**MODULE 3: Detailed FLS design, typically done by the FLS’s medical lead**

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| **Resources to review** |
| Essential Elements | [**Essential Elements**](https://fls.osteoporosis.ca/wp-content/uploads/Osteoporosis-Canada-Essential-Elements-FINAL-April-2021.pdf) |
| Key performance indicators (KPIs) for Canadian FLSs | [**KPIs**](https://fls.osteoporosis.ca/indicator/) |
| What does it take to be an effective FLS Part 1 March 2018 webinar | [**What does it take to be an effective FLS Part 1**](https://www.youtube.com/watch?v=E8rFJIXCYrc)Presented by: Dr. Diane Theriault |
| A day in the life of an FLS coordinator | [**A Day in the Life of an FLS Coordinator**](https://www.youtube.com/watch?v=2cxGskaRaDs&feature=youtu.be)Presented by: Carla Purcell, BScN, CMSN(C) – FLS Coordinator (Nova Scotia)OR if your FLS is going to be a hip-only FLS:[**Fracture Liaison Service in Alberta**](https://www.youtube.com/watch?v=voK1HsEojUM) Presented by: Shannon Falsetti, RN, BScN, GNC(C) and Joyce Mammel, RN, MN, GNC(C) -FLS Coordinators (Alberta) |

To ensure the FLS will be clinically effective, all 8 of Osteoporosis Canada’s Essential Elements of FLS should be met (see next few pages). The person who will be charged with the oversight of the FLS, typically a physician with expertise in osteoporosis, should become familiar with the Essential Elements before proceeding with the more detailed FLS design.

To help secure FLS funding and to ensure sustainability (i.e. with government funding), the FLS will also need to be cost-conscious. When designing your FLS, be aware of and try to be reasonable in the overall costs it will generate to the healthcare system:

* Direct FLS costs:
	+ Salary for the FLS coordinator
	+ Salary for any FLS clerical support
	+ Remuneration for the FLS’s medical lead
	+ Operating costs (office space, telephone, internet, etc.)
* Indirect costs generated by the FLS when it utilizes or recommends:
	+ Investigations (labs and Diagnostic Imaging such as BMD testing)
	+ Osteoporosis medications (most patients are older and will be under the provincial Pharmacare program)
	+ Referrals, e.g. falls prevention programs, osteoporosis specialists

Additionally, an FLS should ensure it is designed to be cost-competitive compared to any other existing local/regional/provincial FLSs within your vicinity that have already been proven to be clinically effective.

Other FLSs in your region. Include the type of FLS.

**FLS’s detailed design**

Please refer to Osteoporosis Canada’s [**Essential Elements**](https://fls.osteoporosis.ca/wp-content/uploads/Osteoporosis-Canada-Essential-Elements-FINAL-April-2021.pdf) **of FLS** for more details on the below. The decisions regarding the FLS’s detailed design are usually left to the FLS’s medical lead as these decisions will greatly impact their own degree of involvement in the FLS.

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| Essential Element | Details |
| **1.DEDICATED FLS COORDINATOR** | Absolutely essential for an effective FLS. If you are considering implementing a post-fracture care model without a dedicated FLS coordinator, it will likely prove to be only minimally effective at closing the post-fracture care gap. Type of FLS to be implemented (inpatient-only, outpatient-only or combined inpatient/outpatient FLS)How many FTEs are needed for the FLS coordinator?Type of healthcare professional to be hired (typically a nurse):Where do you anticipate your FLS coordinator will be working? Have you identified an office space where the FLS coordinator can work privately, e.g. to do confidential phone calls with patients?List of the FLS coordinator’s general responsibilities:Who will be responsible for clerical work (e.g. booking BMD tests, mailing out letters to patients, etc.)?Will the FLS coordinator do anything else but the FLS/osteoporosis management? If so, please describe:Who will the FLS coordinator report to?Any questions you may still have re the FLS coordinator’s role (you can come back to these once you have completed MODULE 3 to see if you’ve addressed them): |
| **2.IDENTIFICATION: systematically and proactively identifies patients age 50 years and older presenting to a hospital with a new fragility fracture**  | Setting? * Combined inpatient/outpatient FLS OR
* Inpatient-only FLS (if the latter, will it be hip-only FLS?) OR
* Outpatient-only FLS

If there is an outpatient component to the FLS, are at least 50% of the ortho clinics covered?What fracture types will your FLS enroll? What age group?How will the systematic and pro-active case finding be performed? * For admitted patients:
* For OPD clinic patients:
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| **3.INVESTIGATION: organizes appropriate investigations to determine the patient’s fracture risk** | For hip-only FLSs: there is no absolute need for BMD testing to be done. All patients with a fragility fracture of the hip are automatically considered high risk. You may wish to skip down to the yellow highlighted section.For any other FLS type (outpatient-only FLS or combined inpatient/outpatient FLS), BMD testing will be required for a significant proportion of the FLS patients. Where is the closest BMD unit? Can you arrange for priority and/or point of care scheduling for the FLS patients?The FLS itself must organize the BMD testing. What will be your FLS’s indications for arranging BMD testing? In your FLS, who will order the BMD? Who will receive the results?For patients enrolled in an FLS with a fracture of wrist (distal radius), shoulder (proximal humerus) or pelvis, FRAX or CAROC will be essential to determine their 10-year fracture risk (which in turn will be needed to determine their need for osteoporosis treatment). Some items to be considered when selecting FRAX or CAROC:* Excepts from Leslie WD, et al, *Direct comparison of FRAX and a simplified fracture risk assessment tool [CAROC] in routine clinical practice: a registry-based cohort study*, Osteoporosis International, 2016: The CAROC system has the appeal of greater simplicity, since it is based upon a smaller number of input variables. However, this comes at a cost of reduction in fracture prediction accuracy … This would be particularly problematic in the context of post-fracture care programs where all individuals would automatically be accorded at least one CAROC risk factor … Furthermore, in those with prior fracture or prolonged glucocorticoid use, the risk reclassification table shows that CAROC overestimates fracture risk [in some patients]. One measure of the magnitude of the improvement in risk prediction using FRAX over CAROC is the … “number needed to FRAX” in order to improve fracture prediction. This value is 36 in the overall population, falling to 8 among individuals with prior fracture … This implies that the improvement in fracture risk prediction [from using FRAX over CAROC] is not negligible and is of a clinically important magnitude.”
* Excepts from OC’s Essential Elements of FLS:
	1. The FLS itself should determine the patient’s fracture risk as it is most familiar with the patient’s clinical risk factors. Relying exclusively on the BMD report’s fracture risk categorization will be an acceptable but inferior option.
	2. A validated fracture risk assessment tool recommended by OC Clinical Practice Guidelines must be used. FRAX with BMD is the preferred option as it has been shown to be the most accurate tool (vs FRAX without BMD and vs CAROC), especially in fracture patients. FRAX without BMD is acceptable where local conditions mandate or where a patient is unable to obtain a valid BMD assessment.
* Implications for OC’s FLS KPIs: When CAROC is used, the femoral neck T-score is absolutely essential to complete the patient’s fracture risk for those who have presented with a fracture of wrist (distal radius), shoulder (proximal humerus) or pelvis. This presents a problem for any such patients who do not attend their BMD appointment or who do not have a valid femoral neck T-score (e.g., patients with prior bilateral total hip replacements for arthritis). FLSs using CAROC can be expected to score significantly lower on their KPI 2 (in the ballpark of ~70%) compared to FLSs using FRAX which typically score 95% or above, as the latter can pivot to FRAX without BMD for any patients where they cannot obtain a valid femoral neck T-score.

What fracture risk determination tool (FRAX or CAROC) will your FLS utilize?Who is responsible for fracture risk determination within your FLS?Who will communicate this risk to the patient’s primary care provider?Other investigations that are encouraged (but not mandatory to be done by the FLS):* Labs, to ensure safe initiation of osteoporosis treatment and to rule out secondary causes. To be cost-conscious, consider limiting only to those lab investigations recommended by Osteoporosis Canada’s Clinical Practice Guidelines. What lab tests will your FLS do or recommend? Who will order? Who will receive the results?
* Spine x-rays where warranted. What will prompt such to be ordered? Who will order? Who will receive the results?
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| **4.INITIATION OF TREATMENT** | In your FLS, who will prescribe osteoporosis treatment? If left to the patient’s PCP (2i FLS model), who will be responsible for making the formal recommendation to initiate osteoporosis treatment to the family physician?For patients already on osteoporosis treatment at the time of their fracture, there must be an osteoporosis medication review. In your FLS, how will this be done? Who will be responsible for conducting this review? Who will communicate any recommendation to the patient’s PCP? |
| **5.FALLS PREVENTION & NON-PHARMACOLOGIC INTERVENTIONS**  | What falls risk screening will be done by your FLS? This could be as simple as asking how many falls the patient has had in the past year. What will be the threshold for determining “high risk for falls”?Who will be responsible to conduct the falls risk screening in your FLS?For all high-risk patients, there needs to be either:1. Referral to a local falls prevention program if one is available locally. What falls prevention programs are available? Who will be responsible for initiating the referral?

OR1. In the absence of any local falls prevention program, an alert letter should be sent to the PCP for all patients deemed to be at significant risk for falls. In your FLS, who will be responsible to send out that alert letter?

What other non-pharmacologic interventions will your FLS provide? |
| **6.MONITORING OF HIGH-RISK PATIENTS, specifically to ensure treatment has been started and taken appropriately** | For patients on oral bisphosphonates, must include at least one assessment of the patient (in person or by phone) to ensure they are taking their medication in a safe and effective manner. Typically, this would occur approximately 1-4 months post-fracture. In your FLS, who will be responsible for this patient contact? When will it occur?For all patients, irrespective of the therapeutic agent that is initiated, there needs to be an assessment of persistence, preferably at approximately 52 weeks post-fracture. Persistence may be assessed using an administrative database. In your FLS, who will be responsible for ascertaining persistence and how will it be ascertained?OPTIONAL: only where resources allow, it is strongly recommended for FLSs to monitor future fragility fractures which would typically require a follow-up period of greater than one year. Does your FLS have the resources to monitor future fractures? If so, how and when will it be done?  |
| **7.INTEGRATION WITH PRIMARY CARE** | For all patients, the FLS will need to communicate:* the results of any investigations conducted by the FLS (this could simply be that the PCP is copied on the results)
* the patient’s fracture risk (low, moderate or high) as determined by the FLS. A BMD report alone, even when cc’ed to the PCP, shall not satisfy this criterium.
* a clear transfer of care communication at the end of the FLS’s follow-up period (for high-risk patients, this will be at one year post-fracture for most FLSs)

For high-risk patients, the FLS will need to communicate:* osteoporosis treatments initiated and/or recommended
* an alert to PCP regarding any patients who are not adherent/persistent with their prescribed osteoporosis medication upon follow-up

Who will be responsible for all of the above communications? |
| **8.MONITORING OF FLS PERFORMANCE, to ensure the model is clinically effective** | At a minimum, patient data must be collected to monitor Osteoporosis Canada’s FLS core [KPIs](https://fls.osteoporosis.ca/indicator/) (FLS Medical Lead to read) and to participate in any national FLS audits conducted by Osteoporosis Canada. For more information, please refer to OC’s FLS KPI document.What tracking tool will your FLS use? Please note that Osteoporosis Canada can provide you with an Excel document for this purpose. It can be adapted to your individual FLS’s needs.Who will be responsible for collecting the patient data? Who will be responsible for data entry into your tracking tool?Who will be responsible for analysing and monitoring the results?Who will be responsible for submitting to Osteoporosis Canada’s FLS audits?  |

OC may be able to provide assistance, please contact: FLS@osteoporosis.ca .