

COVID-19 Vaccination for Young Children

Dr Anne KWOK
24 February 2022



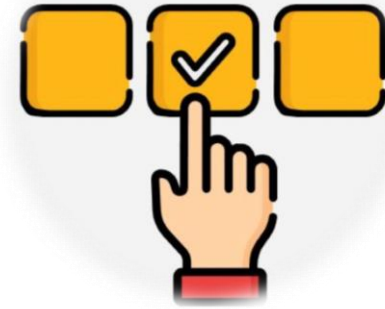
Why do our kids need COVID-19 vaccination?



Threat



Solutions



Options

What threats are our kids facing with?



- Trend of COVID-19 infection among children across the world and in Hong Kong
- Consequences of getting COVID-19 infection in children

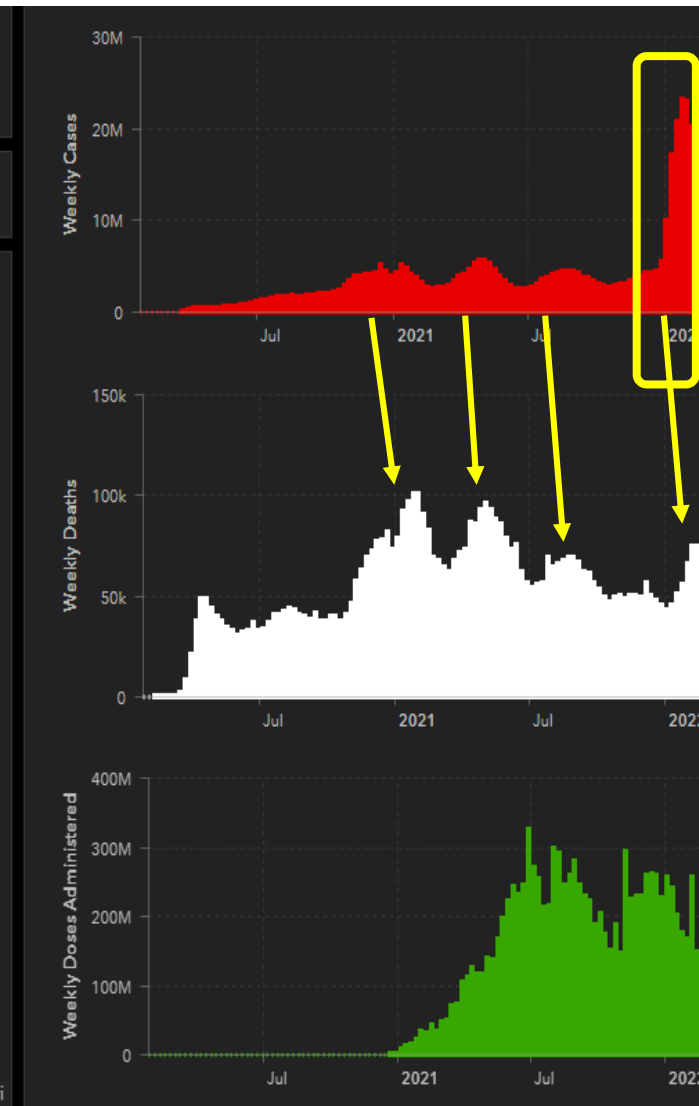
Threat

No. of COVID-19 cases are at all-time high worldwide

[21 Feb 2022] <https://coronavirus.jhu.edu/map.html>

Last Updated at (M/D/YYYY) 2/21/2022, 7:21 PM	Total Cases 424,556,731	Total Deaths 5,888,332	Total Vaccine Doses Administered 10,368,513,840
Cases Deaths by Country/Region/Sovereignty	28-Day Cases 72,510,095	28-Day Deaths 287,659	28-Day Vaccine Doses Administered 708,815,312

US 28-Day: 7,610,902 66,040 Totals: 78,479,408 935,336
France 28-Day: 5,637,847 7,976 Totals: 22,447,021 137,596
Germany 28-Day: 4,894,323 4,551 Totals: 13,667,422 121,301
Russia 28-Day: 4,224,268 19,059 Totals: 15,297,628 339,319
Brazil 28-Day: 4,163,775 21,222 Totals: 28,218,180 644,592
India 28-Day: 3,295,196 22,261 Totals: 42,838,524 512,109
United Kingdom 28-Day: 2,768,717 6,774 Totals: 18,735,911 161,148
Turkey 28-Day: 2,557,356 6,482 Totals: 13,504,485 92,451
Italy



Significant number of children are hospitalized or die due to COVID-19 infection

- As of **Jan 2022**, there are **>12,300 COVID-19 deaths** among **<=19 year-olds worldwide**
 - 58% age 10-19
 - 42% age 0-9

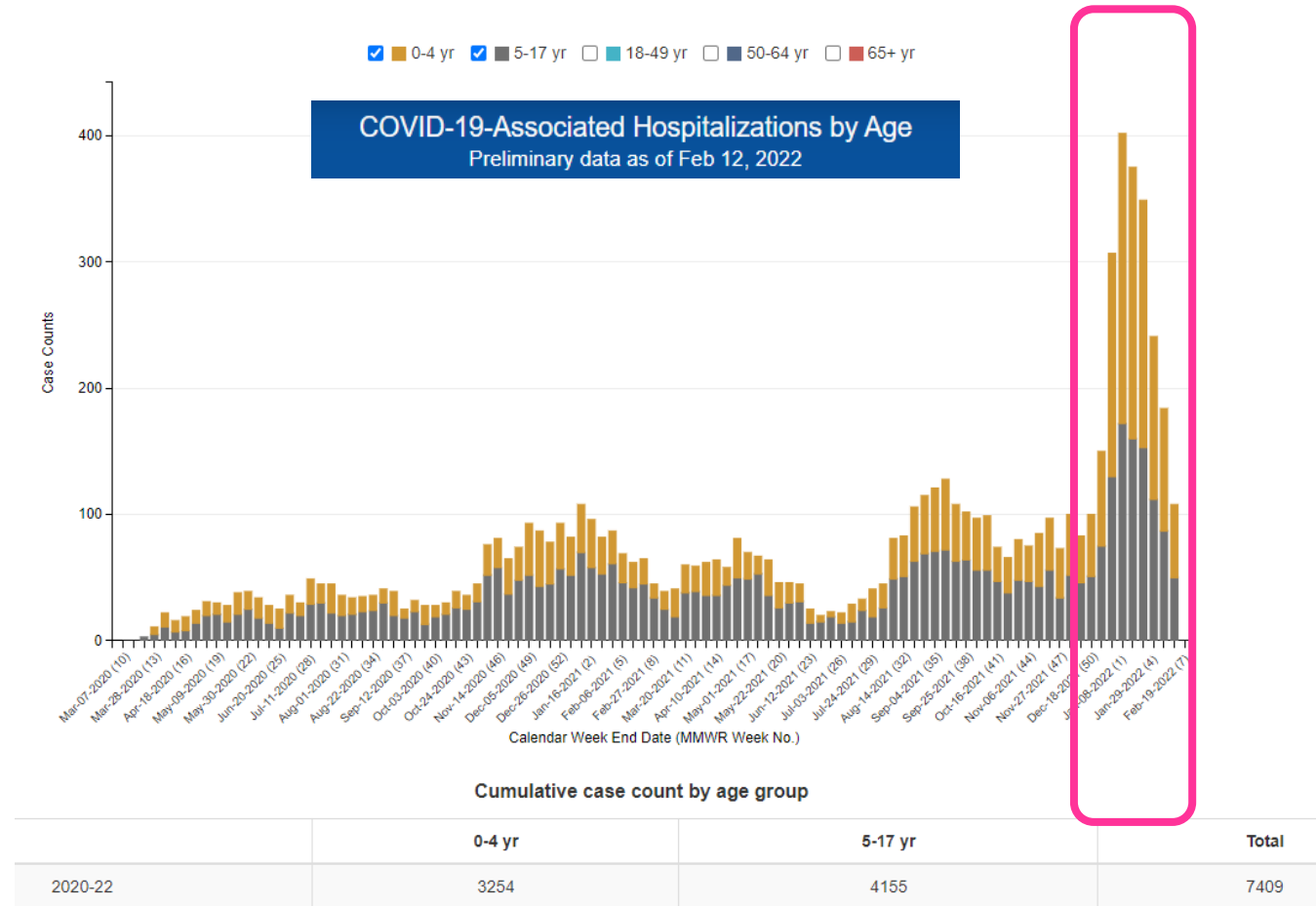
<https://data.unicef.org/topic/child-survival/covid-19/>

- As of **12 Feb 2022**, there are **7409 COVID-19 hospitalizations** among **<=17 year-olds in USA**
 - 56% age 5-17
 - 44% age 0-4

https://gis.cdc.gov/grasp/COVIDNet/COVID19_5.html#virusTypeDiv

https://gis.cdc.gov/grasp/COVIDNet/COVID19_3.html

<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/burden.html>



Total 25,844,005 cases aged <=17 years by September 2021

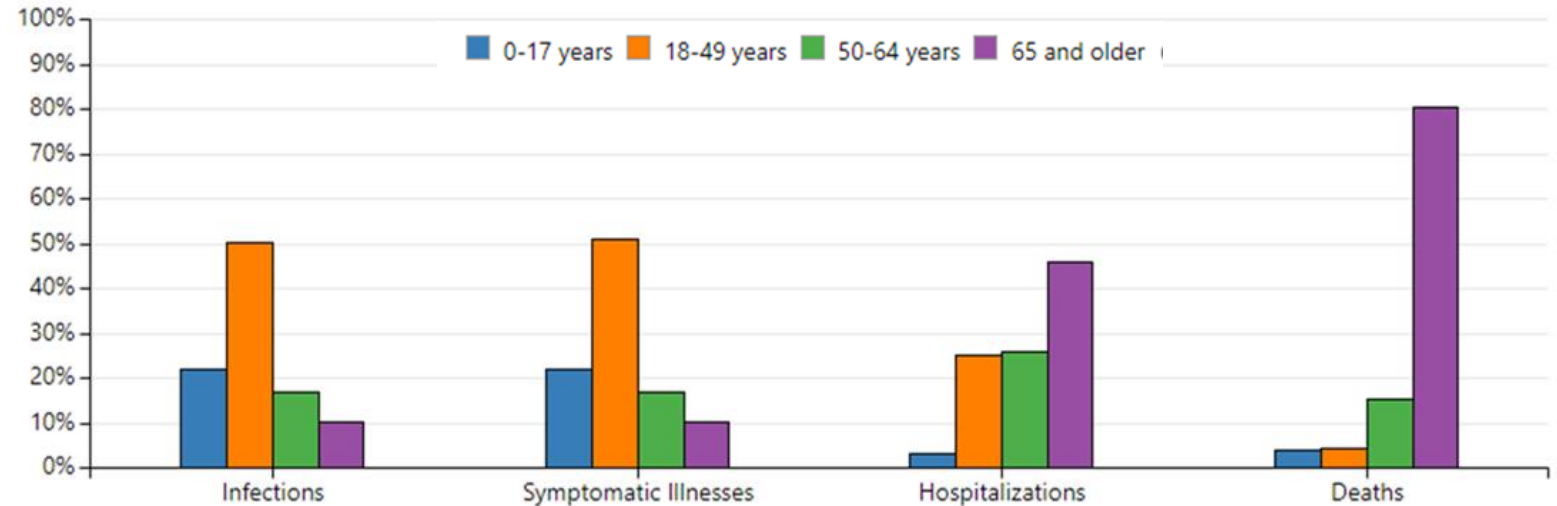
Do children really have mild COVID-19 infection only?

Pre-2022 data →

3% hospitalization

4% death

Percentage of COVID-19 infections, symptomatic illness, and hospitalizations, and deaths, by age group—United States, February 2020–September 2021



	Infections	Symptomatic Illnesses	Hospitalizations	Deaths
0-17 years	22%	22%	3%	4%
18-49 years	50%	51%	25%	5%
50-64 years	17%	17%	26%	15%
65 and older	10%	10%	46%	80%

Do children really have mild COVID-infection only?

2022 data from Singapore → cumulative 14.6% hospitalization

Singapore (1 Oct 2021 – 16 Jan 2022): 14380 children aged <12 years infected

→ 15 developed multi-system inflammatory syndrome

→ 4 required ICU care – >1 case/month; all did not receive vaccine

THE STRAITS TIMES

SINGAPORE

LOG IN

21 Jan 2022

Children aged below 12 starting to make up the majority of Covid-19 cases admitted into hospitals

THE STRAITS TIMES

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LOG IN

24 Jan 2022

17,699 children aged below 12 infected with Covid-19 since pandemic started, 2,586 hospitalised

Variants increase risk & severity of infections in children

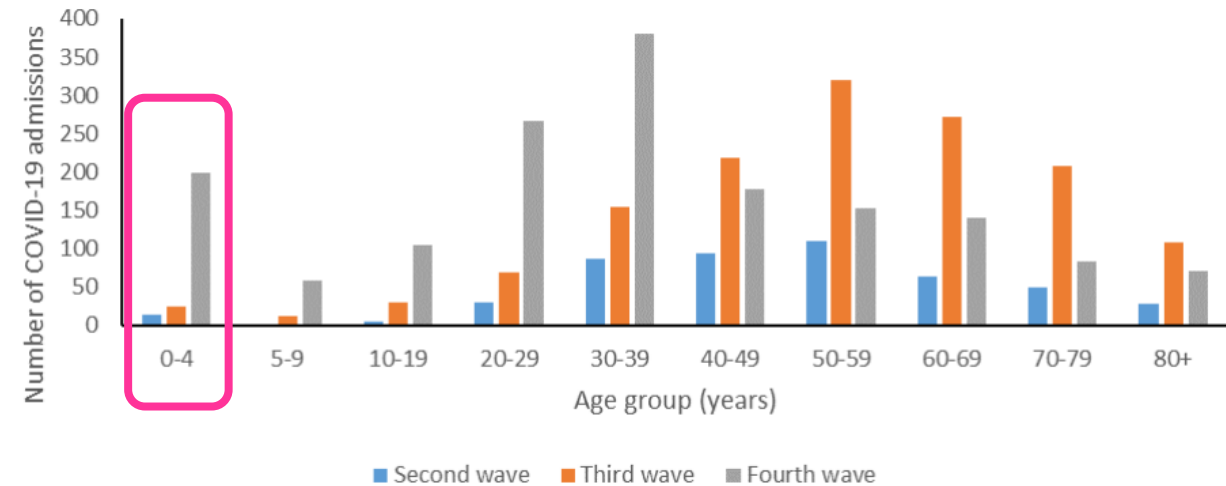
- Children under the age of 15 who have **not had vaccination** accounted for a **highest proportion of new cases**.
- A high proportion of children aged under five required hospital admission

Source: National Institute for Communicable Diseases, South Africa

- Since Singapore adopted a strategy of living with COVID-19, the proportion of primary school students (who have not been vaccinated) suffering from **multisystem inflammatory syndrome** has increased, exceeding that of secondary school students who have been vaccinated

<https://www.moh.gov.sg/news-highlights/details/media-statement-on-paediatric-mis-c-cases-in-singapore>

Number of COVID-19 admissions in first 25 days of second, third & fourth wave, by age group in years, City of Tshwane Metro, 15 November-9 December 2020, 9 May-2 June 2021 & 14 November-8 December 2021



MINISTRY OF HEALTH
SINGAPORE

For Public For Healthcare Professionals e-Services Who We Are

Ministry of Health > News Highlights

MEDIA STATEMENT ON PAEDIATRIC MIS-C CASES IN SINGAPORE

6TH NOV 2021

The Ministry of Health (MOH) has been notified of four cases of paediatric Multi-system Inflammatory Syndrome in Children (MIS-C) to date. These four cases were amongst the over 8,000 paediatric COVID-19 cases in Singapore since the start of the pandemic, and considered rare. Of these four cases, one is in the Children's Intensive Care Unit (CICU), one is in a General Ward, and two have been discharged.

2. The four cases are:

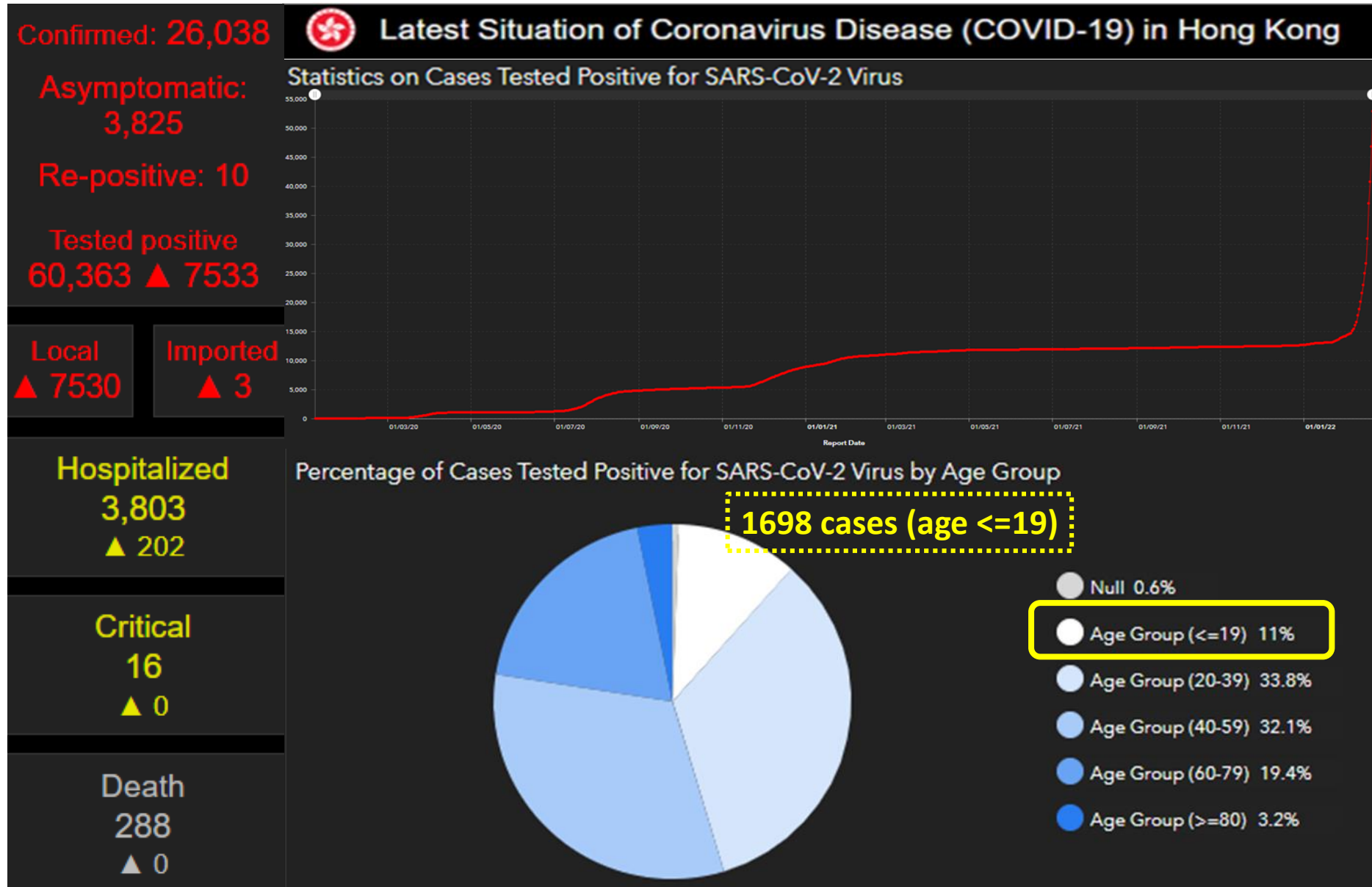
a. A three-year-old boy admitted to the National University Hospital (NUH) CICU on 16 October 2021. He had repeatedly tested PCR-negative, but his serology test results indicated that he likely had a COVID-19 infection two to six weeks prior to the development of MIS-C. He has since recovered and was discharged on 23 October.

b. An eight-year-old boy admitted to KK Women's and Children's Hospital's (KKH) CICU on 27 October 2021. He had been previously diagnosed with COVID-19 infection on 30 September. He has since recovered and was discharged on 1 November.

c. A four-year-old boy admitted to KKH CICU on 1 November 2021. As of 6 November, the boy remains in the CICU and his breathing is supported by mechanical ventilation. He had previously tested positive for COVID-19 infection on 24 September. The KKH paediatric teams are actively managing his care.

d. A two-month-old female infant admitted to KKH General Ward on 3 November 2021. She was previously admitted to KKH for COVID-19 infection on 12 October, and discharged on 19 October. The patient's condition remains stable, with no oxygen requirements.

We are facing the **hardest COVID-19** hit **NOW** in HK



2020 Data in Hong Kong

First released on 3 December 2020, JAMA Network Open

397 cases of children and adolescents with COVID-19 Disease in Hong Kong:

- ~38.8% were asymptomatic
- Some (>0.4%) developed severe complications (e.g. Multisystem Inflammatory Syndrome (MIS-C), COVID toes and Autoimmune Haemolytic Anaemia)
- Some had long term complications (e.g. decreased exercise tolerance, impaired lung function, smell and taste dysfunction)

Clinical Characteristics and Transmission of COVID-19 in Children and Youths During 3 Waves of Outbreaks in Hong Kong

Gilbert T. Chiu, MBBS, MRCPCH; Joshua Sung Chih Wong, MBBS; Ivan Lam, MRCHB; Polly Po Ki Ho, MPH; Wai Hung Chan, MRCHB, MRCP; Felix Yee Sun Yau, MRCHB, MRCPCH; James S. Ross Dougan, MD, PhD; Aileen Chi-Chang Ho, MBBS; Ka Ka Siu, MRCHB; Tammy W. Cheung, MBBS, MRCPCH; David Shu Yan Lam, MRCP; Victor Chi Man Chan, MRCHB, MRCPCH; Kwok Pu Lee, MRCHB; Kwong Wan Tsui, MBBS, MRCP; Tak Wai Wong, MBBS, MRCP; Man Kit Yau, MBBS; Tsz Yan Yau, MRCHB; Kate Ching-Ching Chan, MRCHB; Michelle Wai Ling Yu, MRCHB; Chi Kwong Chea, MBBS; Hsin Kwang Chiu, MBBS, MRCPCH; Kwok Chiu Chan, MBBS, MRCP; Wilfred H. S. Wong, PhD; Marco Hok Kung Ho, MD; Waiyan W. Y. Tso, MBBS, MRCPCH; Keith T. S. Tung, MPH; Christina S. Wong, MRCP; Janette Kwok, PhD; Wing-Hang Leung, PhD; Jason C. Yuen, MBBS; Ian C.K. Wong, PhD; Paul Kwong-Hang Tam, ChM, Godfrey Ch Fung Chan, MD; Chun Rong Chow, MD; Kelvin K. W. To, MD; Yu Lung Liu, MD; Kwok Yung Tsan, MD; Patrick Ip, MPH; Mabel Yee Wai Kwan, MSc, MRCPCH

Abstract

IMPORTANCE Schools were closed intermittently across Hong Kong to control the COVID-19 outbreak, which led to significant physical and psychosocial problems among children and youths.

OBJECTIVE To compare the clinical characteristics and sources of infection among children and youths with COVID-19 during the 3 waves of outbreaks in Hong Kong in 2020.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study involved children and youths aged 18 years or younger with COVID-19 in the 3 waves of outbreaks from January 23 through December 2, 2020. Data were analyzed from December 2020 through January 2021.

MAIN OUTCOMES AND MEASURES Demographic characteristics, travel and contact histories, lengths of hospital stay, and symptoms were captured through the central electronic database. Individuals who were infected without recent international travel were defined as having domestic infections.

RESULTS Among 397 children and youths confirmed with COVID-19 infections, the mean (SD) age was 9.95 (5.34) years, 220 individuals (55.4%) were male, and 154 individuals (38.8%) were asymptomatic. There were significantly more individuals who were infected without symptoms in the second wave (59 of 188 individuals [30.0%]) and third wave (94 of 265 individuals [35.5%]) than in the first wave (1 of 14 individuals [7%]) ($P < .001$). Significantly fewer individuals who were infected in the second and third waves, compared with the first wave, had fever (first wave: 10 individuals [71.4%]; second wave: 22 individuals [18.5%]; third wave: 98 individuals [37.0%]; $P < .001$) or cough (first wave: 6 individuals [42.9%]; second wave: 15 individuals [12.7%]; third wave: 52 individuals [19.6%]; $P = .02$). Among all individuals, 394 individuals (99.2%) had mild illness. One patient developed chilblains (ie, COVID toes), 1 patient developed multisystem inflammatory syndrome in children, and 1 patient developed post-COVID-19 autoimmune hemolytic anemia. In all 3 waves, 204 patients with COVID-19 (51.4%) had domestic infections. Among these individuals, 189 (91.2%) reported having a contact history with another individual with COVID-19, of which most (183 individuals [90.0%]) were family members. In the third wave, 18 individuals with domestic infections had unknown contact histories. Three schoolmates were confirmed with COVID-19 on the same day and were reported to be close contacts.

CONCLUSIONS AND RELEVANCE This cross-sectional study found that nearly all children and youths with COVID-19 in Hong Kong had mild illness. These findings suggest that household

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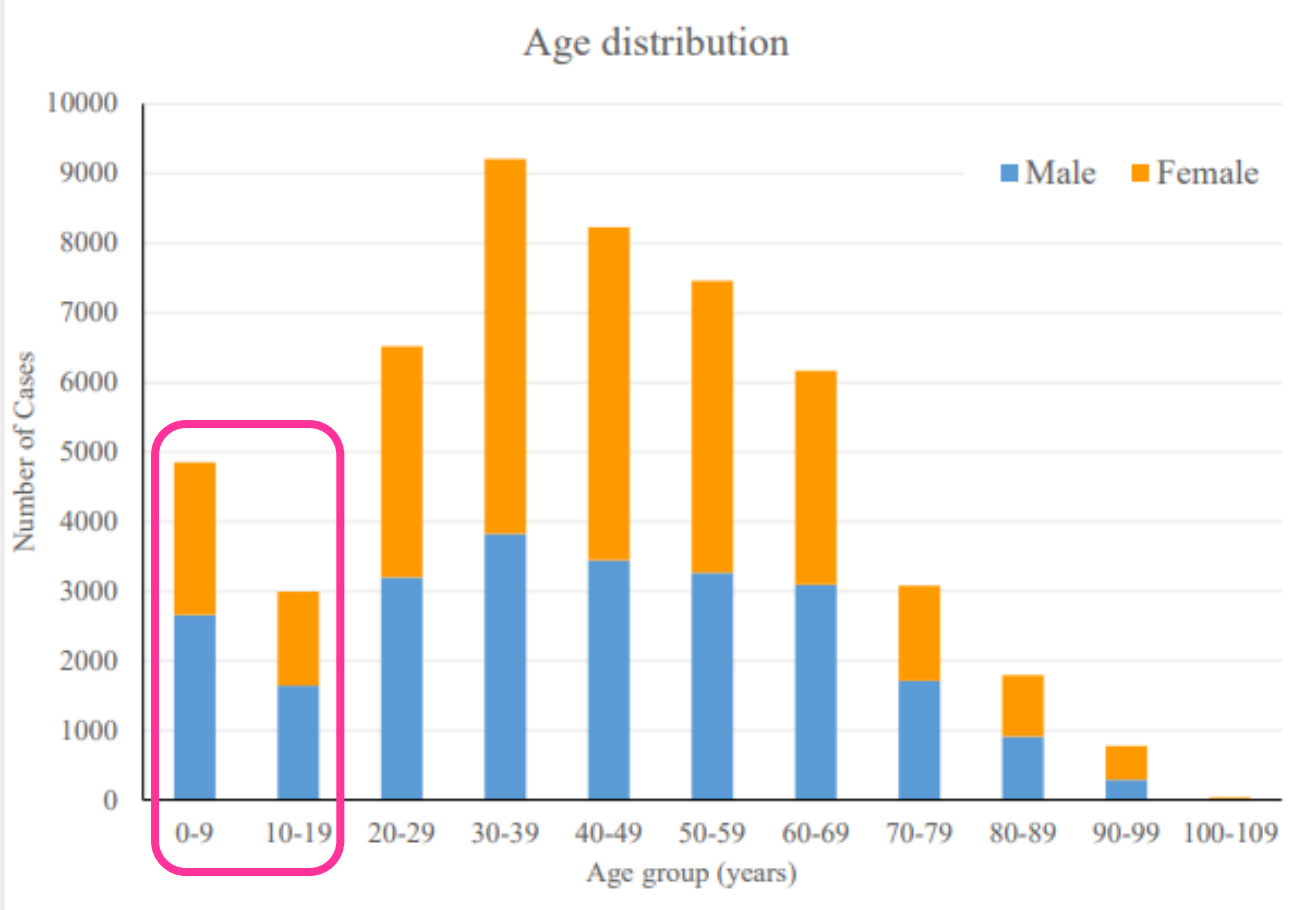
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JAMA Network Open. 2021;4(5):e218824. doi:10.1001/jamanetworkopen.2021.8824

May 3, 2021 | 1/11

Serial COVID-19 deaths among young kids in Hong Kong

Figure 5: Age distribution of cases tested positive for SARS-CoV-2 virus in Hong Kong



Note: Re-positive cases and cases pending investigation are excluded in Figure 5.

(Last updated on 21 February 2022)

https://www.chp.gov.hk/files/pdf/local_situation_covid19_en.pdf

Hospital says boy, 4, who died, had Covid-19

2022-02-12 HKT 09:02

Recommend 14 Share this story

Pok Oi Hospital says a four-year-old boy who died on Friday has subsequently tested positive for Covid-19.

The hospital said the boy's breathing and heartbeat were found to have stopped when he was taken to its accident and emergency department around 3.30am on Friday.

Coronavirus: Condolences flood in for parents of girl, 3, who became Hong Kong's youngest Covid-related fatality

- Girl had no underlying medical problems and was transferred to Hong Kong Children's Hospital, where she died at 8.37pm on Tuesday
- Professor Lau Yu-lung, a paediatrician, notes that young children are more prone to serious complications due to their narrow nasal passages and air tubes



Gigi Choy

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Published: 12:30am, 16 Feb, 2022

Why you can trust SCM

Eleven-month-old baby girl died as Hong Kong reports 7,533 Covid cases

Local | 21 Feb 2022 5:37 pm



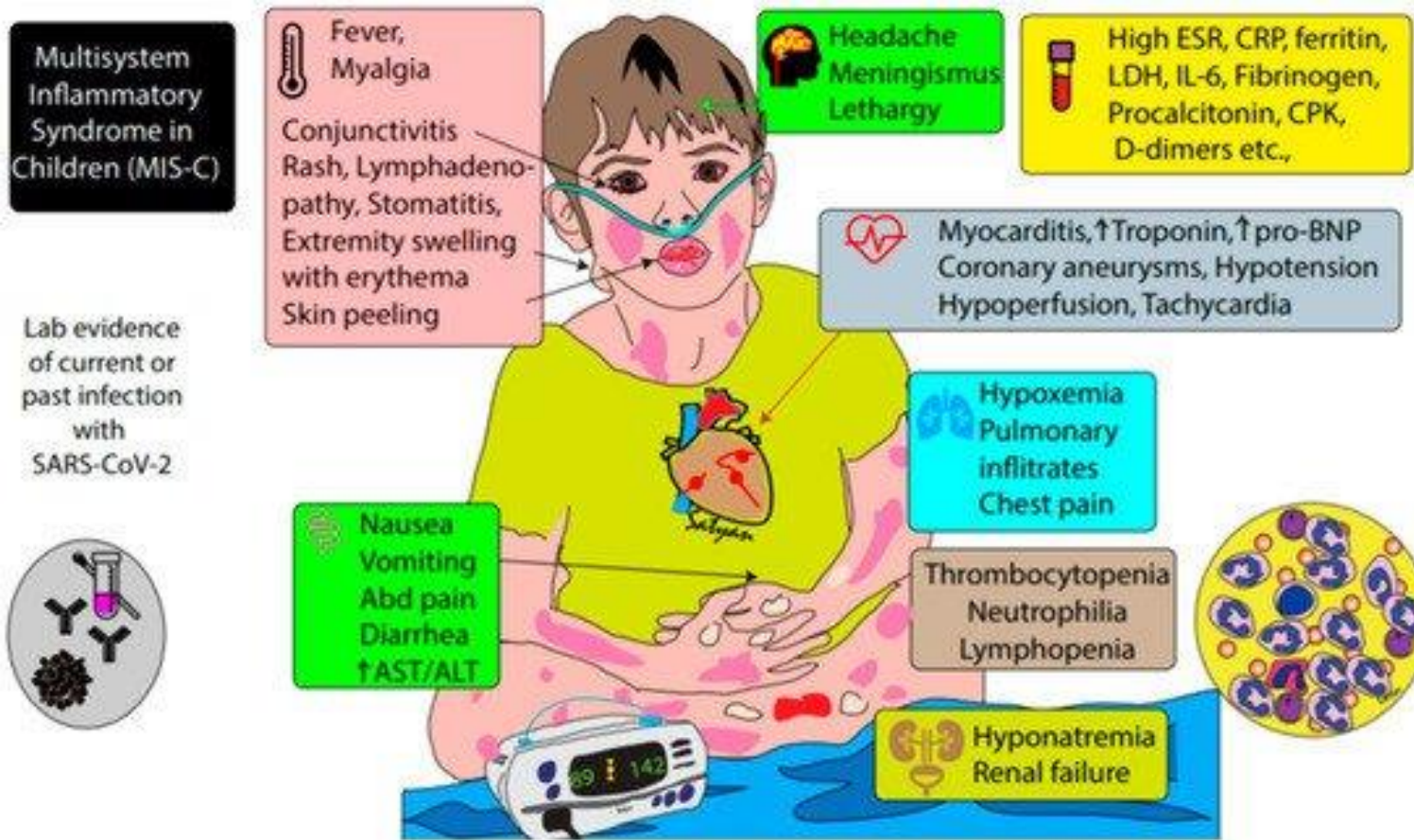
A 11-month-old baby girl has become the city's youngest fatality as Hong Kong again reported a record high of 7,533 infections on Monday.

The girl had general good health but her parents and siblings including a eight-year-old brother and a twin sister also tested positive in rapid tests.

She suffered from fever and seizures last Saturday (February 19) and was brought to the accident and emergency department of Tseung Kwan O Hospital.

She was intubated at the time, and transferred to the pediatric intensive care unit of Queen Elizabeth Hospital.

How would kids be affected by COVID-19 infection?



Long COVID syndrome with ↓ endurance, ↓ lung function, ↓ smell / taste function etc



What threats are our kids facing with?



Threat

More and more children get COVID-19 infection worldwide & in Hong Kong

- can get very sick and may die of it
- can be asymptomatic and spread to others
- can have both short and long term health consequences

We need to protect our kids from COVID-19 virus infection

How to protect our kids from COVID-19 virus infection?



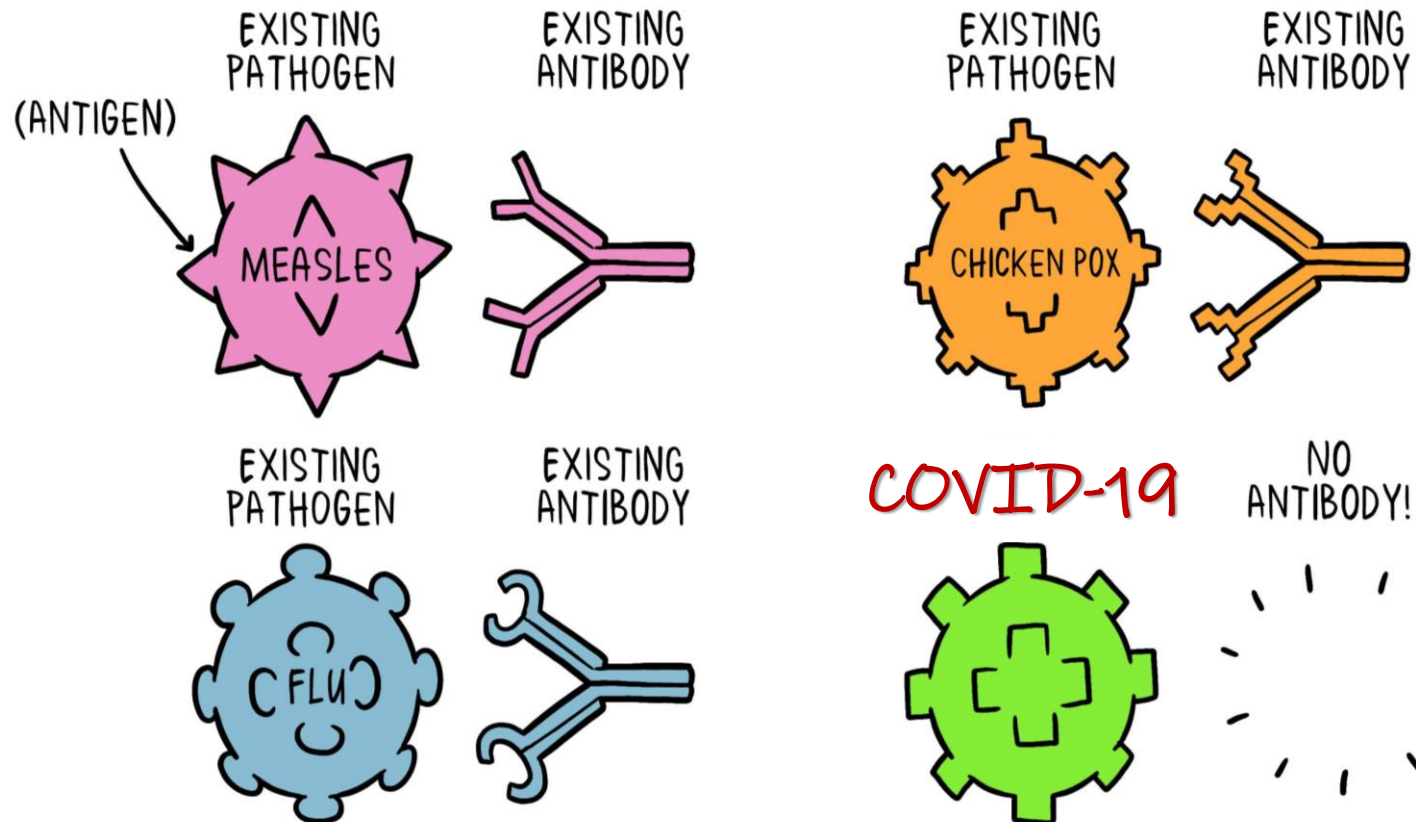
Solutions

- Lock down?
- Stop going to school?
- Just by wearing mask and hand hygiene?
- Get COVID-19 virus infection anyway?
- Vaccination to provide immunity against COVID-19 virus?

How does vaccine give us immunity against infection?

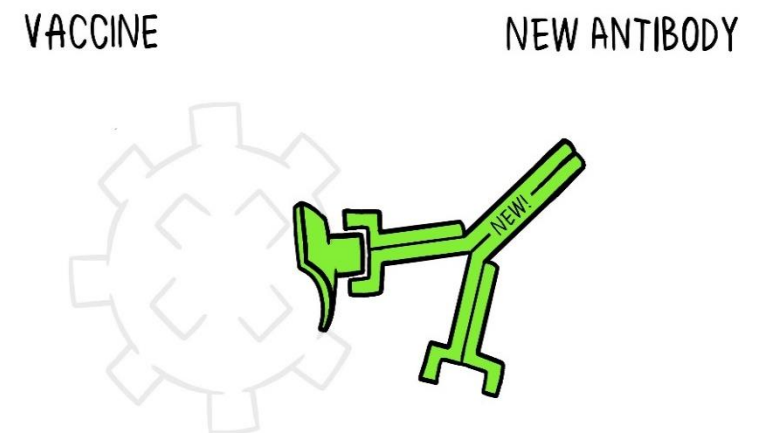
Immunity: body's natural defense

- Recognize and remember certain part of a germ (antigen)
- Better geared to fight in the future, by producing weapon once the germ comes

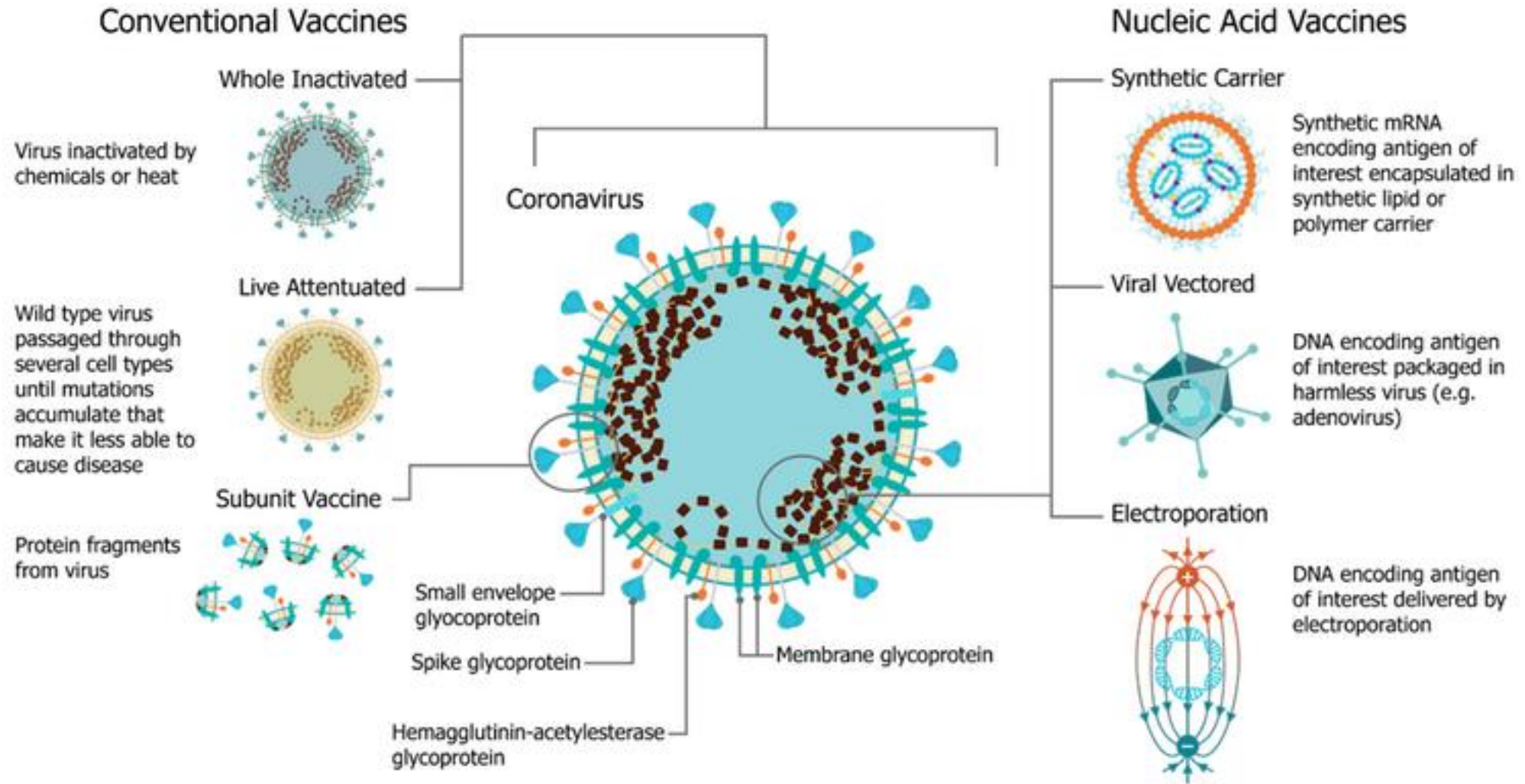


Vaccination / Immunization:

- Induce immunity without major disease
- Eradicated some viruses already e.g. smallpox



Different types of vaccines present a germ's antigens in different ways – they all boost immunity



How to protect our kids from COVID-19 virus infection?

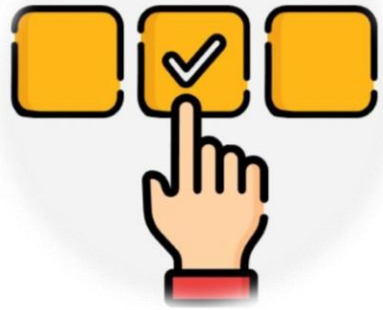


Solutions

- Vaccination to provide immunity against COVID-19 virus

Vaccination is a safe and effective method to protect our kids from COVID-19 virus infection

What types of COVID vaccine are there for children?



Effectiveness

Safety

Options



Sinovac Vaccine (CoronaVac)
for age ≥ 3 years

BioNTech Vaccine (Comirnaty)
for age ≥ 5 years



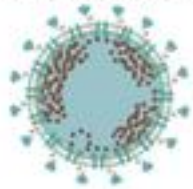
Both types of vaccines present COVID-19 antigens in different ways – they all boost immunity

**Sinovac
Coronavac**

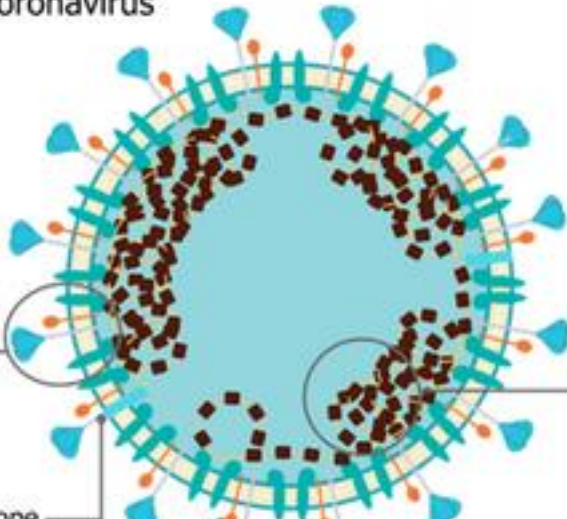
Conventional Vaccines

Whole Inactivated

Virus inactivated by chemicals or heat



Coronavirus



Nucleic Acid Vaccines

Synthetic Carrier



Synthetic mRNA encoding antigen of interest encapsulated in synthetic lipid or polymer carrier

**BioNTech
Comirnaty**

Body recognizes and remembers the shape of virus
→ react as if encountering the real virus
→ Develop immunity to fight when meet the real virus in the future

*Other inactivated vaccines:
e.g. Flu vaccine, Hepatitis A vaccine*

Body produces protein pieces unique to the virus
→ react as if encountering the real virus
→ Develop immunity to fight when meet the real virus in the future

*Other mRNA vaccines:
e.g. Rabies vaccine, Ebola vaccine*

Both COVID-19 vaccines boost immunity better in kids



Phase 1 / 2 study in China:

Seroconversion rate >96% after 2 doses

↑ antibody response (GMT) with ↓ age

- 3-17 years: GMT 142.2
- 18-59 years: GMT 44.1
- ≥60 years: GMT 42.2

Phase 3 studies & real-world data (adult):

- ↓ death by 86.3-100%
- ↓ hospitalization by 87.5-100%
- ↓ infection by 50.7-83.5%



High vaccine effectiveness among different age groups after 2 doses

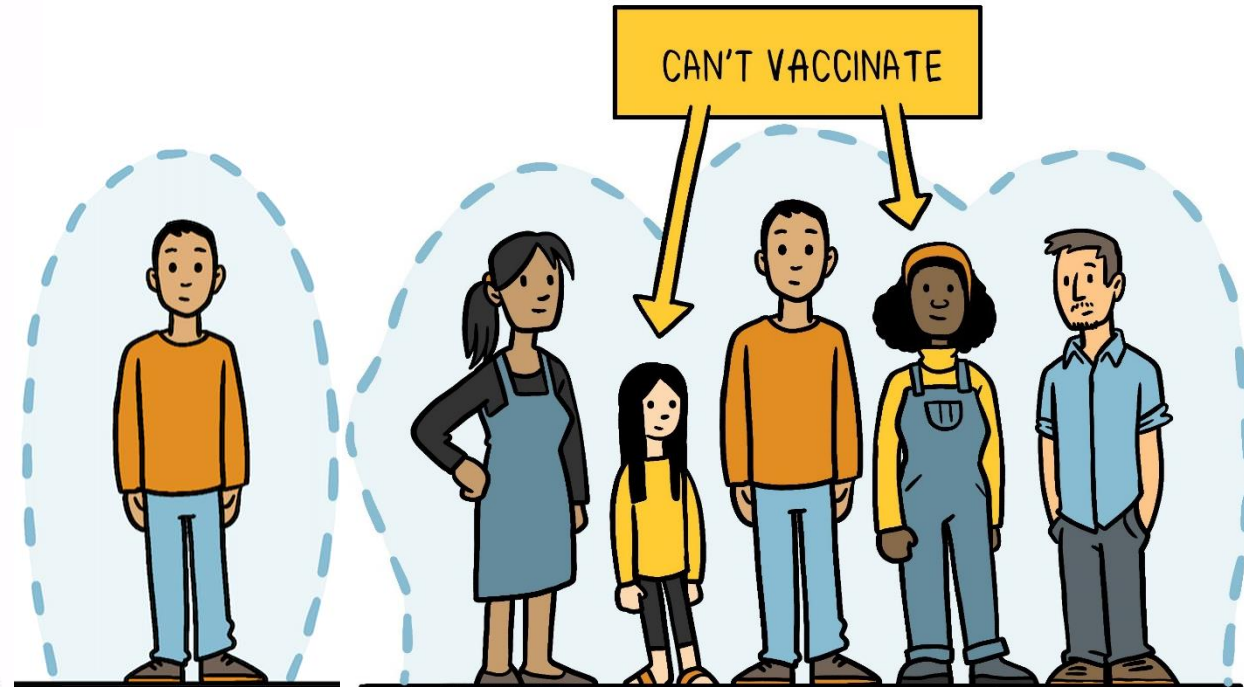
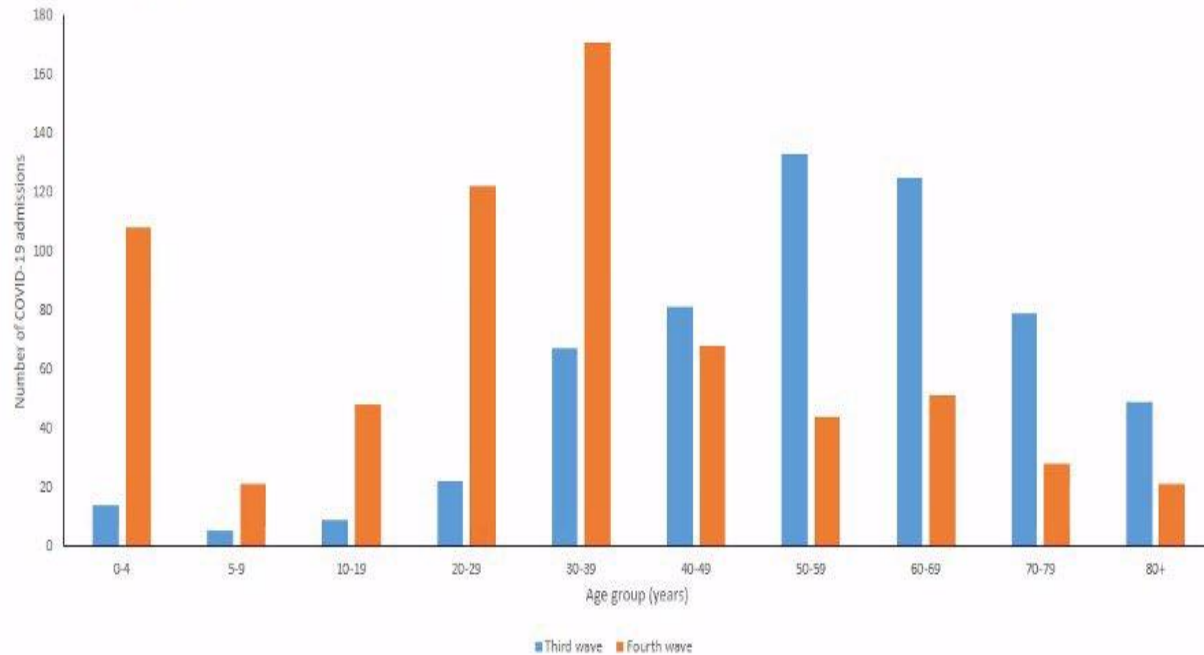
- 16-25 years: 91%
- 12-15 years: 100%
- 5-11 years: 90.7% (1/3 dose)

Inactivated vaccine, recognizing more parts of viral proteins, could potentially broaden protection beyond anti-spike protein responses, and reduce the escape of variants from vaccine immunity

How effective are COVID-19 vaccines overall?

COVID-19 vaccines decrease the rates of death and severe complications
→ turns a threatening illness to a mild one

Number of COVID-19 admissions in first two weeks of third and fourth wave, by age group in years, City of Tshwane Metro, 9-22 May 2021 and 14-27 November 2021



Is Sinovac (CoronaVac) vaccine safe for children? Yes!



Sinovac vaccine:

Most side effects for those aged 3 to 17 years are mild. The most common reaction after Sinovac vaccination is **injection site pain** $\geq 10\%$

Other common side effects 1-10%	Injection site induration and swelling, fever, abnormal skin and mucous membrane, decreased appetite, nausea, headache, cough, fatigue, rhinorrhea and oropharyngeal pain
Uncommon side effects 0.1-1%	Injection site pruritus and erythema, hypersensitivity, diarrhoea, vomiting, myalgia, laryngeal pain, pharyngeal erythema, upper respiratory tract infection, abdominal pain, upper abdominal pain, abdominal distention, dizziness, lymphadenitis, chest discomfort and blepharitis
Serious	<ul style="list-style-type: none">No serious adverse event related to vaccination was identified up to November 2021.

Ongoing Phase 3 studies for age 3-17 years in different countries:

→ *Good safety profile*

Real world data from China (140 million doses given):

- *Reported serious adverse event following immunization (AFEI) <1%*
 - *Most commonly skin reactions*
- *AFEI rarer in children (3-11 years old) than in adolescents and adults*

Is BioNTech (Comirnaty) vaccine safe for children? Yes!



BioNTech vaccine:

The overall safety profile of BioNTech in adolescents 12 to 15 years of age is similar to that in those 16 years old or above.

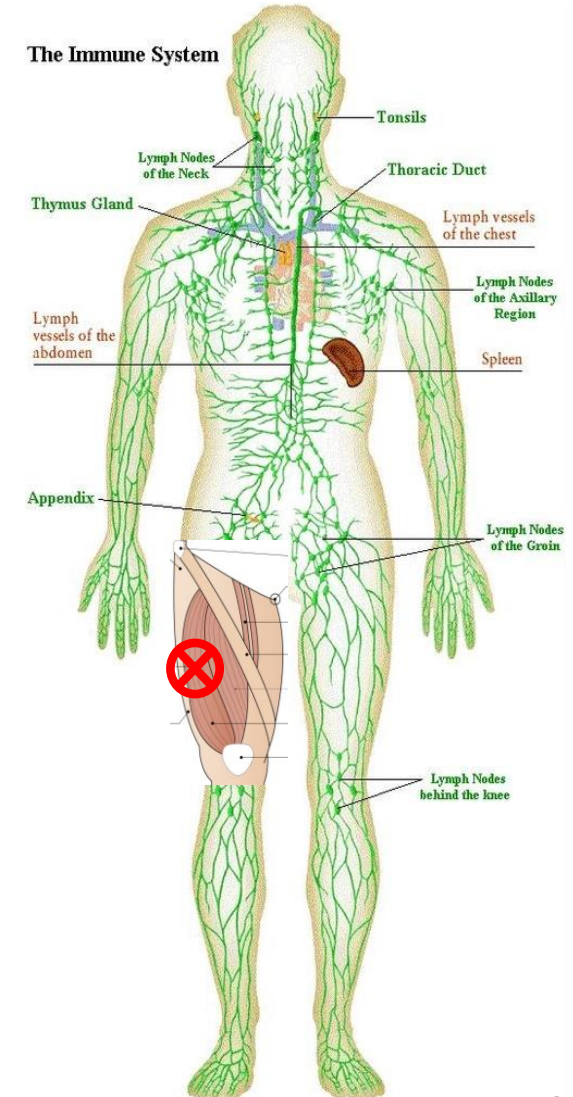
<p>Very common side effects</p> <p>1-10%</p>	<p>Injection site pain and swelling, tiredness, headache, muscle pain, chills, joint pain, diarrhoea, fever</p> <p>(Some of these side effects were slightly more frequent in adolescents 12 to 15 years than in adults)</p>
<p>Common side effects</p>	<p>Injection site redness, nausea and vomiting</p>
<p>Uncommon adverse effects</p> <p>0.1-1%</p>	<p>Enlarged lymph nodes, feeling unwell, arm pain, insomnia, injection site itching, allergic reactions (e.g. rash, itching), feeling weak or lack of energy/sleepy, decreased appetite, excessive sweating and night sweats</p>

Myocarditis and pericarditis are known adverse reactions of BioNTech, and the majority of cases occur after the second dose in adolescents. Adolescents should avoid strenuous exercise for one week after BioNTech vaccination.

- **Hong Kong study 2021:** (305,406 injections given to 12-17 years old teens; standard adult regimen)
 - 29 boys & 4 girls had myocarditis/pericarditis (0.01%); median age ~15 years
 - >80% after 2nd dose; median 2 days after vaccine
 - all mild cases – resolved by themselves
- **Canada study 2021:** (18-24 year-old males)
 - Longer time interval between the 1st and 2nd dose reduces risk of myocarditis /pericarditis
 - 0.01% (<= 30 day interval) → 0.001% (>=56 day interval)
- **Phase 1 / 2 study in 5-11 years:** (1/3 dose)
 - No reported myocarditis or anaphylaxis
 - No severe complication

Measures to minimize risk of myocarditis/pericarditis after BioNTech (Comirnaty) vaccine for kids in HK

1. Injection at the thigh rather than at the arm
 2. Avoidance of vigorous exercise 1 week after injection
 3. Space out the interval between the 1st dose & 2nd dose to 12 weeks
- No more myocarditis/pericarditis observed so far



Reporting of adverse events after immunization (AEFI)

- The Department of Health (DH) has a reporting system which receives AEFI reports to monitor the safety of COVID-19 vaccines
- If you have any suspected AEFI, please alert healthcare professionals to report the event to DH

CoronaVac vaccine

Cumulative number of doses of COVID-19 vaccine administered	About 4,256,400 (As at 31 January)	About 3,724,900 (As at 31 December)
Cumulative number of AEFI reports received [Reporting rate (cases per 100,000 doses administered)]	2,840 [0.07% (66.7)]	2,720 [0.07% (73.0)]

Comirnaty vaccine

Cumulative number of doses of COVID-19 vaccine administered	About 6,869,200 (As at 31 January)	About 6,200,700 (As at 31 December)
Cumulative number of AEFI reports received [Reporting rate (cases per 100,000 doses administered)]	4,054 [0.06% (59.0)]	3,901 [0.06% (62.9)]

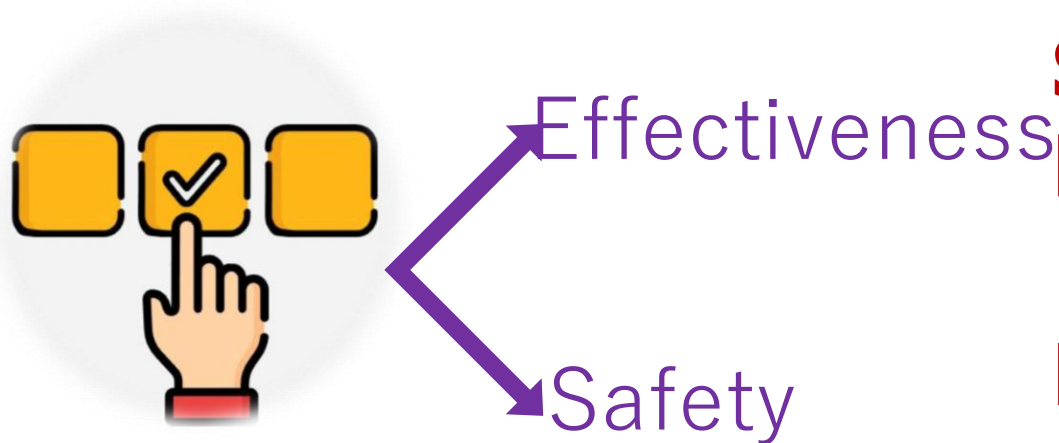
Is there anyone who is not fit for COVID-19 vaccines?

- The vast majority of us are suitable for COVID-19 vaccination
- Do not get vaccinated if you have the following rare conditions:

Comirnaty Vaccine	X Allergy to the previous dose of Comirnaty or its vaccine component
CoronaVac Vaccine	X Allergic history to CoronaVac or other inactivated vaccines
	X Previous severe allergic reaction to vaccine e.g. anaphylaxis, angioedema
	X Severe neurological conditions e.g. demyelinating diseases, Guillain-Barre syndrome
	X Any adverse reaction of nervous system after CoronaVac vaccination
	X Uncontrolled severe chronic diseases → wait until the condition is more stable
	X Pregnant and lactating women

- Defer COVID-19 vaccination by at least 14 days if you have just got another vaccine (e.g. flu vaccine)

What types of COVID vaccine are there for children?



Options

From the current available data:
Sinovac: ≥ 3 years old
BioNtech: ≥ 5 years old

Both Sinovac (CoronaVac) & BioNTech (Comirnaty) vaccines are safe & effective for our kids

How do children get COVID-19 vaccines in Hong Kong?

	Sinovac (CoronaVac)	BioNTech (Comirnaty)
Lower age limit	3 years	5 years
Dosage	Standard dose 0.5ml	>=12 years*: standard dose 0.3ml 5-11 years: 1/3 dose 0.1ml
1 st & 2 nd dose interval	28 days	>=18 years: 21 days <18 years: 12 weeks (84 days)
Injection site	Upper arm muscle (deltoid)	>=18 years: upper arm muscle (deltoid) <18 years: mid-thigh muscle (vastus lateralis)
Vaccination centres	Community Vaccination Centres (CVC) Designated GOPCs & SHS Centres >1000 private clinics enrolled	12 years or above: Community Vaccination Centres 5-11 yr: Children Community Vaccination Centres (CCVC)
Outreach service	Can be arranged by schools	Not available
Precautions		Avoid vigorous exercise 1 week after vaccination

**If <12 years at the 1st dose, and >12 years by the time of 2nd dose
→ recommend to have 1/3 dose also for the 2nd dose*

Booking: Online: www.covidvaccine.gov.hk SHS centre: 2856 9133

Points to note when going to get vaccinated

On the date of vaccination, the child is required to bring along:

- A **consent form** signed by their parents
(www.covidvaccine.gov.hk/pdf/Consent_Form_for_COVID19_Vaccination_ENG.pdf)
- The **original identity documents with photo** (e.g. passport)
(And a school document with photo (e.g. school handbook or student card) too if the identity documents do not bear the photo of child (e.g. birth certificate))
- **One accompanying parent/adult carer**

More information

- CHP Facebook Page
- CHP YouTube Channel
 - <https://www.youtube.com/c/ChpGovHkChannel>
- COVID-19 Thematic Website
 - <https://www.coronavirus.gov.hk>
- Vaccination Programme
 - <https://www.covidvaccine.gov.hk>
- CHP Webpage for vaccination in children and adolescents
 - <https://www.covidvaccine.gov.hk/en/ChildrenAdolescents>
- Enquiry hotline : 3142 2366
- UCNCHS support
 - Hotline: 2344 3532
 - WhatsApp/Viber/text: 5964 6756



衛生署衛生防護中心 **Centre for Health Protection, DH**
@CentreforHealthProtection · Government Organization

Watch Video

youtube.com

A screenshot of the 'Early Vaccination for All' website. The header includes the Government of the Hong Kong Special Administrative Region logo and navigation links in multiple languages. The main banner features the text 'Early Vaccination for All' and 'It's more than a Job'. Below the banner are three main sections: 'Private Doctors and Clinics Providing Sinovac Vaccination', 'Private Doctors and Clinics Providing BioNTech Vaccination', and 'Service Schedule of Mobile Vaccination Stations'. A navigation bar at the bottom contains icons for 'Book Vaccination', 'Booking Status', 'Search for Venues', 'About the Vaccines', 'About the Programme', 'FAQs', 'What's New', 'Vaccination Record', and 'Expert Opinion'. A sidebar on the right lists various resources like 'Videos', 'Webinars', 'Infographics', 'Pamphlets', and 'Other Health Education Materials'. A prominent 'BOOK NOW' button is visible in the bottom right corner.

Take home messages

- COVID-19 vaccines available in Hong Kong are safe and effective against symptomatic COVID-19 disease
- Vaccination is important to protect children and adolescents against COVID-19, and enable them to resume normal school and daily life as soon as possible
- Under the spreading threat posed by mutant virus strains, children and adolescents who are yet to receive vaccination should get vaccinated as early as possible for self-protection



Thematic website on COVID-19
Vaccination Programme

True or False?

- Children do not need to be vaccinated against COVID-19 as they have mild disease?
- Natural immunity is more effective than vaccine-induced immunity?
- COVID-19 vaccines are not safe because they were developed and tested quickly?
- The mRNA vaccine will alter human DNA?

