Prof. Ding-Cheng (Derrick) Chan / 詹鼎正教授

Prof. Chan is the superintendent of National Taiwan University (NTU) Hospital Chu-Tung Branch, a board certified internist and geriatrician, and clinical associate professor in medicine at NTU. He was the former Secretary General and is a current supervisor board member of the Taiwanese Osteoporosis Association (TOA). Prof. Chan’s major field of research is osteoporosis. In 2014, he played a central role in developing Fracture Liaison Services (FLS) at the National Taiwan University Hospital (NTUH) healthcare system. The main hospital program was awarded gold medal while Beihu Branch program was awarded silver medal for the best practice recognition. Their research team developed FLS at NTUH Jin-Shan and Chu-Tung Branch successively. The team also cooperated with Linkou Chang Gung Memorial Hospital (Linkou CGMH), China Medical University Hospital (CMUH), and Kaohsiung Medical University Chung-Ho Memorial Hospital (KMUH) to establish FLS. Subsequently, KMUH was awarded gold medal, and the other two programs have been under review for best practices. Under the guidance of TOA, 18 FLS have been established and 1 FLS is currently under development; 7 of them have been placed on the best practice map on the Capture the Fracture website. This team effort has culminated in the granting of the "2017 Best Secondary Fracture Prevention Promotion " award at the 2017 International Osteoporosis Foundation Worldwide Conference of Patient Societies.

詹鼎正教授現任臺大醫院竹東分院院長、臺大醫院內科暨老年醫學科主治醫師以及內科臨床副教授。他曾任中華民國骨質疏鬆症學會秘書長，也是現任監事。詹教授主要的研究領域為骨質疏鬆。2014年，他推動執行臺大醫院骨科「骨折聯合照護服務(FLS)」的標準化，同年申請最佳執業認證(Best practice recognition)，臺大醫院總院獲得金牌，而北院分院獲得銀牌之肯定。該研究團隊陸續在台大金山分院與竹東分院實行骨折聯合照護服務，也與林口長庚醫院、中國醫藥大學附設醫院及高雄醫學大學附設中正紀念醫院合作，利用同一模式建立FLS，分享資料庫。其中，高醫團隊也獲得金牌獎，而另外兩個團隊則接受最佳執業認證的評估中。在骨鬆學會的指導下，目前臺灣共有18個醫療院所已建立，及4個發展中之骨折聯合照護服務據點，其中7個已經在最佳執行地圖上呈現。而學會的努力，在2017年世界骨質疏鬆基金會全球病友團體大會中，榮獲「最佳次發性骨折防治推廣獎」(2017 Best Secondary Fracture Prevention Promotion)殊榮。

www.capture-the-fracture.org
Get Mapped: How to Get Best Practice Recognition for your FLS

Ding-Cheng (Derrick) D. C. Chan, MD. PhD, FACP
Superintendent, National Taiwan University Hospital Chu-Tung Branch
Clinical Associate Professor, Department of Internal Medicine, College of Medicine, National Taiwan University
Adjunct Associate Researcher, Institute of Population Health Sciences, National Health Research Institutes, Taiwan
Member of Board Supervisors, the Taiwanese Osteoporosis Association

www.capture-the-fracture.org
Learning Objectives of this Webinar

- How to apply to the Best Practice Recognition programme
- How to fill in the FLS questionnaire
- How to use the Best Practice Framework to set up the most effective FLS
- Understand the key principles of implementing an FLS
- Build awareness of the tools available to you on the Capture the Fracture® website
Establish how to Apply to the Best Practice Recognition Programme

Political Prioritization
Get Funded
Get Started
Improve and sustainable

www.capture-the-fracture.org
Why?

High incidence fragilityFx

Care gap

Global health and economic burden

8.9 million fragility Fx occur every year (1.6 million for hip)

80% Fx patients not screened & treated

2050: 6.3 million/yr of hip Fx incidence alone

Direct cost >110Bn/yr by 2025 in the EU, US and China

www.capture-the-fracture.org
New Survey Shows Gap in the Diagnosis and Treatment of Osteoporosis after Fragility Fractures among Post-Menopausal Women in 7 Countries in Asia

Figure 1: Regional variations in post-acute care for osteoporosis

- Percentage patients (%)
- All, China, HK, Korea, M’sia, S’pore, Taiwan, Thailand

- Patient awareness
- BMD screening
- Receipt of medication

Closing the care gap is hard!

**Dedicated FLS**
- Lower re-fracture

**Fewer**
- Secondary care admission
- Care home admission

**Healthcare savings**
- Identify patients at risk
- Systematic Investigation and risk assessment
- Appropriate treatment Initiation

**Ongoing treatment and fracture Monitoring**
Is every FLS automatically effective?
Taiwan Experiences
Is every FLS automatically effective?

1. Set clear criteria and standards
2. Audit services against them
3. Feedback
4. Inform effective care
4 Challenges of the Care Gap

- Hip fracture (dementia)
- Other Inpatients (various wards)
- Outpatient (which clinics)
- Vertebral (radiologist reporting)

- Adherence
- Side effects
- Re-fracture
- Falls

- Same assessment x 3000
- DXA access
- Minimally disruptive for patients

- Match treatment to patient

Identify
Investigate
Monitor
Initiation
Purpose of the Best Practice Framework

Aim:
1. Set the standard for FLS
2. Guidance
3. Benchmarking and fine-tuning

5 domains, 13 standards
- Hip fracture patients
- Inpatient
- Outpatient
- Vertebral fracture patients
- Organization

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.
Fracture Liaison Services in Taiwan

Find them
New Hip Fracture / Newly Identified Vertebral Fracture / Clinical Vertebral Fracture

Assess them
1. FRAX®
2. BMD
3. Life style
4. ALP, Alb, Ca, P, Cre

Fracture Liaison Services (FLS)
T/L Spine X rays
Fall Evaluation
Medication review

Management & Follow-up
Medication, Education (life style and exercise), Referral (geri, endocrione, rehab), Telephone remind, Follow-up (4, 8, 12, 18, 24 m)
Medication and other Managements

Medication

High Fall Risk Mx

Geri, or rehab refer

Exercise suggestion

Education

Endocrine refer if needed

Telephone remind

Follow 4, 8, 12, 18, & 24 months

Database

www.capture-the-fracture.org
The 13 Capture the Fracture Best Practice Standards

**Standard 1** -- Patient identification

**Standard 1** definition:
Fracture patients are identified to enable delivery of secondary fracture prevention

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients identified, not tracked</td>
<td>Patients identified, are tracked</td>
<td>Patients identified, tracked &amp; independently reviewed</td>
</tr>
</tbody>
</table>

KMUH (N=264)
CMUH (N=110)
LKCGMH (N=107)
NTUH-CT (N=40)
NTUH-BB (N=128)
NTUH-MH (N=473)
The 13 Capture the Fracture Best Practice Standards

**Standard 2 -- Patient Evaluation**

**Standard 2 definition:**
Identified patients are assessed for future fracture risk

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% are assessed</td>
<td>70% are assessed</td>
<td>90% are assessed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hospital</th>
<th>NTUH</th>
<th>KMUH</th>
<th>CMUH</th>
<th>LKCGMH</th>
<th>NTUH-CT</th>
<th>NTUH-BB</th>
<th>NTUH-MH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 473)</td>
<td>(N = 110)</td>
<td>(N = 264)</td>
<td>(N = 107)</td>
<td>(N = 40)</td>
<td>(N = 128)</td>
<td>(N = 473)</td>
</tr>
<tr>
<td>NTUH - MH</td>
<td>(N = 473)</td>
<td>KMUH</td>
<td>CMUH</td>
<td>LKCGMH</td>
<td>NTUH-CT</td>
<td>NTUH-BB</td>
<td>NTUH-MH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(N = 264)</td>
<td>(N = 110)</td>
<td>(N = 107)</td>
<td>(N = 40)</td>
<td>(N = 128)</td>
<td>(N = 473)</td>
</tr>
<tr>
<td>NTUH - MH</td>
<td></td>
<td></td>
<td>KMUH</td>
<td>CMUH</td>
<td>LKCGMH</td>
<td>NTUH-CT</td>
<td>NTUH-BB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(N = 473)</td>
<td>(N = 110)</td>
<td>(N = 107)</td>
<td>(N = 40)</td>
<td>(N = 128)</td>
</tr>
<tr>
<td>NTUH - MH</td>
<td></td>
<td></td>
<td></td>
<td>KMUH</td>
<td>CMUH</td>
<td>LKCGMH</td>
<td>NTUH-CT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N = 264)</td>
<td>(N = 110)</td>
<td>(N = 107)</td>
<td>(N = 40)</td>
</tr>
<tr>
<td>NTUH - MH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KMUH</td>
<td>CMUH</td>
<td>LKCGMH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N = 473)</td>
<td>(N = 110)</td>
<td>(N = 107)</td>
</tr>
<tr>
<td>NTUH - MH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KMUH</td>
<td>CMUH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N = 473)</td>
<td>(N = 110)</td>
</tr>
</tbody>
</table>

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

www.capture-the-fracture.org
The 13 Capture the Fracture Best Practice Standards

Standard 3 -- Post Fracture Assessment Timing

**Standard 3** definition:
Post-fracture assessment is conducted in a timely fashion after clinical fracture presentation

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Within 13-16 weeks</td>
<td>Within 9-12 weeks</td>
<td>Within 8 weeks</td>
</tr>
</tbody>
</table>

- KMUH (N=264) 100%
- CMUH (N=110) 93%
- LKCGMH (N=107) 99%
- NTUH-CT (N=40) 100%
- NTUH-BB (N=128) 98%
- NTUH-MH (N=473) 99%

www.capture-the-fracture.org
# The 13 Capture the Fracture Best Practice Standards

## Standard 4 -- Vertebral Fracture (VF) identification

**Standard 4 definition:**
System to identify vertebral fractures

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Known VF identified</td>
<td>Routinely identified for VF</td>
<td>Radiologists identify VF</td>
</tr>
</tbody>
</table>

- **KMUH (N=264)**: 100%
- **CMUH (N=110)**: 94%
- **LKCGMH (N=107)**: 100%
- **NTUH-CT (N=40)**: 100%
- **NTUH-BB (N=128)**: 100%
- **NTUH-MH (N=473)**: 97%

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

[www.capture-the-fracture.org](http://www.capture-the-fracture.org)
The 13 Capture the Fracture Best Practice Standards

Standard 5 -- Assessment Guidelines

**Standard 5 definition:**
Secondary fracture prevention assessment is consistent with guidelines

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local</td>
<td>Regional</td>
<td>National</td>
</tr>
</tbody>
</table>

KMUH (N=264)
CMUH (N=110)
LKCGMH (N=107)
NTUH-CT (N=40)
NTUH-BB (N=128)
NTUH-MH (N=473)

REFLECT AND CONSISTENT WITH HEALTHCARE POLICY AND GUIDELINES AGREED NATION-WIDE

www.capture-the-fracture.org
# The 13 Capture the Fracture Best Practice Standards

**Standard 6 -- Secondary Causes of Osteoporosis**

**Standard 6** definition:
Patients screened for underlying causes of low BMD

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMUH (N=264)</td>
<td>50% of patients screened</td>
<td>70% of patients screened</td>
<td>90% of patients screened</td>
</tr>
<tr>
<td>CMUH (N=110)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LKCGMH (N=107)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NTUH-CT (N=40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NTUH-BB (N=128)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NTUH-MH (N=473)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

www.capture-the-fracture.org
### Standard 7 definition:
Patients at risk for falls are evaluated and sent for prevention

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% of patients evaluated</td>
<td>70% of patients evaluated</td>
<td>90% of patients evaluated</td>
</tr>
</tbody>
</table>

- KMUH (N=264) 100%
- CMUH (N=110) 100%
- LKCGMH (N=107) 100%
- NTUH-CT (N=40) 100%
- NTUH-BB (N=128) 100%
- NTUH-MH (N=473) 99%
The 13 Capture the Fracture Best Practice Standards

Standard 8 -- Multifaceted risk-factor Assessment

**Standard 8 definition:**
Patients are screened and referred for existing lifestyle changes to reduce future fractures

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% of patients screened</td>
<td>70% of patients screened</td>
<td>90% of patients screened</td>
</tr>
</tbody>
</table>

- KMUH (N=264) 100%
- CMUH (N=110) 100%
- LKCGMH (N=107) 100%
- NTUH-CT (N=40) 100%
- NTUH-BB (N=128) 100%
- NTUH-MH (N=473) 100%

www.capture-the-fracture.org
The 13 Capture the Fracture Best Practice Standards

**Standard 9 -- Medication Initiation**

**Standard 9 definition:**
Patients, not on treatment at time of fracture, are initiated on osteoporosis treatment

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% of patients initiated</td>
<td>70% of patients initiated</td>
<td>90% of patients initiated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hospital</th>
<th>NTUH-MH (N=473)</th>
<th>NTUH-BB (N=128)</th>
<th>NTUH-CT (N=40)</th>
<th>LKCGMH (N=107)</th>
<th>CMUH (N=110)</th>
<th>KMUH (N=264)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90%</td>
<td>93%</td>
<td>100%</td>
<td>90%</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>

www.capture-the-fracture.org
The 13 Capture the Fracture Best Practice Standards
Standard 10 -- Medication Review

**Standard 10 definition:**
Patients, already on treatment, undergo reassessment of medication

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTUH-MH (N=473)</td>
<td>50% of patients reassessed</td>
<td>70% of patients reassessed</td>
<td>90% of patients reassessed</td>
</tr>
<tr>
<td>NTUH-BB (N=128)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NTUH-CT (N=40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LKCGMH (N=107)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMUH (N=110)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KMUH (N=264)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

100%
## The 13 Capture the Fracture Best Practice Standards

### Standard 11 -- Communication Strategy

**Standard 11 definition:**
FLS management plan is communicated

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Communicated to physicians</td>
<td>Communicated to physicians &amp; contains 50% of criteria*</td>
<td>Communicated to physicians &amp; contains 90% of criteria*</td>
</tr>
</tbody>
</table>

- KMUH (N=264)
- CMUH (N=110)
- LKCGMH (N=107)
- NTUH-CT (N=40)
- NTUH-BB (N=128)
- NTUH-MH (N=473)

- X-RAY & DXA
- FRACTURE, FALL RISK FACTORS ET AL. 11 ITEMS
### The 13 Capture the Fracture Best Practice Standards

#### Standard 12 -- Long-term Management

**Standard 12 definition:**
Protocol for long-term follow-up and patient adherence

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long-term follow-up at years 1, 2 or beyond</td>
<td></td>
<td>Short-term follow-up at 6-12 months &amp; long-term follow-up at years 1, 2 or beyond</td>
</tr>
</tbody>
</table>

- KMUH (N=264)
- CMUH (N=110)
- LKCGMH (N=107)
- NTUH-CT (N=40)
- NTUH-BB (N=128)
- NTUH-MH (N=473)

www.capture-the-fracture.org

---

3, 6, 9, 12 MONTHS
3, 6, 9, 12 MONTHS
3, 6, 9, 12 MONTHS
4, 8, 12, 18, 24 MONTHS
4, 8, 12, 18, 24 MONTHS
14, 8, 12, 18, 24 MONTHS
The 13 Capture the Fracture Best Practice Standards
Standard 13 -- Fragility fractures are recorded in a database

**Standard 13 definition:**
Fragility fractures are recorded in a database

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local database</td>
<td>Regional database</td>
<td>National database</td>
</tr>
</tbody>
</table>

KMUH (N=264)
CMUH (N=110)
LKCGMH (N=107)
NTUH-CT (N=40)
NTUH-BB (N=128)
NTUH-MH (N=473)

NATIONAL DATABASE
## Fracture Liaison Service (NTUH) Satisfaction Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Adequate</th>
<th>Unsatisfied</th>
<th>Very unsatisfied</th>
<th>NA</th>
<th>missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinators</td>
<td>54.6%</td>
<td>32.4%</td>
<td>5.3%</td>
<td></td>
<td></td>
<td>6.8%</td>
<td>1.0%</td>
</tr>
<tr>
<td>FLS Project</td>
<td>51.2%</td>
<td>33.8%</td>
<td>6.8%</td>
<td>0.5%</td>
<td></td>
<td>6.8%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
1-year mortality

1-year mortality

- Total
- New Identified Vertebral Fracture
- New Hip Fracture
- Clinical Vertebral Fracture

%
1-year mortality (hip fracture)

<table>
<thead>
<tr>
<th>Total (NTUH-MH, LKCGMH, CMUH, KMUH)</th>
<th>Previous Study (Wang et al., 2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.83%</td>
<td>16.32%</td>
</tr>
</tbody>
</table>
The Process

Step 1
FLS submits online application

Step 2
FLS marked in green on the map while being reviewed

Step 3
BPF score discussed with site

Step 4
FLS is scored and recognized on the map

www.capture-the-fracture.org
SCORING: 5 domains

- Hip fracture
- Other inpatient
- Outpatient
- Vertebral
- Organizational (Falls/database)
Scoring: Global / Service Perspective

Drive Improvement

Recognize Excellence

www.capture-the-fracture.org
Scoring: Patient Perspective

Will I receive Effective Secondary Prevention?
BEST PRACTICE FRAMEWORK QUESTIONNAIRE

INTRODUCTION

Capture the Fracture invites Fracture Liaison Services (FLS) to apply for Capture the Fracture® Best Practice Recognition Programme. As a global programme, Capture the Fracture® aims to prevent secondary fractures through the worldwide promotion of FLS. Chaired by Professor Kristina Åkesson of Sweden, the steering committee has developed the Best Practice Framework to recognize the achievements of existing FLS and to encourage other healthcare systems to implement their own FLS.

APPLICATION

Please submit your FLS for recognition by completing the following questionnaire, saving it with the hospital name and date in the title and emailing it to capturethefracture@nofbonehealth.org.

Capture the Fracture will display the FLS on our interactive map at www.capturethefracture.org/map-of-best-practice. Completion of this form should take approximately 20 to 60 minutes depending on the level of data that is readily accessible to the FLS.

DEFINITIONS

- Fracture Liaison Service (FLS): service that aims to systematically identify, treat and refer all eligible patients within a local population who have suffered a fragility fracture with the aim of reducing their risk of subsequent fractures.
- A site is defined as a single hospital, or a regional service, or network of healthcare providers with identical service provision at each location.
- A fragility fracture is a fracture that occurs after trauma equivalent to a fall from standing height or less.
- An inpatient stay is defined as requiring a hospital bed on a ward and does not include accident and emergency and acute assessment units.
- A clinical vertebral fracture is a fracture of the vertebrae which comes to clinical attention on account of causing symptoms e.g. pain.
- A radiological vertebral fracture is a fracture detected by vertebral imaging of the vertebrae through chest X-ray or other modalities (e.g. re-formatted CT scan, MRI scan or Vertebral Fracture Assessment technology on a DEXA scanner).
- A service review for monitoring includes any review performed at the patient level to ascertain medication use, re-fracture and further falls.
# DEMOGRAPHICS

In the following table, enter information about the institution/hospital/clinic and its clinicians.

## A. About the Hospital

<table>
<thead>
<tr>
<th>A1. Name of hospital:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A2. Name of FLS:</td>
<td></td>
</tr>
<tr>
<td>A3. Address: (include city and country)</td>
<td></td>
</tr>
</tbody>
</table>

**A4. Site covers:**
- Please select one:
  - A single hospital
  - Part of a larger hospital network or system
  - Other, please specify:

**A5. If site is part of a larger hospital network or system, please provide the following information:**
- Name of hospital system:
- Number of hospitals in system:
- Population size of hospital system:
- Name of lead clinician:
- Name of FLS coordinator for the system:

**A6. Type of site:**
- Please select one:
  - Private
  - Private not for profit/charitable
  - Government/public
  - Public/private – mixed funding
  - Teaching/University
  - Non-academic
  - Other type of funding – please specify:

**A7. Population size served by the hospital (where applicable):**
- Population size:

**A8. Which acute fragility fractures are seen within your healthcare setting?**
- Examples of non-ortho inpatient fractures include: pelvis, wrists and shoulders admitted to a medical service for pain management or because a frail, elderly person cannot manage at home with the fracture.
- Please select all that apply:
  - Hip fracture
  - Inpatient fragility fractures – orthopaedic/trauma
  - Other inpatient fractures – non-orthopaedic/trauma
  - Outpatient fragility fractures
  - Clinical vertebral fractures
  - Radiological vertebral fractures
  - Other fractures, please specify:

**A9. Do you consent to your data being used anonymously for scientific publication?**
- Please select one:
  - No
  - Yes

If yes:
- Approval to cite country when referencing data
- Approval to cite world region when referencing data

**A10. How did you hear about the Capture the Fracture® programmes?**
- Please select all that apply:
  - Capture the Fracture® website
  - Conference/congress, please specify:
  - National societies, please specify:
  - Referral, please specify:

## B. User Information

<table>
<thead>
<tr>
<th>B1. Name of person completing this form:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B2. Email:</td>
<td></td>
</tr>
<tr>
<td>B3. Phone number:</td>
<td></td>
</tr>
</tbody>
</table>

**B4. What is your role in service?**
- Please select one:
  - Lead clinician – speciality:
  - Specialist practitioner – speciality:
  - Other, please specify:

## C. Lead Clinician (if different from above)

<table>
<thead>
<tr>
<th>C1. Name of lead clinician:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C2. Email:</td>
<td></td>
</tr>
<tr>
<td>C3. Phone number:</td>
<td></td>
</tr>
</tbody>
</table>

**C4. What is your role in service?**
- Please select one:
  - Orthopaedics
  - Endocrinology
  - Rheumatology
  - Geriatrics
  - Gynaecology
  - Other, please specify:

## D. FLS Coordinator (if different from above)

<table>
<thead>
<tr>
<th>D1. Name of FLS coordinator:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D2. Email:</td>
<td></td>
</tr>
<tr>
<td>D3. Phone number:</td>
<td></td>
</tr>
</tbody>
</table>

**D4. What is your role in service?**
- Please select one:
  - Clinician – speciality:
  - Specialist practitioner – speciality:
  - Other – speciality:
## About the FLS Staff

<table>
<thead>
<tr>
<th>E1.</th>
<th>For each type of staff, please enter how much time is spent working within FLS as a whole time equivalent (WTE) percentage. (E.g. 50% for a nurse working half time and 100% for a full-time nurse):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resident physician/surgeon</td>
</tr>
<tr>
<td></td>
<td>Nurse</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
</tr>
<tr>
<td></td>
<td>Occupational therapist</td>
</tr>
<tr>
<td></td>
<td>Clerical/administrator</td>
</tr>
<tr>
<td></td>
<td>Other, please specify below:</td>
</tr>
</tbody>
</table>

| E2. | Please provide any other comments about the staff here: |

| E3. | When did FLS start at your site? |

| E4. | When did the current service model start at your site? |

## About FLS Patient Identification

| F1. | How many fragility fracture patients were seen by your FLS in the past 12 months? |

| F2. | Which patients are identified by your FLS: |

| F3. | Are there any restrictions for which patients are identified by your service? |

| F4. | Hip fracture patients: how are they identified? |

| F5. | Other non-hip non-vertebral inpatients: how they identified? |

| F6. | Fracture outpatients: how are they identified? |

## About FLS Post Fracture Assessment and/or Treatment for Prevention of Secondary Fractures

| G1. | Who assesses the patient for secondary fracture prevention? |

| G2. | Does your facility have access to DXA within the institution? |

| G3. | If not, does your facility have access to DXA elsewhere for referral? |

| G4. | If you do not have access to DXA, what are you using? |

| G5. | Which patients with fractures are eligible to be referred to DXA? |

| G6. | Who assesses the need for treatment? |

| G7. | Who discusses the results of the above assessments with the patient? |

---

**Please select all that apply:**

- FLS Staff
- Hospital clinician—specialty:
- Referred or delegated to primary care physician
- Other, please specify:

---

**Please select one:**

- Yes
- No

---

**Please select one:**

- Peripheral ultrasound
- Quantitative pQCT
- Peripheral DXA
- FRAX or other risk assessment tool
- Other, please specify:

---

**Please select all that apply:**

- FLS Staff
- Hospital clinician, specialty:
- Referred or delegated to primary care physician
- Other, please specify:
### H. Standard 1: Patient Identification

<table>
<thead>
<tr>
<th>Question</th>
<th>&lt;50%</th>
<th>50%-69%</th>
<th>70%-89%</th>
<th>90% or more</th>
<th>Do not know</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. Hip fragility fracture patients</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>H2. Patients admitted with non-hip non-vertebral fragility fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>H3. Patients attending fracture clinic/outpatient clinic with non-vertebral fragility fractures such as wrist fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

### I. Standard 2: Patient Evaluation

<table>
<thead>
<tr>
<th>Question</th>
<th>&lt;50%</th>
<th>50%-69%</th>
<th>70%-89%</th>
<th>90% or more</th>
<th>Do not know</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1. Hip fragility fracture patients</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I2. Inpatients with non-hip non-vertebral fragility fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I3. Outpatients with non-vertebral fragility fractures such as wrist fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
</tr>
</thead>
</table>

### J. Standard 3: Post-fracture Assessment Timing

<table>
<thead>
<tr>
<th>Question</th>
<th>0-8 weeks</th>
<th>9-12 weeks</th>
<th>13-16 weeks</th>
<th>&gt;16 weeks</th>
<th>Do not know</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1. Hip fragility fracture patients</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>J2. Inpatients with non-hip, non-vertebral fragility fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>J3. Outpatients with non-vertebral fragility fractures such as wrist fractures</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>J4. Opportunity for making the decision faster:</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
## L. Standard 5: Assessment guidelines

**L1.** The assessment &/or treatment for prevention of secondary fracture within your service uses protocols that:

- Please select all that apply:
  - Have been developed locally?
  - Reflect and are consistent with healthcare policy and guidelines agreed region-wide?
  - Reflect and are consistent with healthcare policy and guidelines agreed nation-wide?

**L2.** Do you use an absolute risk calculator?

- Please select all that apply:
  - FRAX®
  - Q Fracture
  - Gaman
  - Do not know
  - Other

**L3.** Comments:

## M. Standard 6: Secondary Causes of Osteoporosis

**M1.** What % of patients undergo investigation (at least blood tests) to exclude underlying causes of low BMD?

- Please select one:
  - Less than 50%
  - 50%-69%
  - 70%-89%
  - 90% or more
  - Do not know

**M2.** What is routinely tested?

- Please select all that apply:
  - Serum calcium
  - Serum phosphate
  - Serum alkaline phosphate
  - Serum 25OH vitamin D
  - Serum Parathyroid hormone
  - Full blood count
  - Erythrocyte sedimentation rate/ ESR
  - Liver function
  - Thyroid function
  - Coeliac disease screen
  - Immunoglobulins/myeloma screen
  - Renal function
  - Other

**M3.** What other tests are used (ie. which bone marker)?

**Comments:**

## N. Standard 7: Falls Prevention Services

**N1.** Does your FLS assessment include falls assessment & interventions (where necessary) to lessen future fracture risk?

- Please select one:
  - Yes
  - No
  - Do not know

**N2.** If yes, what % of patients are evaluated to determine whether falls prevention services are required?

- Please select one:
  - Less than 50%
  - 50%-69%
  - 70%-89%
  - 90% or more
  - Do not know

**N3.** Are falls assessment & interventions provided by the same service personnel as determine need for treatment for secondary fracture prevention?

- Yes
- No
- N/A

Please describe who provides further falls assessment:

**N4.** Which interventions are offered to reduce falls risk?

- Please select all that apply:
  - Evidence based strength and balance exercise class (ie. Otago, FAME, etc.)
  - Medication review
  - Home environment assessment
  - Eye test

**N5.** Are there any restrictions apply?

- Please select all that apply:
  - None
  - Age
  - Gender
  - Inpatients only
  - Specific fracture groups
  - Other, please specify

**N6.** Comments:

## O. Standard 8: Multifaceted Health & Lifestyle Risk-Factor Assessment

**O1.** What percentage of patients with fragility fractures undergo a multifaceted assessment, for lifestyle risk-factors, e.g. smoking, alcohol use lack of exercise, dietary advice, etc.?

- Please select one:
  - Less than 50%
  - 50%-69%
  - 70%-89%
  - 90% or more
  - Do not know

**O2.** Comments:

## P. Standard 9: Medication Initiation Standard

**P1.** What % of patients who are recommended for osteoporosis treatment (not including calcium and vitamin D) actually receive treatment?

- Please select one:
  - Less than 50%
  - 50%-69%
  - 70%-89%
  - 90% or more
  - Do not know

**P2.** Are there differences by fracture site/ age/ gender/ residence?
### Q. Standard 10: Medication Review

**Q1.** What % of patients already on bone treatment when they had the fragility fracture, undergo medication review by your service to check whether that remains the most appropriate treatment?

- [ ] < 50%
- [ ] 50%-69%
- [ ] 70%-89%
- [ ] 90% or more
- [ ] Do not know

**Q2.** Are there differences by fracture site/age/residence, and what other tests are used (e.g. which bone markers)?

### R. Standard 11: Communication Strategy

**R1.** Who receives the report from your service which summarizes the outcomes of assessment for treatment to prevent secondary fractures?

- [ ] Patient
- [ ] Primary care physician
- [ ] Orthopaedic surgeon or clinician responsible for fracture care
- [ ] Falls service
- [ ] Osteoporosis specialist, please specify:
- [ ] Other, please specify:

**R2.** What information is included in that report?

- [ ] Fracture risk score
- [ ] DXA – BMD
- [ ] DXA – vertebral fracture assessment or spine X-ray result if done instead
- [ ] Falls risk factors
- [ ] Fracture risk score (FRAX, Garvan, Qfracture, etc.)
- [ ] Medication compliance review (if applicable)
- [ ] Follow-up plan
- [ ] Lifestyle/health risk-factor assessment
- [ ] Other, please specify:

**R3.** To whom are alternate outcomes/assessment protocols routinely communicated?

### S. Standard 12: Long-Term Management

**S1.** Is there a management plan for secondary fracture prevention in place to re-evaluate fracture risk and adherence to osteoporosis treatment in those recommended for treatment?

- [ ] Yes
- [ ] No

**S2.** If yes, what does the re-evaluation include?

- [ ] Medication adherence
- [ ] Medication unwanted effects
- [ ] Re-fracture check
- [ ] Change in fracture risk factors
- [ ] Recurrent falls
- [ ] Other, please specify:

**S3.** Which patients undergo re-evaluation by your service?

- [ ] Hip fracture inpatients
- [ ] Non-hip outpatient fragility fractures
- [ ] Clinical vertebral fractures
- [ ] Radiological vertebral fractures

**S4.** At which times are patients re-evaluated after recommendation to start treatment?

- [ ] < 6 months
- [ ] 6-12 months
- [ ] 12-24 months
- [ ] > 25 months

**S5.** Do you time patient re-evaluation from:

- [ ] The date of the index fracture
- [ ] The date treatment is recommended
- [ ] Other, please specify:

**S6.** In what manner are patients monitored?

- [ ] Prescription review
- [ ] Telephone interview
- [ ] Postal questionnaire
- [ ] Clinic review
- [ ] DXA
- [ ] Other, please specify:

**S7.** Who is responsible for the long-term management of the patient?

- [ ] FLS coordinator
- [ ] Non-clinical specialist practitioner
- [ ] Clinician – specialty:
- [ ] Primary care physician
- [ ] Other physician, please specify:

### T. Standard 13: Database

**T1.** Do you have a local database at your FLS where fracture patient records are recorded?

- [ ] Yes
- [ ] No
- [ ] Hip fracture
- [ ] Other fractures

**T2.** If yes, do you add the database information to a regional register?

- [ ] Yes
- [ ] No
- [ ] Hip fracture
- [ ] Other fractures

**T3.** Do you add your fracture data to a central national database?

- [ ] Yes
- [ ] No
- [ ] Hip fracture
- [ ] Other fractures

**T4.** If you answered no to any of the above, what restrictions apply?
Final steps

1. Save the questionnaire with the hospital name and date in the title: oxfordfls2015.pdf
2. Email to: capturethefracture@iofbonehealth.org.
3. Visit www.capturethefracture.org/fls-questionnaire-survey
Scientific publications

**Paper 1:**

**Paper 2:**
Capture the Fracture: a Best Practice Framework and global campaign to break the fragility fracture cycle, *Osteoporosis International*, 11 March 2013

**Paper 3:**
Effective secondary fracture prevention: implementation of a global benchmarking of clinical quality using the IOF Capture the Fracture Best Practice Framework Tool
*Osteoporos Int.* 2015 Jun 13

www.capture-the-fracture.org
CTF Slide kits:
Help educate and promote the need for secondary fracture prevention and effective FLS:

FLS Toolkit:
Guide healthcare professionals, health administrators and policymakers to implement a successful FLS

www.capture-the-fracture.org
To facilitate global endorsement of our best practice, the BPF document has been translated into 9 different languages (Slovak is on the way); 5 of which are among the 10 most spoken languages of the world. The BPF Questionnaire has been translated into 5 languages.
Taiwanese Osteoporosis Association reports successes in secondary fracture prevention

MAY 1, 2017

With 19 Fracture Liaison Services implemented or in development, Taiwanese hospitals are among the Asia-Pacific’s greatest champions of secondary fracture prevention.

At the recent IOF Worldwide Conference of Osteoporosis Patient Societies, the Taiwanese Osteoporosis Association (TOA) received an award for their extensive efforts in support of Fracture Liaison Services (FLS) in Taiwan. The recognition, which was awarded for the best
2017 Best Secondary Fracture Prevention Promotion

Awarded to

TAIWAN OSTEOPOOROSIS ASSOCIATION
CLOSING THE CARE GAP

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.

John A Kanis
PRESIDENT, IOF

www.capture-the-fracture.org
CTF steering committee

• Prof. Serge Ferrari, Chair, IOF Committee of Scientific Advisors, Division of Bone Diseases, Geneva University Hospital, Switzerland
• Prof. Kassim Javaid, Co-chair, Capture the Fracture Programme, University of Oxford, UK
• Prof. Kristina Åkesson, Co-chair, Capture the Fracture Programme, Malmö Skåne University Hospital, Sweden
• Prof. Willem Lems, VU University Medical Centre, Amsterdam, the Netherlands
• Prof. Thierry Thomas, University Hospital of Saint Etienne, France
• Prof. Stefan Goemaere, Ghent University Hospital, Belgium
• Dr. Donncha O’Gradaigh, Waterford Regional Hospital, Ireland
• Dr. Mark Edwards, University of Southampton, UK
• Dr. Paul Mitchell, Synthesis Medical Limited, New Zealand
• Philippe Halbout, PhD, Chief Executive Officer, IOF
• Dominique Pierroz, PhD, Science Manager, IOF
• Masaki Fujita, Capture the Fracture Coordinator, IOF
226 FLS registered on the map

150 Complete  28  56  50

16

76 Under review

- Algeria
- Australia
- Belgium
- Brazil
- Bulgaria
- Canada
- China
- Czech Republic
- Finland
- France
- Greece
- India
- Ireland
- Italy
- Netherlands
- New Zealand
- Portugal
- Singapore
- Spain
- Sweden
- Switzerland
- Taiwan
- Trinidad & Tobago
- UK
- USA

July 20, 2017

www.capture-the-fracture.org
226 FLS, 35 countries, 6 continents

- FLS in N. America = 36
- FLS in S. America = 16
- FLS in MENA region = 6
- FLS in APAC region = 32

July 20, 2017

www.capture-the-fracture.org
IOF Global Patient Charter
Taking action for a world without fragility fractures

Osteoporosis is a major public health concern. It is an underlying cause of chronic pain, long-term disability and premature death. Yet the condition remains severely underdiagnosed and undertreated. This must stop!

**OUR CHARTER, OUR RIGHTS**

**DIAGNOSIS:**
Timely and accurate assessment of fracture risk; falls risk and diagnosis of osteoporosis

**PATIENT CARE:**
Access to effective intervention options (treatment, lifestyle changes) and to regular drug treatment review by an appropriate healthcare professional

**PATIENT VOICE:**
Involvement and choice in a long-term management plan with defined goals

**SUPPORT:**
Care and support from society and healthcare providers, to ensure active and independent living

Help drive improvement, and show your support:

**PATIENTS:** Speak to your healthcare professional to identify your risk, and take action for change

**HEALTHCARE PROFESSIONALS:** Protect communities' bone health through appropriate assessment and treatment

**POLICYM A KERS, HEALTH AUTHORITIES, AND NATIONAL GOVERNMENTS:** Support the establishment of coordinated models of care (Fracture Liaison Services) to help reduce the global human and socioeconomic burden of fragility fractures

Show your commitment, sign the IOF Global Patient Charter at www.iofglobalpatientcharter.org

Your signatures will help raise the profile of this silent disease, to make fracture prevention a global health priority.

**SUPPORT THE CAUSE TODAY – SIGN THE CHARTER!**

at www.iofglobalpatientcharter.org
國際骨鬆基金會全球病人憲章

為一個沒有脆弱性骨折的世界，即刻採取行動！
骨質疏鬆症是一個公共衛生上重要的議題，它不只會造成慢性疼痛，長期失能，更會造成提早的死亡。然而現況仍是嚴重的評估低估及治療不足，這些必須終止！

經由此憲章的宣告，身為病人或家屬，我有權利要求

在診斷方面：
及時並精確評估骨折風險，跌倒風險及診斷骨質疏鬆症。

在病人照顧方面：
獲得由專業醫療人員所提供的有效介入選擇（例如接受治療或改變生活型態），以及定期藥物治療評估。

在病人參與方面：
參與訂定並選擇有確定目標的長期治療計畫。

在社會支持方面：
獲得相關學/協會及醫療提供者的照護及支持，以確保活力及獨立自主生活。

為幫忙推動改變，展現您的支持，您可採取下列做法：

病人方面：要求照顧您的醫師確認您骨質疏鬆症的危險因子，並採取行動去改善。
專業醫療人員方面：以適當方式去評估及治療骨質疏鬆症病人，維護社區骨骼健康。
政策制定者、衛生單位及各國政府方面：支持建立骨質疏鬆症照護網絡，來幫助減少脆弱性骨折所帶來的全球化社會及經濟負擔。

實現您的承諾！一起來簽署「國際骨鬆基金會全球病人憲章」！
www.iofglobalpatientcharter.org
您的簽署將會彰顯對骨質疏鬆症與無聲疾患的疾病之認知，並使骨質預防成為全球優先考慮的健康議題！
DEVELOPED & ENDORSED BY 46 NATIONAL SOCIETIES
Acknowledgements

We thank IOF, CTF steering committee, TOA staff, as well as FLS physician champions and coordinators in Taiwan for arranging this Webinar.

If you have any additional questions, comments or feedback please email capturethefracture@iofbonehealth.org