

# Communicable Diseases

## WATCH



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### FEATURE IN FOCUS

## Review of scarlet fever and invasive group A streptococcus infection in Hong Kong

*Reported by Dr Hei Tung LAM, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP.*

Group A streptococcus (GAS), *Streptococcus pyogenes*, are bacteria that can be found in the throat and on the skin. People may carry GAS without having any symptoms, while some may develop infections with various severity. The bacteria can be transmitted through either respiratory droplets or direct contact with infected respiratory secretions. Scarlet fever (SF) is caused by GAS and it is a notifiable disease in Hong Kong. It often starts with a fever and sore throat and may be followed by some distinct features such as strawberry tongue (a red and swollen tongue covered in little bumps) and sandpaper rash (a fine red, erythematous rash which gives the skin a sand-paper-like texture). SF usually runs a mild course, but complications may develop occasionally.

There was a change in the incidence of SF in other regions during and after COVID-19 pandemic. In Mainland China, SF activity plummeted during COVID-19 pandemic but it started to rebound to pre-pandemic level in 2024, with about 18 000 cases recorded in the first four months<sup>1</sup>. A similar upsurge of SF cases was seen in a number of European countries in 2022, following a period of reduced incidence of GAS infections observed during COVID-19 pandemic<sup>2</sup>. The phenomenon is also observed in Hong Kong and this article aims to review the local situation of SF and invasive group A streptococcal (iGAS) infection in recent years across the pandemic.

Prior to the start of COVID-19 pandemic in 2020, the annual number of SF cases reported to the Centre for Health Protection (CHP) of the Department of Health ranged from 1 466 to 2 353 in 2016 to 2019. The number plunged to a low level ranged from 41 to 262 cases between 2020 and 2022 when a series of anti-epidemic measures were deployed. After the resumption of normalcy in early 2023, the number of SF cases gradually rose to a level comparable to pre-pandemic period. For the first five months of 2024, 644 cases have been recorded by CHP (Figure 1).

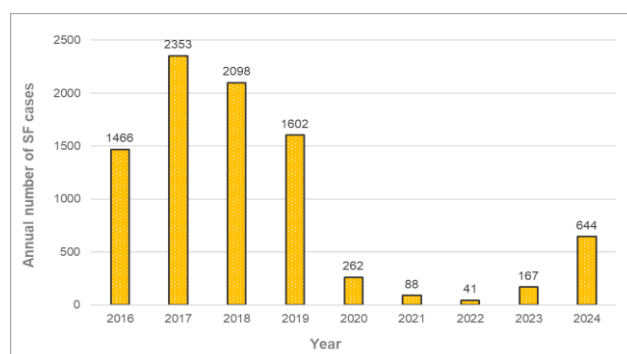


Figure 1 – Annual number of SF cases recorded, 2016 – 2024 (as of May 31, 2024)

While SF occurred throughout the year, there was usually a seasonal pattern in Hong Kong with its activity higher from May to June and from November to December in pre-pandemic years. In 2024, the activity of SF is observed to be following the seasonal trend shown by the increasing number of cases recorded from February to May. (Figure 2).

The clinical and epidemiological features of the SF cases recorded during the first five months this year were broadly similar to those recorded in the pre-pandemic (2016 to 2019) and pandemic period (2020 to 2023) (Table 1). Among the 644 cases recorded in 2024, the male to female ratio was 1.9:1. Their ages ranged from one to 71 years (median: seven years). The majority affected were children under 12 years old (621 cases, 96.4%). 183 cases (28.4%) required hospitalisation but no severe cases or fatal cases were recorded. Seven household clusters and 12

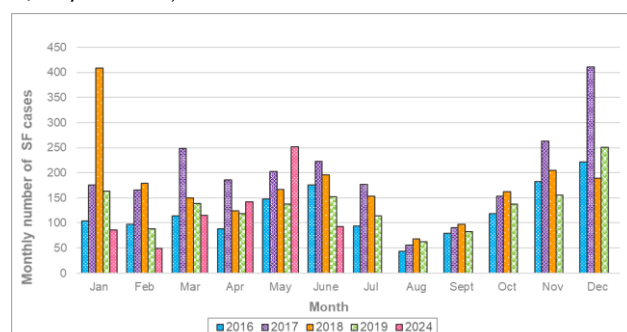


Figure 2 – Monthly number of SF cases recorded, 2016-2019 and 2024 (as of May 31, 2024)

institutional clusters were recorded this year so far, involving five kindergartens/child care centres and seven primary schools and affecting a total of 41 persons, with two to four patients (median: two patients) affected in each cluster.

Table 1 – Characteristics of SF cases, 2016 – 2024 (as of May 31, 2024)

	2016-2019 (Pre-pandemic years)	2020-2023 (Pandemic years)	2024 (As of 31 May)
Number of reported cases	7 519	558	644
Sex ratio (M:F)	1.4:1	1.5:1	1.9:1
Age range (median)	16 days - 64 years (6 years)	3 months - 66 years (5 years)	1 year - 71 year (7 years)
Number of cases aged <12 years old (%)	7 241 (96.3%)	509 (91.2%)	621 (96.4%)
Number requiring hospitalisation (%)	2 538 (33.8%)	189 (33.9%)	183 (28.4%)
Number of severe cases <sup>Note</sup>	13 (0.17%)	1 (0.18%)	0 (0%)
Number of deaths (case fatality rate)	2 (0.03%)	0 (0%)	0 (0%)
Number of clusters recorded	Institutions: 202 Households: 73	Institutions: 4 Households: 5	Institutions: 12 Households: 7
Number of persons involved in each cluster (median)	2-7 (2)	2 (2)	2-4 (2)
Percentage of cases involved in clusters (%)	8.8%	3.2%	6.4%

Note: Severe cases of SF including cases with severe pneumonia, toxic shock syndrome, septic shock and deaths

Apart from SF, GAS can cause a spectrum of diseases from mild throat or skin infections to severe and even life-threatening diseases. When the bacteria enter the blood, muscle or cerebrospinal fluid, they can cause severe and even life threatening diseases such as necrotising fasciitis, streptococcal toxic shock syndrome (STSS) and meningitis, collectively termed iGAS infection. In 2022, France, Ireland, the Netherlands, Sweden, and the United Kingdom of Great Britain and Northern Ireland, increases in iGAS cases were observed, particularly during the second half of the year<sup>3</sup>. There has been an upsurge of STSS cases in Japan since summer 2023 which may be associated with relaxation of COVID-19 counter-measures<sup>4</sup>. Locally, CHP has also been monitoring the activities of iGAS infection through public hospital laboratory surveillance. The monthly detection of iGAS cases with positive specimen in the first five months of 2024 ranged from 11 to 29, which is comparable to the corresponding months in the pre-pandemic period (ranged from five to 39) (Figure 3).

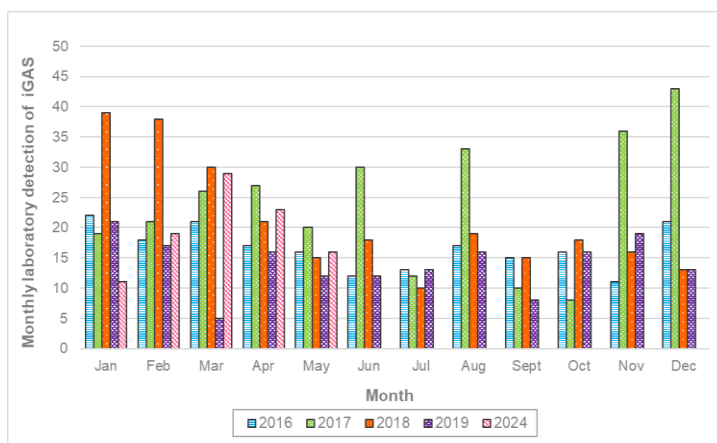


Figure 3 – Monthly detection of iGAS cases with positive specimen in public hospitals, 2016-2019 and 2024 (as of May 31, 2024)

To prevent SF or other GAS infections, it is important to maintain good personal, hand, and environmental hygiene. Symptomatic patients should wear a surgical mask, refrain from work or attending classes at school, avoid going to crowded places, and seek medical advice promptly. SF can be effectively treated with antibiotics. Prompt treatment helps alleviate symptoms faster, prevents rare but serious complications, and minimises the risk of transmission.

In summary, the SF activity in Hong Kong previously decreased to a low level during the COVID-19 pandemic period but soon returned to the pre-pandemic level after relaxation of control measures and resumption of normalcy in 2023 and is expected to follow the seasonal trend as before. CHP continues to closely monitor the SF situation. More information on SF (<https://www.chp.gov.hk/en/healthtopics/content/24/41.html>) and GAS infection (<https://www.chp.gov.hk/en/healthtopics/content/24/107780.html>) are available on the CHP website.

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## Review of B virus infection

*Reported by Ms Ka Yi LAW, Research Officer; Dr Wenhua LIN, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Section, Surveillance Division, Communicable Disease Branch, CHP*

B virus, also known as *herpes simiae virus*, *Macacine herpesvirus 1* or *Cercopithecine herpesvirus 1*, is an alphaherpesvirus belonging to the family of *Herpesviridae* under the genus of *Simplexvirus*. Macaques are the natural reservoir for B virus, and they are commonly found in some countryside areas of Hong Kong (Figure 1).

B virus infection has been reported most commonly in the rhesus and long-tailed macaque (*M. fascicularis*). Most infected macaques are usually asymptomatic or having mild disease. The virus can be latent in the infected macaque for a long time, then be reactivated and shed from the oral, nasal, or genital mucosa without signs of clinical illness. The infection is mainly transmitted through mating, scratching or biting among macaques.

Human infection of B virus is rare, with about 50 human cases have been documented worldwide thus far. The first human case of B virus infection was documented in 1932 that involved a researcher whose fingers were bitten by an apparently normal rhesus macaque while he was engaging in experimental work, and the researcher died of progressive encephalomyelitis 15 days after the injury<sup>1</sup>. Since then, human cases have been reported in the United States<sup>2,3</sup>, Japan<sup>4</sup> and Mainland China<sup>5</sup>. Most cases were caused by scratches or bites from infected macaques, mucosal contact with infected macaques' body fluid or tissue, or injury from contaminated materials. Human-to-human transmission of B virus is very rare but one case had been documented in 1987 in the United States. The case involved a wife contracting B virus from her husband when she applied hydrocortisone ointment to her husband's infected wounds as well as her contact dermatitis lesions on her finger<sup>2</sup>.

Symptoms of B virus infection usually occur within one month after the exposure, which may initially present with flu-like symptoms such as fever, myalgia, fatigue and headache. Vesicular skin lesions may then occur at the bite or scratch site. As disease progresses, the virus can spread to the central nervous system resulting in neurological symptoms, such as hyperesthesia, ataxia, diplopia, agitation and ascending flaccid paralysis<sup>6</sup>. The fatality rate of untreated human infections of B virus was reported as approximately 70%<sup>7</sup>. Human case of B virus infection with central nervous system complications may die even with treatments. Those who survive usually suffer from serious long term neurologic problems<sup>7</sup>.

### The first human case of B virus infection in Hong Kong

The Centre for Health Protection (CHP) of the Department of Health first recorded a case of human infection of B virus on April 3, 2024. The case involved a 37-year-old man with good past health, who presented with fever, coryzal symptoms and right upper eyelid swelling on March 18. He was admitted through the accident and emergency department on March 21 due to fever and decreased conscious level. He was later transferred to Intensive Care Unit (ICU) of the hospital due to further deterioration and he required tracheostomy and mechanical ventilation in ICU. His cerebrospinal fluid specimen taken on March 22 was tested positive for B virus by the Public Health Laboratory Services Branch of the CHP. The clinical diagnosis was B virus encephalitis. He was comatose and his condition remained serious. Epidemiologic investigation revealed that he had contacts with wild monkeys and was wounded by them during his visit at Kam Shan Country Park in late February.

In response to the confirmation of this human case, the CHP stepped up efforts to raise public awareness of B virus infection through several channels, including press releases, social media posts and media interviews. To enhance surveillance, B virus infection was added to the list of "Other communicable diseases of topical public health concern". The CHP also issued letters to remind medical practitioners to remain vigilant against B virus infection and report suspected cases promptly.

Currently no vaccine is available for prevention against B virus infection. Personnel who work with macaques or their specimens, such as laboratory workers and veterinarians, are at a higher risk of exposure and infection. They are recommended to adhere to appropriate laboratory and animal facility protocols and use appropriate personal protective equipment, including gloves and a face shield<sup>8,9</sup>. If a person is exposed, he should wash the exposure site immediately and seek medical attention promptly. Timely first aid and post-exposure antiviral prophylaxis as appropriate is important to prevent B virus infection and its life-threatening outcome.



Figure 1 – Rhesus macaque in Hong Kong (with special thanks to the Agriculture, Fisheries and Conservation Department for sharing the photo)



### Prevention of B virus infection

To minimize the risk of infection, members of the public are advised to:

- ◆ Stay away from wild monkeys
- ◆ Avoid touching or feeding any wild monkeys

In case there are wounds caused by monkeys:

- ◆ Wash the wound with a plenty of running water and seek medical attention immediately



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## NEWS IN BRIEF

**Four local sporadic cases of psittacosis**

The Centre for Health Protection (CHP) of the Department of Health recorded four sporadic cases of psittacosis residing in different districts of Hong Kong on May 22, 24, 30 and June 14, 2024 respectively.

The first case affected a 62-year-old man with underlying illnesses residing in Kwun Tong. He presented with fever, headache, cough, dizziness and shortness of breath on May 8, and was admitted to a public hospital on May 16 due to worsening of symptoms. Chest X-ray showed left sided haziness. He was transferred to Intensive Care Unit due to respiratory failure and was intubated and put on extracorporeal membrane oxygenation support. His condition improved with antibiotic treatment, and he was extubated and transferred to general ward on June 1. Bronchoalveolar lavage collected on May 18 was positive for *Chlamydia psittaci* DNA. He did not keep any birds at home. There were no other reported sources of bird or poultry exposure. All home contacts were asymptomatic.

The second case affected a 69-year-old woman with underlying illnesses residing in Wan Chai. She presented with fever, headache and cough on May 6, and was admitted to a private hospital on May 13 due to desaturation. CT thorax showed extensive consolidative changes consistent with pneumonia. She was transferred to Intensive Care Unit due to septic shock and was intubated and given inotropic support. Her condition improved with antibiotic treatment, and she was extubated and transferred to general ward on May 23. Bronchoalveolar lavage collected on May 18 was positive for *Chlamydia psittaci* DNA. She kept a pet turtle dove at home. She also visited her mother's house daily, where a parrot was kept. The two birds which reportedly stayed indoor without history of contacting other wild birds were both tested negative for *Chlamydia psittaci* by Agriculture, Fisheries and Conservation Department. There were no other reported sources of bird or poultry exposure. All home contacts were asymptomatic.

The third case affected a retired 81-year-old man with underlying illnesses residing in Kwai Tsing. He presented with fever on May 23 and was admitted to a public hospital on the same day. His chest X-ray showed pneumonia. His sputum and nasopharyngeal aspirate collected on May 26 were tested positive for *Chlamydia psittaci* DNA. His condition improved after treatment and he remained hospitalized for rehabilitation. He had travelled to Foshan in Guangdong during incubation period. He could not recall history of contact with bird's dropping or carcasses and he had no pet bird at home. His household contact remained asymptomatic.

The fourth case affected a retired 65-year-old man with underlying illnesses residing in Sha Tin. He presented with fever, cough and shortness of breath on June 1, and was admitted to a public hospital on June 2. His condition improved with antibiotic treatment and was discharged on June 9. His sputum collected on June 8 was tested positive for *Chlamydia psittaci* DNA. He had travelled to Shenzhen during incubation period. He did not keep any bird at home, and denied contact with any birds or poultry, or birds' droppings or carcasses. All household contacts were asymptomatic.

**Two local sporadic cases of listeriosis**

CHP recorded two sporadic cases of listeriosis on May 21 and May 27, 2024 respectively.

The first case affected a 52-year-old woman with history of hyperthyroidism residing in Sai Kung. She presented with fever, vomiting and diarrhoea on April 11 and was admitted to a public hospital on the same day. Blood culture collected on May 18 yielded *Listeria monocytogenes*. She was treated with intravenous antibiotics and her condition has remained 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 affected a 64-year-old woman who was a known case of metastatic breast cancer and nasopharyngeal carcinoma on active chemotherapy residing in Southern. She presented with diarrhoea, fatigue and myalgia on May 20, followed by fever two days later. She was admitted to a private hospital on May 23 and her blood collected on the same day grew *Listeria monocytogenes*. Her condition became stable after initiation of intravenous antibiotic treatment. She had no recent travel history and there was no other known high risk exposure during the incubation period. Her family members remained asymptomatic so far.

### Infectious Disease and Infection Control Forum: B virus (herpes simiae virus) Infection

An infectious disease and infection control forum on B virus (herpes simiae virus) Infection was organised on May 30, 2024 by the Infection Control Branch of Centre for Health Protection (ICB, CHP) and Infectious Diseases Control Training Centre of Hospital Authority (IDCTC, HA).

The first B virus human infection case in Hong Kong was recorded by the CHP in April 2024. The forum was organised aiming to update healthcare professionals the situation of B virus infection. The forum has covered 1) Global and local epidemiology by Dr. Christina LIN from Communicable Disease Branch (CDB) of CHP; 2) Clinical Management by Dr. Thomas CHIK from Infectious Disease Centre (IDC), HA; and 3) Wild Monkeys in Hong Kong by Mr. SHEK Chung Tong from Agriculture, Fisheries and Conservation Department (AFCD).

Over 380 healthcare professionals from across public and private sectors had attended the forum either on-site or by zoom webinar. The forum has been well received. You can visit the IDCTC training portal <https://icidportal.ha.org.hk/Trainings/View/187> for the materials of the forum.



*From left to right: Dr. Jacky CHAN, Consultant, HA IDC; Dr. Leo LUI, Associate Consultant, CHP ICB; Dr. Christina LIN, Senior Medical Officer, CHP CDB; Dr. Hong CHEN, Head, CHP ICB; Dr. Thomas CHIK, Associate Consultant, HA IDC; Mr. Chung Tong SHEK, Senior Fauna Conservation Officer, AFCD; and Dr Owen TSANG, Medical Director, HA IDC joined the Forum on B virus infection on 30 May 2024.*