

EMERGENCY DEPARTMENT INJURY SURVEILLANCE: PROCESS AND OVERVIEW

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Data

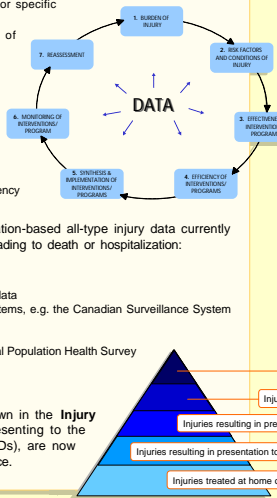
Data are central to the Injury Prevention and Evaluation Cycle (IPEC) needed to examine each one of the following seven steps:

- Determine the Burden of Injury
 - estimate the magnitude of the injury problem in each region and in BC as a whole
 - document the distribution and spread of injuries
 - determine injury trends over regions and over time
 - detect outbreaks of specific injuries
- Identify high risk groups for specific injuries
- Evaluate effectiveness of prevention programs
- Evaluate efficiency of prevention programs
- Facilitate planning and resource allocation for injury prevention initiatives
- Monitor prevention programs on an ongoing basis
- Ultimately reduce the frequency and severity of injuries

The main sources of population-based all-type injury data currently available focus on injuries leading to death or hospitalization:

- Mortality data
- Hospitalization data
- Health-care administration data
- Specialized surveillance systems, e.g. the Canadian Surveillance System for Water-related Fatalities
- Police data
- Survey data, e.g. the National Population Health Survey (NPHS)
- Farm Related Injuries
- Other sources

Data from the next step down in the **Injury Pyramid**, those injuries presenting to the Emergency Departments (EDs), are now the target of injury surveillance.



Why ED Surveillance?

- Information available in mortality and hospitalization databases is limited
- EDs capture injuries of a fairly high severity
- EDs capture more injuries than either mortality or hospitalization databases
- EDs are often primary care providers and the entry point into the medical system
- EDs collect detailed information concerning a wide variety of injuries

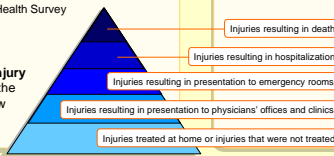
The premise of the proposed surveillance system is a two tiered design. The first tier is EDISS, used to identify trends and patterns of injury from routine data collection. The second tier will be to use these trends and patterns to inform targeted and detailed data collection to further elucidate risk factors and conditions of specific injury types.

The specific objectives of EDISS are to:

- Reduce the effort needed to determine injury status of the population
- Improve injury prevention programming in the community by identifying priorities for action
- Provide the information base necessary for evaluating the impact new laws, regulations and prevention programs may have on injury rates
- Coordinate injury prevention efforts through shared information with different agencies and stakeholders
- Reduce the cost of injuries

Important considerations for the implementation and sustainability of this system:

- Data must be useful
- System must be simple and acceptable to the staff of emergency departments
- Data must be accessible in an electronic format
- Database must have the capacity to link with health care databases
- Dissemination strategies must meet community users needs
- Confidentiality: UBC Ethics approval, BC Privacy Impact Assessment



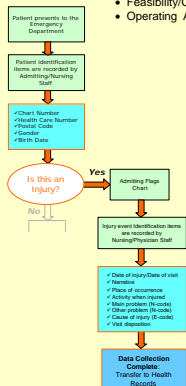
Process

1. Recruitment of Health Regions and Hospitals

- Commitment attained through meetings with:
 - Regional Health Boards
 - CEOs of Hospitals
 - MHO
 - Chiefs of ED
 - Nurse Managers
 - Admitting Managers & Staff
 - Health Records Managers & Staff
 - Injury Prevention Professionals
- Feasibility/Cost issues
- Operating Agreement

2. Needs Assessment

- Site visit: Walk-through ED to determine processes of data charting
- Data Assessment Form
- Resources: Hardware, ambulatory software, installation and customization by ambulatory software providers
- Labour: Health records staff, IS support



3. Training

- Presentation of project to admitting, nursing and health records staff
- Data coding workshop with health records staff
- Training Manual

What is an injury?

An injury is a bodily lesion at organic level resulting from acute exposure to energy (this energy can be mechanical, thermal, electrical, chemical, or radiant) interacting with the body in amounts or rates that exceed the threshold of physiological tolerance. In some cases an injury results from an insufficiency of any of the vital elements (in drowning, strangulation, or freezing). The time between exposure and the appearance of the injury needs to be short (a few minutes).

A case is included if:

- The reason for the attendance to the emergency department is any injury.

A case is not included if:

- The reason for the attendance to the ED is symptoms of acute illness or disease; e.g. pain with no evidence of acute injury, chronic alcoholism or drug abuse, chronic back pain, anxiety or chronic depression, cough or fever attributed to a cold or other viral infection, epilepsy, heart attack.
- The reason for the attendance to the ED is a medical check-up or follow-up treatment: e.g. plaster/cast control, suture removal.

Difficult cases:

iatrogenic injury

- Attendance due to the effects of medical treatment should be included, e.g. Adverse effect to a medication, poisoning due to error in dose, effects of surgery

Delayed presentation

- Cases otherwise satisfying the case definition should not be excluded simply because the patient has not 'first presented' until some time after the injury occurred. e.g. A welder presents with a long-standing eye irritation. On investigation, this was due to a fragment of metal in his eye. He had not been treated for this before.

Where We Are Now: 2-Year Plan

There are presently four regions working in partnership with BCIRPU: NorthWest Health Services Society, Thompson Health Region, South Fraser Health Region and the East Kootenay Health Services Society. Within these regions, 10 hospitals are now committed to the implementation of EDISS, with more on the way.

There is a proposed collaboration between BCIRPU and Health Canada, the National Health Surveillance Infrastructure (NHSI). The NHSI is intended to establish the framework for national and international surveillance of diseases and other potential risks or threats to health, and provide Canadian public health and health care networks with the capacity to deal with them on a timely basis.



Year 1

- Pilot data collection of all injuries seen in the emergency departments of a small sample of hospitals. This includes setting up computer systems to allow abstracting of charts by health records technicians, with electronic data coding.
- Data collection compatible with CIHI (NACRS).
- Training, data cleaning, analyzing, interpreting and returning data to regions so that data can then be disseminated to community partners.
- Standardized reporting methods will be developed with BCIRPU to allow easy review and assessment of data.

Year 2

- Further work with data from initial 10 hospitals to develop and support prevention programs in communities.
- Recruitment of Health Regions and planning for data collection in other hospitals to be implemented in subsequent years.
- Assess portability across Canada

4. Charting & Coding

- Implementation of minimum data set that is compatible with CIHI National Ambulatory Care Reporting System (NACRS)
- Monitoring of completion rates, missing data

Minimum Data Set

Patient Information

- Chart number (Scrambled)
- Health care number (Scrambled)
 - Scrambled Unique Identifier
 - Protects patient privacy
 - Based on chart number and health care number
 - Allows for linkage with other databases for future research
- Postal code
- Gender
- Birth date

Injury Event Information

- Date of visit
- Main problem (N-code)
- Other problem (N-code)
 - Identifies dominant and secondary conditions that require treatment
 - Essential to identify the nature of injury that leads to the ED visit
 - Indication of severity of injury
- External cause (E-code)
 - Description of the principal cause of injury
- Place of occurrence
 - Describes the specific location where the injury happened
 - Enables agencies and organizations to assess injuries occurring within their sphere of responsibility or influence
- Narrative description of injury event
 - Includes a concise text description of the injury producing event
 - Used to identify cases for study
 - Provides more detail about the injury event than E-codes
 - Specifies substances involved in poisonings, toxic exposures, adverse drug reactions
 - Specifies presence or absence of safety devices
- Activity when injured
 - Indicates the type of activity the person was involved in when injured
 - Identifies cases of injury which fall within the area of responsibility of particular sectors, organizations and agencies
- Visit Disposition

Case Scenario

Narrative:

- "Child playing in schoolyard during recess, falls off of playground equipment hitting head"

External Cause:

- E-code E884.0: Fall from playground equipment

Main Problem

- N-code 854.1: Intra-cranial wound

Other Problem:

- N-code 873.4: Open wound of face, without mention of complication

Place of Occurrence:

- 3: School, Other Educational Institution

Activity when injured:

- 1: Leisure

Sustainability

- Building on existing experience and infrastructure
- Providing start-up resources and training
- Committing to a limited data set
- Fulfilling community needs
- Informing planning and implementation of prevention programs

5. Abstracting and Transfer of Data

- Electronic abstraction of Minimal Data Set in a format compatible with the BCIRPU database (e.g. Access)
- Regular transfer of data from hospital to BCIRPU (e.g. every 3 months)

6. Data quality

- Systematic crosscheck of a sample of abstracts against original charts
- Log of problems encountered by health care professionals involved in EDISS

7. Analysis and Interpretation

Statistical summaries and descriptive analysis of injury data by:

- Hospital
- Region
- Province

Production of Reports containing:

- Injury status of the region
- Priorities for action: age groups and injury types
- Changes in injury rates over time
- Comparison of injury profiles between regions

Dissemination

- Direct Mail Out
- Web-site
- Teleconferences
- Presentation at professional conferences and to Community Health Nurses
- Top 10 Fact Sheets



8. Evaluation

Surveillance System Evaluation:

- Simplicity
- Flexibility
- Acceptability
- Sensitivity
- Predictive Value Positive
- Representativeness
- Timeliness
- Process evaluation: Is the data being collected in the appropriate manner?
- Outcome evaluation: Is the data being used to identify priorities for injury prevention and the evaluation of prevention programs?