



# 衛生防護中心 Centre for Health Protection

## Scientific Committee on Vaccine Preventable Diseases

### Guiding Principles for Measles Vaccination for Non-immune Adults in Hong Kong

#### Background and latest situation

Measles is a highly contagious infectious disease and remains endemic in many parts of the world. Globally, the risk has increased significantly with marked increase in measles cases since 2018, and the surge has continued through 2019. According to the provisional data from World Health Organization (WHO), the number of measles cases had quadrupled worldwide with 170 countries reporting 112,163 cases in the first three months of 2019, as compared with 28,124 cases across 163 countries in the same period of 2018<sup>1</sup>. The WHO European Region reported a total of 83,540 measles cases and 74 related deaths in 2018, as compared with 25,869 cases and 42 deaths in 2017 and 5,273 cases and 13 deaths in 2016<sup>2</sup>. In the Western Pacific region, a large-scale, prolonged outbreak occurred in the Philippines resulting in nearly 35,000 cases including 477 deaths in the first five months of 2019<sup>3</sup>. Furthermore, outbreaks occurred in the past few months in places that had previously achieved measles elimination including the United States (U.S.), Japan, New Zealand and Macao SAR.



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<sup>1</sup> WHO. New measles surveillance data for 2019.

<https://www.who.int/immunization/newsroom/measles-data-2019/en/>

<sup>2</sup> WHO. Measles – European Region. <https://www.who.int/csr/don/06-may-2019-measles-euro/en/>

<sup>3</sup> UNICEF-WHO Philippines: Measles Outbreak, Situation Report 11, 27 May 2019.

<https://reliefweb.int/report/philippines/unicef-who-philippines-measles-outbreak-situation-report-11-27-may-2019>

2. Hong Kong was certified by WHO to have achieved the interruption of endemic measles virus transmission in September 2016. The annual totals had remained low with four cases reported in 2017 and 15 cases in 2018. Yet, being an international city with high volume of travel, Hong Kong is constantly facing the risk of measles importations from other countries leading to subsequent spread in the community.

3. With global resurgence of measles especially in the neighbouring countries and popular travel destinations, there has been a marked increase in measles cases in Hong Kong in 2019. In the first five months of 2019, 77 confirmed measles cases were recorded in Hong Kong, exceeding the annual numbers of cases recorded during 2008 - 2018. Most of these cases (92%) affected adults aged 20-49 years who were Hong Kong residents. Thirty-three cases (43%) were related to an outbreak at the Hong Kong International Airport and six cases (8%) were related to another outbreak at a local retail shop, which was not seen in the past decades. For the remaining 38 cases, 76% had travel history to other places during the incubation period.

4. Although not as high a proportion as in 2019, 50 (52%) of the 96 measles cases recorded in Hong Kong from 2014 to 2018 affected adults. Among these adult cases, 30 (60%) were foreign-born adults living or working in Hong Kong which included immigrants, foreign workers and students, while five (10%) were non-residents such as tourists. All of these foreign-born adult cases were either unvaccinated against measles or uncertain about their vaccination history. Eight of them were foreign domestic helpers (FDHs) from the Philippines (7) and Indonesia (1), of which six Filipino FDHs had travelled to the Philippines during the incubation period.

### **Use of measles-containing vaccine in Hong Kong**

5. Measles immunisation for children has been in place in Hong Kong for more than five decades. The anti-measles vaccine (AMV) was first introduced in 1967 as a single-dose schedule. Measles, Mumps and Rubella (MMR) combined vaccine replaced AMV in 1990 and a two-dose schedule has been adopted since 1996<sup>4</sup>. During July to November 1997, a territory-wide mass

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<sup>4</sup> Currently, the Scientific Committee on Vaccine Preventable Diseases recommends the first dose to be given at 12 months of age (as MMR vaccine), and the second dose to be given at 18 months of age (as

catch-up immunisation programme (Special Measles Vaccination Campaign) was launched and approximately 1.1 million doses of MMR vaccine were delivered to persons aged one to 19 years who had not received two doses of measles-containing vaccine<sup>5</sup>.

6. MMR vaccines are proven to be safe and highly efficacious at preventing measles. According to the U.S. Centers for Disease Control and Prevention, when given as scheduled, two doses of MMR vaccine are 97% effective while one dose is 93% effective against measles<sup>6</sup>. Most persons who fail to respond to the first dose will respond to a second dose.

### **Population susceptibility to measles**

7. The coverage of the two doses of MMR vaccine has been maintained at a very high level (>95%) among local-born children over the years. Local seroprevalence survey in 2017 showed that the overall seroprevalence rates of measles antibodies were above 95% in all age groups, demonstrating high population immunity to measles.

8. Due to the high infectivity of measles, WHO recommends that at least 95% coverage with two doses of MMR vaccine is required to achieve herd immunity and sustain elimination. While vaccine uptake among local children has been consistently high, about 40% of Hong Kong population were born outside Hong Kong. Pockets of susceptible persons likely exist in the local community, such as foreign-born persons who had not received any measles vaccination during childhood in their home countries. Moreover, foreign-born non-immune individuals who come to live or work in Hong Kong are considered to pose a relatively higher risk of measles to the local community if they come from countries where measles virus still circulates widely or vaccination coverage is suboptimal.

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Measles, Mumps, Rubella and Varicella combined vaccine) under the childhood immunisation programme.

<sup>5</sup> Chuang SK, Lau YL, Lim WL, Chow CB, Tsang T, Tse LY. Mass measles immunization campaign: experience in the Hong Kong Special Administrative Region of China. Bull World Health Organ. 2002;80(7):585-91.

<sup>6</sup> US Centers for Disease Control and Prevention. Measles vaccination.  
<https://www.cdc.gov/measles/vaccination.html>

## WHO recommendations and overseas practices

9. The WHO's position paper on measles vaccines published in April 2017 recommends vaccination of all susceptible children and adults for whom measles vaccination is not contraindicated<sup>7</sup>. In countries with long-standing immunisation programmes such as Australia, Canada, New Zealand, Singapore, the United Kingdom and U.S., adults who do not have documented evidence of immunity are recommended to receive one or two doses of MMR vaccine depending on the risk of infection. For individuals who had previously received one dose of measles-containing vaccine, a further dose is recommended for full protection. Besides, international travellers, in particular those visiting endemic areas, are recommended to be fully vaccinated against measles.

## Guiding principles for measles vaccination for non-immune adults

10. The Scientific Committee on Vaccine Preventable Diseases (SCVPD) convened a meeting in early April 2019 to review the latest global and local situation of measles, population immunity profile, WHO's recommendations and overseas practices. Over half of the reported measles cases in Hong Kong affected adults. In view of the ongoing measles outbreaks in many parts of the world in recent months, the risk of acquiring measles when travelling abroad has increased substantially, hence increasing the risk of importation of measles cases into Hong Kong. In order to prevent the accumulation of susceptible persons in the local community, it is important that immigrants and migrant workers are vaccinated against measles for closing any potential immunity gaps. After deliberation, the SCVPD formulated the following three guiding principles for measles vaccination of non-immune adults<sup>8</sup> in Hong Kong for maintenance of a very high herd immunity in the post-elimination era:

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<sup>7</sup> WHO position paper on measles vaccines (April 2017).

[https://www.who.int/immunization/policy/position\\_papers/measles/en/](https://www.who.int/immunization/policy/position_papers/measles/en/)

<sup>8</sup> The SCVPD's recommendations on measles vaccination for health care workers (HCWs) are covered separately in "Summary Statement on Vaccination Practice for Health Care Workers in Hong Kong" issued in September 2017.

[https://www.chp.gov.hk/files/pdf/summary\\_statement\\_on\\_vaccination\\_practice\\_for\\_health\\_care\\_workers\\_in\\_hong\\_kong\\_september\\_2017.pdf](https://www.chp.gov.hk/files/pdf/summary_statement_on_vaccination_practice_for_health_care_workers_in_hong_kong_september_2017.pdf)). The SCVPD recommends all HCWs to be immune to measles as well as rubella, hepatitis B and chickenpox.

- i. All adults (especially non-local born) who are non-immune to measles are advised to receive MMR vaccination for personal protection and maintenance of high herd immunity in the community.
- ii. Special attention should be paid to international travellers and foreign domestic helpers (especially Filipinos). They are considered to have a relatively higher risk of acquiring measles based on the local epidemiology of measles in the past few years.
- iii. Foreign-born adults newly arrived in Hong Kong for residence, work or study should review their immune status and receive measles vaccination if they are non-immune, preferably before arrival in Hong Kong.

11. As measles was endemic in Hong Kong and most parts of the world before 1967<sup>9</sup>, people born before 1967 are considered to be immune to measles. For persons born in 1967 or after, they can be considered to be non-immune to measles if they fulfill all the following three criteria:

- iv. did not have laboratory evidence of immunity (i.e. no laboratory test ever done or tested negative/indeterminate for measles immunoglobulin G);
- v. did not have laboratory confirmed measles infection in the past; AND
- vi. have never been vaccinated with two doses of measles-containing vaccine or have unknown vaccination status.

12. Regarding the schedule, non-immune adults who had no history of receiving any measles-containing vaccine or with unknown vaccination history are advised to receive two doses at least four weeks apart. Only one dose is required for those who had already received one dose of measles vaccination in the past.

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<sup>9</sup> Year of introduction of AMV for children in Hong Kong

13. There are local data gaps in understanding the measles immunity of certain groups in Hong Kong, including migrant workers (e.g. FDHs), ethnic minorities, workers in the travel industry, etc. Targeted seroprevalence studies and further research are recommended to generate evidence to inform future vaccination strategy for specific groups.

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