

Communicable Diseases

WATCH

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FEATURE IN FOCUS

Act together now to combat AMR - in echoing the World Antibiotic Awareness Week (November 18 to 24, 2019)

Reported by Dr Grace TSOI, Medical and Health Officer and Dr KH KUNG, Senior Medical and Health Officer, Infection Control Branch, CHP.

The World Health Organization (WHO) has been launching World Antibiotic Awareness Week¹ in November since year 2015, to increase global awareness of antibiotic resistance and to encourage best practices among the general public, health workers and policy makers to avoid the further emergence and spread of antimicrobial resistance (AMR).

AMR develops in microorganisms such as bacteria, fungi, viruses, and parasites over time through genetic changes as a natural evolutionary phenomenon. However, the process is accelerated by misuse and overuse of antimicrobials in human and animals (the latter especially those used for food production) which confers survival advantages upon those with AMR genes. Antibiotics (medicines for bacterial infections) are commonly misused by people with viral infections like cold and flu; and also in animals when they are given as growth promoters or used to prevent diseases in healthy animals.

Resistant bacteria threaten our ability to treat common infectious diseases, which in turn may result in prolonged illness, disability, and death. Without effective antimicrobials for prevention and treatment of infections, major medical procedures and surgeries become very high risk, which in turn increases the cost of health care with lengthier stays in hospitals, more intensive care required, and subsequently imposing additional financial burden to the society.

WHO announced in 2019 that AMR is one of the ten threats to global health³. At least 700 000 people around the world die each year due to infections caused by resistant microorganisms, whereas it is estimated that only 50% of antibiotics are used correctly⁴.

AMR is a complex problem that is driven by many interconnected factors. Resistant bacteria arising in humans, animals or the environment may spread from one to the other without geographic or human/animal boundary. Moreover, antimicrobials used to treat various infectious diseases in animals may be the same or similar to those used in humans. As isolated interventions have limited impact, the "One Health" approach has been distinguished as a major element of AMR control and prevention strategies by

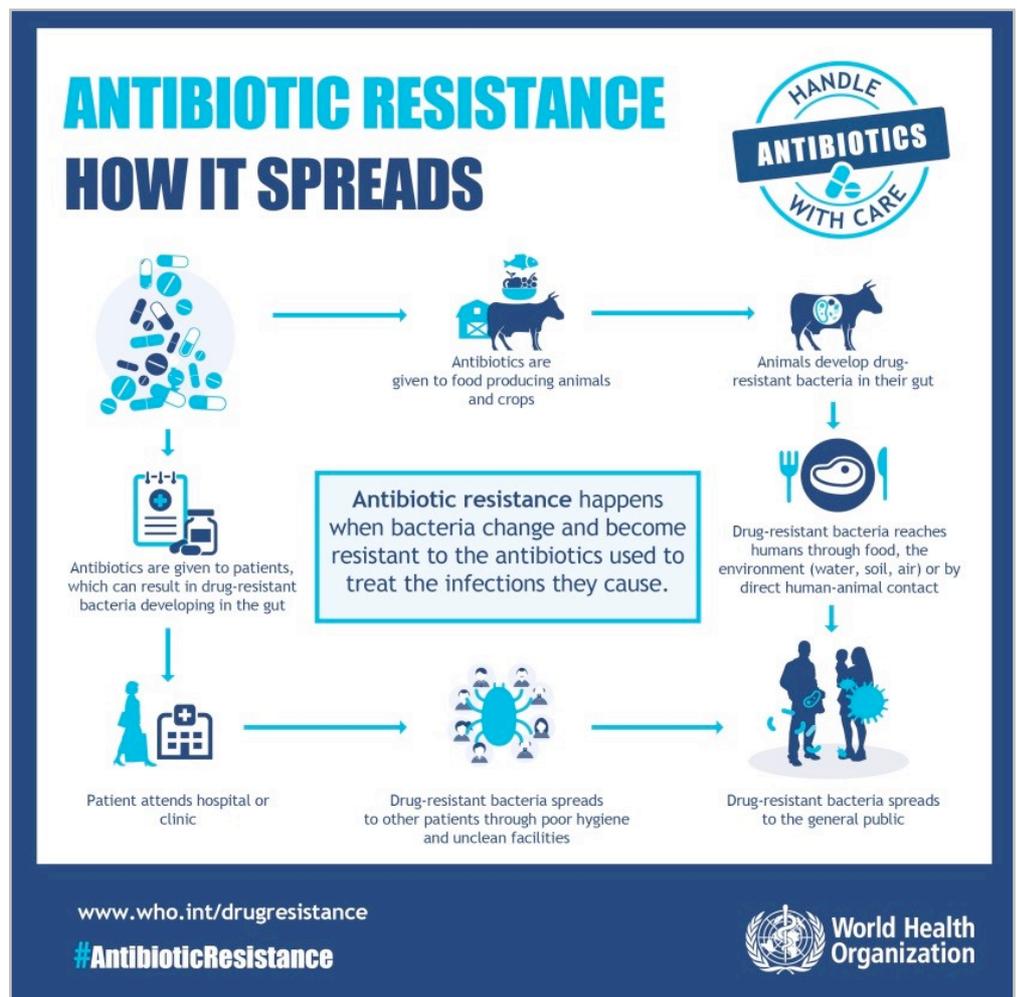


Figure 1 - An infographic from WHO showing how antibiotic resistance spreads².

the international tripartite collaboration of WHO, the Food and Agriculture Organization of the United Nations and the World Organisation for Animal Health.

Hong Kong is also under the threat of AMR as previously reported⁵. The Government of the HKSAR has all along recognised the growing threat of AMR and announced in the 2016 Policy Address to set up a High Level Steering Committee on AMR (HLSC)⁶ to formulate strategies and implement actions. Chaired by the Secretary for Food and Health, the HLSC comprises representatives from relevant government departments, public and private hospitals, healthcare organisations, academia and relevant professional bodies. Under a One Health framework, the HLSC has considered the recommendations proposed by the Expert Committee on AMR⁷ and has taken human health, animal health and food safety into consideration in formulating the holistic Hong Kong Strategy and Action Plan on Antimicrobial Resistance 2017-2022⁸.

“The world is running out of antibiotics”, WHO reported⁹. If we don't want to go back to the pre-antibiotic era, everyone at all levels must start acting now to preserve and prolong the efficacy of antibiotics. At the community level, behavioural changes of individuals towards sensible use of antimicrobials and infection control are crucial to counter the AMR threat on different sides.

Hong Kong Strategy and Action Plan on Antimicrobial Resistance 2017-2022



Figure 2 - Hong Kong Strategy and Action Plan on Antimicrobial Resistance 2017-2022.

What we can do to combat AMR at the community level

On Human side

At any time

- ◆ Proper use of antibiotics
 - ✓ Do not demand antibiotics from your doctor
 - ✓ Follow your doctor's advice when taking antibiotics
 - ✓ Do not stop taking antibiotics by yourselves even if you are feeling better
 - ✓ Do not take leftover antibiotics
 - ✓ Do not share your antibiotics with others
 - ✓ Do not self-purchase antibiotics without a prescription
- ◆ Practise frequent hand hygiene, especially before eating and taking medicine, and after going to the toilet
- ◆ Ensure your vaccination is up-to-date
- ◆ Maintain cough etiquette, wear a mask if you have respiratory symptoms

When undergoing antibiotic treatment

- ◆ Follow your doctor's advice when taking antibiotics
- ◆ Do not stop taking antibiotics by yourselves even if you are feeling better and never share antibiotics with others
- ◆ Antibiotics also kill normal bacteria in your body and predispose you to acquire resistant bacteria. Therefore, when taking antibiotics, one should enhance hygiene by:
 - ✓ Practise frequent hand hygiene
 - ✓ Eat or drink only thoroughly cooked and boiled items
 - ✓ Disinfect and cover all wounds
 - ✓ Wear a mask if you have respiratory symptoms
 - ✓ Young children with symptoms of infections should minimise contact with other children
- ◆ Ask your doctor or pharmacist if in doubt

On Animal side

- ◆ Protect your pet against infectious diseases by keeping vaccinations and deworming up-to-date
- ◆ Immediately seek advice and treatment from a veterinarian if you suspect your pet is sick
- ◆ Only give antibiotics to your pet by following the instructions on veterinary prescriptions
- ◆ Food animal farmers should adopt similar measures to prevent infectious diseases in their animals and use antibiotics responsibly and prudently

On Food side

- ◆ Adhere to 5 Keys to Food Safety
 - ✓ Choose (Choose safe raw materials)
 - ✓ Clean (Keep hands and utensils clean)
 - ✓ Separate (Separate raw and cooked food)
 - ✓ Cook (Cook thoroughly)
 - ✓ Safe Temperature (Keep food at safe temperature)
- ◆ Susceptible populations such as infants, young children, pregnant women and people with weakened immunity should avoid consuming raw or undercooked food
- ◆ To keep consumers, especially susceptible populations, informed of the risks of consuming raw or undercooked food, food businesses can provide consumer advisory or a reminder on raw or undercooked food on the menu, brochures, signage, food labels, and placards, etc.

The future of antibiotics depends on all of us. To echo the call from WHO this year, the Infection Control Branch of the Centre for Health Protection (CHP) of the Department of Health has set up a dedicated webpage for this year's antibiotic awareness week at <https://www.chp.gov.hk/en/features/102082.html>. For more information from the human health, animal health and food safety perspectives, please visit the following AMR webpages:

◆ CHP:

<https://www.chp.gov.hk/en/features/47850.html>

◆ Agriculture, Fisheries and Conservation Department:

https://www.afcd.gov.hk/english/quarantine/qua_live/qua_live_amr/qua_live_amr.html

◆ Centre for Food Safety:

https://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/whatsnew_fstr_antimicrobial_resistance_AMR.html

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Update on the situation of cryptosporidiosis

Reported by Ms Chloe POON, Scientific Officer, Enteric and Vector-borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Cryptosporidiosis is a diarrhoeal disease caused by the parasite *Cryptosporidium*. Among over 20 *Cryptosporidium* species that are known to infect human, *C. hominis* and *C. parvum* accounted for over 90% of human infections¹.

Cryptosporidiosis is transmitted directly from person to person via the faecal-oral route, or indirectly through ingestion of faecal contaminated water or food, such as swallowing contaminated pool water while swimming².

Cryptosporidiosis is generally a mild disease but can be severe in children and immunocompromised persons. The incubation period ranges from two to 10 days with an average of seven days³. People infected with *Cryptosporidium* can be asymptomatic. For those who develop symptoms, the symptoms usually include watery diarrhoea, abdominal pain, dehydration, nausea, vomiting, fever and weight loss. In immunocompetent people, the symptoms are usually self-limiting and last about one to two weeks^{3, 4}. However, symptoms can be more severe and prolonged and may lead to serious or life-threatening illnesses in immunocompromised individuals such as patients with acquired immunodeficiency syndrome (AIDS), cancer patients and transplant recipients who are taking immunosuppressive drugs^{4, 5}.

Cryptosporidiosis can be diagnosed by microscopic examination of stool samples and antigen detection methods. Molecular methods can also be used to identify *Cryptosporidium* at the species level⁶. There is no specific treatment for cryptosporidiosis and the principle of management is to prevent dehydration. Most patients with cryptosporidiosis will recover without treatment.

Due to its low infectious dose, prolonged survival in moist environments and high tolerance to chlorine, *Cryptosporidium* is highly transmissible through drinking water or recreational water such as swimming pool water¹. Outbreaks of cryptosporidiosis linked to municipal drinking water or recreational water contaminated with *Cryptosporidium* have been reported in overseas countries.

Global situation

Cryptosporidiosis is one of the most common causes of waterborne diseases and is endemic worldwide, with the highest incidences found in developing countries¹.

Cryptosporidiosis outbreaks have been reported in developed countries such as the United States (US), the United Kingdom (UK) and Australia. In the US, a total of 444 outbreaks were recorded between 2009 and 2017, with an average of 13% increase in the annual number of outbreaks per year over this period⁷. Over 40% (n=183) of the outbreaks were associated with recreational water, and the majority of these outbreaks were associated with treated recreational water (n=156, 85.2%) including swimming pool (n=100, 64.1%). In the UK, in particular England and Wales, 178 *Cryptosporidium* outbreaks were recorded between 2009 and 2017, involving about 4 000 laboratory confirmed cryptosporidiosis cases⁸. Of the 178 outbreaks, 82 (46%) were related to recreational water while 74 (42%) were related to animal contact.

Local situation

In Hong Kong, medical practitioners are encouraged to report cryptosporidiosis cases to the Centre for Health Protection (CHP) of the Department of Health for epidemiological investigations. From 2010 to 2019 (as of October 31, 2019), CHP recorded a total of 44 confirmed cryptosporidiosis cases. The overall trend of the disease was at low level between 2010 and

2014, with zero to one case reported annually (incidence rate: 0 to 0.01 per 100 000 population). Since then, there was an upsurge in reported cases, from three in 2015, six in 2016, seven in 2017 to 15 cases in 2018. The incidence rates increased from 0.04 per 100 000 population in 2015 to 0.2 in 2018. In 2019 (as of October 31), nine cases of cryptosporidiosis have been recorded (Figure 1) with an annualised incidence of 0.14 per 100 000 population. Increased use of molecular method for testing may account for some of the increased number of reported cases in recent years.

The 44 cases involved 24 males and 20 females, with ages ranging from nine to 57 years (median: 34 years). Over 70% (n=31) of the affected persons were aged between 25 to 44 years (Figure 2). The patients were mainly Chinese (n=39, 88.6%), while three were Europeans (6.8%) and one was an African (2.3%). The ethnicity of the remaining case was unknown as the patient could not be contacted. Most cases presented with mild symptoms such as diarrhoea (n=44, 100%), abdominal pain (n=37, 84.1%), fever (n=22, 50%), nausea (n=16, 36.4%) and vomiting (n=15, 34.1%). Forty cases (90.9%) required hospitalisation. Nonetheless, the majority of cases recovered uneventfully except for two patients who died of other underlying diseases.

All the cases were sporadic cases without epidemiological linkage. Most of them acquired the disease locally (n=30, 68.2%), while five (11.4%) were imported cases with travel history to China (n=1), Kenya (n=1), Malaysia (n=1) and multiple countries (n=2). The importation status of nine cases (20.5%) could not be ascertained, including eight cases having stayed both locally and overseas during the incubation period and one case with unknown history.

Regarding the past medical history, 20 cases (45%) were known to have pre-existing diseases. Of note, 15 cases had immunocompromised conditions including 13 patients with HIV infection, one organ transplant patient receiving immunosuppressant before the onset of symptoms, and one patient with acute leukaemia. The remaining five patients had other underlying medical illnesses.

There was an upsurge of cases in late 2018, with a total of 12 cases reported in November and December. CHP conducted extensive investigations to identify the reason accounting for the upsurge. All cases had no known exposure history to recreational water or unboiled water. The patient lived and worked in various districts without geographical clustering. No epidemiological linkage and common exposure among the cases could be identified. The monthly number of cases decreased after December 2018. In 2019 (as of October, 31), zero to four cases have been reported per month and no abnormal surge was detected so far.

Members of the public are reminded to take precautionary measures to prevent cryptosporidiosis. CHP will continue to promote personal, food and environmental hygiene through various media and channels, and keep abreast of the latest evidence and international practices on strategies in the surveillance, prevention and control of cryptosporidiosis.

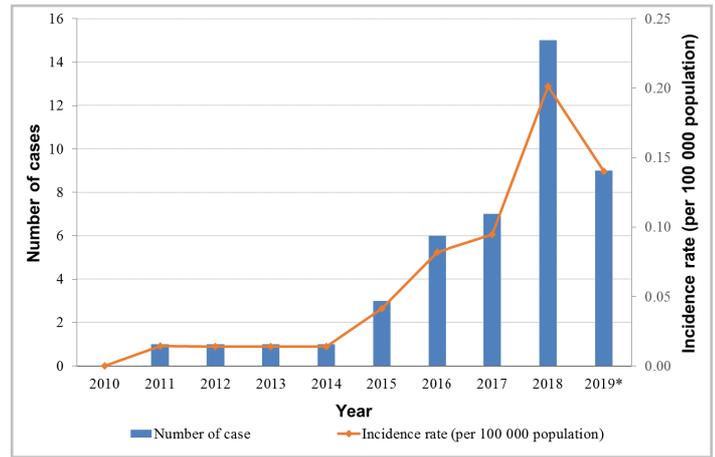


Figure 1 - Annual number and incidence rate of confirmed cryptosporidiosis cases recorded by CHP from 2010 to 2019 (*provisional figures as of October 31, 2019).

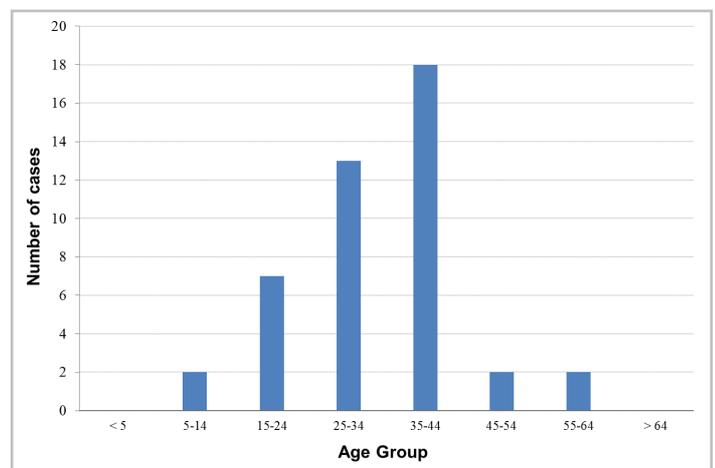


Figure 2 - Age distribution of cryptosporidiosis cases in Hong Kong, 2010 to 2019 (as of October 31, 2019).

Prevention of cryptosporidiosis

There is no vaccine for cryptosporidiosis. To avoid contracting the disease, members of the public should maintain good personal, food and environmental hygiene:

- ◆ Avoid swimming when experiencing diarrhoea and avoid swallowing pool water while swimming;
- ◆ Wash hands thoroughly with liquid soap and water before handling food or eating, and after using toilet or handling faecal matter;
- ◆ Drink only boiled water from the mains or bottled drinks from reliable sources;
- ◆ Avoid drinks with ice of uncertain origin;
- ◆ Eat only thoroughly cooked food;
- ◆ Wash and peel fruits by yourself and avoid eating raw vegetables;
- ◆ Refrain from work or school, and seek medical advice if suffering from gastrointestinal symptoms; and
- ◆ Exclude infected persons and asymptomatic carriers from handling food or providing care to children, elderly and immunocompromised people.

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NEWS IN BRIEF

A domestic cluster of pertussis

The Centre for Health Protection (CHP) of the Department of Health recorded a domestic cluster of pertussis in early November 2019, affecting an 11-month-old girl and a 39-year-old domestic helper. The girl had presented with fever, cough and reduced appetite since October 23 and was admitted to a public hospital on November 4. Her nasopharyngeal swab collected on November 4 tested positive for *Bordetella pertussis*. She was treated with antibiotics. Her condition was stable and she was discharged on November 8.

Contact tracing revealed that her domestic helper had developed cough since October 28. She was referred by CHP to a public hospital for assessment on November 5. Her pernasal swab collected on the same day tested positive for *Bordetella pertussis*. She was treated with antibiotics. Her condition remained stable and she did not require hospitalisation.

The girl's mother had also developed cough recently and had consulted a private medical practitioner. She was referred by CHP to a public hospital for assessment on November 5. Her pernasal swab collected on November 5 tested negative for *Bordetella pertussis*.

The other home contacts were asymptomatic. All of them had pernasal swabs collected and were given chemoprophylaxis. The pernasal swabs were all negative for *Bordetella pertussis*.

Both patients had no travel history during the incubation period. The girl had received three doses of diphtheria, tetanus, acellular pertussis and inactivated poliovirus vaccines while the domestic helper's and the girl's mother's vaccination status against pertussis was uncertain.

A sporadic case of listeriosis

On November 3, 2019, CHP recorded a sporadic case of listeriosis affecting a 60-year-old man with underlying illness. He had presented with fever, myalgia and confusion since October 31 and was admitted to a public hospital on the same day. His blood and cerebrospinal fluid collected on October 31 and November 1 respectively both grew *Listeria monocytogenes*. He was treated with antibiotics and his condition was stable. He had no recent travel history during the incubation period and his household contacts remained asymptomatic.

A sporadic case of necrotizing fasciitis due to *Vibrio vulnificus* infection

On November 4, 2019, CHP recorded a sporadic case of *Vibrio vulnificus* infection affecting a 60-year-old woman with underlying illnesses. She had presented with fever and left hand swelling since November 2 and was admitted to a public hospital on the same day. The diagnosis was necrotizing fasciitis and the patient was found to be in septic shock. She was treated with antibiotics and surgical debridement was performed. Deep wound swab, necrotic tissue and blood collected on November 2 all grew *Vibrio vulnificus*. Her condition continued to deteriorate and she succumbed on November 3. The patient was retired and lived alone. She had punctured her left index finger by a sewing needle on November 1. There was no known history of exposure to seawater or marine products during the incubation period.

A local sporadic case of Hantavirus infection

On November 6, 2019, CHP recorded a sporadic case of Hantavirus infection affecting a 22-year-old man with good past health. He presented with fever, headache, dizziness, myalgia, abdominal pain and vomiting since October 24. He was admitted to a public hospital on October 29 and his blood tested positive for Hantavirus IgM confirming the diagnosis of recent Hantavirus infection. He remained in stable condition and was discharged on November 9.

The patient had no travel history during the incubation period. He worked at a market store in Yau Ma Tei. He did not recall direct contact with rodents but he had history of cleaning up rodent excreta at work during the incubation period. He did not keep pets at home. His home contacts and his colleagues were asymptomatic. The Food and Environmental Hygiene Department had been informed for vector investigation and control.

Symposium on Advanced Infection Control and Round Table Discussion 2019

The Infection Control Branch of CHP has organised the Infection Diseases Symposium 2019 at CHP from November 6 to 7, 2019. The Symposium provided a valuable platform for updating the latest scientific knowledge in infection control in healthcare settings, and preparing the participants to become leaders in driving changes and improving quality for combatting various infectious diseases. The Symposium was well attended by over 350 healthcare professionals including infection control officers and nurses.

Three renowned overseas speakers namely Professor Sanjay Saint from the University of Michigan, USA, Professor Susan Huang from the University of California Irvine School of Medicine, USA, and Professor Anucha Apisarnthanarak from Thammasat University Hospital, Thailand were invited to share cutting-edge science and practical experience in infection control. They have delivered insightful presentations on topics including prevention of catheter associated urinary tract infection, role of behavioural science in infection control, decolonisation for multi-drug resistant organisms, implementing infection control during disaster, control of colistin-resistant Gram negative bacteria and central line-associated bloodstream infections. Besides, Dr Bosco Lam from Princess Margaret Hospital also shared the local scene in controlling *Candida auris* while Professor Siew Ng from the Chinese University of Hong Kong presented the enlightening research findings on the novel approach in controlling multi-drug resistant organisms by decolonisation of the gut microbiota.

We have invited leaders in the field of infection control to join a half-day round table session. In this session, Dr Vincent Cheng shared the local perspectives in controlling multi-drug resistant organisms while the three overseas speakers and participants had a very interactive exchange of ideas on practical issues in implementing infection control measures such as adoption of advanced technology and equipment, staff engagement in influenza vaccine programme, manpower of infection control workers, and usage of chlorhexidine in decolonisation of multi-drug resistant organisms.

The presentation materials were uploaded onto the Hong Kong Training Portal on Infection Control and Infectious Diseases: <https://icidportal.ha.org.hk/Trainings/View/144>.

CA-MRSA cases in October 2019

In October 2019, CHP recorded a total of 104 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 66 males and 38 females with ages ranging from 8 days to 89 years (median: 37.5 years). Among them, there were 79 Chinese, 6 Filipinos, 4 Pakistani, 3 Caucasian, 3 Indonesian, 2 Japanese, 2 Nepalese, 1 Indian, 1 Vietnamese and 3 of unknown ethnicity.

One hundred and three cases presented with uncomplicated skin and soft tissue infections while the remaining case had severe CA-MRSA infection. The severe case affected a 39-year-old woman who sustained a wound over her right hip since October 4. She presented with fever, abdominal pain and diarrhoea since October 7. She attended a public hospital on October 14 and was admitted for management. Her blood specimen collected on October 15 was cultured positive for CA-MRSA. The clinical diagnosis were septic arthritis of right hip joint and sepsis. She was treated with antibiotics and surgical drainage of right hip joint. She remained stable and was discharged on November 8.

Among the 104 cases, one case involving a healthcare worker in a private hospital was reported. Investigation did not reveal any epidemiologically linked cases. Besides, two household clusters, with each affecting two persons, were identified.

Scarlet fever update (October 1, 2019 – October 31, 2019)

Scarlet fever activity in October increased. CHP recorded 138 cases of scarlet fever in October as compared with 83 cases in September. The cases recorded in October included 83 males and 55 females aged between eight months and 64 years (median: six years). There were five institutional clusters occurring in three kindergartens/child care centres, a primary school and a special school. No fatal cases were reported in October.



Photo 1 - Group photo of overseas and local speakers, organising committee and moderators (from left to right): Dr Vincent Cheng, Dr Alan Wu, Dr Kitty Fung, Professor Sanjay Saint, Professor Anucha Apisarnthanarak, Professor Susan Huang, Dr Chen Hong, Dr Bosco Lam, and Mr Anthony Ng.



Photo 2 - Speakers and participants.