

Injury Data Online Tool – Methods and Case Definitions



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Injury Hospitalization iDOT Tool

Injury Hospitalization Case Definition

The following is the criteria which was used to identify the injury hospitalization cases. The case definition is based on the case ascertainment collectively developed by the BC Injury Surveillance Methodology Working Group.

1. Only acute cases are included. Day surgery and rehab cases are excluded.
2. A diagnosis of injury is not always provided in a discharge abstract when an external cause of injury is recorded. Moreover, an external cause of injury code is not always provided when a diagnosis of injury code is coded in the discharge abstract record. Both an external cause of injury ICD-10 code along with a diagnosis of injury code ICD-10 code (S & T codes) were present in the discharge record before the record was included in case ascertainment.
3. A diagnosis type is used to differentiate “significant” conditions that have an effect on the care provided, the patient’s length of stay and resources used during a patient’s hospital stay, from those that do not influence hospitalization. Secondary diagnosis (type 3) was excluded from case ascertainment. All significant diagnosis types - most responsible diagnosis (type M), proxy most responsible diagnosis (type 6), pre-admission comorbid conditions (type 1), post-admission comorbid conditions (type 2) and service transfer diagnoses (types W, X and Y) – were included in case ascertainment.
4. Complications due to medical and surgical care are considered an external cause of injury (ICD-10 codes: Y40-Y84). However, trauma registries and surveillance of injuries for public health purposes generally exclude these events. Complications due to medical and surgical care were excluded from case ascertainment.
5. Sequelae are used to indicate late effects of injuries, which are themselves classified elsewhere. The "sequelae" include those specified as such, or as late effects, and those present one year or more after the acute injury. Hospitalizations involving injury exclude sequelae. It does not represent current injury, and the information is not captured that well.
6. A record can contain multiple external cause of injury ICD10-CA codes. Each hospital discharge rather than each listed external cause of injury will be counted and reported. The first listed external cause of injury ICD-10-CA code will be selected to represent the external cause of the injury-related hospitalization. The first listed code is the most appropriate to describe the cause of injury.
7. Some patients may incur multiple transfers to hospitals based on the treatments required, other patients may also be transferred to various trauma centres based on their injuries. If examined without regard for the episode, a patient with a series of hospitalizations (an initial hospitalization, a nested hospitalization, a transfer hospitalization, and a readmission hospitalization) would be identified as having 4 hospitalizations when they had one hospitalization episode spanning multiple facilities. Transfers and/or episode of care will be taken into account when looking at injury hospitalizations. It will consider:

- Admission to an acute care institution occurs less than 7 hours after discharge from another acute care institution, regardless of whether either institution codes the transfer; or
- Admission to an acute care institution occurs between 7 and 12 hours after discharge from another acute care institution and at least one of the institutions codes the transfer.

Injury Emergency Department (Lower Mainland) iDOT Tool

Injury Emergency Department Visits Case Definition

The following are the criteria that was used to identify the injury ED visit cases captured in the injury ED visit iDOT tool.

1. Includes ED visits for injuries, identified by diagnosis codes S00–T89 in any of the three diagnosis columns.
2. Includes ED visits from hospitals in the Lower Mainland, including Fraser Health, Vancouver Coastal Health, and PHSA, covering both BC residents and non-BC residents. Hospitals in Interior Health, Northern Health, and Island Health are excluded due to low reporting compliance in NACRS.
3. The analysis does not account for episodes of care, meaning each ED visit is counted separately, regardless of whether multiple visits are from the same patient in the same day.
4. The injury diagnosis codes provide detailed information on:
 - a. Affected body region (e.g., head, spine, extremities)
 - b. Nature of the injury (e.g., fracture, laceration)
5. Each record can contain multiple affected body regions and injury natures. Each occurrence is recorded separately, so when requesting a breakdown by injury nature or body region, each is counted in the total ED visit count.
6. Excludes adverse effects (T78) and complications due to certain early complications of trauma or medical and surgical care (T79 – T88) are excluded in injury case ascertainment.
7. In the absence of external cause codes (V01–Y98) in NACRS, we use ICD-10-CA injury diagnosis codes (S00–T89) to infer the mechanisms of injury, labelled as “Type of Injury” on the iDOT tool. The codes provide the following information:
 - a. Type of injury (e.g., poisoning, burns)
 - b. Subtype of Injury (e.g., alcohol poisoning, narcotic poisoning)
8. A record can contain multiple injury mechanisms contributing to an ED visit. To determine the main injury mechanism for an ED visit, the first listed ICD-10-CA injury diagnosis code will be used.

iDOT NACRS (Lower Mainland) Including Hospitals

Hospital
02 Fraser Health
109 Royal Columbian Hospital
115 Langley Memorial Hospital
116 Surrey Memorial Hospital
130 Burnaby Hospital
131 Peace Arch District Hospital
134 Delta Hospital
136 Eagle Ridge Hospital and Health Care Centre
601 Chilliwack General Hospital
602 Mission Memorial Hospital
604 Ridge Meadows Hospital and Health Care Centre
606 Fraser Canyon Hospital
609 Abbotsford Regional Hospital and Cancer Centre
03 Vancouver Coastal Health
101 Vancouver General Hospital
102 St. Paul's Hospital
106 Mount Saint Joseph Hospital
112 Lions Gate Hospital
121 Richmond Hospital
123 UBC Health Sciences Centre
06 PHSA
105 B.C. Children's Hospital

CHIRPP BCCH ED iDOT Tool

What is CHIRPP?

Funded by the Public Health Agency of Canada, the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) was established in 1990 in order to supplement injury surveillance in Canada. The CHIRPP program is an emergency department based injury and poisoning surveillance system which currently operates in 11 hospitals (and one children's outpatient clinic within a general hospital) and 9 general hospitals in Canada. Since its inception, more than 3.2 million records have been collected nationally; more than 80% of these records concern children and youth 19 years of age and younger.

The CHIRPP is a unique, richly detailed database of "pre-event" injury information that ask the questions:

- What was the injured person doing when the injury happened?
- What went wrong?
- Where did the injury occur?

For a better understanding of how CHIRPP track injuries, see Appendix A for CHIRPP's life cycle infographic.

How does the CHIRPP work at BC Children's Hospital?

- When a child (between the ages of 0-17 years) presents to the emergency department (ED), the registration clerk asks the patient the reason for their visit. If the reason for their visit is related to an injury, a CHIRPP form is given to them (Appendix B).
- Patients/caregivers are instructed to complete the first page of the form and put it in the designated boxes at nursing stations once it is filled out.
 - Questions on the form concern the circumstances surrounding the injury. Few examples are: what the person was doing at the time, what actually caused the injury, the factors that contributed to the injury, the nature of injury, injured body part, the time and place where the injury occurred, safety equipment used, and treatment received.
- The CHIRPP team collects the forms from the ED.
- Using BCCH Cerner system (Hospital's information system), a report called "ED Activity Log" is generated for the specific day. This report lists all the ED visits for the day.
- The CHIRPP team will go through all the visits in the ED Activity Log, line by line, and highlight the injury related cases.
- Highlighted cases are matched with the available completed forms for that day.
- The forms are verified and completed by reviewing patient's health record via CST/CERNER. Additional detail is documented on the events preceding the injury as well as completing the missing information on the form.

- A CHIRPP form is created by the CHIRPP team for the highlighted cases that didn't have a form completed by the patient. Both sides of the form is completed by reviewing patient's health record via CST/CERNER .
- These comprehensive steps have enabled us to achieve a 100% capture rate of injury related ED visits at BC Children's hospital.
- After CHIRPP forms are completed, they are entered into the Canadian Network for Public Health Intelligence (CNPHI) by the CHIRPP team.
- The information on the forms are later coded on more than 40 variables by trained coders and organized into defined categories for the injury Data Online Tool (iDOT).

Appendix A: CHIRPP lifecycle infographic

Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP)

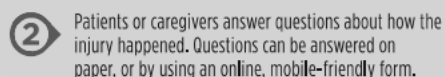
A system to track injuries and poisonings in emergency departments



Injury information is collected right at the hospital.

Injuries cause many deaths and hospital visits in Canada.

We can predict and prevent most injuries. CHIRPP plays an important role in helping to reduce the number and severity of injuries in Canada.



Hospital staff remove any information that could identify a patient. They then enter information about the injury and treatment into the secure, online eCHIRPP database.



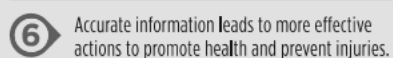
Injury data are analyzed and displayed in graphs and tables.



This near real-time information allows for early detection of new hazards and emerging issues.



Information is shared, then used for evidence-based public health action.



Information in eCHIRPP gives the solid evidence we need to understand how and why injuries happen, and how to prevent them.

For more information about CHIRPP visit:
www.canada.ca/en/public-health/services/injury-prevention/canadian-hospital-injury-reporting-prevention-program.html

Appendix B: CHIRPP form

Public Health Agency of Canada Agence de la santé publique du Canada													
British Columbia's Children's Hospital (CHIRPP)													
C.H.I.R.P.P. Injury/Poisonings Reporting Form													
FOR OFFICE USE ONLY	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">ID No.</td> <td style="width: 85%;"> </td> </tr> <tr> <td>Sex</td> <td> ☐ Male ☐ Female </td> </tr> </table>	ID No.		Sex	☐ Male ☐ Female								
ID No.													
Sex	☐ Male ☐ Female												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> 1 A. When did the injury happen? D D M M M Y Y Y Y H H M M ☐ a.m. ☐ p.m. </td> <td style="width: 50%; vertical-align: top;"> 1 B. What time of day did it happen? ☐ a.m. ☐ p.m. </td> </tr> </table>		1 A. When did the injury happen? D D M M M Y Y Y Y H H M M ☐ a.m. ☐ p.m.	1 B. What time of day did it happen? ☐ a.m. ☐ p.m.										
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2. Where did the injury happen? ☐ Outdoors ☐ Indoors ALSO CHECK EITHER A, B, C, D, E, OR F AND GIVE MORE DETAIL													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"> ☐ A. Own home </td> <td style="width: 70%;"> ☐ Kitchen ☐ Bathroom ☐ Bedroom ☐ Living Room </td> </tr> <tr> <td> ☐ B. Other home </td> <td> ☐ Other (eg. yard, garage) → </td> </tr> <tr> <td> ☐ C. School → </td> <td> ☐ Playground ☐ Sports field ☐ Gym ☐ Classroom ☐ Other (eg. Library) → </td> </tr> <tr> <td> ☐ D. Park → </td> <td> ☐ Playground ☐ Sports field ☐ Other → </td> </tr> <tr> <td> ☐ E. Road → </td> <td> ☐ Sidewalk ☐ Bike path ☐ Bus stop ☐ Other (eg. ditch) → </td> </tr> <tr> <td> ☐ F. Other Location (eg. Arena) → </td> <td> </td> </tr> </table>		☐ A. Own home	☐ Kitchen ☐ Bathroom ☐ Bedroom ☐ Living Room	☐ B. Other home	☐ Other (eg. yard, garage) →	☐ C. School →	☐ Playground ☐ Sports field ☐ Gym ☐ Classroom ☐ Other (eg. Library) →	☐ D. Park →	☐ Playground ☐ Sports field ☐ Other →	☐ E. Road →	☐ Sidewalk ☐ Bike path ☐ Bus stop ☐ Other (eg. ditch) →	☐ F. Other Location (eg. Arena) →	
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☐ F. Other Location (eg. Arena) →													
3. Was the person injured while working for pay? ☐ Yes ☐ No													
4. What was the injured person doing when the injury happened? ALSO CHECK EITHER A, B, OR C AND GIVE MORE DETAIL													
☐ A. Participating in a sport? (eg: ice hockey/soccer) or physical activity (eg: skateboarding, tobogganing) What sport or activity? →													
Did this activity or sport include coaches, instructors or officials? → ☐ Yes ☐ No													
☐ B. In or on a motorized vehicle: ☐ Car ☐ Van/SUV ☐ Truck ☐ Motorcycle ☐ Dirt bike ☐ ATV ☐ Snowmobile ☐ Other													
Where was the patient seated? (ex: driver or passenger seat, in truck bed, or pulled behind vehicle) specify passenger row (passenger, back). →													
☐ C. Other (eg: playing, eating, hobbies, cleaning, etc.) →													
5. Please tell us what happened.													
A. What went wrong? (eg: riding bike lost control and fell / spilled hot coffee / swallowed a magnet or medication)	B. What actually caused the injury? (eg: hit head on concrete or grass / hot coffee burned arm / choked or poisoned)												
6. Was any safety equipment in use when the injury occurred?													
☐ Yes (check all that apply) ☐ No ☐ Unknown													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> ☐ Helmet ☐ Sports Padding (eg: gloves, shin pads) ☐ Life Jacket ☐ Other Safety Equipment - specify (eg: floormats, post covers) → </td> <td style="width: 33%;"> ☐ Hard Hat ☐ Protective boots or clothing ☐ Protective eye wear or face mask </td> <td style="width: 33%;"> ☐ Seat Belt ☐ Inflated Air Bag ☐ Infant Car Seat/Child Booster Seat ☐ Mouthguard ☐ Baby gate </td> </tr> </table>		☐ Helmet ☐ Sports Padding (eg: gloves, shin pads) ☐ Life Jacket ☐ Other Safety Equipment - specify (eg: floormats, post covers) →	☐ Hard Hat ☐ Protective boots or clothing ☐ Protective eye wear or face mask	☐ Seat Belt ☐ Inflated Air Bag ☐ Infant Car Seat/Child Booster Seat ☐ Mouthguard ☐ Baby gate									
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SOMETIMES WE NEED TO CONTACT PATIENTS (OR THEIR GUARDIANS) FOR MORE INFORMATION ABOUT AN INJURY.													
May we contact you if we need additional information? ☐ Yes, you may contact me if needed ☐ No, I do not wish to be contacted													



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British Columbia's Children's Hospital (CHIRPP)

TO BE COMPLETED BY HOSPITAL STAFF • Complete only for first attendance for this injury, at this hospital • Please check that the front of the form is complete.		ER VISIT DATE: DOMMYYYY		Front of form completed by: ☐ Patient ☐ Coordinator ☐ Both	
1 NATURE OF INJURY Select up to 3 codes Most severe 1. Second 2. Third 3. 10NI Superficial, INCL bruises, abrasions 11NI Open wound, INCL minor cuts, lacerations 12NI Fracture, INCL spine 13NI Dislocation, INCL subluxation, spine 14NI Sprain or strain, INCL upper and lower back 15NI Injury to nerve, INCL spinal cord 16NI Injury to blood vessel, INCL hemorrhage 17NI Injury to muscle or tendon, INCL sever, rupture 18NI Crushing injury 19NI Traumatic amputation, INCL partial amputation 20NI Burn or corrosion, EXCL eye injury, internal caustic burn 21NI Frostbite 22NI Bite (with or without envenomation) 23NI Electrical injury (may or may not require a body part) 24NI Eye injury (globe only), INCL burn or corrosion (+135BP) 25NI Dental injury, INCL fractured tooth (+135BP) 26NI Injury to internal organ, INCL inner ear 27NI Soft tissue injury, NFS 31NI Foreign body in external eye (+135BP) 32NI Foreign body in ear canal (+135BP) 33NI Foreign body in nose (+135BP) 34NI Foreign body in respiratory tract 35NI Foreign body in alimentary tract 36NI Foreign body in genito-urinary tract 37NI Foreign body in soft tissue, INCL splinter 41NI Minor head injury (+135BP) 42NI Concussion (+135BP) 43NI Intracranial injury (+135BP) 50NI Poisoning or toxic effect (+900BP) 51NI Drowning or immersion (+900BP) 52NI Asphyxia or other threat to breathing (+900BP) 53NI Systemic overexertion, heat/cold stress (+900BP) 60NI Multiple injuries of more than one nature (+700BP) 70NI No injury detected (+800BP) 75NI Pulled elbow (+430BP) 99NI Nature of injury not specified 76NI Internal caustic burn 77NI Penetrating wound, INCL bullet wound		2 BODY PART(S) Write the body part code for each of the injuries in NATURE OF INJURY at left. Select up to 3 codes Most severe 1. Second 2. Third 3. BP01-Head and Neck 110BP Head, INCL scalp, skull 120BP Face, INCL bones, eyelid/periorcular area, ear, nose, ext. mouth/jaw 130BP Internal mouth 135BP Spec head injury, other head injury spec by NOI 140BP Neck, EXCL spine/spinal cord/discs/nerves/vertebrae 141BP Internal organs/struc of neck, INCL upper esophagus/trachea BP02-Spine and/or Spinal Cord INCL IV Discs and Spinal Nerves 210BP Cervical spine 220BP Thoracic spine 230BP Lumbar spine 240BP Sacrum and Coccyx 250BP Spine, NFS BP03-Trunk 310BP Thorax, INCL ribs, heart, lungs, armpits, lower esophagus/trachea 315BP Upper back, EXCL scapula 321BP Abdomen, INCL all abdominal organs 322BP Lower back 323BP Pelvis, INCL contents, bladder, buttocks, rectum, int. genitalia 324BP Perineum and anogenital area, external genitalia, scrotum 325BP Groin 330BP Back, NFS BP04-Shoulder and Arm 410BP Shoulder, INCL scapula 415BP Clavicle 420BP Upper arm, INCL humerus 430BP Elbow 440BP Forearm, INCL radius, ulna 450BP Wrist, INCL carpal bones 460BP Hand, INCL metacarpals 470BP Finger or thumb BP05-Hip and Leg 510BP Hip, INCL neck of femur 520BP Thigh, INCL femur other than neck 530BP Knee, INCL patella 540BP Lower leg, INCL tibia, fibula 550BP Ankle, INCL tarsal bones 560BP Foot, INCL metatarsals 570BP Toe BP99-Other/Unspecified Injuries 700BP Multiple injuries of more than one body part 900BP Body part not required, INCL systemic injury 999BP Unspecified body part			
N.B. For multiple system trauma (serious injuries of more than 3 types and body parts) use 60 + 700 Is substance use by the patient or another person a factor in this injury? ☐ Yes (specify) ☐ No ☐ Suspected ☐ Illicit Drugs ☐ Medication ☐ Alcohol ☐ Other Provide detail: 		4 PATIENT DISPOSITION Select one code 100T Left without being seen by physician 200T Advice only, diagnostic testing, referred to GP (no treatment in ED) 300T Treated in ED with follow-up PRN 400T Observation in ED, follow-up PRN 500T Observation in ED, follow-up required 600T Treated in ED, follow-up required, referred to other hosp or specialist clinic for injury/poisoning treatment 700T Admitted to this or another hospital primarily for injury/poisoning treatment 800T Admitted primarily for reason other than injury/poisoning treatment 900T DOA or died in ED			
3 INTENT Select one code 10IN 11IN 12IN 13IN 14IN 15IN 16IN 19IN					
5 EVENT ID 1. 2. 3. 4.					



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