

An Environmental Scan of Older Adult Fall Prevention Indicators



Acknowledgement

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Ontario Neurotrauma Foundation
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Background

Injuries and deaths caused by falls among older adults remain a significant public health problem in Canada. In 2018, older adults accounted for more than half of all injury related hospitalizations.¹ In addition, the hospitalization rate due to falls is increasing - over the past three years, the rate has increased by 9% (approximately 9,000 older adults), the largest increase for this population.¹ In Ontario, there were over 6,500 older adults ages 65 to 74 hospitalized due to a fall in 2017.² In adults ages 75 and older, this number jumps to over 25,000.²

The Ontario Fall Prevention Collaborative is a large group of professionals from key organizations involved in the planning and implementing of fall prevention interventions in Ontario. The Collaborative, supported by the Ontario Neurotrauma Foundation, provides guidance on the work that needed to establish a system-based approach to fall prevention among older adults in Ontario. The Collaborative is working in two areas to support a consistent provincial-based approach: data and measurement and fall prevention screening and assessment.

There is a knowledge-to-action gap to meaningfully inform decision making on fall prevention in Ontario. The knowledge need is for surveillance and data monitoring across health sectors to understand the true incidence of falls with consistent measuring methods. This data can inform fall prevention programming, both at a provincial and local level. In addition to promoting quality care and quality of life for healthful aging, preventing falls is a critical opportunity for Ontario to improve healthcare and end hallway medicine.

Adapting knowledge to the local context is a necessary step to promote acceptance and adherence of data monitoring and evaluation. Across Ontario, health sectors currently reference a set of injury indicators and data sources for falls in older adults from a variety of sources.

Data and Measurement Working Group

The Ontario Fall Prevention Collaborative – Data and Measurement Working Group's aim is to develop an inventory of indicators (both population level and programmatic) for fall prevention to be used as a reference across the continuum of care. In addition, the group will develop an inventory of existing data sources to populate these indicators. With this resource, practitioners across Ontario can systematically reference a common set of indicators, providing the ability to compare across sectors (e.g., primary care, home and community care, public health) and across program type (e.g., education, awareness, injury reduction). This information can support future program and policy development at a system level as it relates to fall prevention.

Scope and Objectives of Environmental Scan

Primary Objective:

Phase 1

- To develop an inventory of existing indicators and data sources used across health sectors in Ontario (Part A,) as well as nationally and internationally (Part B), for use in informing fall prevention practice and policy.

Secondary Objectives:

Phase 2 & 3

- To develop an inventory of potential indicators and data sources for both population and programmatic level reporting for fall prevention, that can be referenced and used by all health sectors across Ontario.
- To provide methodological resources toward populating fall indicators using the data available.

Method and Approach

Part A

The Ontario Fall Prevention Collaborative and the Association of Public Health Epidemiologists in Ontario (APHEO) provided input on a list of current fall prevention indicators used in practice. That list included the data sources available to each sector. The Collaborative completed this work in Fall 2019.

Part B

Based on the initial stakeholder input from Part A, the Collaborative identified the need to create a list of proximal indicators for fall prevention that more accurately reflect the work and impact of those in fall prevention practice.

A three-step approach was undertaken:

Step 1: Identification of Indicators

An environmental scan identified existing national, provincial and international reports, data sources and other relevant documents that provide types of measures (i.e., indicators) related to the risk factors for falls across the continuum of care.

Audit/screening tools were also included to enhance the understanding of indicators reporting on the availability and implementation of falls risk screening assessments and documentation. A broad, comprehensive perspective is needed in the identification of indicators because of the multifactorial nature of falls and falls risks.⁴ Definitions used to support the environmental scan are included in Appendix A.

Relevant public sources were first searched for indicators and supporting data. Second, a formal search of the literature was completed using a defined search strategy of databases and search terms. Third, a supplementary search was conducted using an exploratory database to search across all library records as well as a Google search using the preferred search terminology. The search protocol is included in Appendix B.

Step 2: Data Extraction of Indicators

The list of identified indicators was summarized in a data extraction table. The extraction table describes the source document, geographic location, year, indicator area, possible indicators, interpretation/benchmark, measurement type, suggested sector, stated data source and indicator selection process, as available. A snapshot summary of indicators was presented to the Data and Measurement Working Group of the Ontario Fall Prevention Collaborative on February 21, 2020, for input and feedback. The Working Group identified additional sources and documents for review and inclusion.

Step 3: Organization of Indicators

Based on the initial findings, the indicators were organized across the continuum of care (i.e., health promotion, primary prevention, secondary prevention and tertiary prevention) and sector (i.e., public health, pre-hospital/community/urgent-care), hospital (emergency, acute), rehabilitation care, home/community-care, long-term care). Subsequent feedback was sought from the Data and Measurement Working group and the Collaborative on March 30, 2020. The specific feedback is included in the analysis reported in the following section.

Findings

A summary of fall prevention indicators used in Ontario, by sector is included in Appendix C (Part A – Fall prevention indicators in use in Ontario)

Collectively, Part A and B of the environmental scan yielded 91 indicators across Ontario, Canada and globally (Appendix C – Indicator Snapshot). The indicators span seven sectors, aging-spectrum and prevention levels. The level of analysis was reported (i.e., regional, provincial, national and global). Where available, the potential data source was identified as well as relevant research reports where the data is used to support analysis or discussion of older adult fall prevention (Appendix C – Sector-specific tab).

An initial reporting of identified audit/screening tools is included as part of the environmental scan (Appendix C – Audit tools tab). Specific indicators identified the availability or implementation of falls risk screening assessments and documentation of prevention and protection plan. The collection and reporting of data from the application of screening assessments/protection plans may be useful as outcome indicators in themselves (thereby increasing the number of available indicators).

Geographic Analysis

Together, regional and provincial sources make up the majority of identified indicators (n=36, 39%). About one-third of the indicators originate from a national data source (n=31, 35%) (Figure 1).

Regional and Provincial data sources included:

- Client Health and Related Information System (CHRIS)
- Health Quality Ontario
- Nursing Quality Indicators for Reporting and Evaluation (NQIRE via RNAO)
- Public Health Ontario
- Rapid Risk Factor Surveillance System (RRFSS)
- Rehabilitative Care System Evaluation Performance Report (Rehabilitative Care Alliance)
- Stay On Your Feet (SOYF)

National (Canadian) data sources included:

- Canadian Agency for Drugs and Technologies in Health (CADTH)
- Canadian Community Health Survey (CCHS)
- Canadian Patient Safety Institute (CPSI)
- Healthy Aging Indicators (Statistics Canada)
- Hospital Morbidity Database via the Canadian Institute of Health Information (CIHI)

Global data sources (US and international) included:

- National Database of Nursing Quality Indicators (NDNQI)
- World Health Organization (WHO)

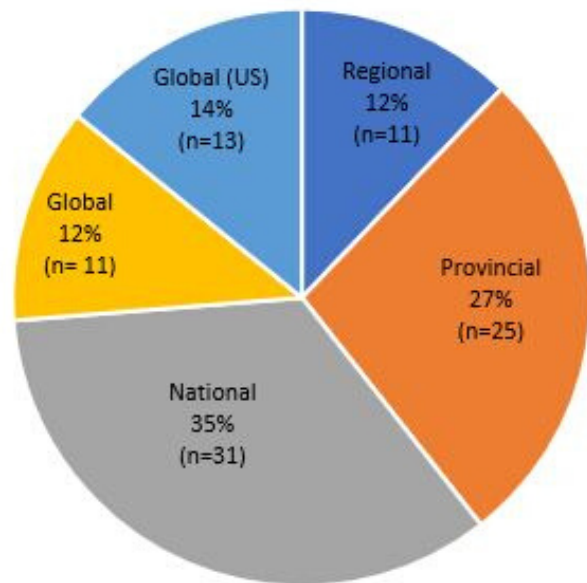


Figure 1. Geographic analysis of indicators

Sector Analysis

Across sectors, one-third of identified indicators are in the acute hospital sector (n=27, 30%).

Long-term care (n=24, 26%) and public health (n=23, 35%) represent the other major sectors (Figure 2).

Primary care is absent in the existing available indicators. Indicators were not explicitly linked with data collection in this sector, possibly due to a lack of data coding related to individual diagnosis or assessment linked with falls in this setting.

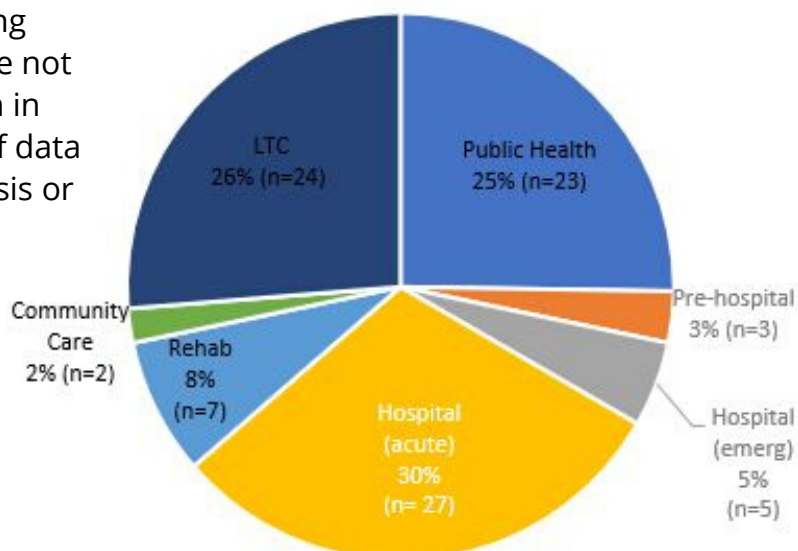


Figure 2. Sector analysis of indicators

Continuum of aging-fall risk analysis

Across the fall prevention risk spectrum, indicators spanned the continuum of care (Figure 3), where:

- **Who is at risk for falls** refers to health promotion/primary prevention indicators where older adults are considered *low or at risk*.
- **Prevent unintentional falls** refers to primary/secondary prevention indicators where older adults are considered at *increased risk*.
- **Reduce fall-related injuries** refers to secondary/tertiary prevention indicators where older adults are considered *vulnerable or frail*.

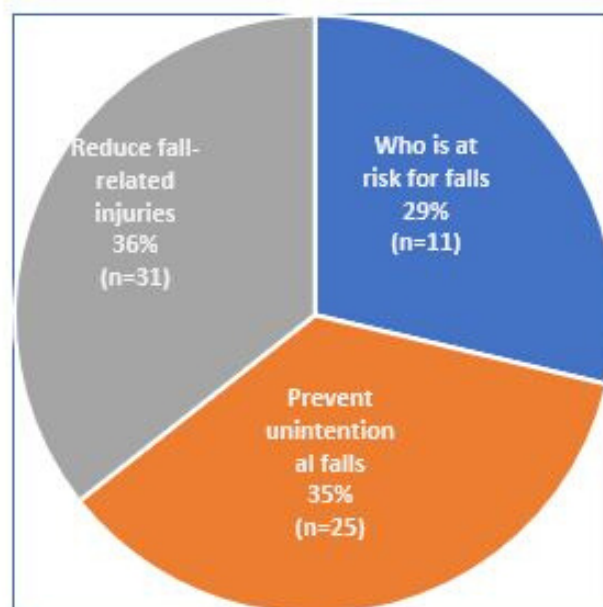


Figure 3. Continuum of aging/falls risk analysis of indicators

Additional Analysis

The Data and Measurement Working Group and the Ontario Fall Prevention Collaborative identified further analysis of the indicators for consideration for subsequent project phases:

- An investment in indicators for Primary Care to identify and describe data for falls specific to this sector. The lack of specific indicators in this area is a critical gap to inform a fulsome picture of fall prevention programming and interventions.
- Given the breadth of indicators, a focused inventory of indicators that are most feasible and relevant to Ontario Health Teams (OHT) is needed to promote buy-in and uptake of data monitoring and evaluation
- Similarly, to serve the purpose of advocating for falls related interventions and programming to reduce the burden on the health care system, a focused inventory of indicators is needed to inform provincial initiatives
- To support comprehensive falls related data collection, further exploration into fall prevention screening and assessment tools is needed to evaluate their usability and feasibility



Limitations

Some limitations may impact the understanding of available indicators. The following non-exhaustive list of considerations are divided according to concerns of over- and under- estimating indicators (**Table 1**).

Table 1. Implications of indicator under- and over-representation

Indicator <i>under</i> -representation	Indicator <i>over</i> -representation
<ul style="list-style-type: none"> • The absence of indicators in specific sectors (e.g., primary care, community/urgent care) does not necessarily suggest there is less opportunity for data collection in these settings. • There may be an overlap of indicators between sectors (e.g., acute care and LTC). With refinement, this may suggest there are fewer indicators within sectors. 	<ul style="list-style-type: none"> • Not all indicators are currently being used in practice. <ul style="list-style-type: none"> ◦ e.g., the indicators from the Canadian Patient Safety Institute and some from the Health Quality Ontario are indicators identified for potential data collection or tools for development for institutional use. • Some indicators may overlap within each sector, based on the provided description. The possible redundancy is an opportunity for further refinement. • Not all indicators would be applicable within the Ontario or Canadian context. <ul style="list-style-type: none"> ◦ e.g., # of lawsuits for falls in a hospital setting is an indicator relevant in the USA.

The **under-representation** of indicators suggests an opportunity for further exploration and indicator development.

The **over-representation** of indicators may provide a false understanding of the actual available indicators. Indicators were grouped accordingly to ensure 'unique' indicators were identified and numbered accordingly. However, there are nuances between indicators that need to be contextualized for their application within an Ontario/Canadian context as well as health care practice setting.

The preliminary analysis (i.e., distribution of indicators across geographic boundaries, sectors and continuum of care) should, therefore, be interpreted conservatively until additional analysis is completed by the Data and Measurement Working Group.

Next Steps

The following intermediate or concurrent steps are offered for consideration to support the next project steps (Phase 2):

1. Validate gaps in the existing inventory of indicators.

To further the preliminary analysis presented, a deeper exploration across levels of prevention and health care sectors is needed. Consider areas that are well-represented and gaps for further exploration/identification of prospective indicators. An analysis should include reviewing indicators within each sector to identify overlap and streamline the number and quality of each indicator.

2. Conduct an assessment for indicator selection.

To move from the 'long-list' of indicators (i.e., n=91) to a 'short-list' of indicators, consider an assessment process for indicator selection. Assessing the indicators can be modelled from indicator selection process criteria and selection pathways that criteria of possibility and feasibility, (face) validity, and importance and relevance. To adapt the knowledge to use in the local context, the emphasis would be on an indicator framework immediately relevant to Ontario Health Teams and to address other provincial initiatives.

3. Populate and pilot the selected indicators.

Based on the available data sources, populate the indicators with the most recent available data. Other considerations for population include the data source, frequency of collection and any methodological notes that may be worthwhile to consider when contextualizing the results. This process would further serve as an opportunity to pilot the indicators against the assessment of feasibility, relevance and importance. This would ultimately assess barriers and facilitators to using the indicators which may be integrated as part of Phase 2 (using the Delphi procedure to achieve consensus among a panel of experts).

4. Inform, promote and support improved data collection.

There is a need to support collection and use of relevant data indicators based on a system approach. Based on the data limitations that may be identified as part of the stated process, this may assist multiple stakeholders across the continuum of care to advocate for robust surveillance systems across all health sectors and levels of intervention. Collaboration may serve to enhance opportunities and synergies to create, test and implement valid and comprehensive measures for falls and fall-related injuries to improve outcomes for the aging population at the provincial level and possibly, to further inform and support data surveillance at the national level.^{4,7,8}

Improved data surveillance will ensure fall prevention efforts are continually evolving based on critical analysis of key indicators and new evidence.⁵ This may also further increase local level data collection and monitoring.

Conclusion

The project's Phase 1 environmental scan identifies the knowledge-to-action gap to meaningfully inform fall prevention strategies and interventions for older adults.

Subsequent project phases will adapt knowledge for the local context in fall prevention in Ontario, while addressing the barriers and facilitators to knowledge use by practitioners across all health care sectors. Ultimately, the monitoring of fall prevention knowledge aims to change practice in Ontario to promote quality of care for older adults and improve overall health care outcomes.

Appendix A

Definitions

Types of measures^{vii}

Outcome measures	Answers whether the team is achieving what it is trying to accomplish and articulates the picture of success. For example, if the team wants to reduce falls it should measure the number of falls.
Process measures	Processes which directly affect the outcome are measured to ensure that all key changes are being implemented to impact the outcome measure. For example, the delivery of timely prophylactic antibiotics to reduce surgical site infection.
Balancing measures	Answer the question whether improvements in one part of the system were made at the expense of other processes in other parts of the system. For example, in a project to reduce the average length of stay for a group of patients, the team should also monitor the percent of readmissions within 30 days for the same group.
Information measures	Collect general details relative to the intervention.

Risk Factors^{viii}

Biological or intrinsic risk factors	Biological or intrinsic risk factors include those pertaining to the human body and are related to the natural aging process, as well as the effects of chronic or acute health conditions (e.g., acute illness; balance and gait deficits; chronic conditions and disabilities, cognitive impairments; low vision; muscle weakness and reduced physical fitness)
Behavioural risk factors	Behavioural risk factors for falling include actions, emotions or choices of the individual (e.g., assistive devices; excessive alcohol; fear of falling; footwear and clothing; history of previous falls; inadequate diet; medications; risk-taking behaviour; vitamin D intake)
Social and economic risk factors	The connection between social determinants and one's health, level of disability, development of chronic conditions, longevity and cognitive function has been well established and is widely accepted (e.g., social networks, socio-economic status)
Environmental risk factors	Environmental risk factors are those factors associated with the physical environment, such as the design of a building, entrances and outdoor spaces, and the type of furniture and other objects in the rooms (e.g., factors in the community; factors in the living environment; weather and climate).

Continuum of care and fall risk^{ix}

Adapted from the Queensland Stay On Your Feet (SOFY) Framework (Figure)



Levels of prevention^x

Primary	<p>Preventing exposure; altering unsafe behaviour</p> <p>Aims to prevent disease or injury before it ever occurs. This is done by preventing exposures to hazards that cause disease or injury, altering unhealthy or unsafe behaviours that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur</p>
Secondary	<p>Reduce impact from falling; prevent injury reoccurrence</p> <p>Aims to reduce the impact of a disease or injury that has already occurred. This is done by detecting and treating disease or injury as soon as possible to halt or slow its progress, encouraging personal strategies to prevent reinjury or recurrence, and implementing programs to return people to their original health and function to prevent long-term problems</p>
Tertiary	<p>Long-term risk; impact of fall</p> <p>Aims to lessen the impact of an ongoing illness or injury that has lasting effects. This is done by helping people manage long-term, often-complex health problems and injuries (e.g. chronic diseases, permanent impairments) in order to improve as much as possible their ability to function, their quality of life and their life expectancy</p>

Appendix B

Search Protocol

i. Public sources reviewed

1. Canadian Patient Safety Institute
2. Canadian Institute for Health Information
3. British Columbia Injury Research and Prevention Unit
4. Centre for Hip Health and Mobility
5. Centre for Excellence on Mobility, Fall Prevention and Injury in Aging
6. Canadian Agency for Drugs and Technologies in Health
7. Canadian Fall Prevention Education Collaborative (CFPEC)
8. Canadian Foundation of Health Care Improvement
9. Fall Prevention Community of Practice (Loop)
10. Finding Balance BC
11. Parachute
12. Public Health Agency of Canada
13. Alberta Health Services
14. Saskatchewan Health Quality Council
15. Agency for Healthcare Research and Quality
16. Centre for Disease Control and Prevention
STEADI: Stopping elderly accidents, deaths, and injuries
17. ECRI Institute
18. Institute for Healthcare Improvement (IHI)
19. Institute for Clinical Systems Improvement (ICSI)
20. Prevention of Falls Network for Dissemination (ProFouND)
21. World Health Organization
22. Statistics Canada
23. LHIN Collaborative
24. Health Quality & Safety Commission of New Zealand
25. Registered Nurses Association of Ontario
26. Canadian Frailty Network
27. McMaster Optimal Aging Portal
28. AdvantAge Ontario
29. National Council on Aging

ii. Formal literature search database and search terms

- Cochrane Evidence Based Medicine Reviews (Systematic Reviews)
- Medline (PubMed)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- PsychINFO

Search terms

Search Term	Possible alternatives
Fall	Accidental falls, falling, slip and fall
Prevention	Primary prevention, secondary prevention, preventative, injury prevention
Seniors	Elderly, Older adults, aged, healthy, active, frail, functionally-impaired, cognitively-impaired
Indicator	Quality indicators, measures, metrics

ii. Supplementary search

A supplementary used the search terms reported in item ii above in the [Ryerson University Library Exploratory Database](#) (Search Everything) and [Google](#).

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^{viii} Public Health Agency of Canada. Seniors' Falls in Canada: Second Report. 2012. Risk factors for falls and fall-related injuries among seniors. Available from: <https://www.canada.ca/en/public-health/services/health-promotion/aging-seniors/publications/publications-general-public/seniors-falls-canada-second-report.html>

^{ix} Ontario Fall Prevention Collaborative. An integrated approach to preventing fall-related injuries among older adults in Ontario. 2019.

^x Institute for Work and Health. Primary, secondary and tertiary prevention. 2015. Available from: <https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>

Appendix C

Access Appendix C.

