

Mass Surveillance & Privacy

APRU Global Health Working Group Webinar: Bioethics and COVID-19



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Key Messages

- Pandemic response
 - Contact Tracing Apps
 - Public health surveillance and infection control measures
- Privacy
 - It is one part of the wider 'bioethical ecosystem' that supports trust and trustworthiness
- Thinking Beyond Privacy (even if an important consideration)
 - Strengthening public health system & key stakeholders
 - Building trust and mobilising social action
- Ethical and Legal Principles, and supportive mechanisms
 - WHO Guidelines on Public Health Surveillance



Impact assessment of non-pharmaceutical interventions against coronavirus disease 2019 and influenza in Hong Kong: an observational study

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Summary

Background A range of public health measures have been implemented to suppress local transmission of coronavirus disease 2019 (COVID-19) in Hong Kong. We examined the effect of these interventions and behavioural changes of the public on the incidence of COVID-19, as well as on influenza virus infections, which might share some aspects of transmission dynamics with COVID-19.

Methods We analysed data on laboratory-confirmed COVID-19 cases, influenza surveillance data in outpatients of all ages, and influenza hospitalisations in children. We estimated the daily effective reproduction number (R_t) for COVID-19 and influenza A H1N1 to estimate changes in transmissibility over time. Attitudes towards COVID-19 and changes in population behaviours were reviewed through three telephone surveys done on Jan 20–23, Feb 11–14, and March 10–13, 2020.

Findings COVID-19 transmissibility measured by R_t has remained at approximately 1 for 8 weeks in Hong Kong. Influenza transmission declined substantially after the implementation of social distancing measures and changes in population behaviours in late January, with a 44% (95% CI 34–53%) reduction in transmissibility in the community from an estimated R_t of 1.28 (95% CI 1.26–1.30) before the start of the school closures to 0.72 (0.70–0.74) during the closure weeks. Similarly, a 33% (24–43%) reduction in transmissibility was seen based on paediatric hospitalisation rates, from an R_t of 1.10 (1.06–1.12) before the start of the school closures to 0.73 (0.68–0.77) after school closures. Among respondents to the surveys, 74.5%, 97.5%, and 98.8% reported wearing masks when going out, and 61.3%, 90.2%, and 85.1% reported avoiding crowded places in surveys 1 (n=1008), 2 (n=1000), and 3 (n=1005), respectively.

Interpretation Our study shows that non-pharmaceutical interventions (including border restrictions, quarantine and isolation, distancing, and changes in population behaviour) were associated with reduced transmission of COVID-19 in Hong Kong, and are also likely to have substantially reduced influenza transmission in early February, 2020.

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Introduction

The first wave of coronavirus disease 2019 (COVID-19) in China, outside of Hubei province, was addressed with the implementation of aggressive public health measures.¹ These measures relied heavily on massive mobility restrictions, universal fever screening in all settings, and neighbourhood-based, household-focused social distancing that was enforced by large teams of community workers, as well as pervasive deployment of artificial intelligence-based social media applications and the use of big data.² Whether some or all of these measures would be acceptable and feasible in settings outside of mainland China has been questioned.³

Hong Kong is a Special Administrative Region of China that operates with a large degree of autonomy. It is located outside the mainland on the southern coast of China, neighbouring Guangdong province—which has recorded the largest number of confirmed cases of COVID-19 (1490 cases as of March 31, 2020) outside of Hubei. Having

been one of the most heavily affected epicentres during the severe acute respiratory syndrome (SARS) epidemic in 2003, the community in Hong Kong has been prepared to respond to emerging infectious diseases. A range of public health measures have been implemented to delay and reduce local transmission of COVID-19, and there have been major changes in population behaviour.

The initial containment or current suppression measures used to control COVID-19 in Hong Kong include intense surveillance for infections, not only in incoming travellers but also in the local community, with around 400 outpatients and 600 inpatients tested each day in early March, 2020. Once individuals are identified to be positive for COVID-19, they are isolated in hospital until they recover and cease virus shedding. Their close contacts are traced (from 2 days before illness onset) and quarantined in special facilities, including holiday camps and newly constructed housing estates. Because not every infected person will be identified, containment measures only work if social distancing



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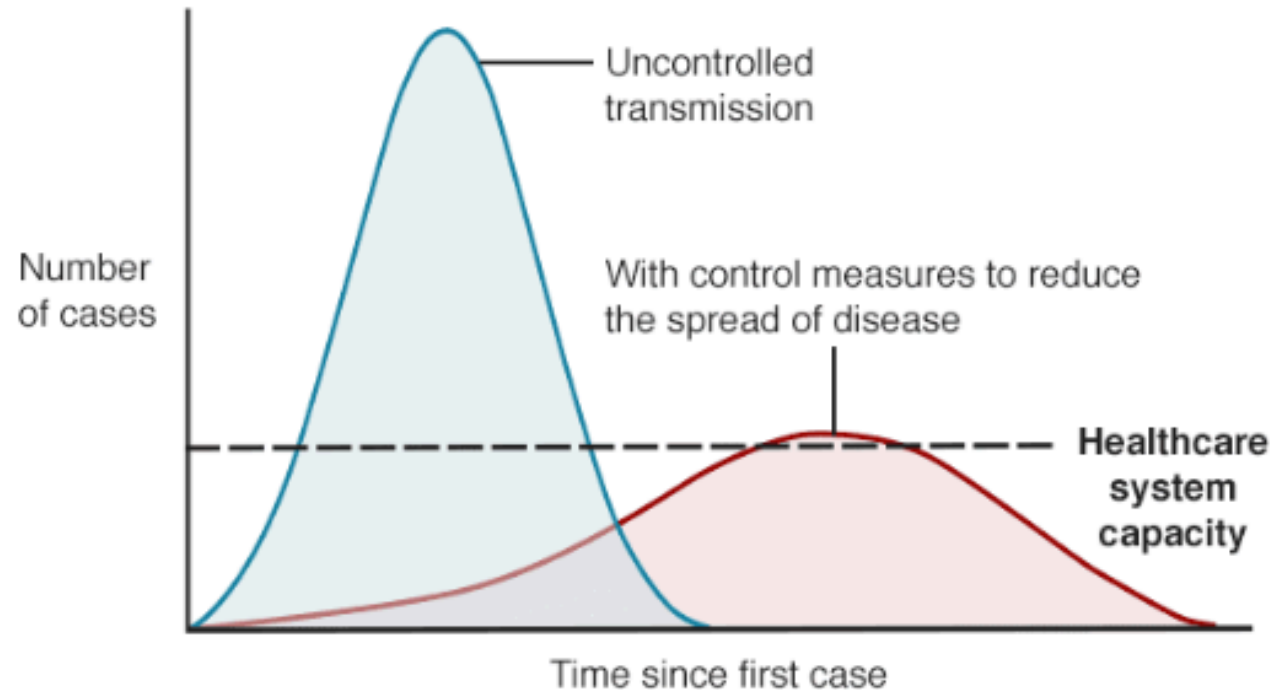
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Mass Surveillance & Infection Control

- Aggressive testing
- Contract Tracing
- Isolation / Quarantine
- Surgical Masks
- Hygiene practices
- Social distancing
- Travel restrictions



How an epidemic peak might be delayed and numbers reduced



*Control measures include closing schools, working from home, limiting large gatherings, travel restrictions

Source: Carl T. Bergstrom, University of Washington, Esther Kim



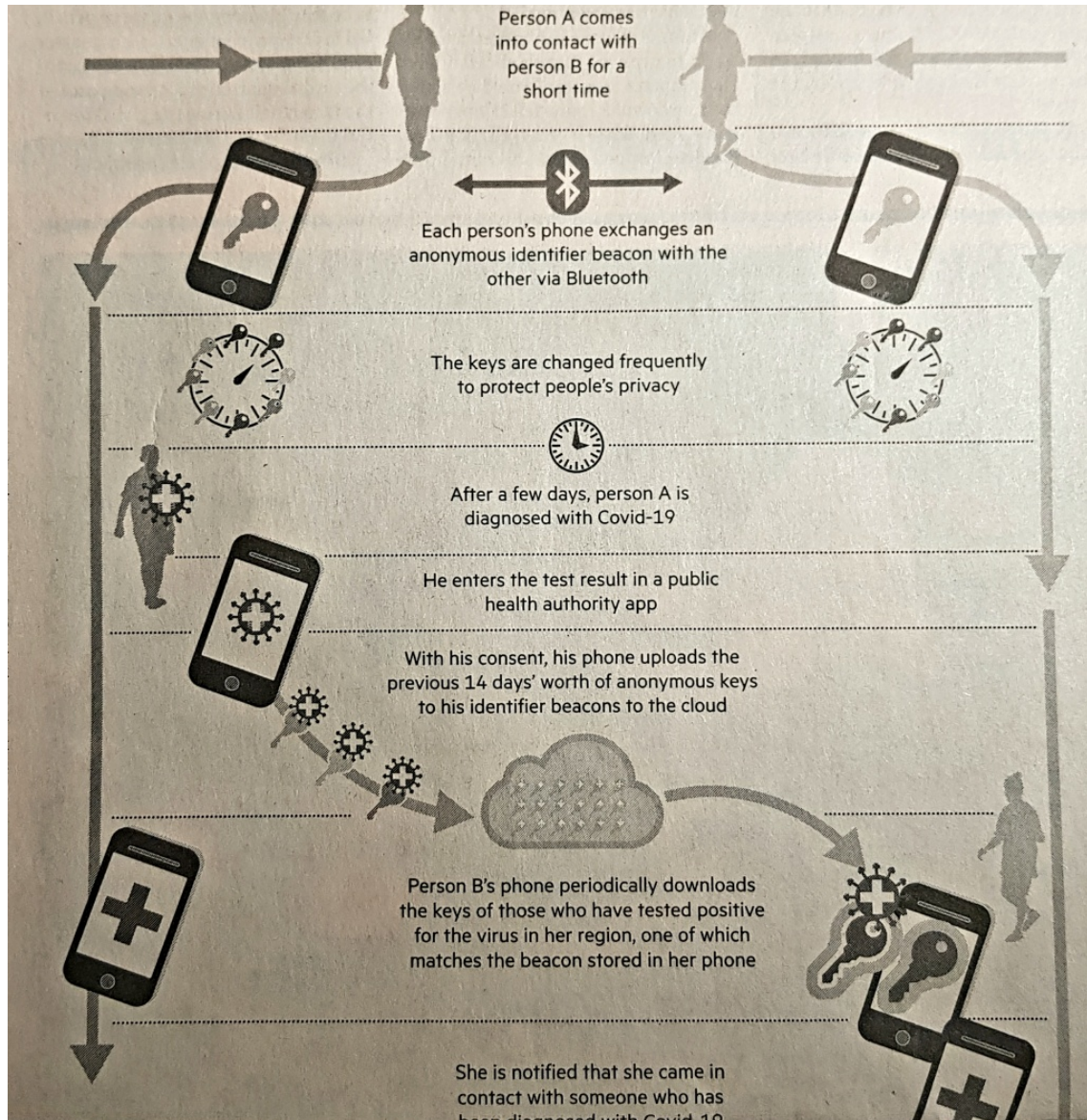
Contact Tracing Apps

- “Alipay Health Code” App in China
- “StayHomeSafe” App in Hong Kong
- “Corona 100m” / “Corona Map” in South Korea
- “Intelligent Electric Fences System” in Taiwan
- “NZ Covid-Tracer” in New Zealand
- “TraceTogether” App in Singapore
 - Adopted in Japan
 - Adopted in Australia
- Privacy concerns balanced with experiences of:
 - SARS across most of East Asia
 - MERS in South Korea
- Many East Asian cities did not go into complete lockdown



Google-Apple App

- Response to concerns over central databases
- Apple and Google will be developing a Bluetooth-based technology and launching a comprehensive solution that includes application programming interfaces (APIs) and operating system-level technology to assist in enabling contact tracing.
- Ada Lovelace Institute sets out some concerns:
 - Not enough users' uptake
 - Discriminate against those without smartphones or not tech savvy
 - Big Tech



Source: Financial Times (21 April 2020)



Surveillance Data:

Disease Control Programmes

Example	Strength	Drawback or Cost
<p>AIDS, HIV prevalence, TB, malaria, polio and other vaccine preventable diseases.</p> <p>Often part of disease control programmes but outside of surveillance and outbreak response unit.</p>	<p>High quality data reported with timeliness appropriate for the disease in question.</p> <p>Usually provides essential input for managing high-priority public health programmes.</p>	<p>Compartmentalization might result in redundancy and parallel building components (e.g. database) while creating barriers to sharing of data and surveillance resources.</p>



Sentinel Surveillance

Example	Strength	Drawback or Cost
Implementation not comprehensive across country but only in an explicit subset of the territory or its facilities. E.g. surveillance for AMR; Global Influenza Surveillance Network	Systematic and more detailed investigation of a subset of cases to assess trends in characteristics that could not be universally evaluated (e.g. lab investigation of pathogens).	Does not yield early warning of outbreaks other than coincidentally in a very small sample population. Could be treated as research.



Ethics of Public Health Surveillance

- Surveillance is similar to research in many ways:
 - Both can involve similar methodologies/activities (e.g., systematic investigation, medical record review, data mining)
 - Both involve human subjects
 - Both can raise similar ethical issues, including: exposure of subjects to risk, standards of care, questions about informed consent
- Increasing importance of surveillance (ethics):
 - Greater role attributed to surveillance in revised WHO International Health Regulations (2005)
 - Rapid technological advance (in diagnostics and other relevant technologies)



Surveillance vs Research

Surveillance is treated different (than research) in practice:

- Lack of similar standard/international regulations
 - But (why) should this be the case?
- Less institutional oversight
 - Committee review often not sought/required
 - But (why) should this be the case?
- Same ethical principles not (always) followed
 - E.g., informed consent is basic tenet of research ethics, but informed consent is often not sought in context of surveillance
 - But (why) should this be the case?
- **What is the technical distinction between research and public health practice (e.g. surveillance that is non-research)?**





WHO guidelines on ethical issues in public health surveillance

Core Ethical Principles

- Common Good
 - Shared benefits but broader than narrow economic sense of 'public good'
- Equity
 - Just and fair conditions for human flourishing
- Respect for Persons
 - Making protection possible and minimize risk of harm
- Good Governance
 - Accountable and open to public scrutiny



Harm Avoidance / Minimization in PHS

“Those responsible for surveillance should identify, evaluate, minimize and disclose risks for harm before surveillance is conducted. Monitoring for harm should be continuous, and, when any is identified, appropriate action should be taken to mitigate it.”

Guideline 8, WHO Guidelines on Ethical Issues in Public Health Surveillance, 2017.



Types of Harm (Potential & Actual)

Harm	Result
Physical	Public attacks, spouse / partner abuse, domestic violence, delayed or inadequate treatment
Legal	Arrest, prosecution, death penalty, expulsion
Social	Discrimination, community discrimination, isolation, inability to access care or exclusion from care, rejection from the community
Economic	Loss of employment or revenue, loss of health care services, loss of insurance, increased insurance premiums, increase health care costs, limited carer options, loss of life resources, forced relocation
Psychological / Emotional	Distress, trauma, stigma



Particular Susceptibility

“Surveillance of individuals or groups who are particularly susceptible to disease, harm or injustice is critical and demands careful scrutiny to avoid the imposition of unnecessary additional burdens.”

Guideline 9, WHO Guidelines on Ethical Issues in Public Health Surveillance, 2017.

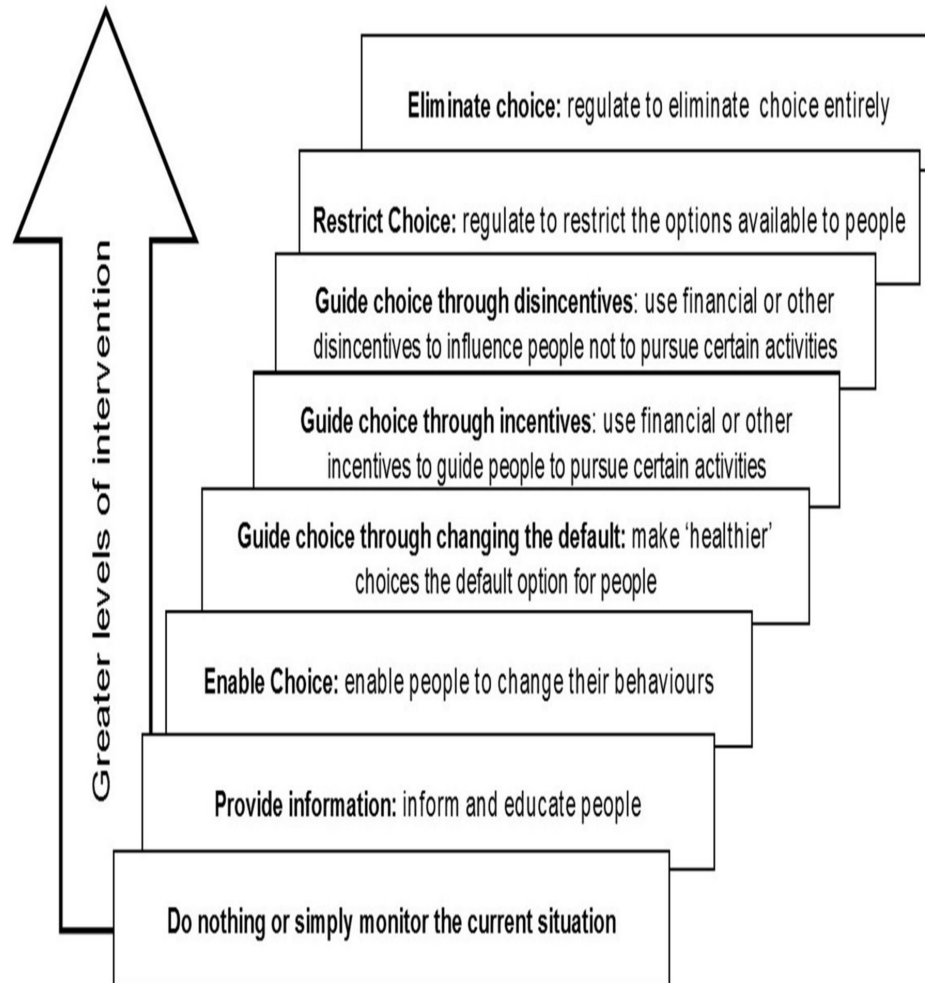


Guideline 9 (Explanation)

- Individuals or groups in situations of heightened vulnerability bear an undue proportion of health problems. Responsible authorities should make special efforts to ensure that these populations are included in surveillance in ways that will **empower** them.
- Public health surveillance and health information systems can provide valuable information to aid the development of health programmes and services **to address their health problems and the underlying determinants of health**, such as clean water, food security and gender equality.
- To **promote equity**, surveillance should focus on the specific problems of these vulnerable communities.



After COVID-19?



- Thinking Beyond Privacy (even if an important consideration)
- Strengthening public health system
- Building trust & trustworthiness
 - Equitable goals and processes
- Effective communication and Community engagement



Thank You !

