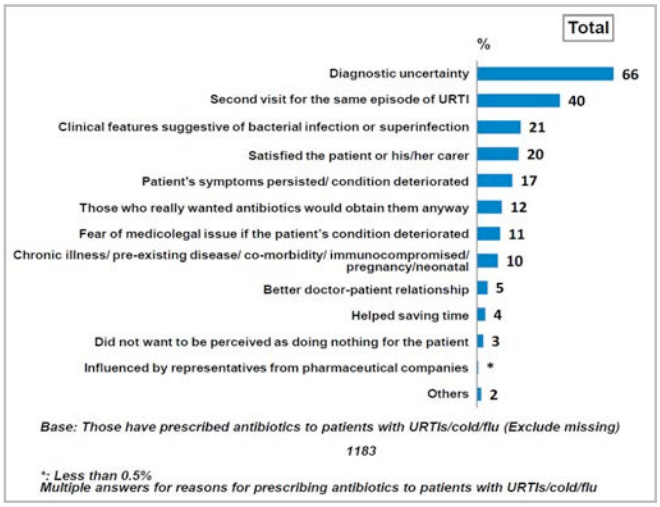

Figure 4 - Reasons for prescribing antibiotics to patients with URTIs/ cold/flu.

One-fourth of doctors stated that their patients/their carers "always"/"very often"/"often" requested antibiotics when consulting URTIs while 66% claimed "sometimes" they received requests (Figure 5a). Although 20% of doctors stated there were no impact, 11% of doctors stated patients'/their carers' expectation had high impact (rating "4"/"5" on a 5-point scale) on their antibiotics prescription for URTIs/cold/flu (Figure 5b).

Awareness and behaviours related to AMR

Nearly half of doctors (48%) considered that AMR was to some extent severe in Hong Kong (8% and 40% rated "5" and "4" on a 5-point scale, where "5" means very severe) (Figure 6). With respect to doctors' action to safeguard the use of antibiotics:

1. Half of doctors stated they "always" advised patients on self-management when they had the above illnesses, and 41% of doctors stated they "always" discussed with patients that antibiotics could not cure viral infections like URTIs/cold/flu; and
2. 33% and 24% of doctors who had prescribed antibiotics in the past year stated they "always" and "very often" reminded patients that improper use of antibiotics would increase AMR, respectively.

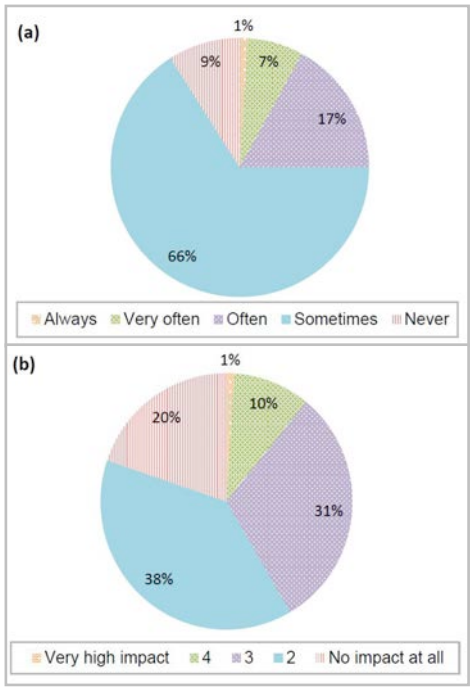

Figure 5 – (a) Frequency of patients/their carers requesting antibiotics when consulting for URTIs/ cold/flu; (b) Impact of patients'/their carers' expectation on prescription of antibiotics for URTIs/cold/flu.

Actions taken and the way forward

This survey has shed light on the attitudes and behaviours of the medical doctors related to antibiotic prescription in URTI. Despite the fact that most of the URTIs and all cold/flu are viral infection, about half of the respondents believed that antibiotics was "useful" or "occasionally useful" for treating them. Less than one-tenth (8%) stated that they "always"/"very often"/"often" prescribed antibiotics to patients with URTIs/cold/flu. Reasons behind prescription are mainly diagnostic uncertainty, repeated consultations, superinfection, clinical deterioration and to a certain extent for the satisfaction of the patients/carers. Elderly patients are more likely to receive antibiotics. This survey also found that younger doctors and doctors working in public healthcare system are less likely to prescribe antibiotic to patients with URTIs/ cold/flu. In response to the findings, DH has rolled out a series of activities including marking of annual Antibiotic Awareness Day/Week since 2012, release of fourth edition of Interhospital Multi-disciplinary Programme on Antimicrobial ChemoTherapy (IMPACT) Guidelines in 2012 (revised version to be released in 2017), launching of I-Pledge Campaign in 2014, development of various education resources and workplace reminders and also public education. Given the heightening global threat of AMR and with the establishment of the High Level Steering Committee on AMR, it is about time to review the effectiveness of these activities and identify the gaps for more targeted approach to contain AMR. Preparation of a follow-up survey is underway.

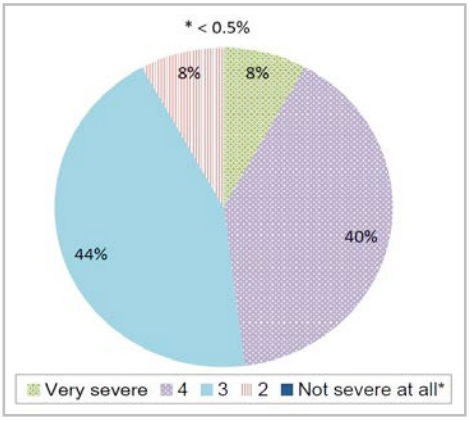

Figure 6 - Perception of severity of AMR in Hong Kong.

Seasonal influenza vaccination coverage survey for the 2015/16 season

Reported by Mr Desmond CHAN, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Introduction

Seasonal influenza vaccination (SIV) is one of the most effective preventive measures against influenza and its complications. The Government started to provide free influenza vaccination to elderly people living in residential care homes from 1998 onwards. The Government gradually expanded target groups in subsequent years, including children and adults aged 65 years or above, by providing free/subsidised influenza vaccination through the Government Vaccination Programme (GVP) and the Vaccination Subsidy Scheme (VSS).

The Centre for Health Protection of the Department of Health conducted a seasonal influenza vaccination coverage survey in 2016, with the major objectives being (1) assessing the SIV uptake and use of subsidy schemes in different groups of the community, (2) investigating awareness and perceptions related to SIV and SIV programme, (3) understanding the reasons for receiving and not receiving SIV and (4) exploring the facilitating factors of receiving SIV in future.

Method

The survey was conducted through telephone household interview with the aid of the Computer Assisted Telephone Interview (CATI) system. Two-stage sampling was adopted, with a random sample of telephone numbers selected at the first stage and one eligible respondent within the selected household approached for interview at the second stage. Target population of the survey was land-based non-institutionalised population of Hong Kong but excluding foreign domestic helpers, two-way permit holders from mainland China and other visitors. Parents/guardians of individuals aged under 18 years acted as proxies for the interview. The survey covered seven groups of individuals according to their age group and status of chronic medical problems (Table 1).

Survey Group	A	B	C	D	E	F	A to F	G
	Children aged six months to five years[2]	Children aged six to 11 years	Children aged 12 to 17 years	Persons aged 18 to 49 years	Persons aged 50 to 64 years	Persons aged 65 years or above[2]	Overall[1]	Persons with chronic medical problems[1]
	(N=1 001)	(N=1 000)	(N=500)	(N=505)	(N=523)	(N=553)	(N=4 082)	(N=549)
Number of respondents who received SIV in 2015/16 season	211	180	37	27	42	183	486	124
SIV uptake in the 2015/16 season	21.1%	18.0%	7.4%	5.3%	8.0%	33.1%	11.9%	22.7%
(95% Confidence Interval)	(18.6-23.6%)	(15.6-20.4%)	(5.1-9.7%)	(3.4-7.3%)	(5.7-10.4%)	(29.2-37.0%)	(10.9-12.9%)	(19.2-26.2%)

Table 1 - Seasonal influenza vaccination uptake in the 2015/16 season in Hong Kong. (Remarks: [1]Weighting was applied on age to compile statistics on overall Hong Kong population and those with chronic medical illness; [2]Children aged six months to five years and elderly aged 65 years or above were eligible for the GVP or VSS in the 2015/16 season.)

Before the commencement of the main fieldwork, a pilot phase was conducted in late April and early May, 2016. The questionnaire and logistics of the CATI system was fully tested and adjusted upon the pilot phase. The main fieldwork was conducted from June to August 2016. To compile statistics of the overall Hong Kong population and those with chronic medical illnesses, weighting was applied on age to make the survey findings more representative of the general population.

Result

We successfully interviewed 4 082 respondents in different survey groups with an overall response rate of 71.3%*. Among the 4 082 respondents, 549 were reported to have chronic medical problems.

(1) Seasonal influenza vaccination and use of subsidy scheme in 2015/16 season

The overall SIV uptake among the Hong Kong population in the 2015/16 season was 11.9% (95% Confidence Interval (CI): 10.9-12.9%) (Table 1). The 2015/16 SIV uptake was highest for those aged 65 years or above (33.1%, 95% CI: 29.2-37.0%), followed by children aged six months to five years (21.1%, 95% CI: 18.6-23.6%) and children aged six to 11 years (18.0%, 95% CI: 15.6-20.4%). Among those respondents with chronic medical problems, 22.7% (95% CI: 19.2-26.2%) received SIV in the 2015/16 season.

A vast majority of the vaccinated respondents did not experience any adverse event following vaccination (90%). Fever (3.7%), injection site pain and swelling (2.1%) and headache (1.5%) were the most commonly reported adverse events. More than half of the vaccinated respondents (57.2%) received their last influenza vaccination during September 2015 to December 2015, and another 27.3% in January 2016 or after. The remaining 15.5% could not recall their exact time in the 2015/16 season of receiving influenza vaccination.

Children aged six months to five years and adults aged 65 years or above are eligible for free/subsidised vaccination through GVP and VSS. Among vaccinated respondents 63.0% children and 82.0% adults aged 65 years or above received SIV through GVP or VSS.

*After excluding invalid telephone numbers attempted (fax number, non-residential number etc.), 4 082 respondents in different survey groups were successfully enumerated from the remaining 5 729 numbers. That makes the overall response rate as 71.3%.

(2) Awareness and perceptions related to SIV and vaccination programme

A majority of survey respondents were aware of information on SIV (82.0%) and the SIV vaccination programme by the Government (62.1%) (Table 2). However, less than 40% of them claimed that they were clear about the details of the SIV vaccination programme, including those who were eligible for GVP or VSS (children aged six months to five years: 37.3%; elderly aged 65 years or above: 31.1%). Only about 71% and 77% of respondents in these two groups respectively perceived that they were eligible for SIV under GVP or VSS (Table 2). Overall, 14.9% of survey respondents had been recommended by health care workers to receive SIV. The proportion was the highest among elderly aged 65 years or above (38.5%).

Survey Group	A	B	C	D	E	F	A to F	G
	Children aged six months to five years[2]	Children aged six to 11 years	Children aged 12 to 17 years	Persons aged 18 to 49 years	Persons aged 50 to 64 years	Persons aged 65 years or above[2]	Overall[1]	Persons with chronic medical problems[1]
	(N=1 001)	(N=1 000)	(N=500)	(N=505)	(N=523)	(N=553)	(N=4 082)	(N=549)
Aware of SIV information	88.5%	92.4%	82.6%	75.6%	86.6%	87.7%	82.0%	89.0%
Aware of SIV programme under the government	69.0%	72.5%	63.8%	55.0%	71.7%	61.7%	62.1%	65.0%
Clear about the details of SIV programme under the government	37.3%	36.5%	24.4%	20.1%	33.5%	31.1%	27.4%	31.6%
Perceived to be eligible for the SIV programme under the government[2]	71.1%	48.3%	26.2%	13.3%	12.2%	76.7%	28.3%	47.4%
Recommended to receive SIV by healthcare workers	26.3%	19.0%	6.8%	8.7%	9.2%	38.5%	14.9%	32.6%

Table 2 - Awareness and perceptions towards SIV and SIV programme. (Remarks: [1]Weighting was applied on age to compile statistics on overall Hong Kong population and those with chronic medical illness; [2]Children aged six months to five years and elderly aged 65 years or above were eligible for the GVP or VSS in the 2015/16 season.)

(3) Reasons for receiving and not receiving SIV in 2015/16 season

"Believe that the vaccination can reduce the risk of flu/ease flu-like symptoms", "worry of getting flu/peak flu season" and "recommended by healthcare worker" were the commonly reported reasons for receiving vaccination (Table 3). Notably, "recommended by healthcare worker" were more commonly mentioned in elderly respondents.

Survey Group	A	B	C	D	E	F	A to F	G
	Children aged six months to five years	Children aged six to 11 years	Children aged 12 to 17 years	Persons aged 18 to 49 years	Persons aged 50 to 64 years	Persons aged 65 years or above	Overall[2]	Persons with chronic medical problems[2]
	(N=211)	(N=180)	(N=37)	(N=27)	(N=42)	(N=183)	(N=680)	(N=152)
Believe that vaccination is effective in reducing the risk of flu/ease flu-like symptoms	32.7%	47.2%	35.1%	29.6%	47.6%	26.2%	32.8%	30.5%
Worry of getting flu/peak flu season	30.8%	27.8%	16.2%	22.2%	16.7%	20.2%	21.3%	19.1%
Recommended by healthcare worker	15.2%	5.6%	5.4%	0.0%	11.9%	30.6%	17.5%	32.7%
A habit to receive the vaccination every year	9.0%	11.1%	10.8%	22.2%	19.0%	15.8%	16.6%	10.8%
Free vaccination/subsidy available for the vaccination	8.5%	5.6%	5.4%	33.3%	9.5%	8.7%	13.5%	7.3%

Table 3 - Commonly reported reasons for receiving seasonal influenza vaccination in the 2015/16 season among vaccinated respondents[1]. (Remarks: [1]Only those who received SIV in the 2015/16 season were asked and multiple answers were allowed; [2]Weighting was applied on age to compile statistics on overall Hong Kong population and those with chronic medical illness.)

For those who were not vaccinated, the main reasons reported were "being healthy and not easy to get flu", "concern about effectiveness of SIV" and "concern about safety of SIV" (Table 4). Concern on vaccine safety was more commonly mentioned for children and elderly.

Survey Group	A	B	C	D	E	F	A to F	G
	Children aged six months to five years	Children aged six to 11 years	Children aged 12 to 17 years	Persons aged 18 to 49 years	Persons aged 50 to 64 years	Persons aged 65 years or above	Overall[2]	Persons with chronic medical problems[2]
	(N=709)	(N=756)	(N=432)	(N=457)	(N=473)	(N=322)	(N=3 149)	(N=364)
Being healthy and not easy to get flu	22.8%	31.1%	44.4%	51.0%	46.1%	38.2%	45.9%	34.2%
Concern about effectiveness of SIV	19.0%	22.9%	16.4%	13.6%	15.4%	7.5%	14.1%	15.8%
Concern about safety of SIV	18.9%	18.9%	8.8%	7.9%	10.4%	16.1%	10.4%	17.1%
Vaccine is expensive	2.0%	6.7%	6.0%	8.1%	17.8%	3.1%	9.7%	14.8%
No time	8.0%	9.0%	8.1%	10.7%	6.8%	3.1%	8.5%	5.8%

Table 4 - Commonly reported reasons for not receiving seasonal influenza vaccination in the 2015/16 season among unvaccinated respondents[1]. (Remarks: [1]Only those who did not receive SIV in the 2015/16 season were asked and multiple answers were allowed; [2]Weighting was applied on age to compile statistics on overall Hong Kong population and those with chronic medical illness.)

(4) Facilitators for receiving SIV in the future

Around 25% of the respondents inclined to receive SIV in the 2016/17 season and the proportion was highest for elderly aged 65 years or above (56.6%), children aged six months to five years (42.8%) and persons with chronic medical problems (42.4%) (Figure 1). Those respondents who were undecided or inclined not to receive SIV in the 2016/17 season were asked whether different measures would facilitate them to receive SIV. "More evidence on safety of SIV", "more evidence on effectiveness of SIV" and "healthcare workers' recommendation" were the most important facilitators ascertained in different groups. "Provision of SIV at school" was also an important facilitator for children. On the other hand, "free SIV" and "subsidy from government" were not as influential in facilitating future SIV even in survey groups not covered by GVP or VSS.

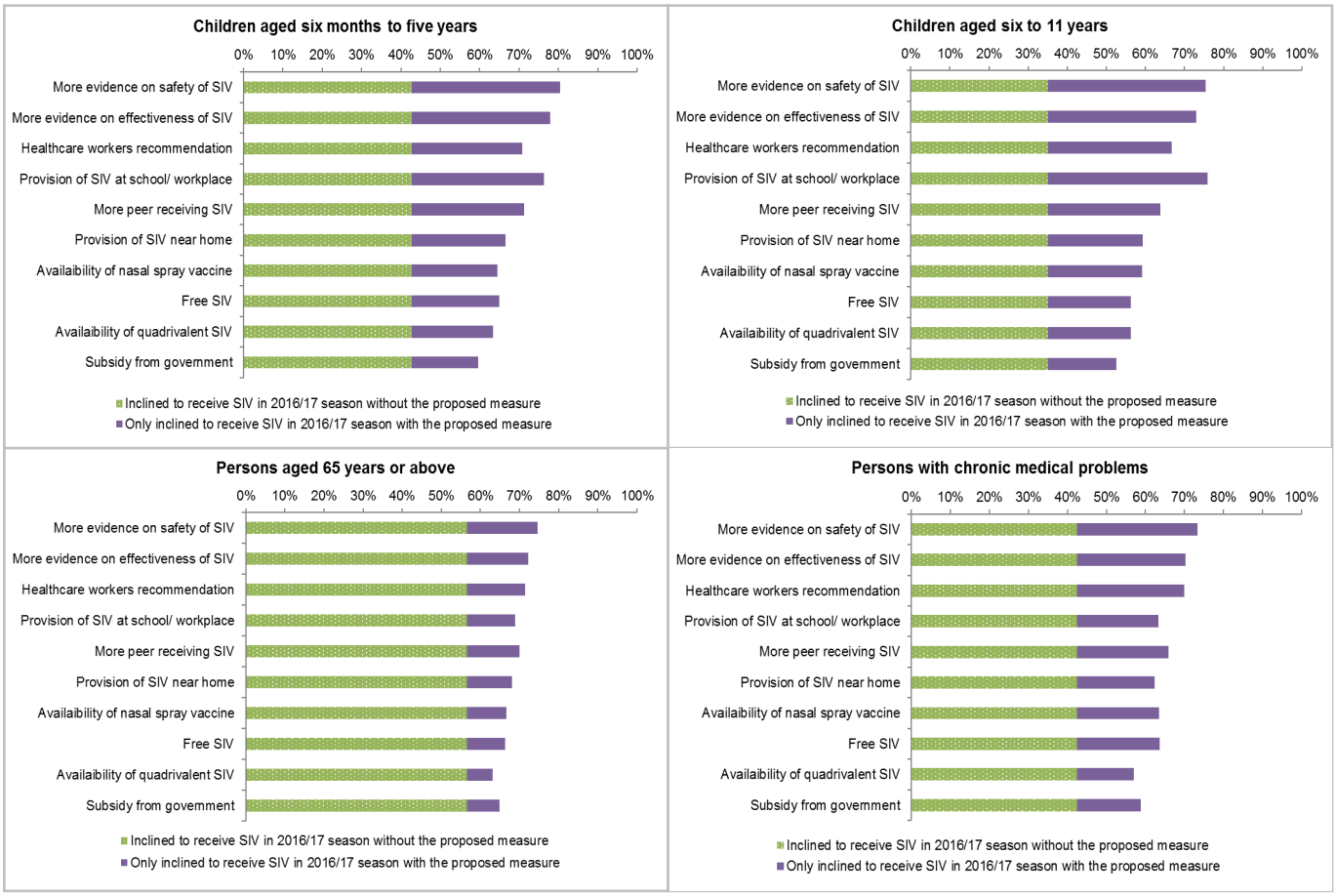

Figure 1 - Facilitators for inclination to receive SIV in 2016/17 season in children aged six months to five years, children aged six to 11 years, elderly aged 65 years or above and persons with chronic medical diseases.

Discussion and conclusion

In conclusion, belief in safety and effectiveness of SIV and healthcare workers' recommendation were important reasons for receiving SIV in the 2015/16 season, and they were also considered as important facilitators for receiving SIV in the 2016/17 season. Provision of SIV at schools was given as another important facilitator for children. On the other hand, concern about safety and effectiveness of SIV and perceived low risk of influenza infection were major barriers to SIV. Despite high awareness of SIV and SIV programme under the Government, the respondents seemed to lack good understanding of the SIV programme. More focus could be put on these factors in the planning and publicity of SIV programme in future.

When interpreting the findings, caution should be exercised since the survey covered only non-institutionalised Hong Kong population that have installed residential telephone lines, i.e. people who live in institutions with expected higher SIV uptake were excluded. Furthermore, the estimates may be subject to recall bias due to the time lag between SIV uptake and survey time. Indeed some 16% could not report timing of vaccination. According to the administrative statistics of VSS and GVP, the coverage of community-dwelling elderly in 2015/16 was 38.6%, which was higher than the corresponding figure in this survey (33.1%). The administrative statistics of the SIV programme showed that there was an increase in the number of vaccines administered from 2013/14 to 2015/16 season for those aged 65 years or above (Table 5). Sales volume of seasonal influenza vaccines for the whole market (including public and private sector) in Hong Kong in corresponding period also showed similar trend (Table 6). The administrative data covered only free/subsidised vaccination provided by the Government and those self-financed vaccination without any Government's subsidy were not included. While the actual SIV coverage in the Hong Kong community could have been under-estimated if based on this survey findings alone, enhancing SIV coverage in especially the target groups via concerted efforts remains a priority.

Influenza season	A			B			A+B
	Children aged six months to five years[1,2]			Community-dwelling elderly aged 65 years or above[1,3]			
	GVP	VSS	Sub-total	GVP	VSS	Sub-total	
2013/14 season Number of doses Number of vaccine recipients	4 000 2 700	81 800 62 000	85 800 64 700	128 300	160 100	288 400	374 200 353 100
2014/15 season Number of doses Number of vaccine recipients	3 200 2 400	71 500 55 200	74 700 57 600	145 300	179 500	324 800	399 500 382 400
2015/16 season Number of doses Number of vaccine recipients	3 200 2 400	57 800 45 200	61 000 47 600	273 500	136 900	410 400	471 400 458 000

Table 5 - Number of doses administered under the Government SIV programmes[1]. (Remarks: [1]Including influenza vaccines administered under the VSS and the GVP for children aged six months to five years and community-dwelling elderly aged 65 years or above; [2]Children who have never received SIV before need to receive two doses;[3]Excluding those administered in the residential care homes for elderly/disabled and other eligible groups such as health care workers in public sector.)

Influenza season	Sales volume
2013/14 season Number of doses	876 340
2014/15 season Number of doses	877 501
2015/16 season Number of doses	907 323

Table 6 - Sales volume of influenza vaccines (Northern Hemisphere) in Hong Kong.

NEWS IN BRIEF

A case of human myiasis

On December 14, 2016, the Centre for Health Protection (CHP) recorded a case of human myiasis affecting a 74-year-old man with underlying illnesses. He presented with bilateral toe gangrene on December 4 and was admitted to a public hospital on the same day. Maggots were noted at the toe wound and were removed. The worms were later identified as larva belonging to the family of Sarcophagidae. His condition was stable. The patient lived alone and he had no recent travel history. Health advice on wound care and environmental hygiene was given to the patient.

A possible case of sporadic Creutzfeldt-Jakob disease

CHP recorded a possible case of sporadic Creutzfeldt-Jakob disease (CJD) on December 23, 2016, affecting an 83-year-old woman with underlying illnesses. She presented with progressive dementia and visual hallucinations in August 2016. She was admitted to a public hospital on December 4 for convulsion. Upon admission, she was found to have extrapyramidal signs, myoclonus, visual dysfunction and akinetic mutism. Electroencephalography finding was atypical for CJD. Her condition was stable. No risk factors for either iatrogenic or variant CJD were identified. She was classified as a possible case of sporadic CJD.