

Communicable Diseases WATCH



衛生防護中心
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Department of Health

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FEATURE IN FOCUS

Resurgence of pertussis: A global and local update

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Pertussis, commonly known as whooping cough, is an acute, highly contagious respiratory infection caused by the bacterium *Bordetella pertussis*. It is spread by droplets when an infected person coughs or sneezes, or via direct contact with respiratory secretions. The disease is characterised by violent and repeated coughing that may last for two to three months, and can even lead to seizures and coma in severe cases. Pertussis affects people of all ages. While adolescents and adults may generally have a mild and nonspecific course, infants in particular those too young to be vaccinated are at greatest risk of severe disease and death following infection.

Pertussis is endemic worldwide, with cyclical peaks occurring every three to five years. Following reduced circulation during the COVID-19 pandemic due to social distancing measures, pertussis cases have rebounded significantly worldwide since 2023. According to data from the World Health Organization (WHO), the global incidence of pertussis increased from a historical low of 4.6 per million in 2021 to 22.8 per million in 2023, returning to pre-pandemic levels. It further surged to an unprecedented high level of 181.3 per million in 2024, indicating a sharp resurgence across many regions (Figure 1)¹.

In Europe, pertussis incidence increased four-fold from 2023 to 2024¹. The highest incidence was reported

among infants under one year of age, with a pronounced rise among 10 to 19-year-olds². In the United States, pertussis reverted to pre-pandemic levels with more than 10 000 cases in 2024. As of May 31, 2025, a total of 12 513 pertussis cases were recorded this year, already exceeded the 7 321 cases reported for the same period in 2024³. While



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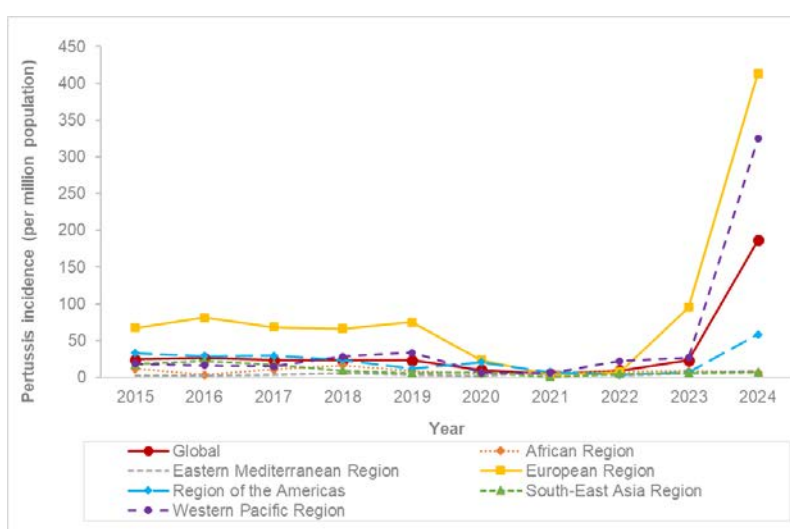


Figure 1 – Global pertussis incidence by region and year, 2015 to 2024.

the incidence remained highest among infants less than one year, a rising proportion of pertussis cases has been observed in adolescents aged 11 to 18 years since 2024^{4,5}.

In Mainland China, reported cases of pertussis surged to approximately 500 000 cases in 2024, a staggering 12-fold increase from 2023⁶. The surge has been accompanied by a shift towards older children and an increasing prevalence of macrolide-resistant *Bordetella pertussis* (MRBP) strains^{7,8}. Similarly, Korea observed a record high number of pertussis cases in 2024 with over 48 000 cases reported, majority being children and adolescents aged seven to 19 years^{9,10}. Japan likewise recorded nearly 20 000 cases of pertussis in the first five months of 2025, the highest since the disease became nationally notifiable in 2018¹¹. Cases have increased rapidly since late March, with adolescents aged 10 to 19 years accounting for more than half of all cases. Infections associated with MRBP have also been reported in nine of the prefectures¹².

Key factors driving the resurgence of pertussis in these countries include reduced natural boosting of immunity due to lower disease circulation during the pandemic, decline in vaccination coverage, waning of vaccine-acquired immunity, enhanced case detection through increased use of polymerase chain reaction (PCR) testing (especially respiratory multiplex PCR panels), as well as emergence of resistant strains^{2,7}. Even though severe cases and mortality remain highest in infants, the burden of pertussis is increasingly shifting towards older children and adolescents as driven by waning of protection over time in conjunction with sub-optimal vaccine uptake or lack of booster vaccination in these age cohorts.

In Hong Kong, pertussis occurs all year round and peaks cyclically every three to five years. The disease activity dropped to very low levels during the pandemic between 2020 and 2023, followed by an uptick in 2024 but overall remained far below the pre-pandemic peak in 2018-2019. The most notable decline was observed in infants aged less than six months. One death was reported in a 76-year-old man with multiple comorbidities in 2024. As of May 31, 2025, four cases of pertussis were recorded this year, involving two adults, one toddler and one infant (Figure 2).

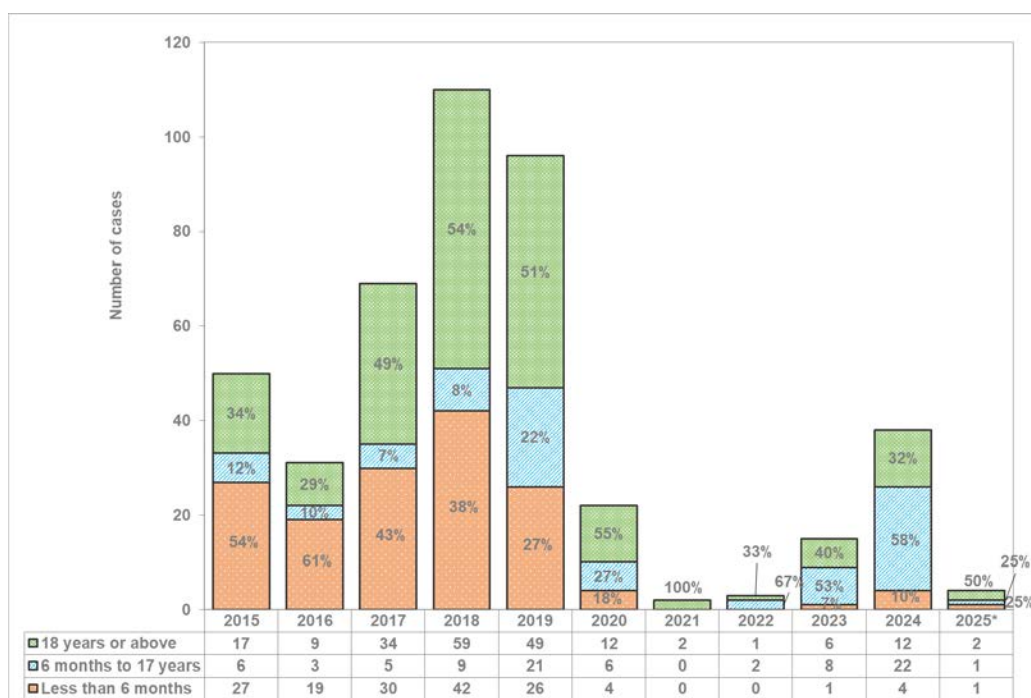


Figure 2 – Pertussis cases by age group and year, 2015-2025* (as of May 31, 2025).

Local surveillance data from the past two years showed an age shift of pertussis cases from infants to older children since the roll-out of maternal vaccination programme in July 2020¹³. During the pre-pandemic years from 2015 to 2019, 40% of cases were infants aged 6 months or younger who had not completed their primary vaccinations. From 2023 to 2025 (as of May 31), only six cases were recorded in infants under six months, accounting for 11% of total cases (Table 1). On the other hand, the number of

Table 1 – Age distribution of confirmed pertussis cases in Hong Kong.

Age group	Number of cases (proportion in percentage)	
	2015 to 2019	2023 to 2025 (as of May 31)
< 6 months	144 (40%)	6 (11%)
6 months to 5 years	39 (11%)	15 (26%)
6 to 17 years	5 (1%)	16 (28%)
18 to 59 years	112 (32%)	12 (21%)
60 years or above	56 (16%)	8 (14%)

pertussis cases in children aged six months to 17 years substantially increased in 2023 and 2024, accounting for over half of all cases.

The changing epidemiology could be attributed to the introduction of free pertussis vaccination for pregnant women between 28 and 35 weeks of pregnancy in Hong Kong starting from July 2020, as an essential part of routine prenatal care. In recent years, the vaccination rate among pregnant women has been maintained at a high level.

Vaccination in pregnancy is key to protecting newborns against pertussis from birth until they are due for their first dose of primary series at two months of age. Pertussis vaccination is recommended in every pregnancy and women should receive one dose of acellular pertussis-containing vaccine at any time in the second or third trimester, preferably before 35 weeks of gestation.

In Hong Kong, pertussis vaccination has been included in the Childhood Immunisation Programme since 1956. The coverage with three doses of pertussis-containing vaccine in children aged three to five years have exceeded 95% over the years. Currently, pertussis vaccines provided in the Maternal and Child Health Centres for infants and young children as well as by the School Immunisation Teams for primary students are combination vaccines containing diphtheria, tetanus and poliovirus antigens. A three-dose primary series is administered to infants at two, four and six months of age, followed by three booster doses at 18 months, Primary One and Primary Six (Figure 3). Studies have shown that completion of the primary series is essential to obtain full protective effects conferred by the vaccine, while subsequent booster vaccinations could extend the duration of protection against pertussis¹⁴.

Apart from active immunisation, maintaining personal and environmental hygiene is crucial for preventing infection and spread of pertussis. When symptoms appear, especially after returning from places where pertussis activity is high, people should wear surgical masks, stay home from work or school, avoid crowded places and seek medical advice as soon as possible. For more information on pertussis, please visit the thematic website: <https://www.chp.gov.hk/en/healthtopics/content/24/35.html>.

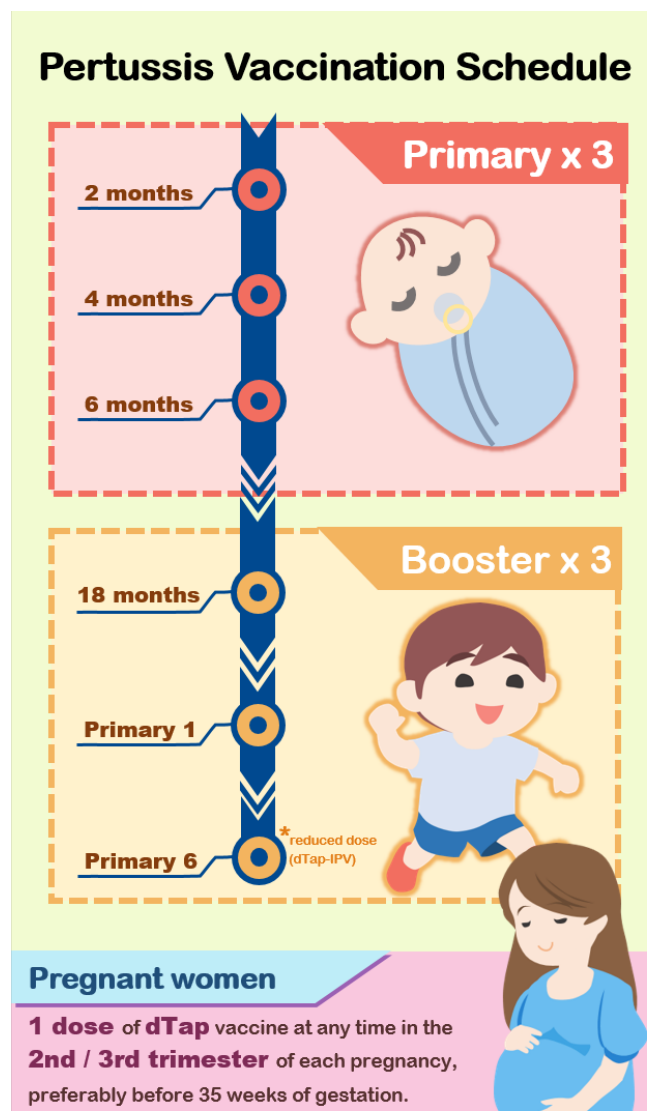


Figure 3 – Pertussis vaccination schedule in Hong Kong.

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Epidemiology of acute gastroenteritis in Hong Kong

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Escherichia coli and *Salmonella spp.*). AGE is usually caused by viral infections, with NoV being a common causative agent. NoV poses a significant public health threat as it is highly contagious and causes AGE outbreaks in settings where people are staying close together, such as schools, elderly homes, hotels, play facilities and cruise ships.

In Hong Kong, AGE is not listed as a statutory notifiable disease. However, the Centre for Health Protection (CHP) of the Department of Health encourages institutions to report suspected outbreaks of AGE to enable prompt investigation and implementation of control measures.

Epidemiological trends of reported AGE outbreaks

From 2015 to May 31, 2025, the CHP recorded a total of 1 583 institutional AGE outbreaks (affecting 16 832 persons). During the pre-COVID-19 era from 2015 to 2019, the annual number of outbreaks ranged from 146 to 182 (median: 167). During the pandemic (2020 to 2022), the number of AGE outbreaks decreased drastically with only 18, 30 and 29 outbreaks recorded in 2020, 2021 and 2022 respectively. This was due to heightened hygiene practices, decreased social interactions and prolonged school closure. After resumption of normalcy in 2023, there was a sharp increase in the number of AGE outbreaks, with annual totals surging to 269 and 240 in 2023 and 2024 respectively. In 2025 (as of May 31), 167 institutional AGE outbreaks have been recorded, surpassing those recorded in the same period of 2023 and 2024 (Figure 1).

Introduction

Acute gastroenteritis (AGE) is characterised by sudden onset of frequent loose or watery stools, often accompanied by vomiting and fever. The causative agents responsible for AGE vary widely, including viruses (such as norovirus (NoV) and rotavirus (RoV)) and bacteria (such as *Escherichia*

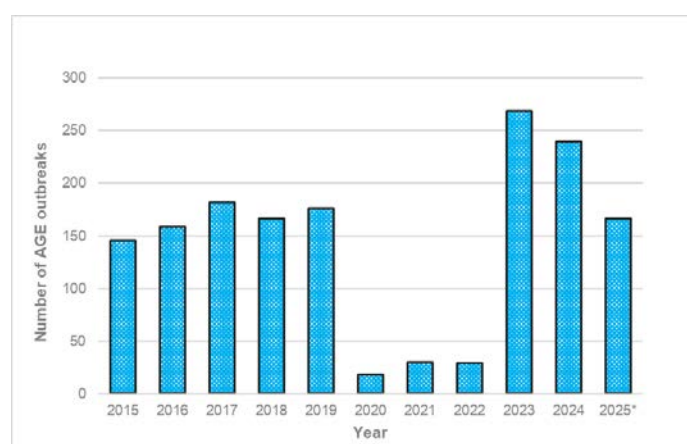


Figure 1 – Number of institutional AGE outbreaks recorded by year, 2015 to 2025 (*provisional figures as of May 31, 2025).

Causative agents of AGE outbreaks

Among the 1 583 AGE outbreaks recorded, causative agents were identified in 652 (41.2%) outbreaks. The majority of AGE outbreaks with known causative agents were associated with NoV (514, 78.8%), followed by RoV (61, 9.4%), sapovirus (26, 4.0%), *Clostridium difficile* (8, 1.2%) and other pathogens (17, 2.6%) (e.g., astrovirus, adenovirus, *Salmonella* spp., *Aeromonas*, etc.). The remaining 26 outbreaks (4.0%) were associated with multiple pathogens.

Epidemiological features of NoV-associated AGE outbreaks

NoV has been the leading cause of AGE outbreaks all along. Before the COVID-19 pandemic (2015 to 2019), the annual number of NoV-associated AGE outbreaks ranged from 40 to 61 (median: 49). During the pandemic period from 2020 to 2022, the total number of NoV-associated AGE outbreaks dropped to very low levels, with only 21 outbreaks recorded (ranging from two to 11 per year). After the resumption of normalcy in 2023, the number of NoV-associated AGE outbreaks increased significantly to 74 and 78 outbreaks in 2023 and 2024, respectively. In 2025 (as of May 31), 85 NoV-associated AGE outbreaks were recorded (Figure 2). The detection of more NoV-associated AGE outbreaks in 2025 might be attributed to increased specimens collection for laboratory testing for AGE outbreaks (67.7% of AGE outbreaks in 2025 had specimen collected, compared to 38.5% in 2023-2024).

Seasonal patterns showed that more NoV-associated AGE outbreaks occurred in cooler months from September to March, with an exception in 2023, when a peak occurred in June following the lifting of pandemic restrictions. In 2025, the activity of AGE outbreaks reached a high level between January and February and then gradually dropped to baseline level in May, consistent with the usual seasonal trend (Figure 3).

Among the 514 NoV-associated AGE outbreaks recorded between 2015 and 2025 (as of May 31), the majority occurred in child care centres/kindergartens (CCC/KG) (228, 44.4%), followed by residential care homes for the elderly (RCHE) (138, 26.8%), primary schools (57, 11.1%), hospitals (13, 2.5%), and secondary schools (eight, 1.6%). The remaining 70 outbreaks (13.6%)

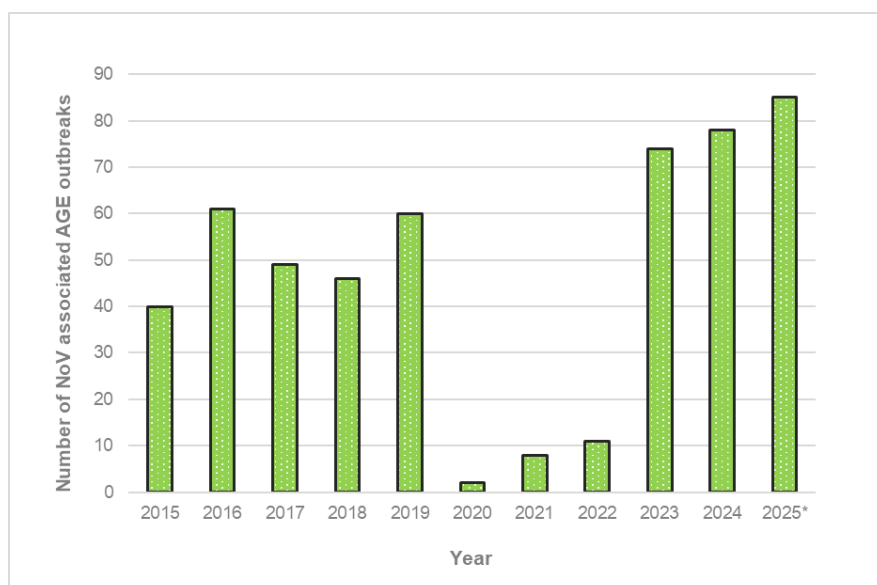


Figure 2 – Number of institutional AGE outbreaks recorded by year, 2015 to 2025 (*provisional figures as of May 31, 2025).

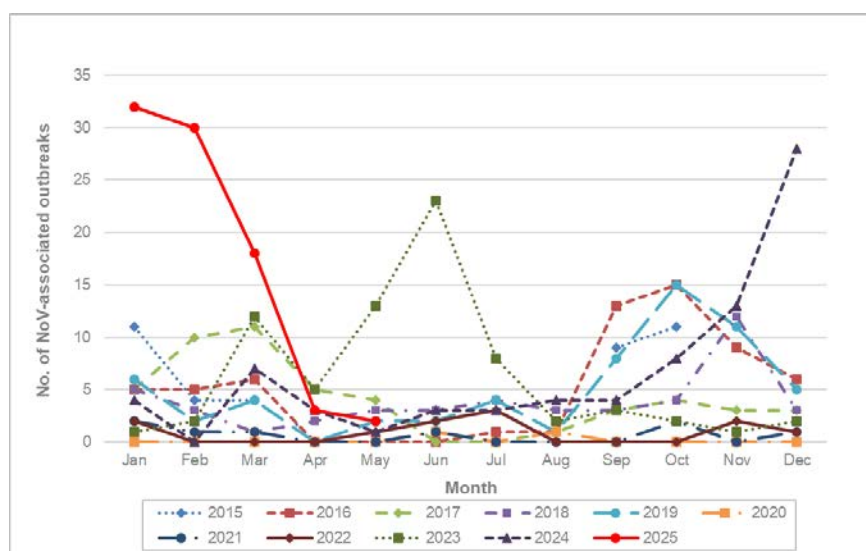


Figure 3 – Number of NoV-associated AGE outbreaks by month, 2015 to 2025 (*provisional figures as of May 31, 2025).

occurred in other institutions (e.g. residential care homes for persons with disabilities, special schools, etc.). Notably, a shift in the relative proportion of settings for these NoV-associated AGE outbreaks was observed following the resumption of normalcy. Before and during the COVID-19 pandemic, over half of these outbreaks occurred in CCC/KG, but this proportion dropped to 30.8% since 2023. On the other hand, the proportion of outbreaks in RCHEs has increased significantly to 40.9% since 2023, compared to 15.2% and 9.5% in the pre-pandemic and pandemic periods, respectively (Figure 4).

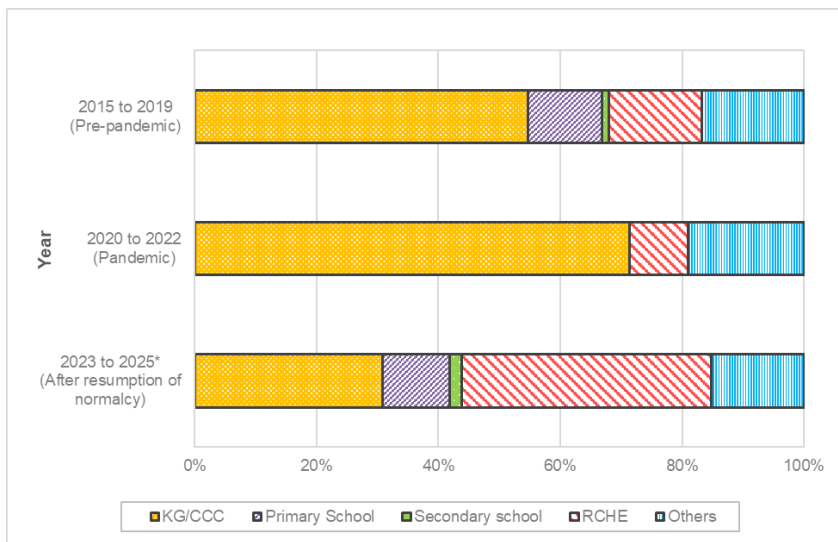


Figure 4 – Distribution of NoV-associated AGE outbreaks by settings and periods (*provisional figures as of May 31, 2025).

Between 2015 and 2025 (as of May 31), NoV-associated AGE outbreaks affected a total of 7 424

persons, with the size of each outbreak ranging from three to 181 persons (median: 11). Of these outbreaks, 210 (40.9%) affected three to nine persons, 218 (42.4%) affected ten to 19 persons, and 86 (16.7%) affected 20 or more persons. The median number of persons affected remained consistent across periods: 12 persons (range: three to 181) during the pre-pandemic period, 12 persons (range: three to 66) during the pandemic period, and 10 persons (range: three to 77) after resumption of normalcy, with no statistically significant differences. Among the 7 424 affected persons, 964 (13.0%) required hospitalisation. A higher proportion (42.5%) of hospitalised patients were residents of RCHEs, often with pre-existing conditions. No fatal cases had been recorded in NoV-associated AGE outbreaks from 2015 to May 31, 2025.

In summary, AGE outbreaks occur throughout the year in Hong Kong, with the majority associated with NoV. Following the easing of restrictions and return to normalcy in 2023, Hong Kong experienced a surge in NoV-associated AGE outbreaks, exceeding pre-pandemic levels after a three-year low. A similar phenomenon was also observed in neighbouring areas, including Mainland China, Taiwan, and Japan, where a notable increase in AGE activity, likely associated with norovirus, surpassed prior years. The CHP will continue to closely monitor the activity of AGE in Hong Kong. To prevent AGE especially those caused by NoV, members of the public should adopt general measures including maintaining good personal, food and environmental hygiene. Further information about NoV infection can be found in the CHP webpage via the hyperlink: <https://www.chp.gov.hk/en/healthtopics/content/24/33.html>.



Prevention of AGE

Maintain good personal hygiene

- ✦ Perform hand hygiene frequently, especially before handling food or eating, and after using the toilet. Wash hands with liquid soap and water, and rub for at least 20 seconds. Then rinse with water and dry with a disposable paper towel or hand dryer. If hand washing facilities are not available, or when hands are not visibly soiled, hand hygiene with 70 to 80% alcohol-based handrub may be considered. As alcohol does not effectively kill norovirus, alcohol-based handrub should not substitute hand hygiene with liquid soap and water.
- ✦ Wear gloves and a surgical mask while disposing of or handling vomitus and faeces, and wash hands thoroughly afterwards.
- ✦ Refrain from work or attending class at school, and seek medical advice if suffering from fever, vomiting or diarrhoea.
- ✦ Exclude infected persons and asymptomatic carriers from handling food and from providing care to children, the elderly and immunocompromised people.

Maintain good food hygiene

- ✦ Adopt the 5 Keys to Food Safety in handling food, i.e. Choose (Choose safe raw materials); Clean (Keep hands and utensils clean); Separate (Separate raw and cooked food); Cook (Cook thoroughly); and Safe Temperature (Keep food at safe temperature) to prevent foodborne diseases.
- ✦ Drink only boiled water from the mains or bottled drinks from reliable sources.
- ✦ Avoid drinks with ice of unknown origin.
- ✦ Purchase fresh food from hygienic and reliable sources. Do not patronise illegal hawkers. In general, you can eat fruit skin after thorough washing. However, if you would like to reduce the risk of illness especially when you travel abroad, peel raw fruit before you eat and do not eat the peelings.
- ✦ Cook all food, particularly shellfish, thoroughly before consumption.
- ✦ Susceptible populations (e.g. pregnant women, infants, young children, the elderly and people with weakened immune systems) should avoid eating foods that are consumed without heat treatment (e.g. shellfish, especially oyster, to be consumed raw) or foods containing ingredients that are not cooked (e.g. pre-prepared or pre-packaged salads).

Maintain good environmental hygiene

- ✦ Maintain good indoor ventilation.
- ✦ Clean vomitus/ faeces and disinfect the contaminated areas properly and immediately. Keep other people away from the contaminated areas during cleaning.
- ✦ Maintain proper function of sanitary facilities and drainage system.
- ✦ Clean and disinfect toilets used by infected persons and the soiled areas.

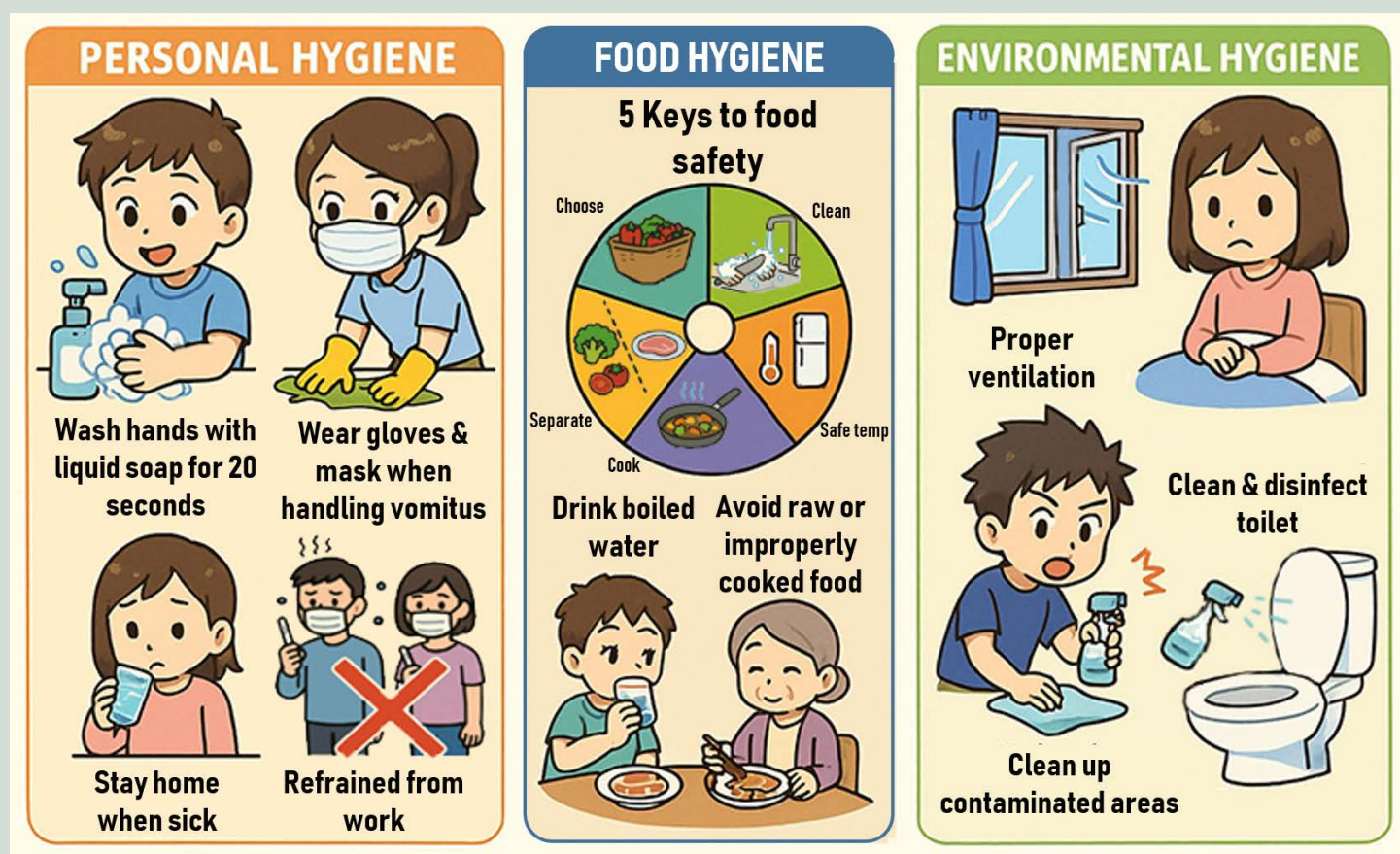


Figure 5 – Prevention of acute gastroenteritis.

Global Disease Snapshot

Major Outbreaks and Emerging Infections



Source of information

Ho Chi Minh City for Disease Control: <https://hcddc.vn/tinh-hinh-dich-benh-sot-xuat-huyet-tay-chan-mieng-va-soi-tai-tp-ho-chi-minh-tinh-den-tuan-242025-39VTfF.html>

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PAHO: <https://www.paho.org/en/news/27-5-2025-public-health-risk-yellow-fever-remains-high-americas-due-continued-occurrence-human>

NEWS IN BRIEF

Guangdong, Hong Kong and Macao hold public health exercise in preparation for hosting 15th National Games, National Games for Persons with Disabilities, and National Special Olympic Games

The Centre for Health Protection (CHP) of the Department of Health, in collaboration with the health authorities of Guangdong Province and Macao, conducted a public health exercise, code-named "Jingfeng" 「競鋒」 on June 11, to enhance the capacity of the three places to co-operate in preventing and controlling communicable diseases during major sports events. The exercise was held to prepare for the 15th National Games (15th NG), the 12th National Games for Persons with Disabilities (NGD), and the 9th National Special Olympic Games (NSOG), which will be co-hosted by Guangdong, Hong Kong and Macao this November and December.



Photo 1 – Staff from the three places conducting the exercise through video conferencing.

The exercise simulated a scenario in which two players participating in the 15th NG basketball competition in Hong Kong were diagnosed with invasive meningococcal infection while they were in the city. An epidemiological investigation revealed

that some of their close contacts had already departed Hong Kong for Shenzhen and Macao respectively. In accordance with the established mechanism, Hong Kong immediately notified the health authorities of the three places, promptly traced the close contacts and implemented appropriate infection control measures to prevent the spread of meningococcal infection.

During the exercise, the CHP, together with the Guangdong Provincial Disease Control and Prevention Administration, the Guangdong Provincial Center for Disease Control and Prevention and the Health Bureau of Macao SAR conducted a drill and exchanged views on communicable disease surveillance, prevention, control and notification mechanisms during the 15th NG, and 12th NGD and 9th NSOG via a video conference. More than 30 officers from the health authorities of the three places participated in the exercise.

The CHP has organised a total of 32 emergency response exercises and drills since its establishment, simulating situations with cases such as human cases of avian influenza, measles, plague and Middle East Respiratory Syndrome, etc.



Photo 1 – The IMPACT Guidelines 6th edition was officially published on 19 June 2025.

Infectious Disease Forum: Release of the Sixth Edition of Interhospital Multi-disciplinary Programme on Antimicrobial ChemoTherapy (IMPACT)

The CHP organised an Infectious Disease Forum on 19 June 2025 to introduce the 6th edition of the Interhospital Multi-disciplinary Programme on Antimicrobial ChemoTherapy (IMPACT) Guidelines. Over 150 healthcare professionals from the public and private sectors attended the event. Updates highlighted include empirical therapy for common infections, recommendations for antimicrobials targeting known pathogens, guidelines for surgical antimicrobial prophylaxis and adverse reactions for selected antimicrobials.

The IMPACT guidelines is a collaborative effort among the CHP, the Hospital Authority, the Li Ka Shing Faculty of Medicine of the University of Hong Kong, the Faculty of Medicine of the Chinese University of Hong Kong, the Hong Kong Medical Association and the Hong Kong Private Hospitals Association. Since its first edition published in 1999, it has been an important reference for healthcare professionals, and the foundation of Antimicrobial Stewardship Programme in hospitals. The IMPACT guidelines promote rational and evidence-based antibiotic prescription to avoid misuse and overuse of antimicrobials, which is one of the strategic interventions outlined in the Hong Kong Strategy and Action Plan on Antimicrobial Resistance.



Photo 2 – Dr Edmond Ma, Acting Head of the Infection Control Branch of the CHP, addressed the forum.

To access the IMPACT Guidelines, please visit the IMPACT webpage (<https://impact.chp.gov.hk/>). In addition, the IMPACT mobile application has been updated to the 6th edition contents.



Photo 3 – Dr Ho Pak-leung, Chairman of the IMPACT Editorial Board, introduced the 6th edition of IMPACT.



Photo 4 – The IMPACT editorial board members gathered to introduce the updated contents.

Two local sporadic cases of necrotising fasciitis due to *Vibrio vulnificus* infection

The first case involved an 87-year-old male with underlying illness residing in Tin Shui Wai. He presented with fever, left calf pain and swelling on May 24, 2025 and was admitted to a public hospital on May 25. He was clinically diagnosed to have necrotising fasciitis and surgical debridement of left leg was performed. *Vibrio vulnificus* was cultured from blood and left leg aspirate. His condition was stable. According to his family, he purchased a marine fish from a wet market in Tin Shui Wai on May 24 and handled the fish before symptom onset although no injury was noted. He had no recent travel history.

The second case involved a 68-year-old male with underlying illness residing in Yuen Long. He had a diabetic foot ulcer. He presented with fever, shortness of breath, abdominal pain, diarrhea and bilateral lower leg swelling on June 13, 2025, and was admitted to a public hospital on the same day. He was clinically diagnosed to have necrotising fasciitis involving both lower legs. Right above knee amputation and excisional debridement were performed. *Vibrio vulnificus* was cultured from blood specimen. His condition deteriorated and he succumbed on June 18. According to his family, he visited a wet market on June 11 although no injury was noted. He had no recent travel history.

A local sporadic case of human myiasis

The CHP recorded a case of human myiasis affecting a 97-year-old resident of an elderly home in North district. He was bedbound with multiple chronic diseases including a chronic wound over left foot. On June 12, 2025, maggots were found in this wound and he was admitted to a public hospital for treatment on the same day. His condition remained stable. Site inspection revealed that some of the protective nets at the windows were worn out. Advice on personal care and environmental hygiene was given to the elderly home. The Pest Control Advisory Section of the Food and Environmental Hygiene Department was informed for follow-up actions at the vicinity of the elderly home. The Social Welfare Department was informed to monitor care standard in the elderly home concerned.

Two local sporadic cases of listeriosis

The first case affected a 63-year-old woman with underlying diseases residing in Sha Tin. She presented with fever, diarrhoea and malaise on May 25, 2025 and was admitted to a public hospital on May 26. Her cerebrospinal fluid specimen collected on the same day grew *Listeria monocytogenes*. She was treated with antibiotics and her current condition was stable. She had no recent travel history and there was no known high-risk exposure during the incubation period. Her household contacts remained asymptomatic.

The second case involved a 56-year-old female with underlying illness residing in Central and Western district. She presented with fever, confusion and diarrhoea on May 31, 2025, and was admitted to a public hospital on the same day. Cerebrospinal fluid collected on June 1 grew *Listeria monocytogenes*. She required intubation and was admitted to an Intensive Care Unit. Her condition improved with antibiotic treatment. She had no travel history and denied any high-risk exposure during the incubation period. Her household contacts remained asymptomatic.

A probable case of sporadic Creutzfeldt-Jakob disease

The CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) affecting a 70-year-old male with underlying health conditions residing in Eastern district. He presented with progressive dementia, myoclonus, and akinetic mutism since mid-March 2025. He was admitted to a public hospital on June 17, 2025. Findings of his electroencephalogram was compatible with CJD. His condition remained stable, and he had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified.

A local case of invasive community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infection

The CHP recorded a local case of invasive CA-MRSA affecting an 87-year-old man with underlying diseases and a stoma residing in Kwai Tsing. He presented with fever and decrease in general condition since June 5, 2025, and was admitted to a private hospital on June 7. Blood specimen collected on June 8 was cultured positive for CA-MRSA. He was diagnosed to have sepsis. His condition remained stable with antibiotic treatment. He had no recent travel history. His household contacts remained asymptomatic.

A local sporadic case of *Streptococcus suis* infection

The CHP recorded a sporadic case of *Streptococcus suis* infection affecting a 58-year-old male cook residing in Kwai Tsing. He presented with fever, vomiting, diarrhoea, myalgia and arthralgia on June 17, 2025, and was admitted to a public hospital on June 19. His blood specimen was cultured positive for *Streptococcus suis*. His condition remained stable upon treatment. During the incubation period, he sustained a cut on his right index finger. He recalled he had handled raw pork at work without protective gloves after the injury. Otherwise, there was no other known exposure to livestock, farm or abattoir before onset of symptoms. His home contacts and coworkers were asymptomatic.