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衞生防護中心 Centre for Health Protection
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FEATURE IN FOCUS

Antibiotic Awareness Week 2017

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Antibiotic Awareness Week 2017 (November 13 to 19, 2017)

The Centre for Health Protection (CHP) of the Department of Health launched the Antibiotic Awareness Week (AAW) 2017 on November 13 to 19, 2017 to tie in with the third World AAW initiated by the World Health Organization (WHO), to increase awareness of global antimicrobial resistance (AMR) and to encourage best practices among the general public, health workers and policy makers to avoid the further emergence and spread of AMR. The theme of this year "Seek advice from a qualified healthcare professional before taking antibiotics" is to raise awareness of the need to preserve the power of antibiotics through appropriate use.

AMR is considered as one of the greatest threats to global health and economy. WHO has come up with the Global Action Plan on AMR in 2015. The Government of Hong Kong Special Administrative Region announced in the 2016 Policy Address to set up a multi-sectoral High-Level Steering Committee on AMR to formulate strategies and implement actions. The Hong Kong Strategy and Action Plan on AMR (2017-2022) was formulated under the 'One Health' framework in July 2017. It outlines key areas, objectives and actions to contain the growing threats of AMR in Hong Kong. One of its key areas is to optimise the use of antibiotics through implementation of Antibiotic Stewardship Programme (ASP).

CHP organised a half day event "AAW 2017 cum Seminar on ASP in Primary Care and Hospital Settings" in the lecture theater of CHP on November 13, 2017 as part of the publicity activities of AAW. During the event, the Controller of CHP, Dr WONG Ka-hing, together with representatives from medical and pharmacology sectors officiated the launching ceremony of AAW 2017. ASP in Primary Care and the fifth edition of Interhospital Multi-disciplinary Programme on Antimicrobial ChemoTherapy (IMPACT) were officially launched. Furthermore, experts in Clinical Microbiology and Infection, Infectious Diseases and Family Medicine held presentation and discussion sessions on antibiotic resistance and stewardship in primary care and hospital settings.

An Advisory Group on Antibiotic Stewardship in Primary Care chaired by Dr Angus MW CHAN, the President of the Hong Kong College of Family Physicians, was formed early this year. It comprises of key stakeholders in public and private sectors, academia and major professional societies, to formulate guidance notes and to advise on strategies to enhance ASP in primary care. Guidance notes on antibiotic treatments for different common infections including acute pharyngitis, acute uncomplicated cystitis in women and simple (uncomplicated) skin and soft tissue infections are developed, based on the best available clinical evidence and common local practice for each infection. As the guidance notes are developed in consultation with key stakeholders in primary care settings, the recommendations can be tailored to their needs. The guidance notes will be continuously reviewed and updated with reference to the latest research, together with local prevalence of pathogens and associated antibiotic susceptibility profiles, so that family doctors and healthcare professionals can have updated information as reference. New guidance notes will also be developed in due course. In addition, patient education materials are available for patients to raise their awareness and enable them to use

antibiotics appropriately. Family doctors in primary care play an important role in AMR containment measures, not only by practicing rational antibiotics prescription, but also educating and empowering patients on safe use of antibiotics during clinical encounters. The guidance notes and related materials could be accessed through the thematic website of ASP in primary care. Territory-wide medical education and training sessions will be arranged to promulgate the programme.

The IMPACT guidelines have been regularly reviewed and updated, since its first edition published in 1999, and served as invaluable reference tools for medical and health professionals in hospitals to guide appropriate clinical management of infectious diseases in hospitals and thus reduce unnecessary antibiotic prescriptions. An IMPACT Editorial Board chaired by Dr HO Pak-leung was formed in 2016 to revise the IMPACT. All parts have been updated base on the local epidemiology and international recommendations. A new section on tuberculosis has also been added. A new website has been launched as a one-stop portal for the IMPACT guidelines, with interactive medical calculators and easy-to-read antibiograms of public and private hospitals to enhance its accessibility for healthcare professionals. Mobile applications in iPhone and Android interfaces have also been updated.

Alongside, CHP is going to launch a mass media campaign to promulgate the importance of judicious use of antibiotics to the general public through diverse medium including broadcast of health messages in TV, Radio, public transportations and social media. Act now to preserve the power of antibiotics! Do show your commitment and support on responsible use of antibiotics by signing "I Pledge".

Please visit our miniwebs for further information:

- Antibiotic Awareness Week 2017 (http://www.chp.gov.hk/en/view_content/49851.html)
- Antibiotic Stewardship Programme in Primary Care (http://www.chp.gov.hk/en/view_content/49811.html)
- IMPACT (http://impact.chp.gov.hk/)

Photo 1 - Dr WONG Ka-hing (centre), Controller, CHP and other guests officiated the launching ceremony during Antibiotic Awareness Week 2017 cum Seminar on Antibiotic Stewardship Programme in Primary Care and Hospital Settings on November 13, 2017.

Photo 2 - Dr Angus MW CHAN (5th from the left), Chairman, Advisory Group on Antibiotic Stewardship in Primary Care and other members attending the Antibiotic Awareness Week 2017 cum Seminar on Antibiotic Stewardship Programme in Primary Care and Hospital Settings on November 13, 2017.

Photo 3 - Dr HO Pak-leung (6th from the left), JP, Chairman, IMPACT Editorial Board and other members attending the Antibiotic Awareness Week 2017 cum Seminar on Antibiotic Stewardship Programme in Primary Care and Hospital Settings on November 13, 2017.

Update on novel influenza A infection

Reported by Ms Chloe POON, Scientific Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Overview

There are various subtypes of influenza A viruses. Apart from seasonal influenza A viruses (i.e. H3N2 and H1N1pdm09) circulating among humans, there are many other non-seasonal influenza A viruses that are mainly found in animals. These viruses are distinct from the seasonal influenza viruses and are not easily transmitted to humans. However, some of them may occasionally cross the species barrier and infect humans, causing diseases of different severity. These viruses are known as novel influenza A viruses. The human population generally has little or no immunity against them. A pandemic will occur if a novel influenza virus acquires the ability of efficient human-to-human transmission through genetic changes. In this article, we reviewed the global situation of novel influenza A infections in humans in the recent one year.

Avian influenza viruses

Avian influenza viruses mainly affect birds and poultry. Birds and waterfowl are natural reservoirs of avian influenza viruses. Human infections with various subtypes of influenza A have occurred in the past, including H5N1, H5N6, H6N1, H7N2, H7N3, H7N7, H7N9, H9N2, H10N7 and H10N8. In 2017 (as of November 20), human infections with H5N1, H5N6, H7N9 and H9N2 viruses have been reported so far.

H5N1

Four human H5N1 cases have been reported to the World Health Organization (WHO) in 2017 (as of October 30), as compared with 10 cases and 145 cases reported in 2016 and 2015 respectively (according to onset date). The four cases occurred in Egypt (3) and Indonesia (1). Among them, two cases recovered and two cases died. No human H5N1 case has been detected in Hong Kong in the past five years. The last case in Hong Kong was an imported case from Guangdong (廣東) detected in June 2012. No locally acquired human H5N1 case has been detected after 1997.

H5N6

One human H5N6 case has been reported by the National Health and Family Planning Commission (NHFPC) in 2017 so far. The case affected was a 33-year-old male from Guangxi (廣西) with live poultry exposure before onset, and he was in serious condition at time of reporting. Since 2014, a total of 17 sporadic human cases (including at least 11 deaths) have been reported by NHFPC and all occurred in Mainland China. No human H5N6 case has been detected in Hong Kong so far.

H7N9

Since the emergence of human cases of H7N9 infection in Mainland China in March 2013, there have been five distinct waves of human infection (Figure 1). The most recent wave (fifth wave) occurred from October 2016 to September 2017. It was the most severe one among the five waves, with 766 human H7N9 cases reported globally (Table 1) as compared with a total of 798 cases reported during all the previous four waves combined.

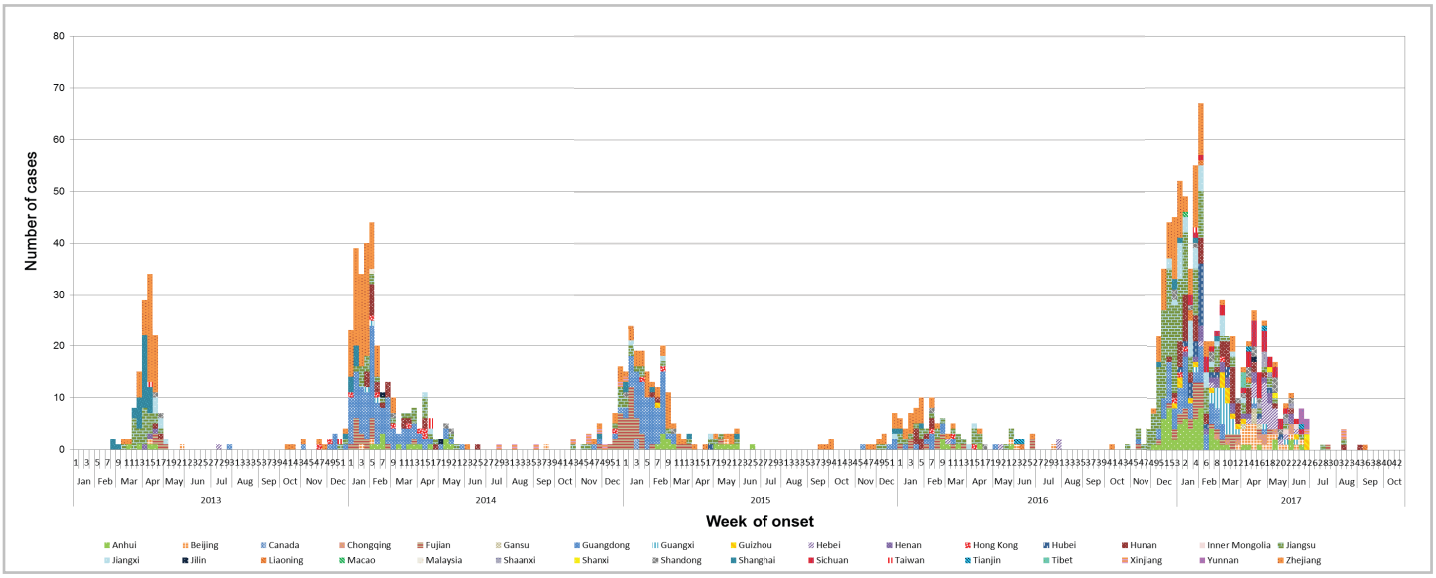

Figure 1 - Weekly number of human H7N9 cases by onset date, 2013-2017.

In the fifth wave, Jiangsu (江蘇), Zhejiang (浙江), Anhui (安徽) and Guangdong were the provinces that reported the greatest numbers of cases (148, 91, 63 and 63 respectively). Besides, the affected areas have spread to western China with eight provinces/ municipalities/autonomous regions (Chongqing (重慶), Gansu (甘肅), Inner Mongolia (內蒙古), Shaanxi (陝西), Shanxi (山西), Sichuan (四川), Tibet (西藏) and Yunnan (雲南)) reported cases for the first time in this wave (Figure 2).

Locally, five imported human H7N9 cases were reported in the fifth wave with the last case confirmed on March 7, 2017. Two cases died while the remaining cases recovered. In comparison, zero, 10, three and three cases had been reported in the first, second, third and fourth wave respectively.

The epidemiological and clinical characteristics of the cases reported in the fifth wave were similar to those in the previous waves[1]. Among the 766 reported cases, their ages ranged from three to 91 years (median: 57 years). The male-to-female ratio was 2.5:1. Most cases presented with severe conditions, and were known to have exposure to live poultry or contaminated environments such as live poultry markets. At least 313 cases (41%) were reported to be fatal cases.

Among the cases reported from Mainland China in the fifth wave, a total of 14 clusters of human cases were detected, compared with an average of 6.5 clusters in each of the previous waves (range four to 11 clusters)[2] (Table 2). Twenty-nine of the 758 cases (3.8%) were involved in clusters in the fifth wave as compared with 55 of the 775 cases (7.1%) in the previous four waves. According to WHO, even though small clusters of cases have been reported, including those involving healthcare workers, current epidemiological and virological evidence suggested that avian influenza viruses have not acquired the ability of sustained transmission among humans.

Table 1 - Human H7N9 cases reported in the fifth wave (October 1, 2016-September 30, 2017) by place of report.

Place of report	Number of cases	Onset date of the last reported case	Remark
Mainland China	758	September 3, 2017	Occurred in 27 provinces/ municipalities/ autonomous regions
Hong Kong	5	March 3, 2017	Four cases imported from Guangdong and one case imported from Fujian (福建)
Macau	2	January 8, 2017	One case imported from Guangdong and one case having exposure to poultry imported from Guangdong
Taiwan	1	January 23, 2017	Imported from Guangdong

Figure 2 - Places with human H7N9 cases reported in the fifth wave.

According to the United States (US) Centers for Disease Control and Prevention (CDC), based on publically available genetic data, about 10% of viruses from the fifth wave carried genetic markers indicating reduced susceptibility to one or more neuraminidase inhibitor antiviral medications[4]. In Hong Kong, analysis of the neuraminidase gene of the H7N9 viruses from the imported cases did not reveal any mutation associated with reduced susceptibility to neuraminidase inhibitors.

Before the fifth wave, H7N9 viruses were known to be low pathogenic viruses in poultry and birds, and infected poultry and birds usually did not display any symptoms. In the fifth wave, outbreaks of highly pathogenic avian influenza (HPAI) A(H7N9) have occurred in multiple areas in Mainland China. The emerging HPAI viruses possessed multiple amino acid insertions at the haemagglutinin protein cleavage site and have caused high mortality in birds and poultry. In the fifth wave (as of July 14, 2017), 28 human cases of HPAI H7N9 infection (including 16 deaths) have been identified[5]. Human infection with HPAI H7N9 was associated with exposure to sick and dead backyard poultry in rural areas. The epidemiologic characteristics and disease severity of the HPAI H7N9 case-patients were found to be similar to those observed in patients infected with low pathogenic H7N9 viruses[6].

Table 2 - Comparison of clusters of human H7N9 cases[3].

		Previous four waves	Fifth wave
Total number of clusters		26	14
Total number of cases involved in clusters (% of total reported cases)		55(7.1%)	29 (3.8%)
Number of cases in each cluster (median)		2-3 (2)	2-3 (2)
Number of secondary cases		29	15
Exposure history of secondary cases	Contact with index case-patient only but without poultry exposure	10	4
	Contact with index case-patient and known poultry exposure	19	11

According to WHO, most human cases were exposed to avian influenza viruses through contact with infected poultry or contaminated environments, including live poultry markets. Since the H7N9 viruses continue to be detected in poultry and environments in Mainland China, further human cases are expected to occur from time to time, but the likelihood of sustained human-to-human transmission remains low. Based on past epidemiological pattern, it is expected that the activity of H7N9 will increase again when the winter approaches.

H9N2

Four sporadic cases of human H9N2 infection have been reported by NHFPC in 2017 so far. Three cases affected young children aged less than one year while the remaining case affected a 32-year-old man. All cases presented with mild illness. Two cases reported poultry exposure prior to symptom onset. Locally, the latest human H9N2 case was an imported case from Shenzhen (深圳) reported in December 2013.

Swine influenza viruses

Influenza viruses of swine origin circulate and cause outbreaks in pigs, and may occasionally infect humans. When these viruses are found in humans, they are called 'variant viruses' in order to distinguish them from human seasonal influenza viruses. Examples of human infection with swine influenza viruses are influenza A(H1N1) variant virus (H1N1v), influenza A(H1N2) variant virus (H1N2v) and influenza A(H3N2) variant virus (H3N2v). In 2017, human cases of H1N1v, H1N2v and H3N2v have been reported.

H1N1v

Two human cases of H1N1v have been reported in 2017[7]. The first case was an Italian male in his 40's with obesity who developed severe acute distress respiratory syndrome in October 2016. The patient required mechanically ventilation and extracorporeal membrane oxygenation. He subsequently recovered. He had contact with pigs on a pig farm[8]. The second case was reported from Switzerland in February 2017 affecting a 23-year-old male farm worker who presented with mild acute respiratory symptoms. Samples from the swine at the farm where the patient worked also tested positive for swine H1N1 viruses.

H1N2v

Four human H1N2v cases were reported in 2017 (as of October 31) and all occurred in the US (Ohio [3] and Colorado [1]). All cases reported contact with swine at agricultural events prior to onset of illness. They did not require hospitalisation and had fully recovered. Since 2005, 13 cases have been reported by US CDC. Most cases were associated with mild illness and two had been hospitalised but had recovered. There has been no confirmed human H1N2v case in Hong Kong so far.

H3N2v

In 2017 (as of October 31), 61 human H3N2v cases have been reported and all occurred in the US (Maryland [39], Ohio [15], Michigan [2], Delaware [1], Nebraska [1], North Dakota [1], Pennsylvania [1] and Texas [1]). There was a large outbreak in Maryland in September 2017 affecting 39 individuals. The majority of the cases reported exposure to swine in fair settings during the week preceding illness onset. The case in Nebraska reported no contact with swine during the week preceding illness onset, however a household member did report exposure to swine. The latest case in Michigan was a close contact of a previously reported laboratory-confirmed H3N2v case. It is possible that limited human-to-human transmission occurred, however no ongoing human-to-human transmission has been identified[9]. Only five out of the 61 patients required hospitalisation and all cases recovered[10].

Up to the end of October 2017, a total of 413 cases with H3N2v infections have been recorded by US CDC since 2012 (Figure 3). In Hong Kong, a case of H3N2v was detected in 1999 affecting a 10-month-old girl who had fully recovered[11]. No other H3N2v case has been detected in Hong Kong after this case.

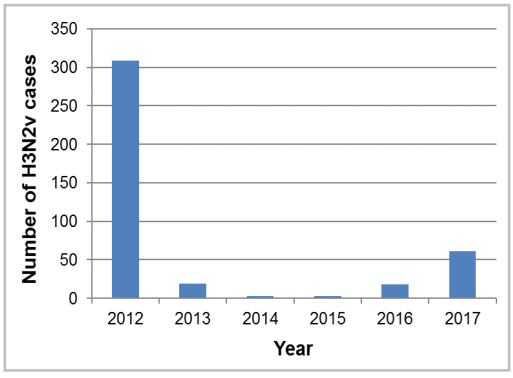

Figure 3 - Annual number of H3N2v infections reported by US CDC, 2012-2017 (as of October 31, 2017).

According to WHO, swine influenza viruses circulate in swine populations in many regions of the world. Most human infections with swine influenza viruses were exposed to the swine influenza viruses through contact with infected swine or contaminated environments. Human infection tends to result in mild clinical illness. Since these viruses continue to be detected in swine populations, further human cases or outbreaks can be expected. Current evidence suggests that these viruses have not acquired the ability of sustained transmission among humans, so the risk of community-level spread is considered low.

The Centre for Health Protection of the Department of Health will continue to closely monitor the latest development of avian and other novel influenza viruses around the world and maintain close liaison with WHO, NHFPC, and the health authorities of Guangdong, Macau, neighbouring and overseas countries to obtain the latest information.

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NEWS IN BRIEF

A sporadic case of listeriosis

On November 13, 2017, the Centre for Health Protection (CHP) recorded a sporadic case of listeriosis affecting a 75-year-old woman with underlying illnesses. She was admitted to a public hospital for management of her underlying illnesses on November 1. She developed diarrhoea since November 8. Her blood culture collected on November 9 grew *Listeria monocytogenes*. She was treated with courses of antibiotics. Her condition gradually deteriorated and she passed away on November 19 due to underlying illness. Investigation could not identify any high risk food item consumed by her during the incubation period. She had no recent travel history and her household contacts remained asymptomatic.

CA-MRSA cases in October 2017

In October 2017, CHP recorded a total of 103 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 58 males and 45 females with ages ranging from seven months to 92 years (median: 36 years). Among them, there were 72 Chinese, 10 Filipinos, 5 Caucasian, 4 Pakistani, 3 Indian, 1 Indonesian, 1 Korean, 1 Nepalese and 6 of unknown ethnicity. All cases presented with uncomplicated skin and soft tissue infections.

Separately, the isolate of one case affecting a six-year-old girl was found to be resistant to mupirocin. The patient presented with skin infection on her left chest and recovered after antibiotic treatment.

Besides, there were two clusters identified. One was the household contact of another case recorded in June. One case lived in a drug treatment and rehabilitation centre and was epidemiologically linked to another case in the same centre previously reported in September. Decolonisation was provided to the close contacts in this centre. No cases involving healthcare worker were reported during this reporting period.

Scarlet fever update (October 1, 2017 – October 31, 2017)

Scarlet fever activity in October increased as compared with that in September. CHP recorded 154 cases of scarlet fever in October as compared with 91 cases in September. The cases recorded in October included 95 males and 59 females aged between four months and 39 years (median: six years). There were six institutional clusters occurring in two kindergartens and four primary schools, affecting a total of 15 children. No fatal cases were reported in October. Of note, there has been a marked increase in scarlet fever activity since late October. Based on the past epidemiological pattern, the activity of scarlet fever is expected to remain at a high level in the coming few months. Parents have to take extra care of their children in maintaining strict personal, hand and environmental hygiene. People suspected to have scarlet fever should consult a doctor promptly.