

From (**Nothing**) to an integrated Public Health
Information System (**iPHIS**) and the pan-Canadian
Electronic Public Health Surveillance (**EPHS**) system

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Robert Pless
Knowledge, Information and Data Systems Division
Office of Public Health Practice
Public Health Practice and Regional Operations Branch

 Public Health
Agency of Canada

Agence de santé
publique du Canada

Canada 

The federal government has
collected national infectious
disease data since 1924

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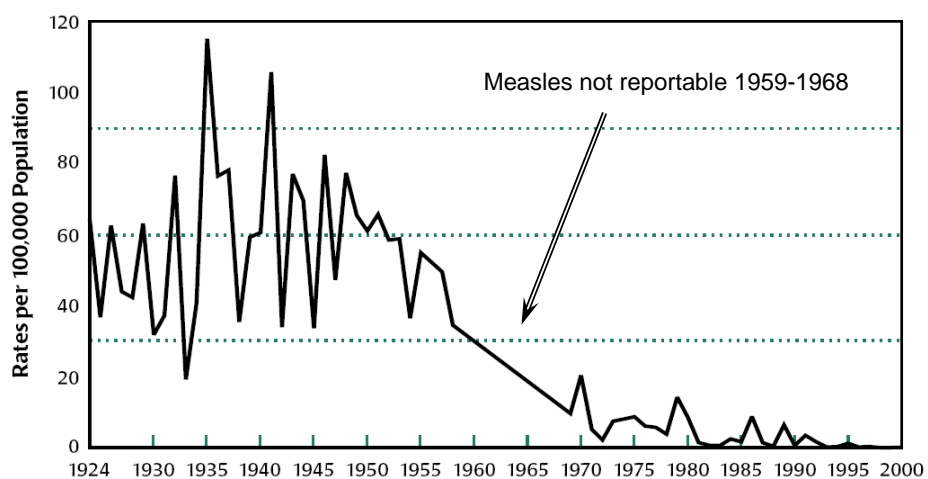
Cette présentation a été effectuée le 26 octobre 2006, au cours du Symposium "Nouvelles technologies de l'information en santé publique : implications sur le terrain" dans le cadre des Journées annuelles de santé publique (JASP) 2006. L'ensemble des présentations est disponible sur le site Web des JASP, à l'adresse <http://www.inspq.qc.ca/jasp>.

Issues

1. **No specific legislation** that requires national communicable disease reporting
2. There is **no coordinated surveillance** to enable the timely, accurate exchange of information ..for action by the public health community." (FPT Surveillance Integration Design Team, 1998)
3. ...each jurisdiction carries out surveillance using different methodologies, different software and different standards and definitions with varying human resource capacity.

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Measles – Reported Cases, Canada, 1924-2000



Source: Canadian Immunization Guide, 2002

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Notifiable Disease reporting

#cases/year	2002		2003	
	Province	Federal	Province	Federal
Chlamydia	7613 (7614)	7662	8050	8092
Cryptosp.	127 (130)	127	161	161
Hep C	4625 (4552)	4648	3574	3570
Hib	7	7	10	10
HIV	442	441	436	436
Measles	5 (3)	3	1	1
M. Mening.	32	31	29	26
Pertussis	642 (645)	640	960	891
E.Coli	140	142	123	123

() = corrected numbers in 2003 annual report

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Report of the Auditor General-1999

Raised concerns about health surveillance activities:

- Health **surveillance systems within Canada are not well-integrated with service delivery** data input processes
- **Business processes** and rules for health surveillance tracking and alerts **need to be defined further**
- **Standardization needs to be incorporated** into public health data and surveillance processes).
- **Data quality is inconsistent** – some surveillance data is missing, or data are not specific enough for surveillance. Methods in which the data is collected and reported from jurisdictions are inconsistent and untimely from the regions, provinces, and at the national level.
- Consistent processes to develop and implement health **surveillance standards are not in place** (i.e. privacy and security; tracking and alert business rules not developed/ standardized; access; linkages to other systems).

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Response:

→HC-PHAC/PTs

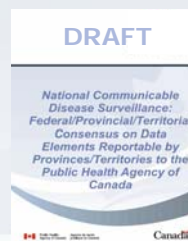
1. The **Canadian Integrated Public Health Surveillance (CIPHS)** Program

- Collaborative development of tools
- Pan-Canadian development of iPHIS
 - Public Health Surveillance as a by-product of case management



2. **Standards development**

- Data elements for surveillance
- Data standards for immunization registries



Evolving tools



iPHIS

integrated Public health Information System

Modules that support the delivery of PH services

The screenshot shows the iPHIS Applications Page with a navigation menu on the left and a list of modules in the main content area. The navigation menu includes: Demographics, General, Administration, System Admin, CD, TB, STD, Lab, Mass, Public Health, Outbreak, Reports, and Logoff. The main content area lists the following modules:

- Communicable disease case management
- Immunization registry
- TB and STI/HIV management and clinic support
- Clinic management (schedules, referrals)
- Outbreak management
- Laboratory requisitions and results (link to labs)
- Newborn assessment & early childhood development
- Dental
- Audiology/Vision screening referrals
- Mass services: LTC and School

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The screenshot shows the iPHIS Applications Page with a navigation menu on the left and text in the main content area. The navigation menu includes: Demographics, General, Administration, System Admin, CD, TB, STD, Lab, Mass, Public Health, Outbreak, Reports, and Logoff. The main content area contains the following information:

PHAC: License to P/T jurisdictions at no cost

- Product development, technical support
- Pan-Canadian enhancements
- Contract support for P/T enhancements

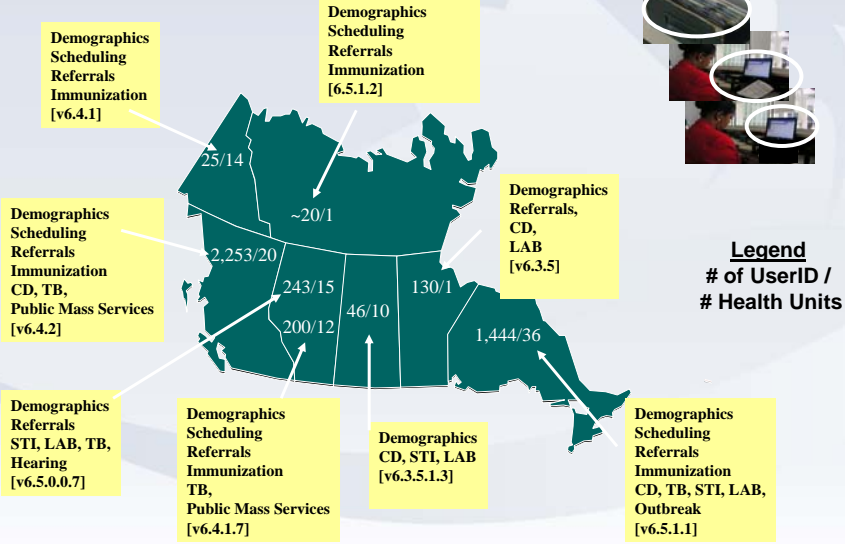
P/T: Implementation and front line support

- Hardware, software, configuration, training...

Joint: Product Advisory Group

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iPHIS deployment: 7 P/T, mixed use



Evolving standards and systems

REPORT OF A VACCINE-ASSOCIATED ADVERSE EVENT

Canadian Immunization Guide

CCDR

Functional Standards and Minimum (Core) Data Sets for a National Immunization Registry Network and Vaccine Associated Adverse Events Surveillance System

Guidelines for Childhood Immunization Practices

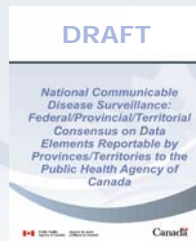
Canadian Immunization Practice Advisory Committee (CIPIAC) and Advisory Committee on Immunization (ACI)

Guidelines for Childhood Immunization Practices

Some of the established national goals and targets have been achieved and good progress is being made towards the others, but much effort is still needed to reach them all.

- Population-based estimates of immunization coverage for children in Canada show some for concern. Coverage varies by dose, by province, territory and age group, with the lowest coverage for groups that appear to have the greatest need for immunization.
- There are several opportunities for improvement in Canada, resulting in greater equity and coverage. In 2007 and 2008, respectively, 27% and 22% of children in the 18-month to 4-year age group were not immunized against measles, mumps and rubella (MMR) vaccine. In 2007 and 2008, respectively, 27% and 22% of children in the 18-month to 4-year age group were not immunized against tetanus, diphtheria and pertussis (Tdap) vaccine.

Standards for data elements: Core/minimum reportable + Definitions



Centre for Surveillance Coordination / Le Centre de coordination de la surveillance	
Attribute:	Age
Entity: Person	Description: The age of the client at the time of the Health Related Event.
Attributes: Age Estimated Age Indicator Date of Birth Name First Name Middle Name Last P/T Unique Identifier	Rationale: The age of the client at the time of the Health Related Event is important for identifying exposure groups in outbreak situations and for evaluating trends within specific diseases. Federally, there is a need to collect data on age to the level of precision of "day," particularly when recording events among infants or young children. This can be especially important for vaccine preventable diseases. Age is also important for evaluating vaccination status compliance in reported cases.
Code Table: Sex Code	Content Standards:
Linkages: To Episode To Residential Address	Business Rules: When the DOB is known, the algorithm for calculation of age (age years, age months and age days) developed by Health Canada will calculate: Age equals DOB minus (the first available date starting with onset date, clinical diagnosis date, specimen collection date, laboratory test result date, and date reported to public health authority.) Age will be calculated to months for children less than 5 years of age and to years for all older individuals. When the DOB is unknown (i.e. estimated), the Estimated Age Indicator is used to indicate whether the age provided is based on the DOB or is estimated from other information. DOB can be accepted at the federal level if the submitting jurisdiction does not convert age to the years-months format.
	Edit Rules:
	Data Source: Local Data Type: Numeric Data Size: 3 Data Set: Core - Local, Provincial/Territorial, Federal

Integration of tools and standards still lacking...

PREVIOUS SEVERE SYSTEMIC REACTIONS
 PRIOR SYSTEMIC ALLERGIC REACTION TO IMMUNOGLOBULINS
 HISTORY ANAPHYLACTIC REACTION TO INGESTION OF EGGS
 HYPERSENSITIVITY TO THIMEROSOL
 COAGULATION DISORDER
 EVOLVING NEUROLOGICAL DISORDER
 ALLERGY TO STREPTOMYCIN, NEOMYCIN OR POLYMYXIN B
 HISTORY OF FEBRILE CONVULSIONS
 INFANT UNDER 6 MONTHS OF AGE
 HOUSEHOLD CONTACT IMMUNOCOMPROMISED
 HOUSEHOLD CONTACT SUSCEPTIBLE AND NOT IMMUNIZED
 UNIMMUNIZED CAREGIVERS
 CLIENT HAS IMPAIRED IMMUNE SYSTEM
 CLIENT ON IMMUNOSUPPRESSIVE MEDICATION
 CLIENT HAS ACUTE FEBRILE ILLNESS OR ACUTE INFECTION
 JUV.RHEUM.ARTH.SEROPOS FOR RUB.ANTIBOD./SERONEG-NO REMISSION
 PREGNANT, LIVE VACCINE CONTRAINDICATED
 PREGNANT AND NOT AT IMMEDIATE RISK
 <4 WEEKS SINCE LAST LIVE VACCINE OR <8 WEEKS SINCE TB TEST
 GAMMA GLOBULIN OR BLOOD TRANSFUSIONS IN THE PAST 3 MONTHS
 KNOWN ALLERGY TO ANIMAL PROTEIN (BOVINE SERUM)
 MAJOR LOCAL REACTION TO PREVIOUS DOSE
 IMMUNIZATION NOT GIVEN ON RECOMMENDATION OF PHYSICIAN
 EMERGENCY HEALTH CARE SETTING REQUIRED
 ACUTE HYPERSENSITIVITY TESTING REQUIRED
 ANTIBODY LEVELS NEEDED
 HAS PROTECTIVE ANTIBODY/ANTITOXIN LEVELS
 HYPERSENSITIVITY TO ALUMINUM PHOSPHATE
 -99 ASSIGNED BY CENTRAL NURSING OFFICE



and then there was SARS...

Surveillance/Data Gathering and Dissemination (12B.5)

- facilitate the longer-term development of a comprehensive and national public health surveillance system...
- arrive at **business process agreements for collaborative surveillance**
- **focus on the needs of public health infostructure and investments to enhance disease surveillance, and link public health and clinical information systems**



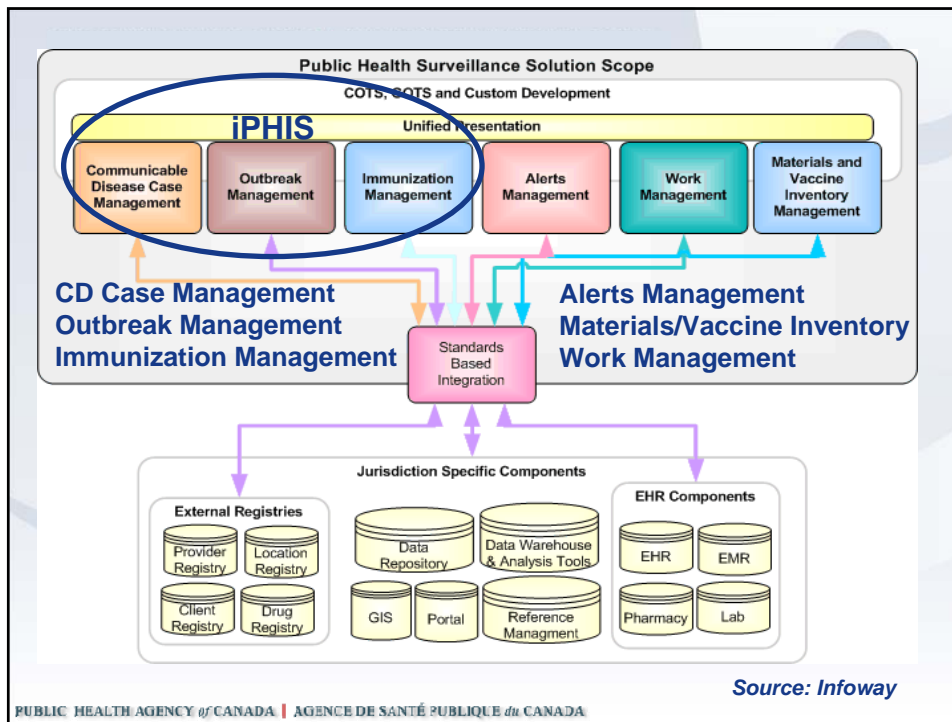
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Response: →Canada Health Infoway

Federal Budget 2004:

- "\$100 million [to] be invested in Canada Health Infoway to assess, develop and implement a high-quality, real-time public health surveillance system to assist in the timely identification of infectious disease outbreaks such as SARS."
- Principles:
 - Pan-Canadian approach
 - Consistent with EHR architecture
 - Responsive to PH needs / Jurisdictionally customizable
 - Integrated with existing applications
 - Based on COTS, enriched with GOTS, leverage iPHIS

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Evolution of “EPHS”

Initial response

- iPHIS / CIOSC (alerts)
- Standards

Current response

- Infoway PHS Program launch
- pan-Canadian Steering Committee
 - Architecture/Requirements Definition
 - Joint solution RFP and vendor selection
 - Solution Definition and Use Case Appendix
- Infoway pan-Canadian Standards Group for PHS
- Detailed design phase/Detailed Design Use Cases
- Development and Reference Implementation release

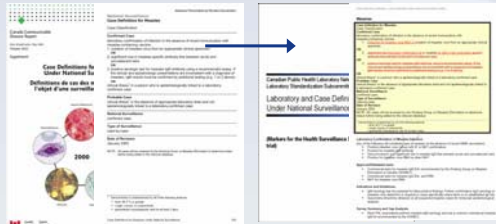
Challenges for public health practice and surveillance in Canada

- National issues
 - Standards to agree on and apply
 - Front line public health provider engagement and skills development
 - Data sharing agreements
- Provincial/Territorial needs
 - Decisions on component implementation
 - What and when, costs, training
 - Migration and transition issues
- PHAC perspective
 - Surveillance data from Infoway solution
 - Migration support to iPHIS installations
 - “Retirement” of iPHIS

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Surveillance landscape?

NND list + Case Defn + Other

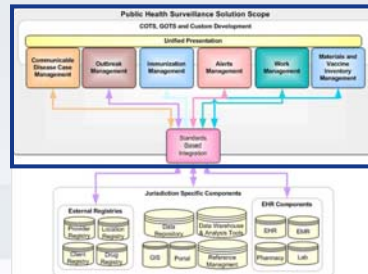


Standards



Data sharing Agreements...

Infoway EPHS Solution



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