



IOF

CAPTURE *the*  
FRACTURE

# BEST PRACTICE FRAMEWORK *for* FRACTURE LIAISON SERVICES

## Setting the standard

Studies have shown that Fracture Liaison Service models are the most cost-effective in preventing secondary fractures. This systematic approach, with a fracture coordinator at its centre, can result in fewer fractures, cost savings for the health system and improvement in the quality of life of patients.

# BEST PRACTICE FRAMEWORK FOR SECONDARY FRACTURE PREVENTION

The Best Practice Framework (BPF) is the internationally endorsed, peer-reviewed guideline for secondary prevention of osteoporotic fractures. The BPF promotes a coordinator-based model of care known as a Fracture Liaison Service (FLS) as the model of choice to be adopted by all hospitals and outpatient facilities that are treating fragility fracture patients. The BPF serves two key purposes:

- Provides guidance for institutions that are implementing a FLS
- Sets a benchmark for established FLS looking to improve existing services

Structured as a series of 13 standards, the BPF addresses elements that are essential to FLS success and also includes aspirational goals, thus encouraging excellence. Each standard gives criteria and targets that are broken down into three levels of achievement: gold, silver and bronze.

## Recognizing excellence

Capture the Fracture® recognizes all FLS who are in compliance with the BPF on the online interactive map. Here is how it works:

### Step 1

FLS submits application



### Step 2

FLS marked in green & reviewed



### Step 3

BPF achievement level assigned



### Step 4

FLS is recognized on the map



To get involved or to submit your FLS for recognition, visit [www.capturethefracture.org](http://www.capturethefracture.org)

# FRAMEWORK BREAKDOWN

## 1. PATIENT IDENTIFICATION

Fracture patients within the scope of the institution (inpatient and/or outpatient facility or health-care system) are identified to enable delivery of secondary fracture prevention.

The intention of this standard is to ascertain the ROUTE by which fracture patients are identified. The standard recognizes that some institutions will manage just inpatients, some will manage just outpatients and others will manage both in- and outpatients.

A questionnaire will identify which type of fracture patients are included within the scope of the institution.

### LEVEL 1

Clinical fracture patients are being identified but no patient tracking system exists to evaluate percentage of patients that are identified versus those that are not.

#### Guidance

The institution does not have a system to track every patient presenting to the institution with a fracture, so cannot accurately determine the proportion of all patients that are reached by the service.

### LEVEL 2

Clinical fracture patients are being identified and a patient tracking system exists to evaluate percentage of patients that are identified versus those that are not.

#### Guidance

The institution does have a system to track every patient presenting to the institution with a fracture, so can accurately determine the proportion of all patients that are reached by the service.

### LEVEL 3

Clinical fracture patients are being identified and a patient tracking system exists to evaluate percentage of patients that are identified versus those that are not. The quality of data capture has been subject to independent review.

#### Guidance

The institution does have a system to track every patient presenting to the institution with a fracture, and has data quality control assessment measures independent of the team that deliver post-fracture care e.g. an existing hospital-wide data quality assurance team or clinical coding quality team that is either internal or external to the hospital/system.

*It is recognized that health-care institutions/systems will have varying methods to define their 'fracture patient' group, whether it be by diagnostic codes (ICD, CIM10), patient age, fracture type etc., from which to enable secondary fracture prevention.*

## 2. PATIENT EVALUATION

Identified fracture patients within the scope of the institution are assessed for future fracture risk.

This standard is concerned with the number of patients being assessed for subsequent fracture risk. The intention of this standard is to ascertain what proportion of all patients presenting to the institution or system with a fracture are evaluated for future fracture risk. The standard recognizes that some institutions will manage just inpatients, some will manage just outpatients and others will manage both in- and outpatients. Additionally, the standard recognizes circumstances when the best practice is to bypass fracture evaluation and go straight to treatment protocols (e.g. for patients who are 80+).

### LEVEL 1

Of those patients identified, in whom progression to immediate treatment is not warranted, 50% are assessed for subsequent fracture risk.

### LEVEL 2

Of those patients identified, in whom progression to immediate treatment is not warranted, 70% are assessed for subsequent fracture risk.

### LEVEL 3

Of those patients identified, in whom progression to immediate treatment is not warranted, 90% or more are assessed for subsequent fracture risk.

*Evaluation on this standard will take into account the difficulties associated with assessing patients with dementia or impaired cognitive function.*

### 3. POST-FRACTURE ASSESSMENT TIMING

Post-fracture assessment for secondary fracture prevention is conducted in a timely fashion after fracture presentation.

This standard is concerned with the timing of when subsequent fracture risk assessment is done. This assessment can be performed by any qualified provider but must be tracked by the FLS coordinator and must contain appropriate post-fracture assessment elements such as bone density testing, risk assessment or other assessment procedures relevant to the patient. This is to ensure a formal fracture risk assessment has been done.

#### LEVEL 1

Post-fracture assessment for secondary fracture prevention occurs within 13-16 weeks of clinical fracture presentation.

##### Guidance

The proportion of patients which this standard applies to is defined by the 50%, 70% and 90% ranges required to achieve Level 1, Level 2 or Level 3 respectively, in Standard 2.

#### LEVEL 2

Post-fracture assessment for secondary fracture prevention occurs within 9-12 weeks of clinical fracture presentation.

##### Guidance

The proportion of patients which this standard applies to is defined by the 50%, 70% and 90% ranges required to achieve Level 1, Level 2 or Level 3 respectively, in Standard 2.

#### LEVEL 3

Post-fracture assessment for secondary fracture prevention occurs within 8 weeks of clinical fracture presentation.

##### Guidance

The proportion of patients which this standard applies to is defined by the 50%, 70% and 90% ranges required to achieve Level 1, Level 2 or Level 3 respectively, in Standard 2.

*Utilizing the health-care institution/system's average timing protocols, applicants are encouraged to give as accurate a time-frame as possible for when the post-fracture assessment for secondary fracture prevention is conducted. It is noted, however, that conducting post-fracture assessment at a time greater than four months post-fracture is too late.*

## 4. VERTEBRAL FRACTURE

Institution has a system whereby patients with previously unrecognized vertebral fractures are identified and undergo secondary fracture prevention evaluation.

The majority of vertebral fractures are unrecognized or undetected. The intention of this standard is to establish what systems the institution has put in place to identify vertebral fractures amongst patients presenting and/or admitted to the institution for any condition. Knowledge of vertebral fracture status in addition to bone mineral density (BMD) has been shown to significantly improve fracture risk prediction for secondary fractures.

### LEVEL 1

Patients with clinical vertebral fractures undergo assessment and/or receive treatment for prevention of secondary fractures.

**Guidance**  
Up to a quarter of patients presenting to an FLS with non-vertebral fractures were shown to have vertebral deformities by Vertebral Fracture Assessment technology. The standard is cognisant that for some fracture patients conducting vertebral fracture assessment may not be practical for change management e.g. amongst hip fracture patients.

### LEVEL 2

Patients with non-vertebral fractures routinely undergo assessment with lateral vertebral morphometry by DXA (or possibly by plain spine radiology) to assess for vertebral fractures.

**Guidance**  
For those patients referred into a local bone densitometry unit for a DXA scan on account of reasons other than a prior fracture history, ascertaining vertebral fracture status may influence treatment decisions significantly for a proportion of patients.

### LEVEL 3

Patients who are reported by the Institution's Radiologists to have vertebral fractures on plain X-rays, CT & MRI scans (whether these are serendipitous or not) are identified by the FLS in order that they undergo assessment for treatment for prevention of secondary fractures.

**Guidance**  
A substantial volume of imaging is undertaken amongst over 50 year olds which presents an opportunity to significantly increase identification rates of patients with previously unrecognized vertebral fractures in the course of care for other conditions.

*This standard recognizes that vertebral fracture patients are difficult to identify. This standard is aspirational but since vertebral fractures are the most common fragility fracture it would be remiss to not include the attempt to identify them in this framework.*

# 5. ASSESSMENT GUIDELINES

The institution’s secondary fracture prevention assessment, to determine the need for intervention, is consistent with local/ regional/national guidelines.

The intention of this standard is two-fold. Firstly, the standard requires institutions to adhere to guidance that has been subject to peer review at a local, regional or national level. Secondly, the standard highlights an important leadership role that an effective FLS can play in supporting colleagues across the national health-care system. A well-established FLS should play a leading role in lobbying for, and drafting national guidelines on secondary fracture prevention.

## LEVEL 1

The institution’s assessment is consistent with peer-reviewed guidance developed by the local institution delivering the FLS, or by adaptation of international guidelines.

**Guidance**  
Although local or adapted international guideline use is accepted at this level, there is an expectation that once regional, state or national guidelines are developed the site will work towards modifying their secondary fracture prevention assessments.

## LEVEL 2

The institutions’ assessment is consistent with regional or state guidelines.

**Guidance**  
Although regional or state guideline use is accepted at this level, there is an expectation that once national guidelines are developed the site will work towards modifying their secondary fracture prevention assessments.

## LEVEL 3

The institution’s assessment is consistent with national guidelines.

*It is recognized that different health-care institutions/systems may be limited to the guidelines that are available within their country.*

## 6. SECONDARY CAUSES OF OSTEOPOROSIS

Institution can demonstrate what proportion of patients who require treatment for prevention of secondary fractures undergo further investigation (typically blood testing) to assess for underlying causes of low BMD).

It is important to recognize why patients have osteoporosis. Assessment should follow an algorithm that screens for secondary causes.

### LEVEL 1

Institution can demonstrate that 50% of patients who need treatment are routinely screened for secondary causes of osteoporosis.

### LEVEL 2

Institution can demonstrate that 70% of patients who need treatment are routinely screened for secondary causes of osteoporosis.

### LEVEL 3

Institution can demonstrate that 90% of patients who need treatment are routinely screened for secondary causes of osteoporosis via site protocol and referral to specialists, if indicated, has been arranged.

#### Guidance

For clarity, in health-care systems where the primary care physician serves as the 'gate keeper' for referrals to specialists, the FLS is required to have a robust agreement with local primary care physicians to ensure that onward referral occurs.

*It is recognized that there will be varying methods used to identify secondary causes of osteoporosis. The philosophy of this standard is that post-fracture patients who are in need of treatment are assessed to identify secondary causes of osteoporosis in accordance with the institution or health-care system's existing methods.*



## 7. FALLS PREVENTION SERVICES

Patients presenting with a fragility fracture, and who are perceived to be at risk of further falls, are evaluated to determine whether or not falls prevention intervention services are needed, and if so are subsequently referred to an established falls prevention service.

The grading of this standard will be based on whether falls prevention services are available. The basic standard will be that an assessment will be done to determine whether a patient needs falls prevention services. The standard rating will be raised if falls prevention services are available and whether patients can be referred to it.

### LEVEL 1

50% of patients presenting with fractures who are perceived to be at risk of further falls are evaluated to determine whether falls prevention services are needed.

**Guidance**  
All patients are evaluated for falls risk using a basic falls risk evaluation questionnaire.

### LEVEL 2

70% of patients presenting with fractures who are perceived to be at risk of further falls are evaluated to determine whether falls prevention services are needed.

### LEVEL 3

90% of patients presenting with fractures who are perceived to be at risk are evaluated to determine whether falls prevention services are needed, and appropriate patients are referred to an established falls prevention service that delivers evidence-based interventions.

**Guidance**  
Falls prevention service should deliver evidenced-based programmes.

*This standard determines whether or not a falls prevention service is available, and if so how it is being utilized. If there is not an established falls service in the locality, this standard becomes aspirational and encourages the leadership of the FLS to lobby the institution/system to make a falls service available.*

## 8. MULTIFACETED HEALTH AND LIFESTYLE RISK FACTOR ASSESSMENT

Patients presenting with fragility fractures undergo a multifaceted risk-factor assessment as a preventative measure to identify any health and/or lifestyle changes that, if implemented, will reduce future fracture risk, and those patients in need are subsequently referred to the appropriate multidisciplinary practitioner for further evaluation and treatment.

Going beyond treatment by medication, it is important to identify other needs for intervention that will reduce future fracture risk, including assessing for any underlying health or lifestyle risk factors that may contribute to future fractures. Identifying risk-factors such as smoking, alcohol use, poor nutrition, lack of exercise, poor coordination, poor balance, etc., and referring the patient to the appropriate health-care provider for intervention will help to prevent future fractures.

### LEVEL 1

50% of inpatients undergo multifaceted risk-factor assessments.

### LEVEL 2

70% of inpatients undergo multifaceted risk-factor assessments.

### LEVEL 3

90% of inpatients undergo multifaceted risk-factor assessments.

*A multifaceted risk assessment can be done by one health-care provider within the FLS (clinician, nurse, FLS coordinator etc.), and needed intervention services can be referred to the appropriate health-care provider for further evaluation and treatment. For example, a very elderly patient presenting with a fragility fracture undergoes a multifaceted risk-factor assessment and is identified to have very poor coordination and balance. Identifying this, the FLS refers the patient to be fitted for hip protectors as a preventative measure for hip fracture from a fall.*

*It is recognized that there will be varying methods used to identify multifaceted risk factors for future fractures. The philosophy of this standard is that post-fracture patients who are in need of treatment are assessed to identify "lifestyle" risk-factors in accordance with the institution or health-care system's existing methods.*

## 9. MEDICATION INITIATION

All fracture patients over 50 years, not on treatment at the time of fracture presentation, are initiated or are referred to their primary care physician/provider for initiation, where required, on osteoporosis treatment in accordance with evidence-based local/regional/national guidelines.

The standard is not a general measurement of per cent of patients treated, but rather a measurement of the per cent of patients within the applicable guideline who are treated. The standard is cognisant that not all fracture patients over 50 years of age will require treatment.

### LEVEL 1

50% of fracture patients, who are eligible for treatment according to the evidence-based local/national/regional guideline, are initiated on osteoporosis medicines.

### LEVEL 2

70% of fracture patients, who are eligible for treatment according to the evidence-based local/national/regional guideline, are initiated on osteoporosis medicines.

### LEVEL 3

90% of fracture patients, who are eligible for treatment according to the evidence-based local/national/regional guideline, are initiated on osteoporosis medicines.

*This framework recognizes variations in the underlying health-care system. Dependent on the nature of the health-care system, the specialist may be able initiate treatment or, when the primary care physician/provider is the 'gatekeeper', the specialist can refer the patient to the primary care physician/provider for initiation of treatment. In either case, evidence is sought that this process is as robust as possible.*

## 10. MEDICATION REVIEW

For patients already receiving osteoporosis medications when they present with a fracture, reassessment is offered which includes review of medication compliance, consideration of alternative osteoporosis medications and optimization of non-pharmacological interventions.

The intention of this standard is to assess whether the FLS reviews patients that have fractured whilst, seemingly, receiving treatment for osteoporosis, and what proportion of this sub- group of patients undergo thorough review.

### LEVEL 1

Institution demonstrates that it reviews the medications of 50% of patients captured above (by the FLS), who are on treatment at time of fracture and performs a review of medication compliance and/or consideration of alternative interventions.

### LEVEL 2

Institution demonstrates that it reviews the medications of 70% of patients captured above (by the FLS), who are on treatment at time of fracture and performs a review of medication compliance and/or consideration of alternative interventions.

### LEVEL 3

Institution demonstrates that it reviews the medications of 90% of patients captured above (by the FLS), who are on treatment at time of fracture and performs a review of medication compliance and/or consideration of alternative interventions.

# 11. COMMUNICATION STRATEGY

Institution's FLS management plan is communicated to primary – and secondary – care clinicians and contains information required by and approved by local stakeholders.

The intention of this standard is to understand to what extent the FLS management plan – and communication of it to relevant clinical colleagues in primary and secondary care – has sought those colleagues' opinions on how best to suit their needs to ensure optimum adherence with recommendations from the FLS.

## LEVEL 1

Institution's FLS management plan is communicated to primary and secondary care physicians.

## LEVEL 2

Institution demonstrates that the FLS management plan is communicated to primary and secondary care clinicians and contains at least 50% of criteria listed.\*

## LEVEL 3

Institution demonstrates that the FLS management plan is communicated to primary and secondary care clinicians and contains at least 90% of criteria listed.\*

*This standard pertains mainly to situations when patients present to an inpatient or outpatient facility for a non-orthopaedic related reason, and whilst there, it is opportunistically discovered that a fracture exists (i.e. chest x-ray for pneumonia discovers a vertebral fracture). In this case a post-fracture management plan is put into place and communicated to the patient as well as to all health-care providers and payers (if referral required) involved with the patient's care.*

*\*Criteria mentioned in Level 2 and Level 3: fracture risk score, DXA – BMD, DXA – vertebral fracture assessment or spine x-ray result if done instead, Primary osteoporosis risk factors, secondary causes of osteoporosis (if applicable), fracture/fall risk factors, current drug treatment (if applicable), medication compliance review, follow-up plan, lifestyle risk-factor assessment, time since last fracture.*

## 12. LONG-TERM MANAGEMENT

Institution has a protocol in place for long-term follow up of evidence-based initial interventions and a long-term adherence plan.

The intention of this standard is to ascertain what processes are in place to ensure that long-term management of fracture risk is reliably provided. In health-care systems with an established primary-care infrastructure, local primary care must be involved in developing the processes that they will implement for this aspect of post-fracture care. In health-care systems that lack primary-care infrastructure, the FLS must establish effective feedback processes directly from the patient or carer and devise strategies to ensure follow-up by the FLS.

### LEVEL 1

Treatment recommendations, for patients requiring drug treatments, include a long-term follow-up plan that occurs >12 months after fracture advising when the patient should undergo future reassessment of fracture risk and of need for treatment.

#### Guidance

Institution can demonstrate the proportion of patients originally assessed by the FLS have a long-term follow-up plan in place that has been subject at years 1 & 2 and beyond.

### LEVEL 2

### LEVEL 3

Treatment recommendations, for patients requiring drug treatments, include both a short-term follow-up plan <12 months after fracture, AND a long-term follow-up plan >12 after fracture, advising when the patient should undergo future reassessment of fracture risk, the need for treatment and clear guidance on when and with whom lies responsibility for monitoring adherence to treatment.

#### Guidance

Institution can demonstrate the proportion of patients originally assessed by the FLS have a short-term follow-up plan within 6-12 months, as well as a long term management plan in place that has been subject at years 1 & 2 and beyond.

*A key responsibility of an FLS of care is to have a protocol in place to ensure long-term follow-up will take place, and clear guidance on when and with whom lies the responsibility for monitoring adherence to treatment whether it be by the FLS, referred to the primary care physician/provider, or by another means that suits the underlying health-care system.*

## 13. DATABASE

All identified fragility fracture patients are recorded in a database which feeds into a central national database.

The intention of this standard is to highlight the importance of having an effective database to underpin the service. The standard also emphasizes the aspirational objective of developing local, regional and national databases that would enable benchmarking of care against the other FLS provider units throughout the country.

### LEVEL 1

Fragility fracture patient records (for patients captured above) are recorded in a local database.

### LEVEL 2

Site demonstrates that all fragility fracture patient records identified above are recorded in a database that can be shared regionally for data comparison.

### LEVEL 3

Site demonstrates that all fragility fracture patient records identified above are stored in a central, national database. The database can provide benchmarking against all provider units.

*A local database for recording fragility fracture patient records, Level 1, is essential to an FLS. A national database is aspirational and is important to strive toward, and therefore is set at Level 3.*

## ABOUT CAPTURE THE FRACTURE®

Capture the Fracture® is an IOF initiative which promotes secondary fracture prevention on a global level by facilitating the implementation of Fracture Liaison Services (FLS), a coordinator-based, post fracture model of care. Visit [www.capturethefracture.org](http://www.capturethefracture.org) for further information and a broad range of resources.

The Best Practice Framework was originally published in the following IOF position paper:

Akesson K, Marsh D, Mitchell PJ, McLellan AR, Stenmark J, Pierroz DD, Kyer C, Cooper C; IOF Fracture Working Group (2013) Capture the Fracture: a Best Practice Framework and global campaign to break the fragility fracture cycle. *Osteoporos Int* 24:2135-2152.

*Worldwide, there is a large care gap that is leaving millions of fracture patients at serious risk of future fractures. 'Capture the Fracture®' hopes to close this gap and make secondary fracture prevention a reality.*

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