## Key performance indicators (KPIs) for Canadian FLSs v3.0:

Setting the foundation for reflective practice and improvement for FLSs

# **OSTEOPOROS** IS

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Broken bones from osteoporosis are more common in women than heart attack, stroke and breast cancer combined.



### **Executive summary**

A huge post-fracture care gap exists: less than 20% of fragility fracture patients ever receive the osteoporosis care they need to prevent their next fracture.<sup>1-5</sup> These patients are trapped in a cycle of recurrent and costly fractures.

Although many interventions have been attempted nationally and internationally over the last two decades, only Fracture Liaison Services\* (FLS) have been able to show a meaningful reduction in the post-fracture care gap,<sup>6-16</sup> the incidence It was a real mess before FLS. The care was fragmented between ortho, x-ray, emergency and inpatients. There was no one person to connect all the dots together to make the assessment happen. Almost invariably the patients fell between the cracks and never received the treatment they needed to prevent their next fracture.

Ken Cameron Family physician, Dartmouth, NS

of repeat fractures,<sup>7,8,15-19</sup> mortality,<sup>8,15,16,18</sup> and utilization/costs of healthcare resources.<sup>7,13,19-24</sup>

To be effective, an FLS must first have the right processes in place (see the Essential elements of FLSs\*). One of these crucial processes is the ability of the FLS to monitor its own effectiveness.

The key performance indicators (KPIs)\* presented in this document will be a useful guide for Canadian FLSs. The FLS KPIs provide:

- A way to measure the performance of the FLS at the level of the system
- A useful tool to facilitate on-going continuous quality improvement through Plan-Do-Study-Act (PDSA) methodology\* to address any identified care gaps
- The ability for FLSs to compare their performance with that of other FLSs from across Canada

Appreciated thoroughness of bone assessment, education package, time that FLS nurse spent with me and my family to answer all our questions.

Patient with fracture White Rock, BC The more experienced and established an FLS is, the better the patient outcomes will be, but the KPIs will set up all FLSs for a much faster path to success.

Osteoporosis Canada's (OC) goal is to help ensure that no fracture patient is ever "left behind" and that each of them will receive the osteoporosis care they need to prevent their next fracture. OC's FLS KPIs are a crucial part of this endeavour.

Let's make their FIRST break their LAST!



NORMAL



**OSTEOPOROSIS** 

Broken bones can be warning signs of osteoporosis.

\*these terms are further defined in the Glossary.

### Glossary of terms as used in this document

#### Fracture Liaison Service:

A Fracture Liaison Service (FLS) is a specific systems-based model of care for secondary fracture prevention where a dedicated coordinator:

IDENTIFICATION	systematically and proactively identifies patients aged 50 years and older presenting to a hospital with a new fragility fracture and/or with a newly reported vertebral fracture
INVESTIGATION	organizes appropriate investigations to determine the patient's fracture risk
	facilitates the initiation of appropriate osteoporosis medications

FLS has outperformed all other post-fracture osteoporosis interventions in terms of significant patient outcomes and reduction in healthcare costs.<sup>6-8</sup> Other key components of FLS are listed in Osteoporosis Canada's *Essential Elements of FLS*.

#### The "3i's":

**Identification, Investigation** and **Initiation** of treatment are often referred to as the "3i's" of FLS, with identification being the first i, investigation the second i and initiation the third i.

#### CAROC

A tool to determine fracture risk jointly endorsed by the Canadian Association of Radiologists and Osteoporosis Canada. CAROC incorporates 5 risk factors: age, sex, prior fragility fractures, glucocorticoid use and bone density measurement. CAROC has been validated in the Canadian population.<sup>25</sup> To access the CAROC tool, go to https://osteoporosis.ca/multimedia/FractureRiskTool/index.html?\_ga=2.41186087.46353695.1633343535-2126717784.1528887805#/Home.

#### **Essential Elements of Fracture Liaison Services:**

The *Essential Elements* were defined by Osteoporosis Canada in September 2015 and updated in June 2021. They are deemed the bare minimum processes necessary to ensure that an FLS will be set up for success, particularly in its ability to have a meaningful impact on the post-fracture care gap at the level of the system. For the complete list of the *Essential Elements*, please see Appendix A.

#### First-line osteoporosis medications:

First-line osteoporosis medications in this document are defined as per the 2010 Osteoporosis Canada Clinical Practice Guidelines<sup>26</sup> (alendronate, risedronate, zoledronic acid, denosumab, raloxifene, estrogen and teriparatide) plus romosozumab which only became available in Canada in 2019.

#### Fragility fracture:

A fragility fracture is a fracture occurring spontaneously or following minor trauma such as a fall from standing height or less. In this document, we focus on those fragility fractures recommended for surveillance by the Canadian Chronic Disease Surveillance System (CCDSS) Osteoporosis Working Group of the Public Health Agency of Canada (PHAC)<sup>27</sup>: hip, wrist, shoulder, spine and pelvis.

**Excluded** from the definition of fragility fracture: traumatic fractures, stress fractures, pathologic fractures, peri-prosthetic fractures, avulsion fractures and atypical femoral fractures (complete or incomplete).

#### FRAX

A tool to determine fracture risk endorsed by Osteoporosis Canada. FRAX is a computer-driven tool that incorporates many risk factors including age, sex, Body Mass Index (BMI), prior fragility fracture, parental history of a hip fracture, current smoking, high alcohol intake, glucocorticoid use, rheumatoid arthritis and other secondary causes. FRAX can be computed with or without inclusion of a BMD (Bone Mineral Density) measurement. FRAX has been validated in the Canadian population.<sup>28-30</sup> To access the Canadian FRAX tool, go to https://www.sheffield.ac.uk/FRAX/tool.aspx?country=19.

#### Key performance indicators (KPIs) for FLSs:

FLS KPIs are sub-classified as "core" or "supplementary". In this document, the term "KPI" will refer to all of the FLS KPIs unless specifically identified as either "core" or "supplementary".

The **core** KPIs are deemed absolutely essential. They are kept to an absolute minimum so as to lessen the demands on FLS staff's time in collecting and recording the data required to measure and monitor such indicators.

**Supplementary** KPIs are strongly recommended for FLSs with sufficient resources. FLSs may choose to monitor some, but not all of the supplementary indicators.

#### **Persistence:**

The act of continuing the treatment for the prescribed length of time. For the purposes of this document, the KPI for persistence will measure the proportion of patients who remain persistent at 52 weeks post-fracture.

#### Plan-Do-Study-Act (PDSA) methodology:

PDSA methodology is a simple yet powerful tool for accelerating quality improvement (see **www.ihi/org** for more information). The steps in the PDSA cycle are:

- Step 1: Plan Plan a change or modification of practice, including a plan for collecting data
- Step 2: Do Try out the change/modification on a small scale or over a short duration
- Step 3: Study Analyze the data and the results
- Step 4: Act Refine the model, based on what was learned from Step 3

#### Point of care

In the context of this document, point of care refers to FLS care provided at the time and place of the patient's orthopaedic care. The driving notion behind point of care is to bring the FLS care immediately and conveniently to the patient. This is an important enabler for FLSs.

#### ACRONYMS:

BMD: Bone mineral density
FLS: Fracture Liaison Service
KPI: Key Performance Indicator
NHNS: Non-hip, non-spine fracture patients
OC: Osteoporosis Canada
Rx: Medication (In this document, refers specifically to prescription osteoporosis medication).

# The need for consistent and comparable indicators for FLSs

Without FLS, 80% of fragility fracture patients never receive the osteoporosis care they need to prevent their next fracture.<sup>1-5</sup> Indeed, recent studies have demonstrated that the post-fracture care gap has worsened in the past few years,<sup>4,5</sup> possibly in part as a result of exaggerated fears of the very rare risks posed by osteoporosis medications.

In order to prevent a patient's next fracture, four actions must take place:

- 1. The FLS must **identify**/capture the fragility fracture patients at the level of the healthcare system.
- 2. Each fragility fracture patient must be **investigated**/assessed to determine their fracture risk.
- 3. Patients determined to be at high risk for subsequent fractures must be **initiated** on effective osteoporosis medication.
- 4. Osteoporosis medications take 6-12 months to become effective at reducing fracture risk. Patients initiated on osteoporosis medication must therefore **persist** with their treatment for more than one year in order for future fractures to be prevented.

Evaluating FLS's performance is crucial in order to identify the FLS's strengths and weaknesses, and any areas for improvement. A database is an absolute necessity for continuous quality improvement of the FLS through a process of Plan-Do-Study-Act (PDSA) within a culture of ongoing reflection and improvement of the program. The data will drive the improvement in care.

Comparing similar FLS programs provides an opportunity to learn from others and can be used to improve patient outcomes. More information on PDSA for FLSs can be found in Appendix H of the OC's FLS Toolkit at http://fls.osteoporosis.ca/wp-content/uploads/FLS-TOOLKIT-App-H.pdf.

It should therefore not come as any surprise that FLS performance monitoring is an integral recommendation of all existing national and international FLS clinical standards documents.<sup>31-33</sup>

28% of women and 37% of men who suffer a hip fracture will die within the following year.



#### The need for national FLS audits

In order to optimize patient outcomes, an FLS must be able to compare its own performance against that of other similar FLSs (e.g., located in a similar setting such as an inpatient orthopaedic ward or outpatient orthopaedic clinic). National FLS audits have become mandatory in the United Kingdom where they provide very useful comparative data for the country's FLSs.<sup>34,35</sup> In New Zealand, FLSs provide quarterly reports on their performance to the Ministry of Health.<sup>36</sup>

Osteoporosis Canada conducted its first national FLS audit in 2018 (http://fls. osteoporosis.ca/wp-content/uploads/Report-from-Osteoporosis-Canadas-firstnational-FLS-audit.pdf) and its second one in 2020 (https://fls.osteoporosis.ca/ wp-content/uploads/Second-national-FLS-audit-report-2020-English.pdf). We will continue to conduct periodic national FLS audits approximately every two years in order to provide comparative data for Canadian FLSs.

### Core KPIs (essential)

#### **Overview of core FLS indicators**



PLEASE NOTE: The numerators and denominators above MUST comply with the full definitions as described further in this document. Some numerators and denominators may vary depending on patient stream.

\* FF stands for "fragility fracture".

#### Patient demographics data to be collected

Age (at time of fracture) and fracture type (hip, wrist, shoulder, pelvis or spine) are considered "core" demographics.

#### **KPI 1 (identification)**

The first i will be assessed in 3 different patient streams:

- Patients with hip fractures
- Patients with non-hip, non-spine (NHNS) fractures
- Patients with spine fractures (exploratory only).

	Patients with hip fracture	Patients with non-hip, non-spine fracture	Patients with spine fracture (exploratory only)
NUMERATOR <sup>a,b</sup>	Number of patients aged 50 and up with a fragility fracture of the hip (proximal femur) enrolled in the FLS <u>within 12 weeks</u> of the incident fracture.	Number of patients aged 50 and up with a fragility fracture of the shoulder (proximal humerus), wrist (distal radius) or pelvis enrolled in the FLS <u>within 12 weeks</u> of the incident fracture.	Number of patients aged 50 and up with a fragility fracture of the <b>spine</b> (thoracic/ lumbar), enrolled in the FLS.
DENOMINATOR <sup>a</sup> B	Number of patients admitted/ discharged with a hip fracture, from the hospital's administrative database <sup>c</sup> X 1.	Number of patients admitted/discharged with a hip fracture, from the hospital's administrative database <sup>c</sup> X 1.7.	

- a. The time frame, e.g., 6 months, 1 year, etc shall be identical for both the numerator and the denominator.
- b. The above numerators **EXCLUDE:** traumatic fractures, stress fractures, pathologic fractures, peri-prosthetic fractures, avulsion fractures and atypical femoral fractures (complete or incomplete).
- c. CRITICAL/ESSENTIAL: The hip fracture numbers to be used in the calculation of this denominator should be at the level of the entire healthcare system for the FLS's catchment area, typically the number of hip fractures admitted to or discharged from the hospital annually. It cannot simply be the number of hip fractures captured by the FLS or the number of hip fracture referrals received. Systematic and pro-active case finding is an integral part of the definition of FLS as endorsed by Osteoporosis Canada. A model receiving its patients through a regular referral process therefore does not satisfy OC's definition of FLS.



At least 1 in 3 women and 1 in 5 men will suffer a broken bone from osteoporosis in their lifetime. In some regions, hip fracture surgery is concentrated in a few select hospitals. OC's FLS Audit Committee will guide the adjustments for the denominator for those FLSs.

In the event that a patient presents with two different acute fractures at the same time (e.g., a hip fracture and a pelvic fracture occurring from the same fall), the patient can only be counted once. For consistency, OC recommends that the FLS might classify such patients as follows:

- In inpatient-only and combined inpatient/outpatient FLSs, patient presenting with a hip + any other fracture: classify as a hip fracture
- In an outpatient-only FLS, patient presenting with a non-hip, non-spine fracture + any other fracture: classify as a non-hip, non-spine fracture
- In any FLS, patient presenting with a non-hip, non-spine fracture and a spine fracture: classify as a non-hip, non-spine fracture.

#### Benchmarks for KPI 1:

Levels to be reached	Color	Interpretation
0-49%	RED	Highest priority for service improvement
50-79%	AMBER	Good, room for improvement
≥ 80%	GREEN	Great, at or near optimal

#### **KPI 2 (investigation)**

NUMERATOR	Of the below denominator, number of patients aged 50 and up with a fragility fracture of the <b>hip</b> (proximal femur), <b>shoulder</b> (proximal humerus), <b>wrist</b> (distal radius) or <b>pelvis</b> who have a fracture risk completed by a validated fracture risk assessment tool (FRAX with or without BMD or CAROC) <u>within 26 weeks</u> of the incident fracture. Separately provide the number of patients in the above who were deemed HIGH RISK. <b>D</b>
DENOMINATOR	Number of patients aged 50 and up with a fragility fracture of the hip (proximal femur), shoulder (proximal humerus), wrist (distal radial) or pelvis enrolled in the FLS <u>within 12 weeks</u> of the incident fracture, as per the numerators for KPI 1. Includes patients who have died.

#### Benchmarks for KPI 2:

Levels to be reached	Color	Interpretation
0-94%	RED	Highest priority for service improvement
≥ 95%	GREEN	Great, at or near optimal

#### KPI 3 (initiation of Rx)



- a. Initiation may be ascertained by one of the following methods:
  - i. FLS providing the prescription to the patient directly.
  - ii. Patient self-report of treatment initiation.
  - iii. Medication dispensed as per a pharmaceutical or administrative database.

#### Benchmarks for KPI 3:

Levels to be reached	Color	Interpretation
0-49%	RED	Highest priority for service improvement
50-79%	AMBER	Good, room for improvement
≥ 80%	GREEN	Great, at or near optimal

#### KPI 4 (persistence of Rx)

Persistence is an issue for all osteoporosis medications. It is known that many patients lose faith in their osteoporosis medications or become concerned about the risk of rare side effects and decide to stop their medications, often without even consulting with or notifying their healthcare providers.

NUMERATOR F	Of the below denominator, number of patients who are still on first-line osteoporosis medication (whether it is still the original one, or switched to an alternate one) <u>at least</u> 52 weeks after their incident fracture <sup>a</sup> .
denominator E	Number of HIGH-RISK patients initiated and/or recommended to remain on osteoporosis medication as per the numerator for KPI 3. Includes patients who have died.

- a. Persistence may be ascertained by one of the following methods:
  - i. Patient self-report of persistence (i.e., still taking the medication).
    - For patients on oral osteoporosis medication, teriparatide or romosozumab, self-report of the last time taken will be sufficient:
      - Within the last week for daily medications
      - Within the last 2 weeks for weekly medications
      - Within the last 6 weeks for monthly medications
    - For patients on denosumab, confirmation of date of last injection or date the medication was dispensed is required to ensure that the medication was administered within the last 7 months.
    - For patients on zoledronic acid, confirmation of date of last infusion or date the medication was dispensed is required to ensure the medication was administered within the last 18 months.
  - ii. Medication dispensed, as per a pharmaceutical or administrative database, within the last 3 months for oral medications or romosozumab\* OR as above for denosumab or zoledronic acid.

\*most patients are prescribed a 3-month supply for these osteoporosis medications

The benchmarks for KPI 4 have not yet been established. They will be considered following OC's third national FLS audit (in 2024).

### Supplementary KPIs (strongly recommended for FLSs with sufficient resources)

#### Patient demographic data to be collected:

Over and above the "core" demographics, the following demographic data is strongly recommended:

- Patient sex
- Prior fragility fractures after age 40 including fracture type (hip, spine, wrist, shoulder, pelvis) and number (e.g., 2 prior fragility fractures)
- Number of falls in the last year (including the one that led to the incident fracture). Most vertebral fractures are not precipitated by a fall.
- Treatment status at the time of the fracture (e.g., already on osteoporosis treatment at the time of the fracture)
- Treatment "failure" (e.g., patient has already received a full year or more of appropriate osteoporosis treatment prior to the fragility fracture)



#### Fall prevention:

The incidence of falls in seniors is significant, as is the number of fractures that have occurred as a result of a fall. Therefore, it is particularly important to focus on future fall prevention strategies in this population. Alongside osteoporosis medication, identification of fall risk and subsequent referrals to appropriate services can further act to reduce secondary fractures. Fall prevention referrals may include, but are not limited to: geriatric assessments, balance and strength training classes, vision care, medication reviews, and home safety assessments.

NUMERATOR	Number of patients who were referred to a fall prevention program.
DENOMINATOR	Number of patients enrolled by the FLS who were deemed to be at higher risk of falls.

#### **Repeat/subsequent fractures:**

An effective FLS may be expected to reduce the number of repeat/subsequent fractures within 1 to 2 years, but most certainly can be expected to reduce fracture risk starting in the second year post-fracture (i.e., in the year from 52 weeks post-fracture to 104 weeks post-fracture). For FLSs with limited resources, monitoring the number of fractures in that second year post-fracture may be optimal. For FLSs with sufficient resources, an even longer follow-up period could be considered.

NUMERATOR	Number of enrolled FLS patients who have suffered a new fracture of the <b>hip</b> (proximal femur), <b>spine</b> (thoracic/ lumbar), <b>shoulder</b> (proximal humerus), <b>wrist</b> (distal radius) or <b>pelvis</b> within a specified time frame (e.g., the second year post-fracture).
DENOMINATOR	Number of FLS patients for whom the FLS has follow-up data (either through continued contact with the patient or via other means such as access to diagnostic imaging studies) within a specified time frame (e.g., the second year post-fracture).
	For this indicator, it is important to also separately state the FLS's rate of patient follow-up, i.e., the proportion of high risk patients for whom there is longer term data to ascertain whether or not there

has been a subsequent fracture.

Please note that any FLS can and should continue using all of their current protocols which may well exceed the recommendations, as per the described core and supplementary FLS KPIs as outlined in this document. For example, an FLS with protocols allowing enrollment of patients less than age 50 or with fracture types other than hip, wrist, shoulder, pelvis and spine, can continue to provide those services. However, the latter patients (those with less than age 50 and those with other fracture types) should not be included in the numerators or denominators in the context of a national FLS audit.

### Interpretation of FLS KPIs

Caution must be exercised when interpreting the KPIs for an individual FLS or patient stream. Weak performance is likely the result of a barrier. Barriers to FLS success can be classified as:

- Internal: limitations due to issues specific to the FLS itself (e.g., FLS inclusion/ exclusion criteria, algorithms, processes, etc.)
- External: limitations due to issues outside the control of the FLS (e.g., limited access to bone mineral density (BMD) testing, limited access to effective osteoporosis medications on the provincial medical insurance plan, etc.)

FLSs which discover a major weakness for any of the individual KPIs may require more comprehensive performance measurements than recommended in this document to further analyze and identify their specific barriers. For a more complete listing of internal and external barriers, please see the *Report from Osteoporosis Canada's first national FLS audit: leading FLS improvement in Canada* at

http://fls.osteoporosis.ca/wp-content/uploads/Report-from-Osteoporosis-Canadasfirst-national-FLS-audit.pdf

#### The effect of under-resourcing

Unfortunately, most Canadian FLSs struggle with under-resourcing and it is impossible to have a completely effective FLS without adequate funding. As a result of under-resourcing, difficult decisions have to be made to restrict some of the FLS programs in order to maximize outcomes with the limited resources allocated. In other words, many FLSs have had the perverse task of having to determine which patients the FLS will automatically have to "leave behind".

#### Vertebral fractures

The current version of the FLS KPIs is designed to assess FLSs implemented in the orthopaedic settings (inpatients and/or outpatients), but the reality is that very few vertebral fractures are ever seen in those settings. The current version of the KPIs is effectively "leaving behind" the overwhelming majority of the vertebral fracture patients. This will be addressed fully in a future version of this document.

Weakness in any of the FLS KPIs should NEVER be automatically interpreted as reflecting a problem with the FLS itself until a full analysis is completed. 'We can wait for the hip fracture to happen then deal with it - or we can prevent it. Preventing it saves the human cost and saves health care dollars, so that's what we're doing.'

Earl R. Bogoch MD FRCSC Professor, Department of Surgery Brookfield Chair in Fracture Prevention University of Toronto St. Michael's Hospital/ Unity Health

### **Case Studies**

The key teaching points in these illustrative case studies are derived from the lessons learned by several of our Canadian FLSs during OC's prior national FLS audits. To preserve confidentiality, details have been altered. Although KPI 4 is now listed as one of OC's core FLS KPIs, it is yet to be evaluated in any OC national FLS audit, hence the reason it is not included in these case studies.

#### Case study 1

Regional hospital A has an inpatient-only FLS focusing exclusively on hip fracture patients. The FLS sees an older patient population. At the end of its first year of operation, the FLS participates in an OC national FLS audit. The hospital's performance is described as follows:

	Patients with hip fracture	Patients with non-hip, non- spine fracture	Patients with spine fracture Exploratory only
KPI 1	80%	N/A This remains a care gap at this hospital	N/A
KPI 2	100%	← A fragility fractu	re of the hip is automatically
KPI 3	35%	considered HIGH RISK. A BMD test is not needed for fracture risk determination.	

The FLS team is surprised at the relatively poor performance for their KPI 3. In reviewing the possible internal and external barriers, they identify many significant barriers to success for this including:

- Many patients are quickly transferred from their regional hospital to the patient's home hospital and there is currently no process at the FLS to follow-up such patients.
- Several of the primary care providers of the region are reluctant to prescribe osteoporosis medications to their elderly patients, believing erroneously that it takes many years for these medications to prevent a fracture.
- Some of the long term care (LTC) facilities of the region routinely stop osteoporosis medications when patients are admitted to their facility.

#### PLAN:

- The FLS team sets up new processes that enables the FLS coordinator to do phone followup with patients and/or their support person if the patient is discharged/transferred before counselling re: osteoporosis treatment can be provided.
- The FLS develops a fact sheet on *Management of osteoporosis in the elderly* to accompany the FLS's recommendations sent to the patients' primary care providers.
- A speaker is organized to present on Osteoporosis Canada's LTC Guidelines at the next conference of the provincial association of Care of the Elderly physicians, most of whom work in LTC facilities.

#### Case study 2

Hospital B has an inpatient-only FLS focusing exclusively on hip fracture patients. When OC conducted its first national FLS audit, the FLS had a dedicated FLS coordinator. Unfortunately, due to budget cuts, the FLS had lost its FLS coordinator by the time OC conducted its second national FLS audit. Undaunted, the FLS team decided to create a new post-hip fracture care model whereby all admitted hip fracture patients would automatically be seen by an osteoporosis specialist during their hospitalization.

Exceptionally, OC's FLS Audit Committee permitted this post-fracture care model to participate in the second Canadian national FLS audit, despite there being no dedicated FLS coordinator, recognizing that the new model might potentially be effective.

КРІ	First national FLS audit (2018)	Second national FLS audit (2020)
KPI 1, hips	89%	58%
KPI 1, NHNS	N/A This remains a care gap at this hospital	N/A This remains a care gap at this hospital
KPI 2	100%	100%
KPI 3	86%	72%
Proportion of hip fracture patients enrolled in the FLS who are initiated on treatment overall	77% (89 X 86%)	42% (58 X 72%)

Here are Hospital B's results:

The FLS team arranged a meeting with their hospital administrator to review the above results. The administrator was concerned by the significant drop of hip fracture patients who were being discharged from hospital on effective osteoporosis medication (dropping from 77% with the FLS coordinator to only 42% without). This was all the more shocking given that the average Canadian FLS had seen a significant improvement in their care outcomes in 2020 compared to 2018.

Based on these findings, the hospital administrator was compelled to reinstate the FLS coordinator position. Additionally, the possibility of expanding the FLS to the hospital's orthopaedic outpatient clinics is now being explored.

This case demonstrates that even when the audit results may be "poor", they can still have a positive impact on helping improve the clinical care received by fracture patients.

### What Canada needs now!

A nationwide post-fracture osteoporosis care gap exists throughout **Canada which is** leaving **Canadians** needlessly at risk of suffering future fractures and resulting in an enormous avoidable expenditure on fracture care. Access to Fracture Liaison Services for all Canadians will transform the delivery of post-fracture care and result in significant financial savings. The post-fracture care gap has been well documented in Canada.<sup>1-5</sup> Additionally, the post-fracture care gap has worsened significantly since 2009.<sup>5</sup> This situation simply cannot be allowed to continue.

Based on overwhelming evidence, only FLS can meaningfully close this care gap that is leaving patients to suffer repeat fractures that could, and should, have been prevented. FLS is quickly becoming the standard of care internationally, but Canada still lags far behind.

The OC FLS Registry (http://www.osteoporosis.ca/fls/canadian-fls-registry/) was launched in May 2016 to profile Canadian hospitals offering effective FLSs meeting the 8 Essential Elements. With only 43 FLSs in 5 provinces on the Registry as of December 31, 2021, the overwhelming majority of Canadians who suffer a fragility fracture still do not have access to an FLS and are therefore stuck in the nation-wide post-fracture care gap. Osteoporosis Canada estimates that less than 15% of fragility fracture patients in Canada have access to an FLS. Their high risk for new fractures remains unchecked. Many more FLSs are needed!

Jurisdictions which have implemented FLSs are to be congratulated for ensuring that quality osteoporosis care is provided to fragility fracture patients. However, as there are many internal and external barriers, it is critical that each FLS documents their effectiveness at closing the care gap. The OC FLS KPIs are a critical tool for the measurement and monitoring of the FLS's effectiveness.

Canadian FLSs participating in the OC national FLS audits are making a contribution to closing the post-fracture care gap, not only at the local level, but also on a national scale. Even with just two previous national FLS audits, there is already good evidence that the standards of our Canadian FLSs have already been heightened, as evidenced by a significant improvement in all of the measured KPIs in the second national audit compared to the first one. FLSs participating in national FLS audits are definitely the standard to be emulated by future Canadian FLSs.

What Canada needs now:

- that healthcare systems recognize the importance and impact of FLS. Many new FLSs need to be implemented.
- that existing FLSs be given the opportunity to reach their full potential. Many of the barriers to an FLS's success are related to under-resourcing of that FLS. Adequate resources must be made available to all FLSs.

Osteoporosis Canada's goal is to ensure that no fragility fracture patient is "left behind" and that every Canadian has access to appropriate post-fracture care. Together, we can be successful and help **make their FIRST break their LAST**!

### Acknowledgements

The team behind the development of Osteoporosis Canada's FLS KPIs 3.0 are members of the FLS Audit Committee, with representation from each province featured on the OC FLS Registry. The Audit Committee members have generously donated their time and expertise to help ensure that the recommendations in this document are pragmatic, aligned with the current OC guidelines/FLS Toolkit and are adapted to the Canadian reality.

#### **FLS Audit Committee**

Chair: Brigadier General (retired) Hilary Jaeger, MSc, MD Dorcas Beaton, PhD, MSc, BScOT, *Ontario* Josée Delisle, BScN, MSc, *Québec* Shannon Falsetti, RN, BScN, GNC(C), *Alberta* Sonia Singh, MD, MHSC, *British Columbia* Diane Theriault, MD, FRCPC, CCD, *Nova Scotia* 

We also thank Luanne Schenkels, Osteoporosis Canada's FLS Manager, for her assistance with this work.

Fracture Liaison Services have been shown to be highly cost-effective in Canada and internationally.



### **Appendix A:** Osteoporosis Canada's Essential Elements of Fracture Liaison Services (FLS)

#### **Osteoporosis Canada's definition of FLS**

A Fracture Liaison Service (FLS) is a specific systems-based model of care for secondary fracture prevention where <u>a dedicated FLS coordinator</u>:

1 <sup>st</sup> i	I DENTIFICATION	Systematically and proactively identifies patients aged 50 years and older presenting to a hospital with a new fragility fracture and/or with a newly reported vertebral fracture;
2 <sup>nd</sup> i	<b>I</b> NVESTIGATION	Organizes appropriate investigations to determine the patient's fracture risk;
3 <sup>rd</sup> i	<b>I</b> NITIATION	Facilitates the initiation of appropriate osteoporosis medications for high-risk patients.

FLS has outperformed all other post-fracture osteoporosis interventions in terms of significantly improved patient outcomes and reduction in healthcare costs.<sup>6,7,16</sup> Other key components of FLS are listed in Osteoporosis Canada's Essential Elements of FLS.

#### Essential Elements of FLS

		meaningful improvement in the post-fracture care gap, typically
1	DEDICATED FLS COORDINATOR	improving the rate of appropriate osteoporosis treatment at least two-fold.
2	IDENTIFICATION	FLS has outperformed all other post-fracture interventions leading to a significant reduction in secondary fractures and their associated healthcare costs. <sup>6,7,16</sup>
3	INVESTIGATION	
4	INITIATION OF TREATMENT	Post-fracture care models that do not meet the above definition and the Essential Elements have, to date, demonstrated either complete lack of effectiveness in closing the post-fracture care gap or, in the case of 1i models (identification and alert to the Primary Care Provider), only a small improvement in the proportion of patients receiving appropriate osteoporosis treatment.
5	FALLS PREVENTION & NON-PHARMACOLOGICAL INTERVENTIONS	
6	MONITORING OF THE PATIENT	
7	INTEGRATION WITH PRIMARY CARE	The FLS Registry Committee, however, recognizes that new research is ongoing and welcomes submissions to the Registry from innovative post-fracture care models that may not meet all of the current Osteoporosis Canada Essential Elements of FLS, provided:
8	MONITORING OF FLS PERFORMANCE	
For further details on the Essential Elements, see the Technical Parameters, https://fls.osteoporosis.ca/wp-content/ a) the model has been in operation for at least one full year		

Technical Parameters. <u>https://fls.osteoporosis.ca/wp-content/uploads/Osteoporosis-Canada-Essential-Elements-FINAL-April-2021.pdf</u>

a) the model has been in operation for at least one full year AND

FLS, as described in this document, consistently demonstrates a

b) the model demonstrates it is effective based on OC's core FLS KPIs.

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### Appendix B: Development of OC's FLS KPIs

OC's FLS KPIs have been developed by a national committee with representation from each province featured on the OC FLS Registry. They are intended to provide a standardized overview of the most important determinants of an FLS's effectiveness.

OC's FLS Audit Committee strives to focus exclusively on performance measures deemed most critical to an FLS's success in order to minimize, as much as possible, the burden imposed on FLS staff's time in collecting and recording the data required to measure and monitor these KPIs.

The KPIs are focused on patients presenting with the fractures highlighted for surveillance by the Canadian Chronic Disease Surveillance System of the Public Health Agency of Canada: hip (proximal femur), forearm (distal radius), shoulder (proximal humerus), pelvis and spine (thoracic/lumbar). These are the fracture types which have the highest risk of future fractures.

The KPIs have very inclusive denominators. Many will be surprised that the denominators include even those patients who have subsequently died. The FLS Audit Committee believes this is the only way to ensure that the KPIs will be comparable between FLSs.

OC conducts periodic national FLS audits, focused on the core FLS KPIs, usually every two years.

OC's FLS KPIs are updated after each national FLS audit, based on the lessons learned from the latter. In the past few years, Canadian FLSs have matured and they are now reaching higher standards. This was demonstrated with the significant improvement in all of the core KPIs in the second audit compared to the first one. The most important changes made following OC's second national FLS audit, i.e., the changes from v2.0 to v3.0, include:

- Addition of a 4<sup>th</sup> core KPI. The KPI for osteoporosis treatment persistence has been elevated from "supplementary" to "core" status. It becomes FLS KPI 4.
- Establishing benchmarks for KPIs 1-3. Benchmarks for KPI 4 may be established following OC's third national FLS audit.

For more information on the development of Osteoporosis Canada's key indicators for Canadian FLSs, go to http://www.osteoporosis.ca/fls/indicator-development/.

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