

Pandemics and epidemics

Causes, responses, and
community protection

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**Unceded territories of the Coast Salish peoples
Indigenous scholars and leaders in health protection**

Presentation overview



Pandemics and epidemics



Social determinants of health and pandemics



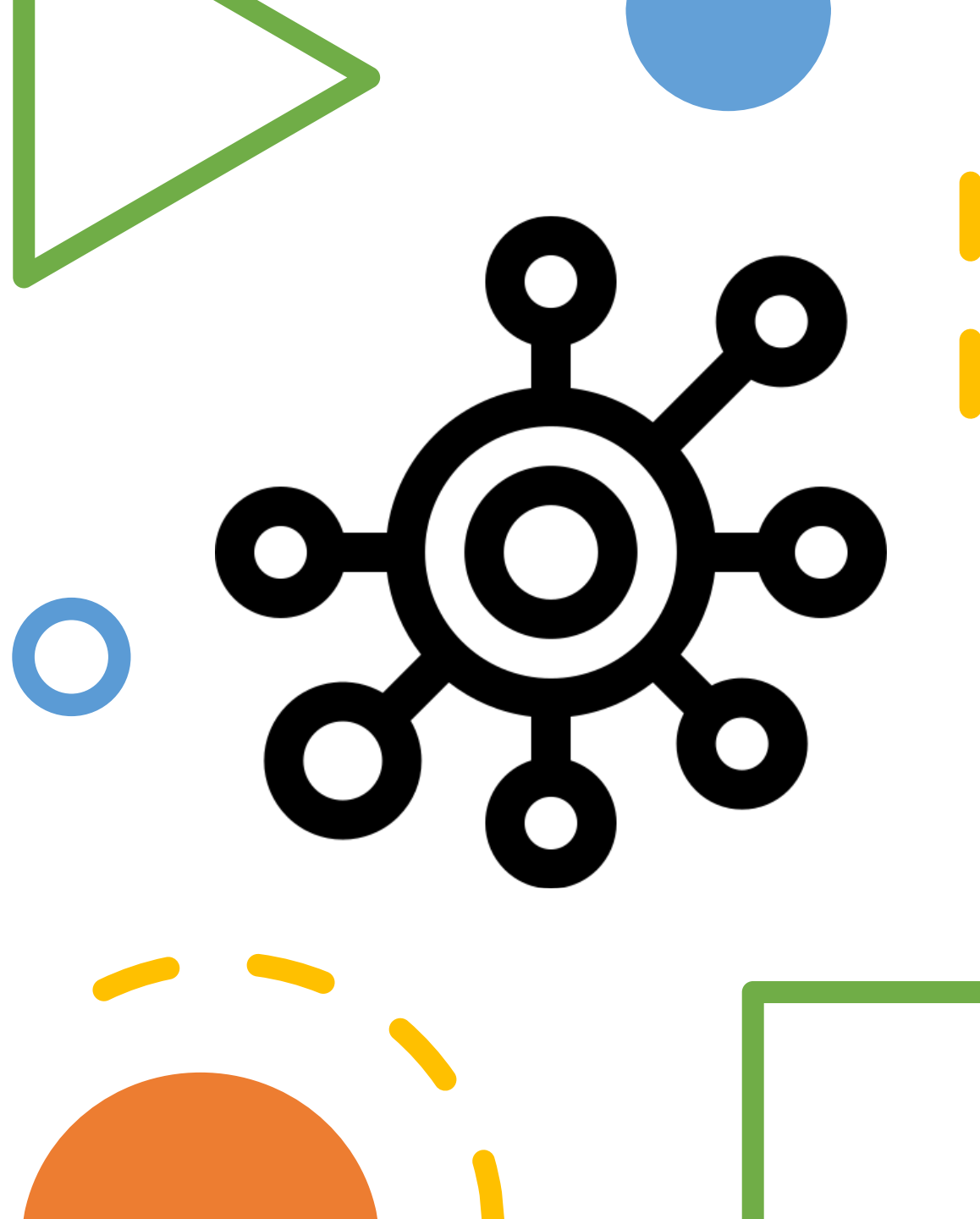
Community preparedness and protection



Helpful resources

Key messages

- Language matters
- Learn from community
- Be prepared!



Key terms

Term	Definition	Example
Sporadic	A disease or infectious agent that occurs infrequently and irregularly, may lead to a few cases.	Polio
Endemic	Constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area (<u>expected</u> frequency of disease)	Hepatitis A in Northern India
Hyper-endemic	Persistent, high levels of disease occurrence affecting all age groups equally	HIV in some east African communities

Key terms

Term	Definition	Example
Epidemic	An increase (often sudden) in the number of cases of a disease above what is expected in the population	2014 Ebola in West Africa
Outbreak	Same as epidemic, but in a specific geographic area	2017 plague in Madagascar
Cluster	An aggregation of cases grouped in a place and time that are suspected to be greater than the number expected, even if the expected number is unknown	1854 cholera outbreak in London UK
Pandemic	An epidemic that has spread over several countries or continents, usually affecting a large number of people	Global HIV

Epidemics vs. Pandemics



Epidemic

- Event in which a disease is actively spreading
- Often used to describe problem that has grown out of control

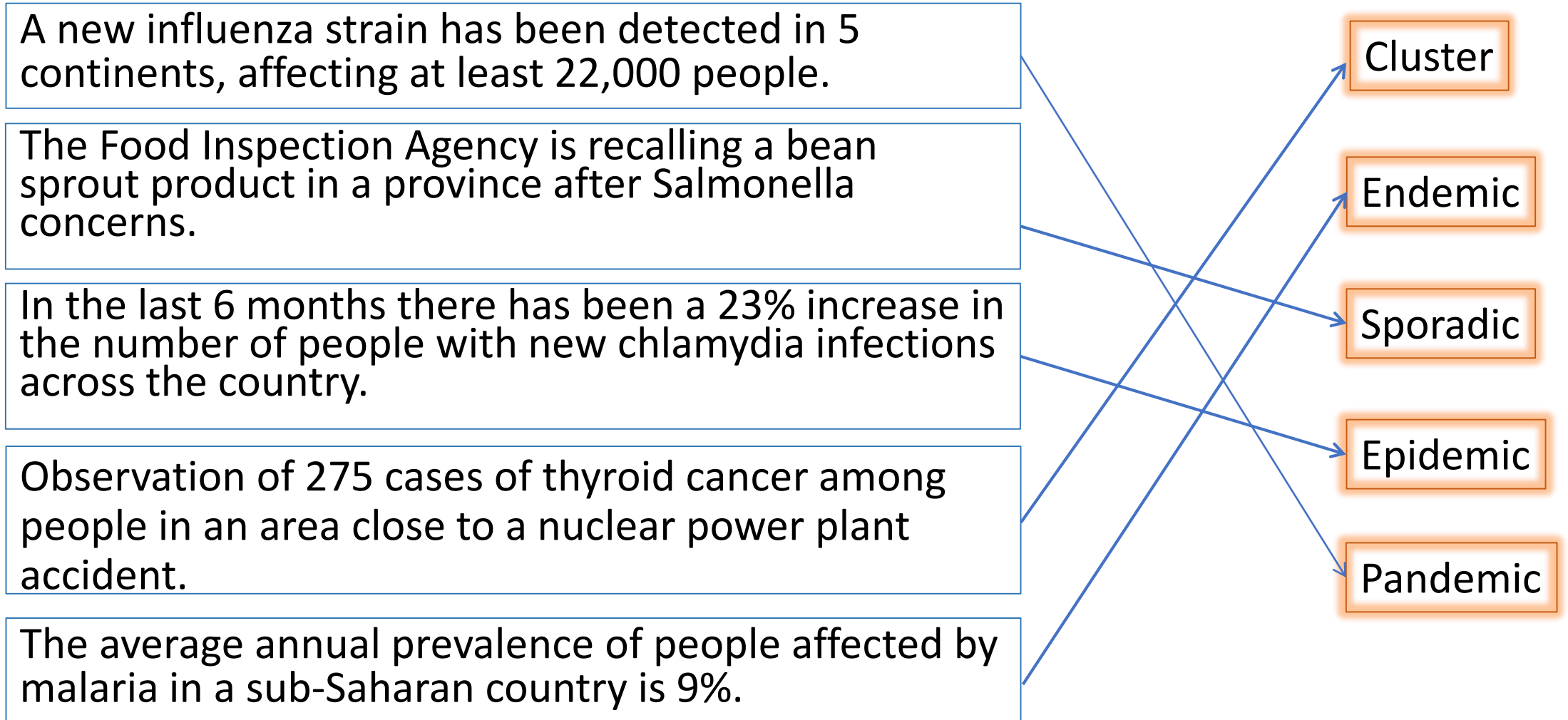


Pandemic

- Relates to geographic spread
- Describes disease that affects a whole country or the entire world

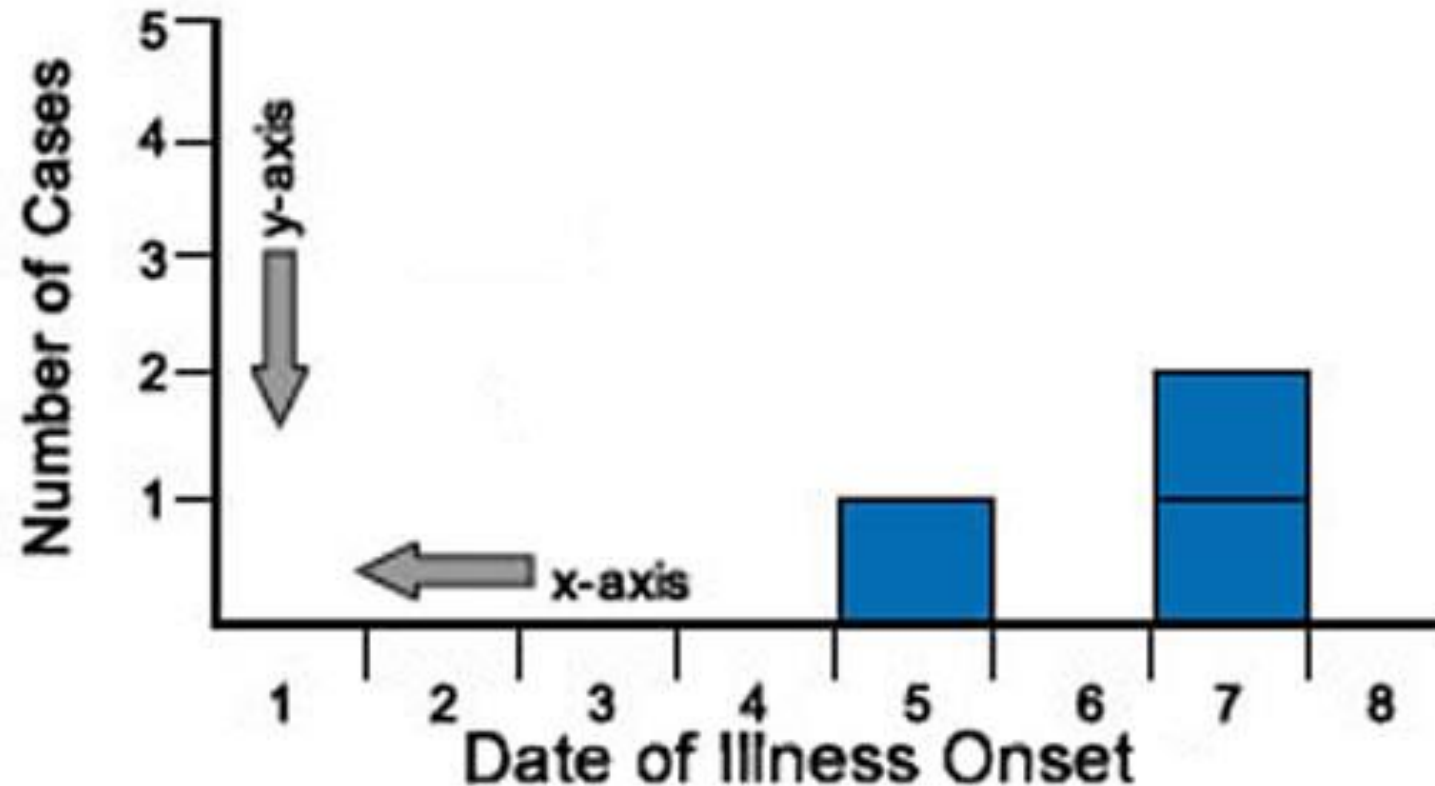
Which type of disease event is it?

Match the event (left hand side) to the types of disease events (right hand side)

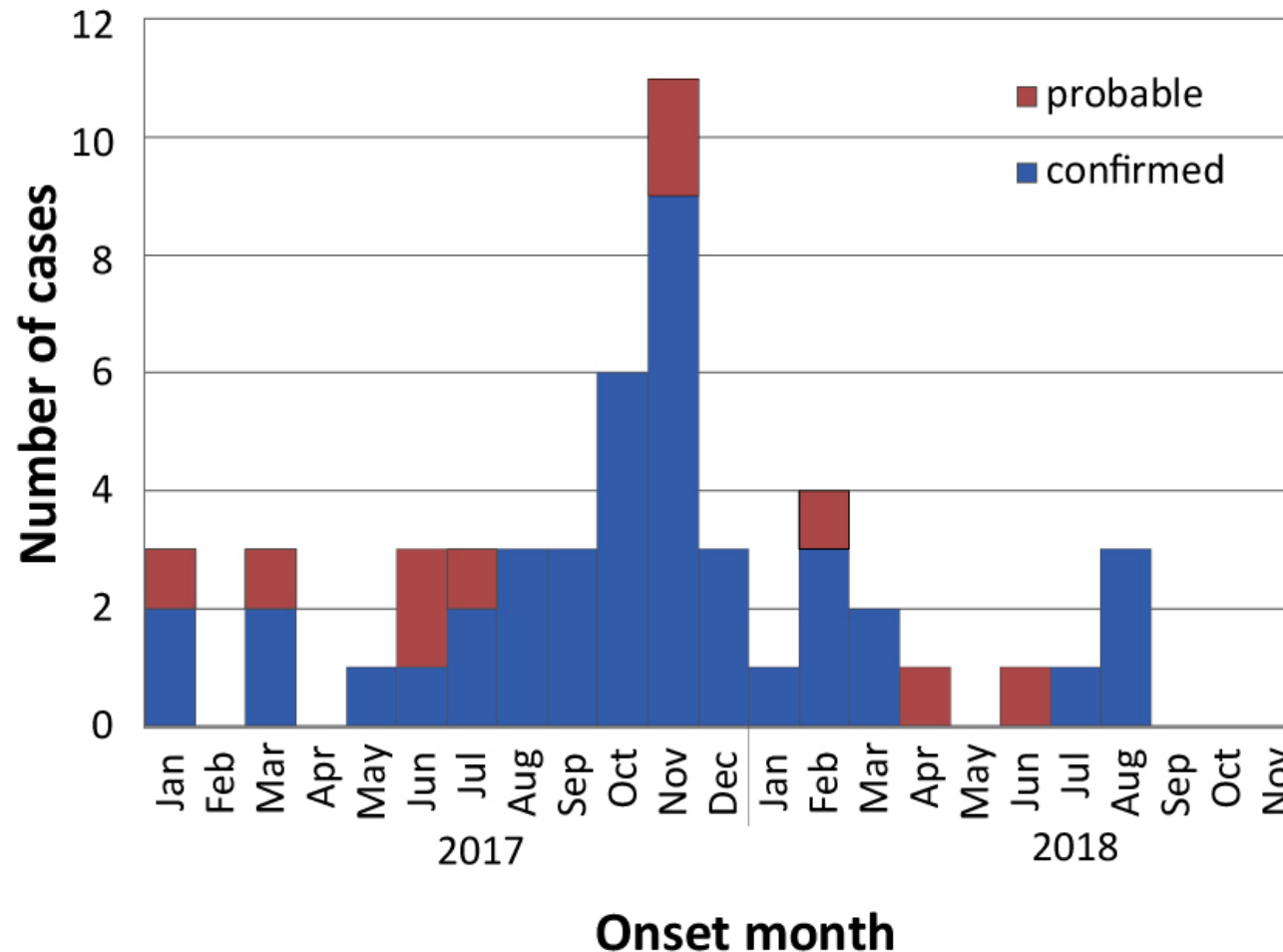


Some key tools to understand magnitude of disease spread

The Epi Curve

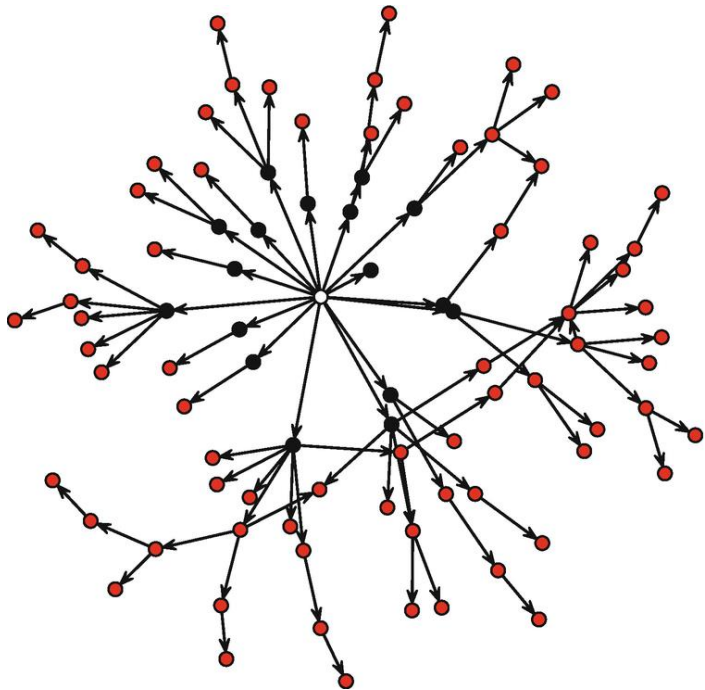


Epidemic curve of confirmed and probable outbreak cases of hepatitis A in Toronto, Ontario, by month of onset (January 1, 2017–November 30, 2018)



Some key tools to understand magnitude of epidemics

R_0 (pronounced R-naught): how contagious is the disease?



Disease	Reproduction number – R_0
Ebola, 2014	1.51 to 2.53
H1N1 influenza, 2009	1.46 to 1.48
Seasonal influenza	2.0 to 3.0
Measles	12 to 18
SARS	1 to 3
COVID-19	1.4 to 4.08

The R_0 for STBBIs is more complicated...

$$R_0 = \beta c D$$

R_0 : Reproductive number

β : Transmission probability per partnership

C : Rate of partner change

D : Duration of infection

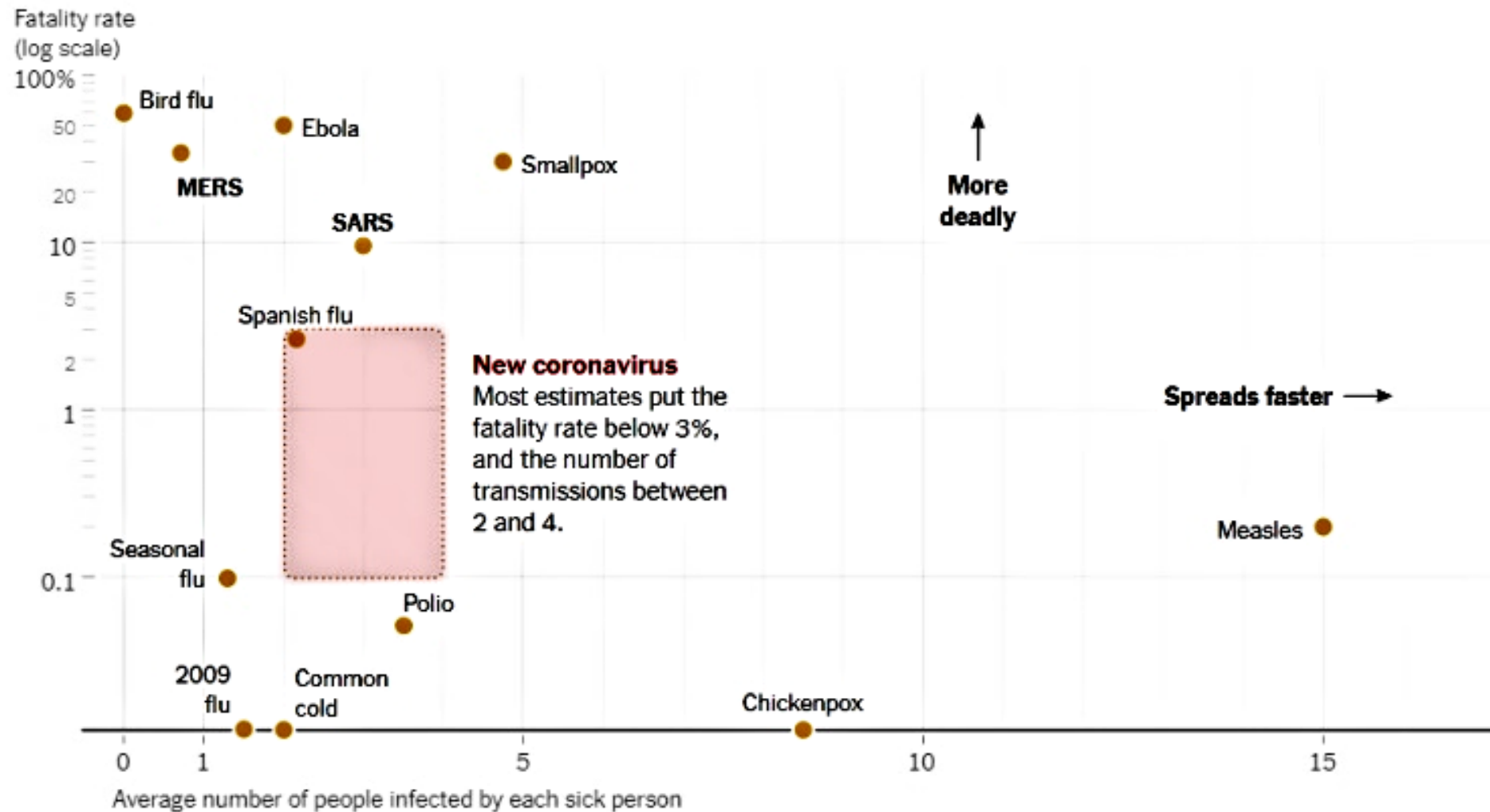
Some key tools to understand magnitude of epidemics

Case Fatality Rate (CFR): the number of people who die as a result of being infected

$$\text{CFR} = \frac{\text{Number of deaths due to disease x}}{\text{Number of cases diagnosed with disease x}}$$

Disease	Case Fatality Rate
Ebola, 2014	50%
H1N1 influenza, 2009	0.4%
Seasonal influenza	0.1%
Measles	15%
SARS	9%
COVID-19	~2%

Putting epidemics in perspective



Note: Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can vary, and numbers for the new coronavirus are preliminary estimates.

Causes of epidemics and pandemics

- Population density
- Mass displacement
- Global mobility
- Environmental degradation
- Closer contact with animals



“Health to us is actually the result of having a sense of belonging, of knowing who you are, of knowing who your relatives were, of knowing what your place is in community. It’s about social responsibility, it’s about a whole complex network of relationships. So, health is not the absence or presence of disease. It’s a way of relating...and of being.”

– Gwen Philips, Ktunaxa Nation (First Nations Health Council, 2010).



There's Blood in the Rocks, Video Installation Still, Dr. Marianne Nicolson (Kwakwaka'wakw), 2017.

Social determinants of health

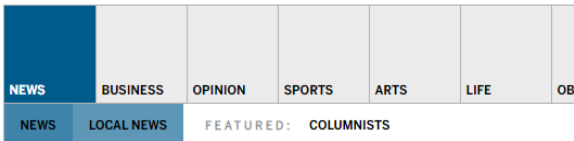
- Economic equity
 - Gender/sex equity
 - Self-governance
 - Sustainable environmental practices
 - Connection to culture
 - Strong education system
- Safe access to excellent health care
 - Social connection, relational health
 - Safe and affordable housing
 - Spiritual freedom
 - Community and neighbourhood cohesion and safety

Stigma, racism, and the spread of disease

COMMENTARY »

Insanity over COVID-19 inflicts real pain on Chinese-owned businesses in Metro Vancouver

by Charlie Smith on February 22nd, 2020 at 7:49 AM



'Nothing has changed': The roots of Saskatchewan's HIV crisis

"People can live with the virus, but they can't live with the stigma and the discrimination."

Lifestyle

How the Ebola outbreak turned into a racism and responsibility debate

GlobalPost

August 07, 2014 · 4:50 AM UTC

By Tristan McConnell



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Swine flu on NBCNEWS.com

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Lessons from 2009 H1N1 pandemic in BC

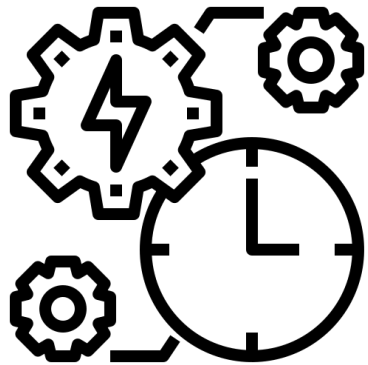
What was done

- Action plan between governments early in the outbreak phase
- Coordination between the multiple levels of government
- Diagnostic kits sent out early to remote areas – expedited process
- Mobilization of additional staff and resources, daily monitoring of patient numbers, infection control measures
- Quick response with treatment

What was learned

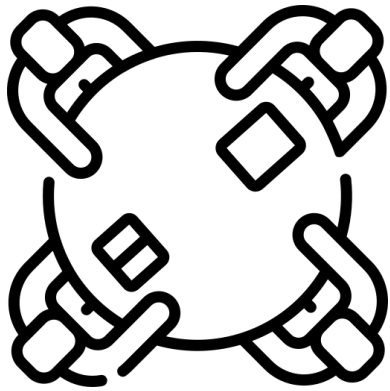
- Need stronger social policies to address determinants of health
- Need immediate measures to address structural barriers to protection
- Need for community-level response plans
- Need community-led surveillance
- Need integration of culture and traditions into pandemic prevention and response

Outbreak preparation and response at the community level



- Learn from history and from community
- Connect with the FNHA Health Protection Nurse Specialist for Pandemic and Communicable Disease Emergencies (CDE)
- Take a short course on epidemic/pandemic planning
- Keep up to date with epidemics in Canada and globally
- Plan to plan!

Outbreak preparation and response at the community level



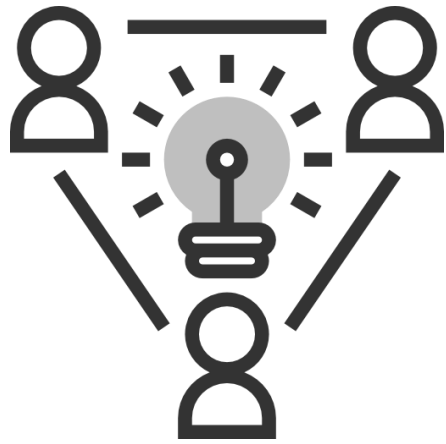
Conduct community engagement

- Greatest asset for detecting outbreaks, helping with containment, preventing spread
- Can support implementation of mitigation efforts

Start by

- Inviting Knowledge Keepers, Elders, youth
- Inviting people who have strong trust-based relationships and can help make sure interventions are collaborative and culturally-safe

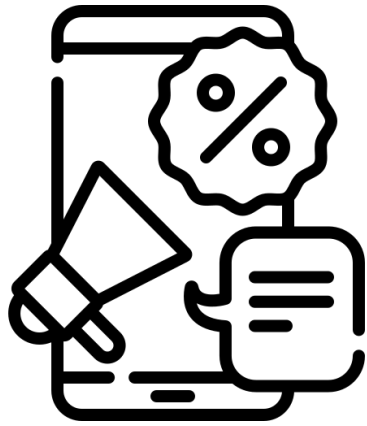
Outbreak preparation and response at the community level



Coordinate responders

- Identify people/groups/organizations that will be part of the responders
- Terms of Reference
- Dedicated physical space to meet
- Identify sources of information for up-to-date information and outbreak surveillance
- Information sharing plan
- Safety & protection plan

Outbreak preparation and response at the community level



Strategize for effective risk communication

- Trust is essential – listen to and understand community concerns
- Be clear about lack of certainty
- Rely on your community advisory group to communicate risk and health protection measures
- Keep messages straight forward

Want to know more?

Free short online public health courses in epidemiology and emergency response

<https://mphprogramslist.com/awesome-free-online-public-health-courses/>

<https://www.coursera.org/lecture/epidemic-pandemic-outbreak/week-1-video-1-what-are-epidemics-pandemics-outbreaks-szvxO>

<https://www.extension.harvard.edu/course-catalog/courses>

Want to know more?

Free toolkits for public health & emergency response

<https://www.who.int/emergencies/diseases/managing-epidemics-interactive.pdf>

<https://hsl.uw.edu/toolkits/public-health/>

Free global health courses

<https://www.fic.nih.gov/Global/Pages/training-resources.aspx>

Information on COVID-19

[http://www.bccdc.ca/health-info/diseases-conditions/coronavirus-\(novel\)](http://www.bccdc.ca/health-info/diseases-conditions/coronavirus-(novel))

Want to know more?

Research on lessons learned from the H1N1 response within First Nations

<http://www.nccah-ccnsa.ca/Publications/Lists/Publications/Attachments/176/NCCAH-FS-InfluenzaPandemic-Part03-Halseth-EN-Web.pdf>

<https://www.rrh.org.au/journal/article/1781>

<https://www.rrh.org.au/journal/article/1290>