



WHO Pandemic Influenza Severity Assessment - Canadian experience

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May 2017



Objectives

- Present Canada's participation in PISA
- Discuss various applications of threshold assessments in routine surveillance data

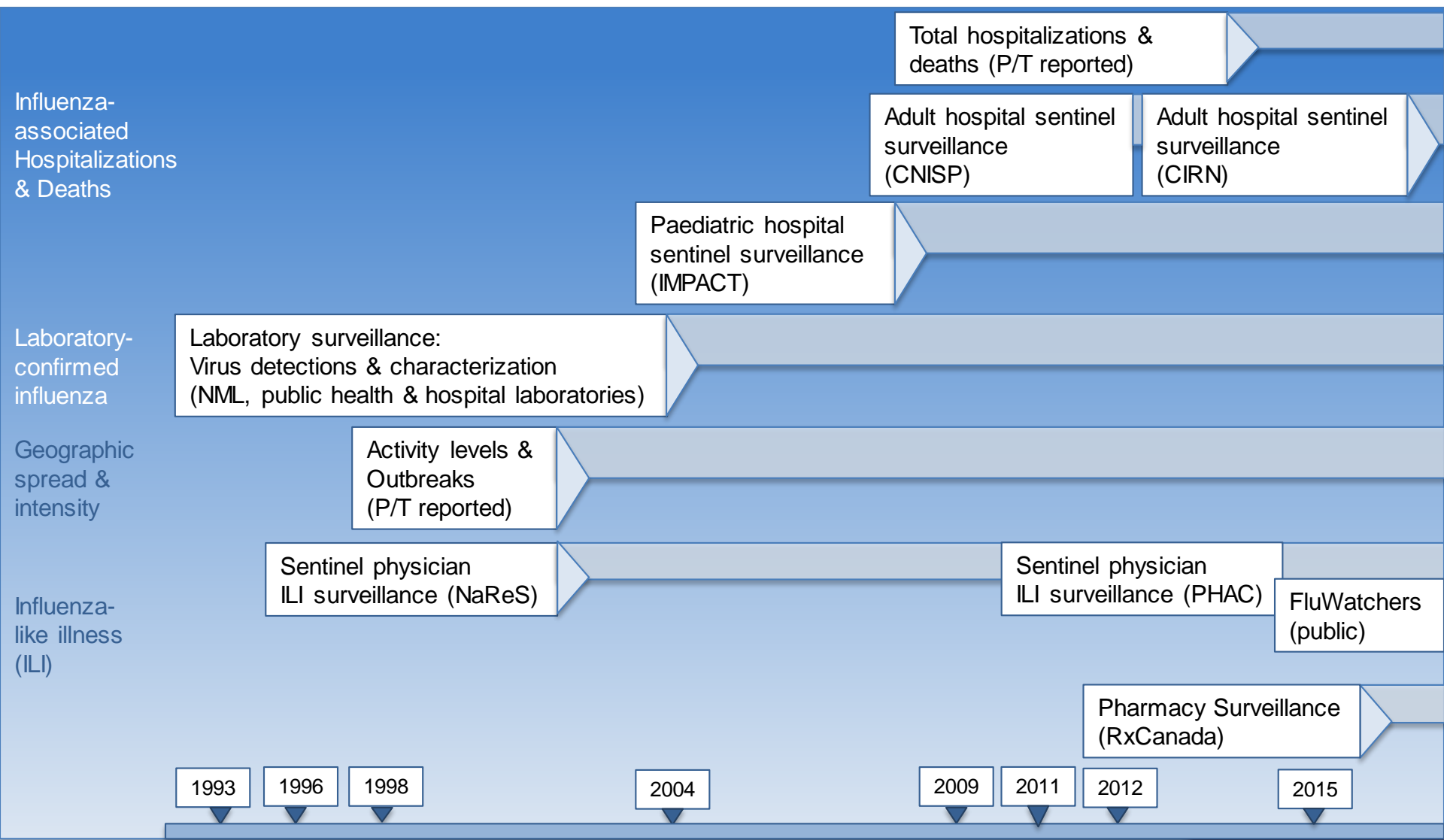
Outline

- Participation in PISA
- Evolution of FluWatch
- Current PISA indicators
- Methodology
- Assessment – transmission
- Assessment – seriousness of disease
- Methodology: MEM
- FluWatch Objectives
- PISA & other thresholds
- PISA 2015-16
- Next steps & Canadian advice

FluWatch participation in PISA

- Canada has participated in the PISA project and pilot data collection since 2014.
- Criteria for indicator selection:
 - Indicative of influenza activity (laboratory-confirmed)
 - From a reliable and stable system
 - Timely
 - Historical data available
 - Denominators available where possible for rates/proportions

Evolution of FluWatch



Current indicators for Canada

1. Transmission:
 - Number of laboratory specimens positive for influenza (Respiratory Virus Detections Surveillance);
 - Percentage of primary care visits for ILI (Sentinel Physician ILI Reporting)
2. Seriousness of disease:
 - Number of pediatric hospitalizations (IMPACT)
3. Impact: (none)

Methodology

For Canada, we have used a previous WHO method with thresholds based on confidence intervals (CI) around the (aligned) mean peak seasonal value.

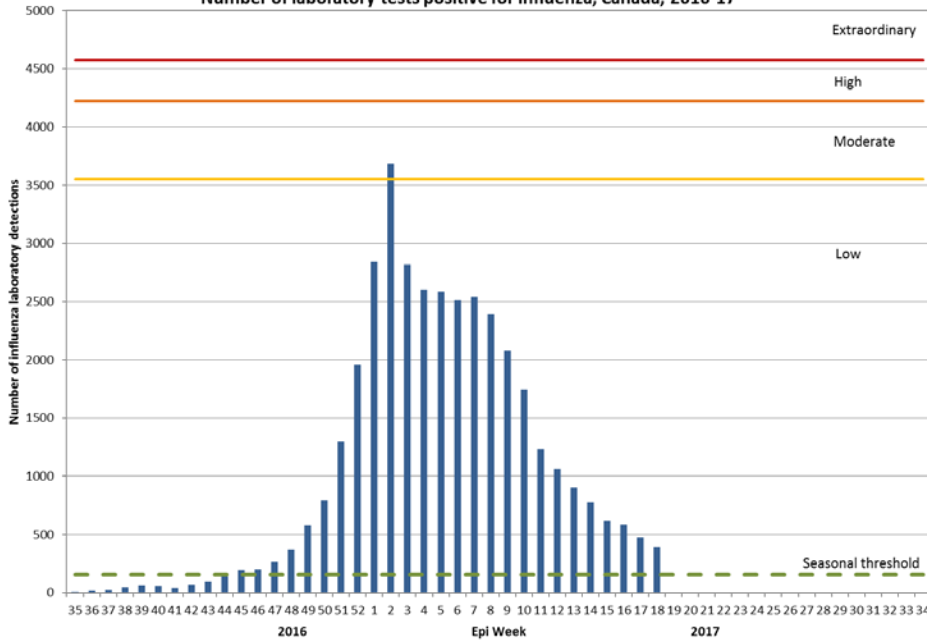
- Seasonal baseline: median seasonal value
- Low: baseline to 40% CI
- Medium: 40 to 90% CI
- High: 90 to 97.5% CI
- Extraordinary: over the 97.5% CI

WHO currently recommends using the Moving Epidemic Method (MEM).

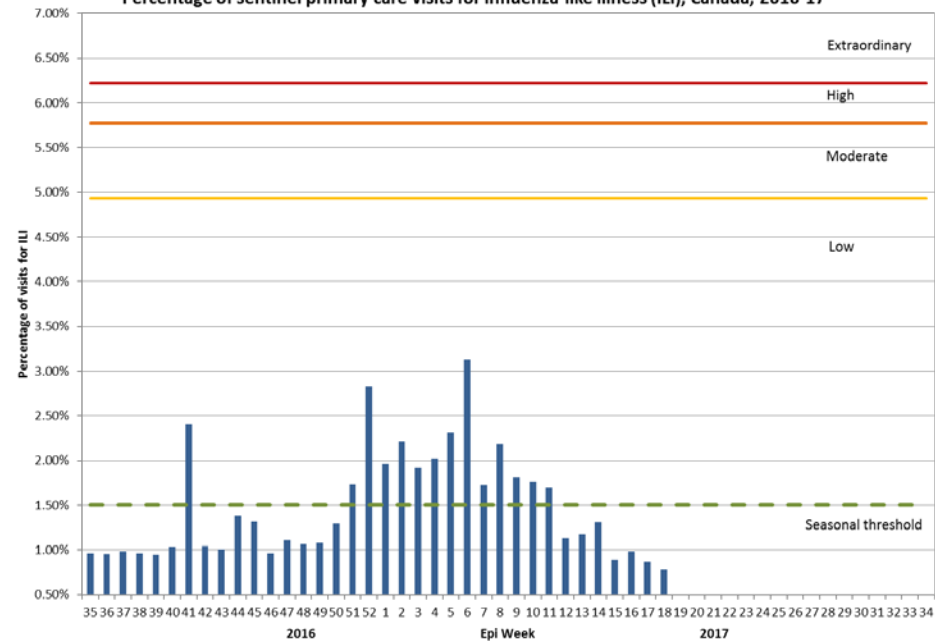
The current Canadian method assesses the 'level' of the season in the peak week only.

Assessments - transmission

Number of laboratory tests positive for influenza, Canada, 2016-17

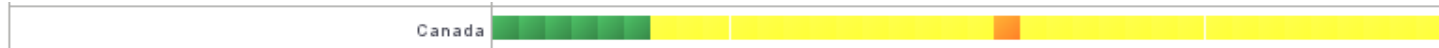


Percentage of sentinel primary care visits for influenza-like illness (ILI), Canada, 2016-17



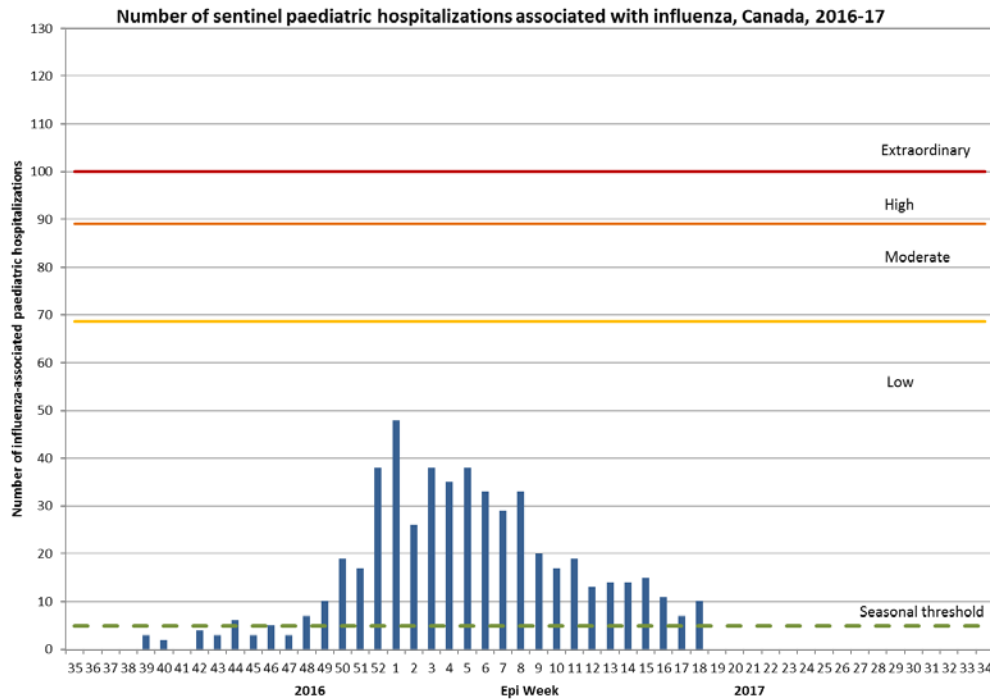
Pandemic Influenza Severity Assessment (PISA) Chart

Indicator **Transmission** | Period From **2016-35** | To **2017-18** | FLU Region **Global**



- No data or no information
- No activity or below seasonal threshold
- Low transmission
- Moderate transmission
- High transmission
- Extra-ordinary transmission

Assessments – seriousness of disease



Pandemic Influenza Severity Assessment (PISA) Chart

Indicator: | Period From: | To: | FLU Region:



No data or no information	Moderate clinical
No activity or below seasonal threshold	High clinical
Low clinical	Extra-ordinary clinical

Methodology: MEM

WHO currently recommends using the Moving Epidemic Method (MEM).

- Developed for use with ILI or ARI surveillance.
- Encompasses a broader range of seasonal peak values.
- Favours specificity in identification of an influenza epidemic.

FluWatch Objectives

FLUWATCH 2.0

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To Detect

Identify signals for timely identification of, and coordinated assessment and response to, epidemics & other events of urgent public health concern

To Inform

Contribute to the evidence base necessary for planning, development and implementation of health programs & healthy public policies

To Enable

A robust surveillance infrastructure to enable the timely and relevant response and research necessary to mitigate the impacts of viral respiratory pathogens

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Assess influenza activity, including signals for start, progression, and end of seasonal epidemics

Disseminate information to providers, public health partners and public in a timely manner

Ensure flexibility and scalability needed for national pandemic response

Assess patterns of intensity in transmission and severity by person, place and time, including risk factors

Provide evidence to support the implementation of public health interventions and the evaluation of their impact

Maintain a collaborative and integrated national surveillance infrastructure

Detect and describe unusual respiratory events and/or novel viruses

Assess the impact and burden of influenza epidemics

Engage research networks to guide timely and targeted research projects

Characterize circulating viruses, including antigenic and genetic changes

Provide information that the WHO can use to make its recommendations for influenza vaccine composition

Develop and standardize surveillance processes to ensure consistency and comparability across surveillance partners

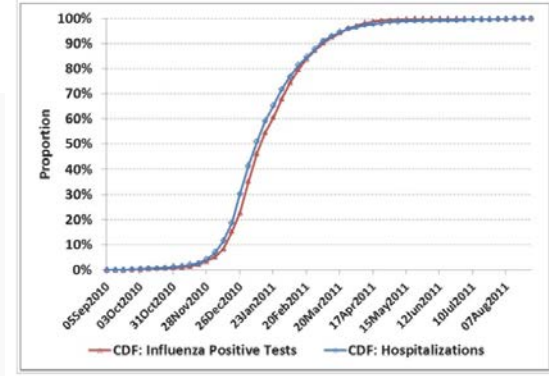
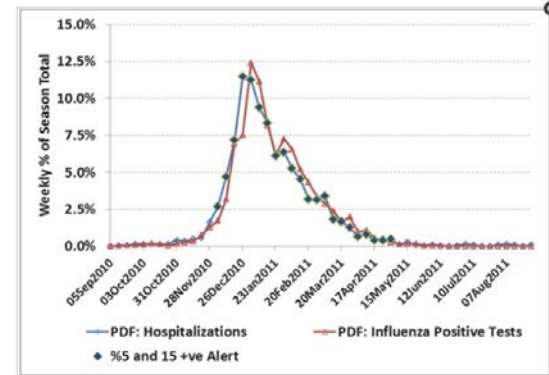
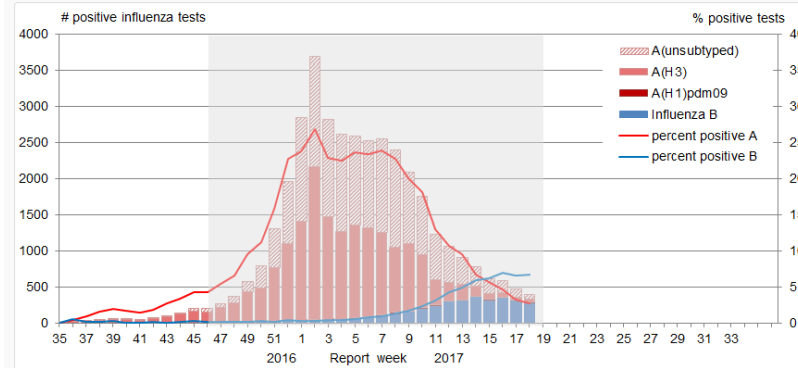
PISA & other thresholds

- Season start prediction
- Season end declaration
- Describing the epidemic period
- Forecasting peak activity and/or timing

RESEARCH ARTICLE
Leading Indicators and the Evaluation of the Performance of Alerts for Influenza Epidemics

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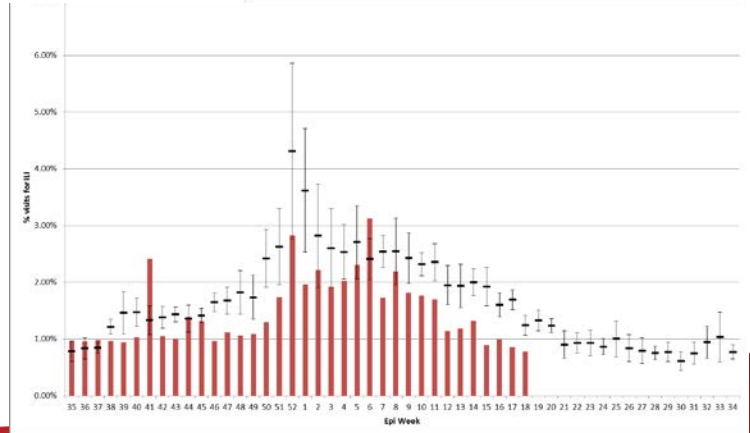
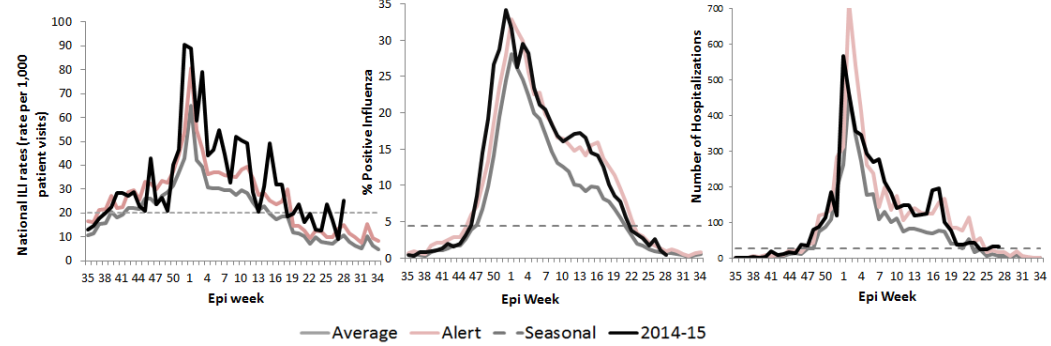
* These authors contributed equally to this work.



a) Weekly number of influenza positive tests and influenza admissions to hospital for the Ontario, 2010/11 season. b) Corresponding cumulative distribution functions (CDF).
 ● 2016-2017 — Mean 2010/11 to 2015/16

2014-15 Indicators against the Calculated Thresholds

Fig 1: ILI (rate per 1,000 patient visits) Fig 2: % Positive Lab Specimens Fig 3: Number of Hospitalizations



PISA 2015-16



Extraordinary level triggered by high numbers of paediatric hospitalizations

Exploratory analysis revealed it to be a true surveillance signal, validated by other systems.

Corroborated by some other countries (although not reflected in PISA levels)



Next steps & Canadian advice

For Canada

- Application & comparison of MEM for Canada
- Assess denominators for current indicators
- Evaluate additional indicators to include in PISA assessment
- Explore capacity for age-specific thresholds
- Establish complementary threshold measures for other national purposes

PISA globally

- Provides a meaningful global interpretation of national indicators
- A common understanding and clear communications are important
- Needs stable historical data (which can be maintained during a pandemic)