Evidence into Action: An Overview of Injury Data and Evidence Informed Practice Recommendations for Eastern Ontario

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Parachute

Ontario Injury Prevention Resource Centre
Introductions

❖ Ontario Regional Injury Data Report - ORIDR
❖ Jayne Morrish - Research Coordinator
❖ Stacie Carey - Health Promotion Coordinator - Data & Knowledge Exchange
Goals

1. Understand the data in the report and be able to locate it when needed.

2. Understand how to compare data across regions

3. Learn about new tools available to disseminate the information in the ORIDR
Outline

❖ History & Purpose of ORIDR
❖ Layout of ORIDR
❖ Methodology
❖ Data trends for Eastern Ontario
❖ Comparisons and social determinants
❖ Evidence-Informed Practice Recommendations
History Behind ORIDR

❖ Ontario Injury Data Report released in 2012 - OIDR
❖ Requests for regional information
❖ Evidence-Informed Practice Recommendations (EIPs)
❖ Six unique regional reports
Purpose of ORIDR

❖ Provide **counts (#)** and **rates (per 100,000)** of injury related
  ‣ **ER visits, hospitalizations and deaths**
  ‣ Broken down by **cause** and **age-group**
  ‣ Separate report for each region

❖ Better understanding of causes of injuries
  ‣ Aid in reducing injuries
Purpose of ORIDR Cont’d

❖ Connect with one another
  ‣ Share knowledge, promote effective strategies, talk same language

❖ EIPs
  ‣ Provide initial evidence for health practitioners
Layout of ORIDR

❖ 6 Reports - 1 report for each region
  ▶ Summary section
  ▶ Section of data tables
    - All tables have the same format
  ▶ EIPs for top injury issues
❖ All available from the OIPRC’s website
  ▶ www.oninjuryresources.ca
Ontario Regional Injury Data Report summary

Introduction

The Ontario Injury Prevention Resource Centre and Parachute are pleased to present the Ontario Regional Injury Data Report.

Injury is the leading cause of death for Canadians 1 to 64 years of age and is the second leading cause of potential years of life lost before the age of 70.1 There are also major financial implications of injury in our society. According to the Economic Burden of Injury in Canada report released by SMARTRISK in 2009, injuries cost the Ontario economy $6.8 billion. In addition, there were more than 18,000 deaths in Ontario between the years 2001-2005 due to injury, causing these losses to impact both personal and public loss. This loss of life is tragic and unnecessary. It is commonly held that more than 90% of injuries are preventable.

Injuries have been described as the "invisible epidemics" or as the "neglected diseases", as they occur in great numbers and there is a widespread misconception in society that they are accidents which are a part of everyday life. Accidents have been defined as unavoidable acts of fate. But injuries, even unintentional injuries, are not accidents; research shows that injuries are causally related to specific events and risk factors (e.g., gender, social-economic status, age, risk-taking behaviour) and thus, they are predictable and preventable.

Injury can be defined as the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. The time between exposure to the energy and the appearance of an injury is short. Forms of energy that cause injuries include: thermal energy (e.g., scalds or burns); mechanical energy (e.g., collision, falls or gashes); electrical energy (e.g., electrical shock); chemical energy (e.g., poisons); or the absence of heat or oxygen (e.g., hypothermia or suffocation). External causes of injuries can be classified as intentional (self-harm or assault) or unintentional (motor vehicle collisions, falls, drowning and poisoning when there is no intent to harm). This report includes both intentional and unintentional injury counts and rates. Evidence has indicated that both categories of injury have their own unique risk factors and are receptive to interventions.

The Ontario Injury Data Report

In March of 2012, SMARTRISK (now part of Parachute) released the Ontario Injury Data Report. This report presented the counts and rates of injury-related emergency department visits, hospitalizations and deaths by cause of injury in Ontario as a whole as well as separately for each region.

Evidence Informed Practice Recommendations

This section of the Ontario Regional Injury Data Report provides data on a single provincial region. Consult the Summary section for information on the methodology used to generate these reported data, as well as guidance on interpretation and publication details. Sections for other regions can be accessed at www.ontarioinjuryreport.on.ca.

For tables with injury counts where less than 5 the actual count value has been replaced with "<5" and the rate with "." to mitigate issues of residual disclosure.

* Please note that sport related falls are included in both the fall related injuries and sport related injuries categories. Additionally the injury category "drowning or jumping into water" (ICD-10 code W14) has been also been included in both the fall related injuries and sport related injuries categories. Also, playground injuries have been included as an isolated injury as well as in the fall related injuries category. To avoid double counting, the column totals and table totals in tables 1 and 2 reflect including these counts and rates only once. Any discrepancies in these totals are due to this.
Layout of ORIDR Cont’d

❖ Tables have same order as in the OIDR
❖ Information on reading the tables is available via a taped webinar on the OIPRC’s website
❖ EIPs listed in alphabetical order
Summary Section

❖ Tables for each Ontario Region
  ‣ Top five causes of ER visits, hospitalizations and deaths

❖ Methodology
  ‣ Definitions, regional network breakdown, and ICD-10 codes used
  ‣ How to read the tables and EIPs
Summary Section

❖ Expert reviewers
  ▸ Full report, individual EIPs
❖ Data source: IntelliHEALTH Database
❖ 4 Databases used
Data Tables

❖ Tables 1 & 2: All Injuries
❖ Tables 3, 4 & 5: Falls
  ‣ Table 5 shows *location of injury* (i.e., hip)
❖ Tables 6 & 7: On Road MVC’s
❖ Tables 8 & 9: Off Road MVC’s
❖ Tables 10 & 11: Sports & Rec
❖ Tables 12 & 13: Violence
❖ Tables 14 & 15: Suicide & Self-harm
### Table ERIN-1

Top five mechanisms of injury resulting in the largest proportion of injury related emergency room visits, Eastern Ontario Region, fiscal year 2007-2009

<table>
<thead>
<tr>
<th>Cause of Injury</th>
<th>Visits</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls</td>
<td>109,997</td>
<td>1342.5</td>
</tr>
<tr>
<td>Inanimate</td>
<td>100,218</td>
<td>1223.2</td>
</tr>
<tr>
<td>Sports and Recreation</td>
<td>53,087</td>
<td>647.9</td>
</tr>
<tr>
<td>Animate</td>
<td>27,552</td>
<td>336.3</td>
</tr>
<tr>
<td>On Road</td>
<td>17,241</td>
<td>210.4</td>
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</table>
Eastern Hospital Visits

**Table ERIN-2**

Top five mechanisms of injury resulting in the largest proportion of injury related hospitalizations, Eastern Ontario Region, fiscal year 2007-2009

<table>
<thead>
<tr>
<th>Cause of Injury</th>
<th>Hospitalizations</th>
<th>Rate</th>
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<tbody>
<tr>
<td>Falls</td>
<td>10,286</td>
<td>125.5</td>
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<tr>
<td>Self-Harm/Suicide</td>
<td>1,176</td>
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<tr>
<td>On Road</td>
<td>1,115</td>
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<tr>
<td>Inanimate</td>
<td>1,092</td>
<td>13.3</td>
</tr>
<tr>
<td>Sports and Recreation</td>
<td>888</td>
<td>10.8</td>
</tr>
</tbody>
</table>
Eastern Ontario – Deaths

Table ERIN-3

Top five mechanisms of injury resulting in the largest proportion of injury related *deaths*,
Eastern Ontario Region, calendar year 2001-2005

<table>
<thead>
<tr>
<th>Cause of Injury</th>
<th>Deaths</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Harm/Suicide</td>
<td>699</td>
<td>8.5</td>
</tr>
<tr>
<td>Falls</td>
<td>569</td>
<td>6.9</td>
</tr>
<tr>
<td>On Road</td>
<td>447</td>
<td>5.5</td>
</tr>
<tr>
<td>Poisoning</td>
<td>213</td>
<td>2.6</td>
</tr>
<tr>
<td>Suffocation</td>
<td>94</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Data Comparisons

❖ All tables are laid out the exact same way for each region
  ▸ Difference: data is specific to the region
❖ Can now compare across regions with same information
Eastern & Northern

<table>
<thead>
<tr>
<th>Cause</th>
<th>Eastern</th>
<th></th>
<th></th>
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<td></td>
<td>Death</td>
<td>Rates</td>
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<td></td>
</tr>
<tr>
<td>Self-harm/Suicide</td>
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<td>8.5</td>
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<td>Self-harm/Suicide</td>
<td>590</td>
<td>14.5</td>
<td></td>
</tr>
<tr>
<td>Falls</td>
<td>569</td>
<td>6.9</td>
<td></td>
<td>Falls</td>
<td>337</td>
<td>8.3</td>
<td></td>
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<tr>
<td>On-Road</td>
<td>447</td>
<td>5.5</td>
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<td>On-Road</td>
<td>344</td>
<td>8.4</td>
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<tr>
<td>Poisoning</td>
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<td>2.6</td>
<td></td>
<td>Poisoning</td>
<td>174</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>Suffocation</td>
<td>94</td>
<td>1.2</td>
<td></td>
<td>Suffocation</td>
<td>52</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** table created for webinar, not available in the report.
## Eastern & Northern

### Comparison of Death Data between Eastern and Northern - Number and Rates

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>Eastern DEATH</th>
<th>Eastern RATES</th>
<th>CAUSE</th>
<th>Northern DEATH</th>
<th>Northern RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-harm/Suicide</td>
<td>699</td>
<td>8.5</td>
<td>Self-harm/Suicide</td>
<td>590</td>
<td>14.5</td>
</tr>
<tr>
<td>Falls</td>
<td>569</td>
<td>6.9</td>
<td>Falls</td>
<td>337</td>
<td>8.3</td>
</tr>
<tr>
<td>On-Road</td>
<td>447</td>
<td>5.5</td>
<td>On-Road</td>
<td>344</td>
<td>8.4</td>
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<tr>
<td>Poisoning</td>
<td>213</td>
<td>2.6</td>
<td>Poisoning</td>
<td>174</td>
<td>4.3</td>
</tr>
<tr>
<td>Suffocation</td>
<td>94</td>
<td>1.2</td>
<td>Suffocation</td>
<td>52</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**Note:** table created for webinar, not available in the report.
## Eastern & Central West

### Comparison of ER Visits between Eastern and Central West - Number and Rates

<table>
<thead>
<tr>
<th>Cause</th>
<th>Eastern</th>
<th>Central West</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ER Visits</td>
<td>RATES</td>
</tr>
<tr>
<td>Falls</td>
<td>109,997</td>
<td>1342.5</td>
</tr>
<tr>
<td>Inanimate</td>
<td>100,218</td>
<td>1223.2</td>
</tr>
<tr>
<td>Sports &amp; Recreation</td>
<td>53,087</td>
<td>647.9</td>
</tr>
<tr>
<td>Animate</td>
<td>27,552</td>
<td>336.3</td>
</tr>
<tr>
<td>On-Road</td>
<td>17,241</td>
<td>210.4</td>
</tr>
</tbody>
</table>

*Note: table created for webinar, not available in the report*
All Regions - Falls

<table>
<thead>
<tr>
<th>Hospitalized Fall Injuries</th>
<th>Count</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central East</td>
<td>15,811</td>
<td>96.6</td>
</tr>
<tr>
<td>Central West</td>
<td>15,444</td>
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<tr>
<td>Toronto</td>
<td>13,779</td>
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<tr>
<td>South West</td>
<td>10,291</td>
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</tr>
<tr>
<td>Eastern</td>
<td>10,286</td>
<td>125.5</td>
</tr>
<tr>
<td>Northern</td>
<td>6,524</td>
<td>159.7</td>
</tr>
</tbody>
</table>

**Note:** table created for webinar, not available in the report
Comparisons

❖ Always remember:
  ‣ Unique aspects of the region that may play a role
    - Social Determinants
  ‣ Varying top injuries

❖ Easy comparisons
  ‣ Tables have exact same layout across regions
  ‣ Comparing with a common language
  ‣ Easy to isolate and compare trends within injury categories and specific age-groups
Social Determinants of Health and Injury

❖ Income and income distribution – lower income groups have higher injury rates

❖ Employment and working conditions – lower income more likely to be injured at work

❖ Social environments and social exclusion – housing hazards, violence, pedestrian injuries
Social Determinants of Health and Injury

❖ Education and literacy – injuries that are serious but not fatal associated with lower levels of education

❖ Housing – older buildings, rental units, poorly maintained residential areas associated with higher injury rates

❖ Gender – men higher risk overall, women at risk for particular types of injury (e.g., violence), may be linked to difference in wages
Social Determinants of Injury

- Rural vs. urban environments – unique risks associated with both
  - Access to care
  - Polarization of rich and poor

Source: Social Determinants of Injury. Atlantic Collaboration on Injury Prevention
Social Determinants of Injury

- Equity, Social Determinants and Public Health Programmes (WHO, 2010)
  - Focuses on the points at which the causal pathway between social determinants and injury can be targeted and interrupted
    - Examples used are alcohol, housing and neighbourhoods, and road and vehicles
Evidence Informed Practice (EIP) Recommendations

❖ Top injury issues in Eastern region (alphabetical)

› Falls
› On-Road Injuries
› Poisoning
› Sports and Recreation
› Suffocation
› Suicide
Falls

❖ Risk factors by age:

‣ Children – natural curiosity, inexperience

‣ Teenagers and adults – increased maladaptive risk taking, environmental hazards, sports and recreation

‣ Older adults – biological, behavioural, social/economic, and environmental
Falls

❖ Children
  ▸ Home hazards – parent education, window guards, stair guards, furniture placement
  ▸ Playground hazards – CSA standard, active supervision

❖ Teenagers & adults
  ▸ encourage adaptive behaviours and educate on proper activity involvement practices
Falls

- Older adults
  - **Overall**: individual validated assessment of risk (e.g., Scott Fall Risk Screening Tool) and management of those risks
  - **Community strategies**: assessment and modification of home environment, exercise, assistive devices, health management
  - **Residential strategies**: multidisciplinary team, environment modification, individual plans for those at high risk, exercise, assistive devices
On-Road Injuries

❖ Factors influencing exposure to risk
   ‣ Motorization, age, urban planning

❖ Factors influencing involvement in an on-road incident
   ‣ Speed, driver impairment, driver inexperience
On-Road Injuries

❖ Factors influencing on-road incident severity
  ▸ In-car protection, speed, roadside objects

❖ Factors influencing post on-road incident severity and recovery
  ▸ Time and quality of response, vehicle factors
On-Road Injuries

❖ Population level

▷ Road Safety campaigns that include:
  - Communication campaigns, integrated campaigns
  - Supporting activities that relate to the 3 E’s
  - Involve enforcement agencies and legislative changes when appropriate, coupled with education and promotion of environmental changes
On-Road Injuries

❖ Individual level: target high risk behaviours

‣ Distracted driving – e.g., comprehensive strategy
‣ Fatigue – e.g., education
‣ Aggressive driving - strategies reduce speed
‣ Seatbelts
‣ Alcohol and drug use
‣ New drivers – graduated licensing
‣ Children – proper car seats
Poisoning

❖ Risk Factors:

› Children
  - Curiosity and inexperience

› Older adults
  - Multiple medications, drowsiness, cognitive function, caregiver knowledge
Poisoning

❖ Population level strategies
  ▸ 3 E’s of injury prevention
  ▸ Carbon monoxide detectors
  ▸ Poison control centres
  ▸ Home safety education
Poisoning

❖ Children
  ▪ Safe storage of medication and household products
    - Child-resistant caps, locked up, out of sight and out of reach, original containers,
    - active supervision

❖ Older Adults
  ▪ Safe practices when taking medication
Sports and Recreation

❖ Risk Factors:

➢ Intrinsic
  - Previous injury, fitness level, balance training

➢ Extrinsic
  - Protective equipment, rules, coach, culture, length of time
Sports and Recreation

❖ Children and Youth
  ‣ Organized sport
  ‣ Physical training, protective equipment, rule changes

❖ Adults
  ‣ Exercise
  ‣ Slow and gradual, equipment, knowledge

❖ Older Adults
  ‣ Health considerations
Sports and Recreation

❖ Concussions
  ▸ Pre-activity assessments using validated assessment tools for diagnosis
  ▸ Careful monitoring of symptoms
  ▸ Return to play guidelines
Suffocation

❖ Risk Factors

❖ Children

- Food items (e.g., hot dogs, peanuts, grapes, popcorn)
- Products (e.g., magnets, balloons, plastic bags)
- Sleep environment (loose blankets, pillows, sleep positions)
Suffocation

Prevention in Children:
- Creating safe sleep environments
- Safe food preparation
- Choking hazards out of reach
- Remove all hanging window cords, coverings or drawstrings
Suicide

❖ Self-harm vs. suicide
  ‣ Self-harm – intentional self-poisoning or self-injury, irrespective of type of motive or the extent of suicidal intent (Hawton et al., 2012)

❖ Data collection issues
  ‣ Hospitals collect data in terms of emergency room visits, hospitalizations and deaths
  ‣ ICD 10 codes often related to self-harm
  ‣ Data does not distinguish between self-harm and suicide as it does not account for suicidal intent
Suicide

- **Risk factors:**
  - Mental illness, previous suicide attempt
  - Male
  - Age – increases in adolescence and elderly

- Complex and multifaceted issue
  - No single risk factor or combination
Suicide

❖ Prevention

› **Individual level**: treatment of mental illness, support for previous suicide attempters,

› **Community level**: access to lethal means, gatekeeper training (safeTALK, ASIST, community helpers), education and awareness
Suicide

❖ **School-based programming**
  - Based on best available evidence and evaluated carefully
  - Program resources: NREPP (USA)

❖ **Postvention**
  - Linked to primary prevention
  - Procedures directing actions following a suicide
Contact Information

Jayne Morrish - jmorrish@parachutecanada.org
647-776-5110

Stacie Carey- scarey@parachutecanada.org
647-776-5130
Methodology Cont’d

❖ Population estimate data - “Pop Est Summary PHU County Munic” database

❖ Calendar year population data used

$$\frac{\text{total number of ER visits / hospitalizations / deaths in an age group over the reported period}}{\text{total population in that age group over the reported period}} \times 100,000$$

❖ Age-Specific Annual Rate per 100,000 for calendar year

❖ How many people per 100,000 were injured
Methodology Cont’d

- ICD10 Codes used - full list available in summary document
- Quality assurance - robust checking process
- Residual disclosure - occurs when previously unknown information about an individual can be deduced based on combination of information sources
  - IntelliHEALTH release guidelines require cell sizes less than 5 should be suppressed
  - In ORIDR any cell counts less than 5, but greater than zero, have been suppressed and replaced with “<5”, associated rates replaced with “/”
### Methodology Cont’d


<table>
<thead>
<tr>
<th>CAUSE</th>
<th>0-4</th>
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<th>25-34</th>
<th>35-44</th>
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<th>60-64</th>
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<td>&lt;5</td>
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<td>109</td>
</tr>
</tbody>
</table>

Number and Age-Specific Rate per 100,000 AGE GROUP

- ATV is highlighted in red.