APEC LSIF Policy Dialogue:

Enabling a Resilient Vaccination Ecosystem

28-29 January 2021
Chinese Taipei’s COVID-19 Vaccination Strategies

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Deputy Director General
Centers for Disease Control,
Ministry of Health and Welfare, Chinese Taipei
COVID-19 Overview

Global epidemic situation

Global confirmed cases: 97,419,541
Global deaths: 2,093,894
Global fatality rate: 2.15%
Number of region: 193

Data source: ECDC 2021/1/22
**COVID-19 Overview**  

**Effective COVID-19 control in Chinese Taipei**

- **Confirmed cases per 100,000 population**
  - Andorra: 12,952
  - Montenegro: 9,075
  - Czech Republic: 8,677
  - San Marino: 8,640
  - Luxembourg: 8,170

- **Cumulative confirmed cases**
  - US: 24,718,873
  - India: 10,610,983
  - Brazil: 8,697,368
  - Russia: 3,655,839
  - UK: 3,543,646

**Rank of Chinese Taipei**

- 185
- 193

**Chinese Taipei**

- 3.7
- 873

*Dated: 2021/1/22*
COVID-19 Overview

Non-Pharmaceutical Interventions still Crucial

Social Distancing

Personal protective practices

- Entry temperature screening,
- Hand sanitizer and disinfectants widely placed in public spaces

Contact Tracing
Testing
Quarantine
Isolation
COVID-19 Vaccination Program

Essential Elements

- Immunization Program
- Immunization policy and strategies
- Financing & Sustainability
- Monitoring & Surveillance
- Delivery Service
- Distribution System
- Vaccine Quality and Safety

Immunization Program
65% of population (about 15 million persons)

- COVAX
- Domestic production
- Bilateral agreement with overseas suppliers
9 groups of people are listed as the priority groups for COVID-19 vaccination:

<table>
<thead>
<tr>
<th>Stage I (2 million doses)</th>
<th>Stage II (2~10 million doses)</th>
<th>Stage III (Supplies likely sufficient to meet demand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical personnel</td>
<td>Essential Personnel</td>
<td>Elders aged ≥ 65 y</td>
</tr>
<tr>
<td>Disease Prevention staff</td>
<td>Who Maintain Normal Functions Of society</td>
<td>19-64y High risk</td>
</tr>
<tr>
<td></td>
<td>Long-term care, Social welfare workers, caregivers</td>
<td>Persons with major chronic conditions</td>
</tr>
<tr>
<td></td>
<td>Soldiers</td>
<td>Healthy adults 50-64 y</td>
</tr>
</tbody>
</table>

Cumulative number (million):

- Medical personnel: 0.45
- Disease Prevention staff: 0.5
- Essential Personnel: 0.58
- Long-term care, Social welfare workers, caregivers: 0.8
- Soldiers: 1
- Elders aged ≥ 65 y: 4.7
- 19-64y High risk: 8.5
- Persons with major chronic conditions: 8.6
- Healthy adults 50-64 y: 13.9

COVID-19 Vaccination Program

Prioritized groups for vaccination
Vaccination Program Schedule

- The vaccine doses are expected to be delivered as early as March 2021.
- The schedule will be made based on the time and quantity of vaccines that we can obtain.

Vaccination Strategy

- Multidose vaccine: 5~10 doses/vial
  - Make an appointment
  - Get vaccinated collectively
**Passive surveillance**

- Reporting of suspected adverse reactions by healthcare providers

**Active surveillance**

- Follow-up for recipients
- Smartphone-based two-way messaging
Conclusion

- Prudent Action
- Early Deployment
- Rapid Response
Thanks for your attention!
SESSION 1

Maximizing the Public Health & Economic Value of Vaccination
Dr. Teiji Takei, MD, MBA, PhD
Assistant Minister for Global Health and Welfare, Ministry of Health, Labour and Welfare (MHLW)
Japan
Maximizing the Public Health & Economic Impact of Vaccination

Rachel Mitrovich, DrPH, MPH
Director, Global Vaccines Public Policy
MSD

January 2021
Value of vaccination: The ripple effect from individual to society

Vaccines are one of the greatest public health success stories in history

- With the exception of safe water, no other intervention has had a greater effect on overall mortality reduction and population health to date.
- Vaccination helps to ensure health, education, and equity across all stages of life and allows important social and economic returns that go beyond the individual and family.
- The ripple effects of vaccination accrue without regard to race, gender, age, or geography.

Vaccines help protect against serious infectious diseases across all stages & various circumstances of life

Vaccines help save 2 to 3 million lives globally each year

Vaccination in children and adolescents can help promote healthy growth and development. Childhood vaccination impacts school readiness and performance.

Vaccines administered to women during pregnancy can provide protection against serious infectious diseases for the mother, newborn, or both.

Vaccination may protect people affected by underlying chronic conditions, such as diabetes or kidney disease, by preventing infectious diseases and lowering the risk of related medical complications.

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Vaccination provides value to the broader community by limiting the spread of disease

Herd immunity helps protect the unvaccinated by limiting the spread of disease in the community\(^1,2\)

Vaccination provides the individual with boosted immunity against severe diseases and can provide indirect protection to unvaccinated individuals by reducing the spread of infection. \(^1,2\)

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Vaccination is regarded as one of the most cost-effective public health interventions¹

For every dollar invested in childhood vaccination, the return is approximately $44²

$151 BILLION SAVED²

Worldwide

$145 billion in productivity losses³
$6.2 billion in treatment costs³

$1 SPENT = $44 RETURN⁴

For every dollar invested in childhood vaccination, the return is approximately $44⁴

High vaccine coverage rates are critical to preventing outbreaks and limiting their impact at the societal level

Disruption of routine immunization services due to the COVID-19 pandemic creates a risk of resurgence of vaccine preventable diseases, such as polio and measles\(^1,2\)

According to WHO, at least 26 measles vaccination campaigns were or are at risk of being cancelled and 46 economies put their polio campaigns on hold\(^1,2\)

Maintaining routine vaccination during a pandemic:

- Reduces strain on already burdened healthcare systems
- Addresses health inequities
- Supports primary health care and Universal Health Coverage
- Contributes to global health security

The current value proposition for vaccination is limited, leaving value on the table

Undervaluing vaccination leads to:

- Suboptimal use of existing vaccines
- Reduction in investment in breakthrough and incremental vaccine innovation
- Downstream effects not being recognized when setting policies / making decisions
- Lack of funding dedicated to prevention and vaccination

Health expenditure by function of health care, OECD average, 2018


2. Includes rehabilitative and ancillary services
How to ensure vaccination reaches its full potential in APEC

01 Equip policymakers with a more comprehensive picture of the full value of vaccination across the life course, as well as the value of vaccine innovation.

02 Develop evidence-based approaches that enable the inclusion of the societal value perspective in technical decision-making and expand the evidence base that uses these processes.

03 Invest in real world data on the societal impact of vaccination, advance health economic models to assess the full societal value of vaccination, and strengthen NITAG’s capability and adoption of advanced health economic models that assess value more broadly.

04 Ensure technical review processes are pulled through in procurement decision-making to support a healthy vaccines market that incentivizes and rewards innovation.
Thank You
SESSION 2

COVID-19 and Beyond: Confidence and Resilience in the Vaccine Ecosystem
Dr. Charles Harvey, PhD
Vaccine Public Policy Director, Japan, China and Asia-Pacific
MSD
Addressing vaccine hesitancy and building vaccine resilience

January 2021
Vaccines

One of the greatest public health success stories in history

Vaccines are vital in the global fight against disease, eradicating smallpox and nearly eliminating other diseases like polio worldwide.

Vaccines help prevent +30 infectious diseases worldwide

2-3 million lives are saved worldwide each year through vaccination¹

$1=$44 Every dollar spent on childhood immunization yields $44 in economic benefits²,³

“With the exception of safe water, no other modality, not even antibiotics, has had such a major effect on mortality reduction and population growth.”

Stanley A. Plotkin, MD, Vaccine Developer, Emeritus Professor of Paediatrics, University of Pennsylvania & Emeritus Professor, Wistar Institute

Source:
The threat of vaccine hesitancy

Each year, vaccines help save millions of lives worldwide. Vaccine hesitancy threatens to reverse the progress made in combatting serious and preventable infectious diseases.¹

What is vaccine hesitancy?

Vaccine hesitancy is the reluctance or refusal to vaccinate despite the availability of vaccine services.²

What causes vaccine hesitancy?

There are three main factors related to vaccine hesitancy³:

- **Complacency**: The perception that vaccine-preventable diseases pose a much smaller risk than they do.

- **Convenience**: How easy or difficult it is to receive vaccines, based on the systems that surround immunisation programmes, including accessibility, quality of care, and cost.

- **Confidence**: A lack of trust in the effectiveness and safety of vaccines and the systems that deliver them.

Vaccine hesitancy is not just about the small but vocal minority of the population that refuses vaccination. Rather, hesitancy exists along a broad continuum of opinion that ranges from vaccination refusers at one end to vaccination acceptance at the other.\textsuperscript{1,2,3}


Our approach to addressing vaccine hesitancy

At MSD, we are working with a variety of partners to help build confidence in vaccination. Our approach includes global, national, and local engagement. To us, protecting public health is more than a business decision – it is a shared mission.

Globally
Developing high quality vaccines for use across the world.

ASIA PACIFIC: MSD has supported the formation of the Asia Pacific Immunisation Coalition (2020).

Nationally
Build strong and resilient immunisations systems.

INDONESIA: In partnership with the Ministry of Health and the Indonesian Paediatric Association, we support the #LengkapiVaksinasiAnak campaign.

Locally
Empowering communities with knowledge and capabilities.

PHILIPPINES: In collaboration with the Department of Health and the League of Cities, we have launched Bakuna Muna! (Vaccine First), an advocacy campaign.
Building more resilient vaccination programs within APEC

01 Engaging directly with communities, officials, and experts to understand hesitancy, its impact on vaccination and public health, and what can be done about it.

02 Investing in immunization system infrastructure to anticipate and manage issues related to vaccine hesitancy.

03 Activating a broad set of actors within and beyond the health system to reach communities and individuals more effectively and demonstrating broad support for vaccination.

04 Developing national strategies and strengthening capabilities of health care workers to increase confidence in vaccination.

05 Mobilizing private sector and other stakeholders involved in digital media to address misinformation and promote dissemination and availability of accurate information.

06 Developing and implementing policies that increase public confidence in vaccination.
Thank You
Dr. Eng Eong Ooi, PhD
Deputy Director
Emerging Infectious Diseases Program
Duke-National University of Singapore School of Medicine
Vaccine development for outbreak response

Eng Eong Ooi BMBS PhD FRCPath
Professor
Programme in Emerging Infectious Diseases
Duke-NUS Medical School
Dyssynchrony in drug and vaccine development for outbreak response

Thielman et al, Clinical Trials 2016
Challenges in pre-pandemic vaccine development

Funding support?

Lack of clear regulatory pathway for licensing
- Difficulty in conducting clinical trials etc.
- Animal rule (but not every viral disease has a good animal model)

When and how much to manufacture?

Uncertain returns and recovery of development cost

Competition from other more profitable agenda
- Blockbuster drugs
New vaccines for a safer world

The Coalition for Epidemic Preparedness Innovations (CEPI) is a global partnership launched in 2017 to develop vaccines to stop future epidemics.

$57Obn
The estimated annual global cost of moderately severe to severe pandemics

Eleven
The number of diseases WHO identified as public health risks due to epidemic potential and lack of biomedical countermeasures

$2.8bn
The minimum average cost for progressing one vaccine against each of WHO’s 11 priority epidemic infectious diseases
Coronavirus Vaccine Tracker

By Carl Zimmer, Jonathan Corum and Sui-Lee Wee  Updated Jan. 26, 2021

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
<th>LIMITED</th>
<th>APPROVED</th>
<th>ABANDONED</th>
</tr>
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<td>38</td>
<td>24</td>
<td>20</td>
<td>8</td>
<td>2</td>
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- Vaccines testing safety and dosage
- Vaccines in expanded safety trials
- Vaccines in large-scale efficacy tests
- Vaccines in early or limited use
- Vaccines approved for full use
- Vaccines abandoned after trials
The California-based company Arcturus Therapeutics and Duke-NUS Medical School in Singapore have developed an mRNA vaccine. It has a “self-replicating” design that leads to a greater production of viral proteins. Tests on animals showed that it protected them against infection. In August, Arcturus launched a Phase 1/2 trial at Singapore General Hospital. On Nov. 9, the company announced that an interim analysis of the trial showed that the vaccine produced an immune response that’s in the range of responses seen in people who recovered from Covid-19. On Jan. 6 Arcturus announced that they had permission to start the Phase 2 portion of the trial in both Singapore and the United States. Singapore reached an agreement with Arcturus to spend up to $175 million to acquire vaccines when they’re ready.

Updated Jan. 12
Insights from studying the live yellow fever vaccine

Chan C et al, JCI Insight 2017
Low et al, NEJM 2020
The California-based company Arcturus Therapeutics and Duke-NUS Medical School in Singapore have developed an mRNA vaccine. It has a "self-replicating" design that leads to a greater production of viral proteins. Tests on animals showed that it protected them against infection. In August, Arcturus launched a Phase 1/2 trial at Singapore General Hospital. On Nov. 9, the company announced that an interim

Vaccine construction 4.5 months Phase 1/2 clinical trial 6 months Multi-country phase 2 clinical trial
Cumulative COVID-19 vaccination doses administered per 100 people

This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).
Viral outbreaks in the 21st century

2003

SARS CoV-1

2009

Swine H1N1

2012

MERS CoV

2014

Ebola

2015

ZIKV

2016

YFV

2019

SARS CoV-2

Not if.
What’s next and when?

Darren Mok
How can we prepare for the next pandemic?

Develop ways to accelerate discovery, development, manufacturing and licensing of new vaccines and drugs safely and effectively?
  ◦ Investment in basic, translational and regulatory science
  ◦ Address issues of affordability and accessibility

Economic sustainability

These efforts will require active partnerships
  ◦ Academia
  ◦ Industry
    ◦ Biotech
    ◦ Big pharma
  ◦ Revised regulatory framework
  ◦ Government