

Fragility fracture prevention in primary care

Paul Mitchell
Synthesis Medical Ltd – New Zealand and UK
University of Derby, UK

8th June 2012

GP CME 2012
Rotorua, New Zealand

Why does osteoporosis matter?

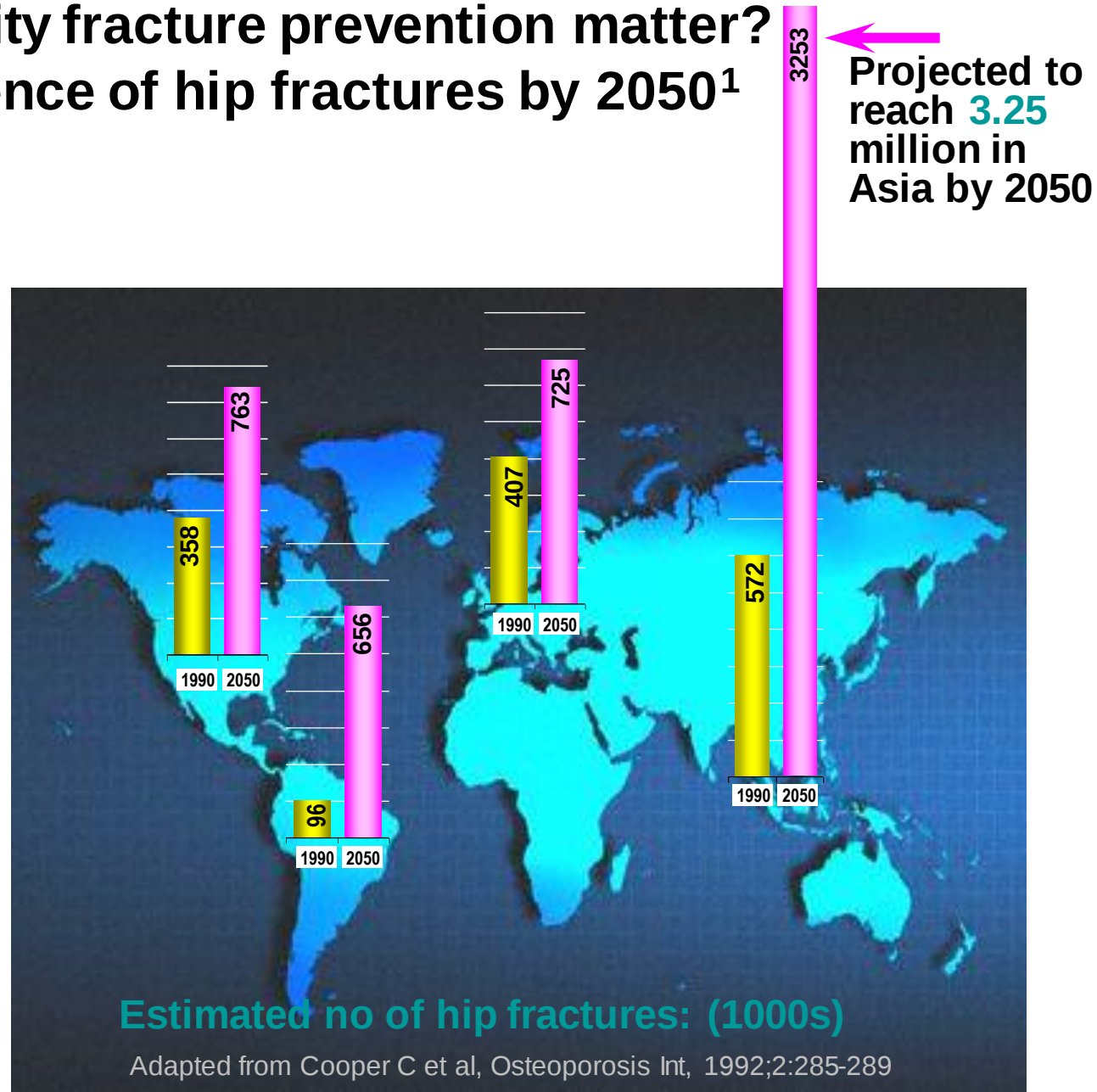
because ...

**Worldwide a fragility fracture
occurs every 3 seconds**

Why does fragility fracture prevention matter?

Projected incidence of hip fractures by 2050¹

Total number of
hip fractures:
1990 = 1.66 million
2050 = 6.26 million



Why does osteoporosis matter in New Zealand?

- **Because New Zealand's 1 million baby boomers began to retire in 2011**
- By the late 2050s, one in four New Zealanders will be aged ≥ 65 years¹
- The population aged ≥ 85 years is set to grow at least 3-fold, from 72,500 people in March 2011² to between 250,000 and 420,000 by 2061³
- **3,803 cases of hip fracture occurred in 2007, at a cost of NZ\$105 million⁴**
- The annual incidence of hip fractures in women aged >60 years in 1991 was 1,830⁵ which had risen to 2,639 by 2007⁴, an increase of 44%
- Audits throughout the world have shown that the majority of patients presenting with fragility fractures do not receive intervention to prevent secondary fractures
 - **Studies from New Zealand identified a similar 'care gap' across the country^{6,7}**

1. Statistics New Zealand. Demographic trends. 2011

2. Statistics New Zealand. National population estimates: March 2011 quarter. 2011

3. Statistics New Zealand. National Population Projections: 2009 (base)-2061

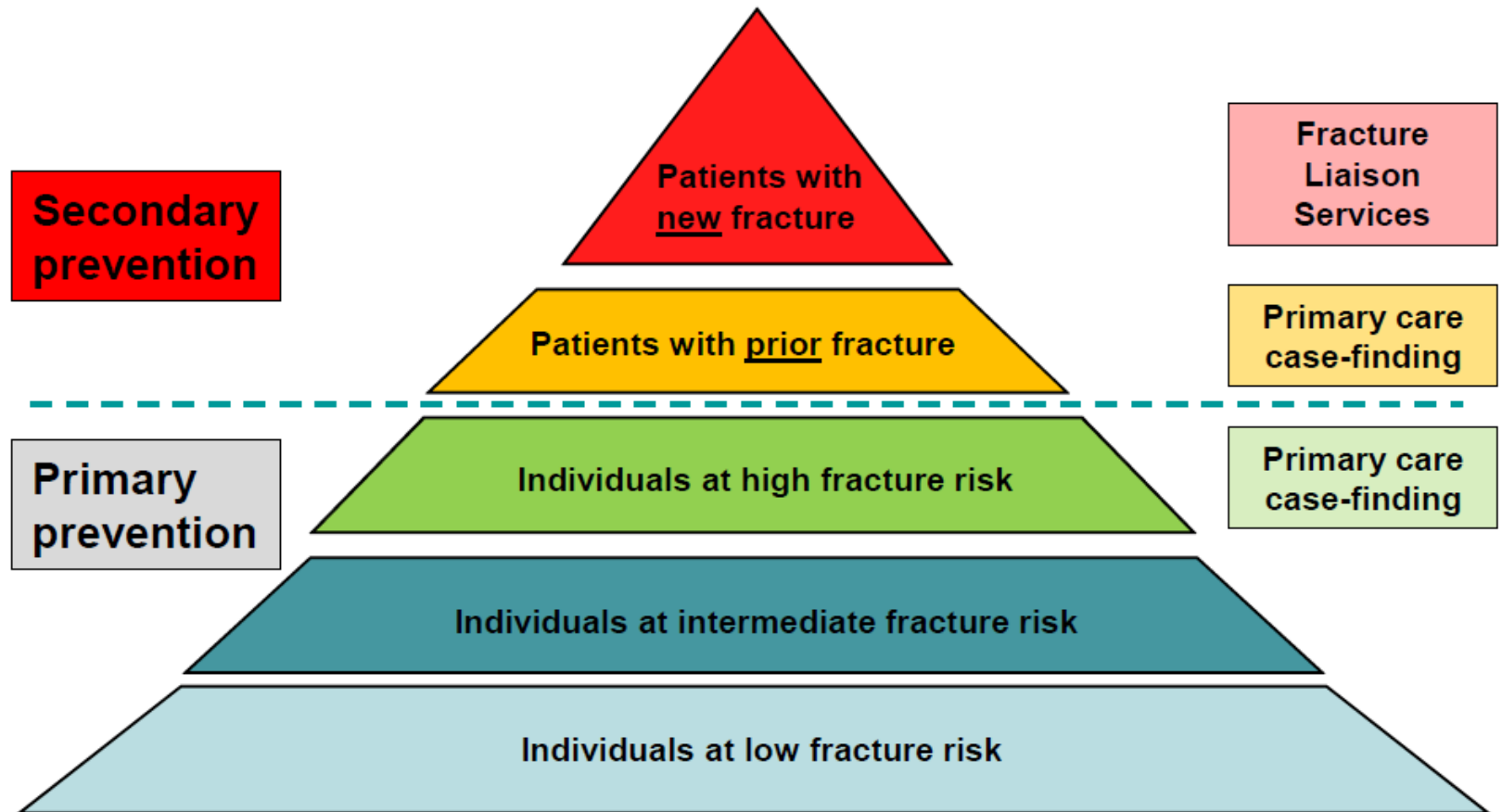
4. *Appl Health Econ Health Policy* 2011;9(2):111-123. Brown Pet al

5. *Pharmacoeconomics* 1996;9(3):231-245 Lane A

6. *Osteoporosis Int* 2005;16 Suppl 2:S44-53 Dreinhoffer K et al

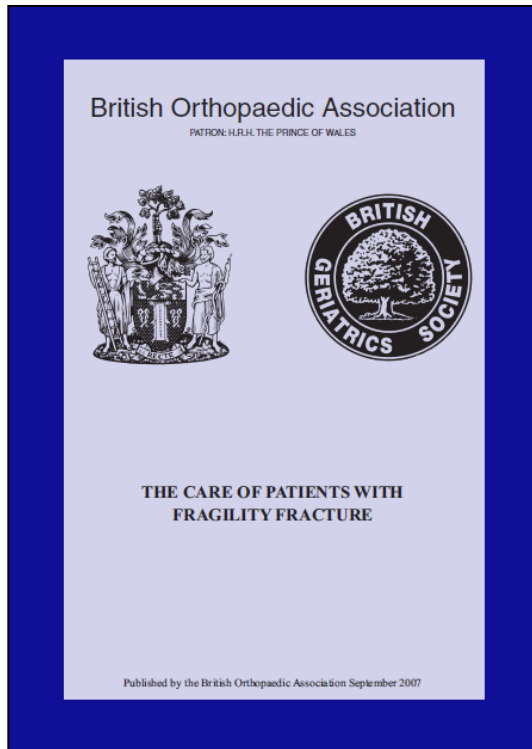
7. *J Bone Joint Surg Br* 2009; 91-B(SUPP II):342. Stracey-Clitherow HD & Bossley CJ

A systematic approach to fracture prevention

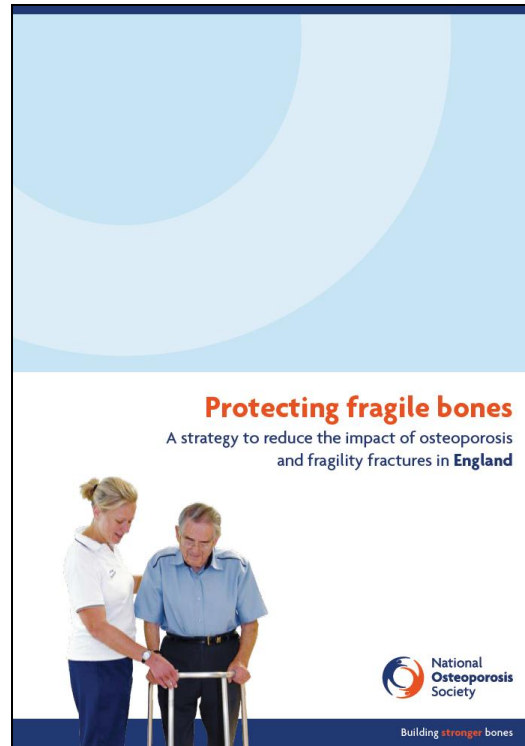


Hip fracture care and prevention in the UK

A consensus on a systematic approach



**Professional
organisations**



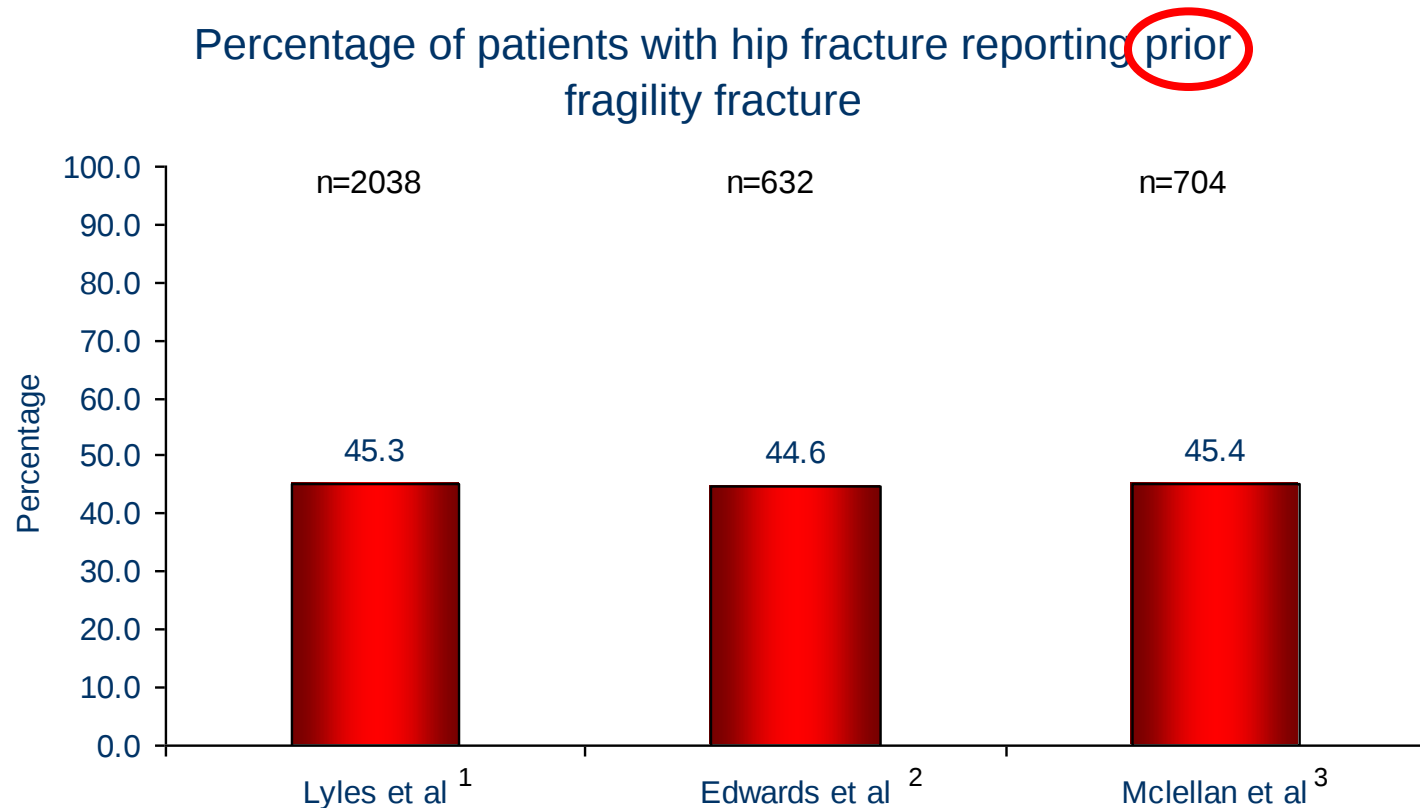
**Patient
society**



**Policy
makers**

Signal fractures

Patients presenting with hip fracture



1. ASBMR 2006. 28th Annual Meeting in Philadelphia, Pennsylvania, USA. 2006. Abstract SA405. Lyles KW et al

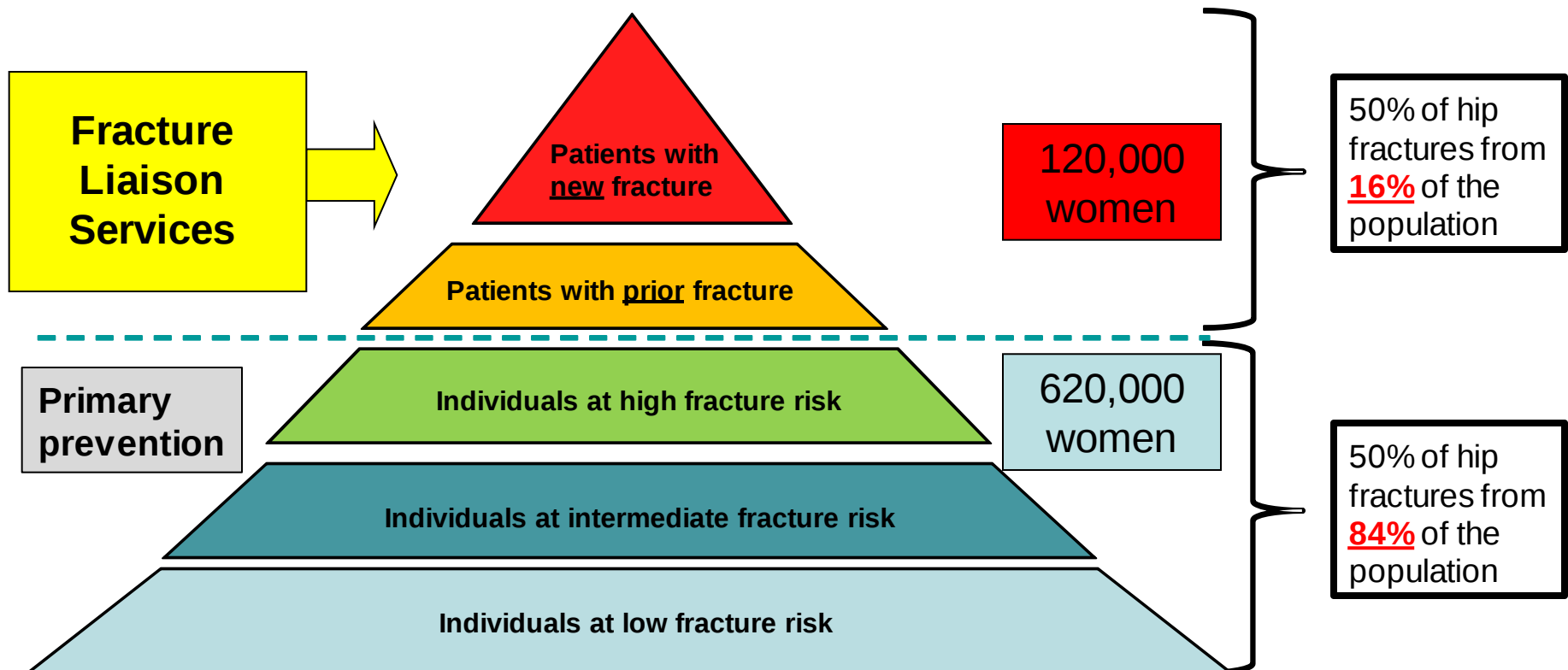
2. *Clin Orthop Rel Res* 2007;461:226-230 Edwards BJ et al

3. NHS Quality Improvement Scotland. *Effectiveness of Strategies for the Secondary Prevention of Osteoporotic Fractures in Scotland*. 2004. McLellan AR et al

Fracture risk and ease of case-finding

Effective targeting of healthcare resources

The majority of post-menopausal women (84%*) have not suffered a fragility fracture
Strategies to case-find new and prior fracture patients could identify up to **50% of all potential hip fracture cases from 16% of the population**



Adapted from Curr Med Res Opin 2005;21:4:475-482 Brankin E et al

* BOA-BGS 2007 Blue Book. <http://www.nhfd.co.uk/>

Fracture Liaison Service

The Glasgow Model: aims and service structure

- Offer assessment to all patients over 50 years presenting with a fragility fracture
- Glasgow FLS is delivered by a Nurse Specialist supported by a Lead Clinician in Osteoporosis
- Nurse Specialist identifies patients with new fragility fractures:
 - admitted to the orthopaedic inpatient ward, and
 - managed as outpatients through the fracture clinic
- The Nurse Specialist arranges attendance of appropriate patients at the “one stop” FLS clinic where BMD is measured by DXA to assess future fracture risk
- Treatment for secondary fracture prevention initiated by the FLS when merited on basis of future fracture risk
- Older patients, where appropriate, are identified and referred onto the falls service/falls pathway
- **Long-term management plans agreed by protocol with local general practice**

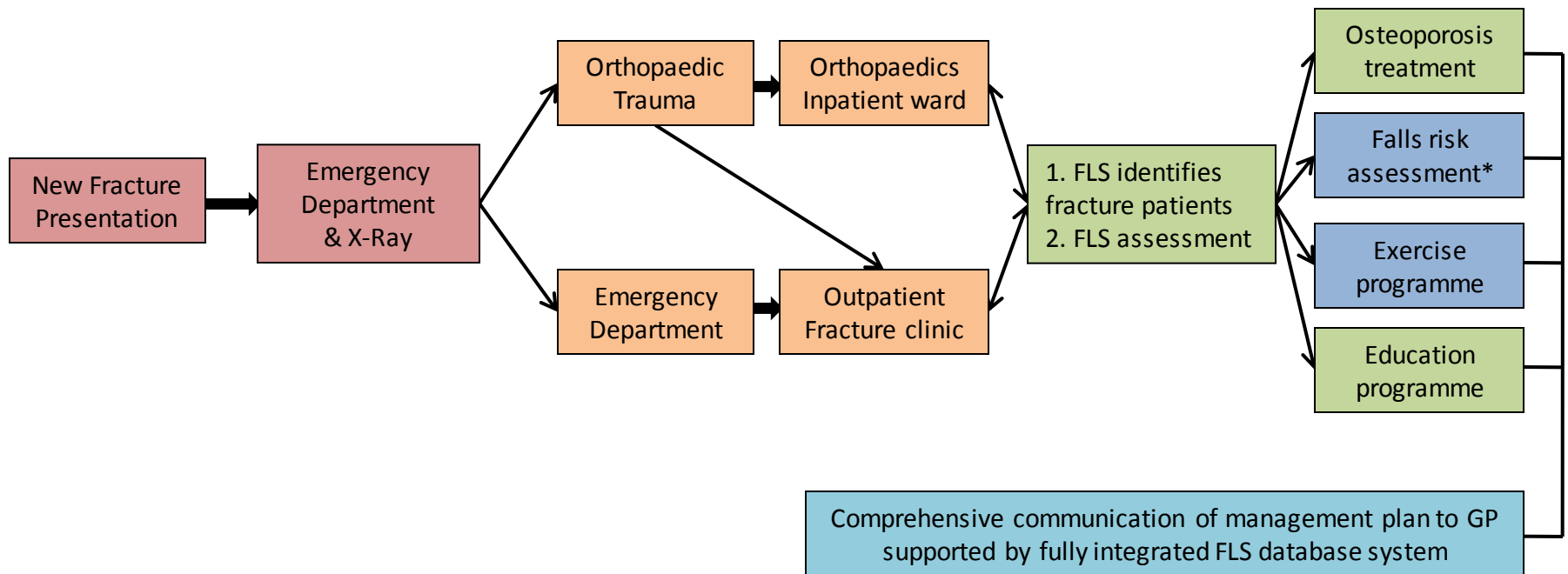
1. *Best Prac Res Clin Rheum* 2005;19:6:1081-1094 Gallacher SJ

2. *Osteoporosis International* 2003;14(12):1028-1034 McLellan AR et al

3. *Calcif Tissue Int* 2007;81:85-91 Langridge CR et al

Fracture Liaison Service

Service structure

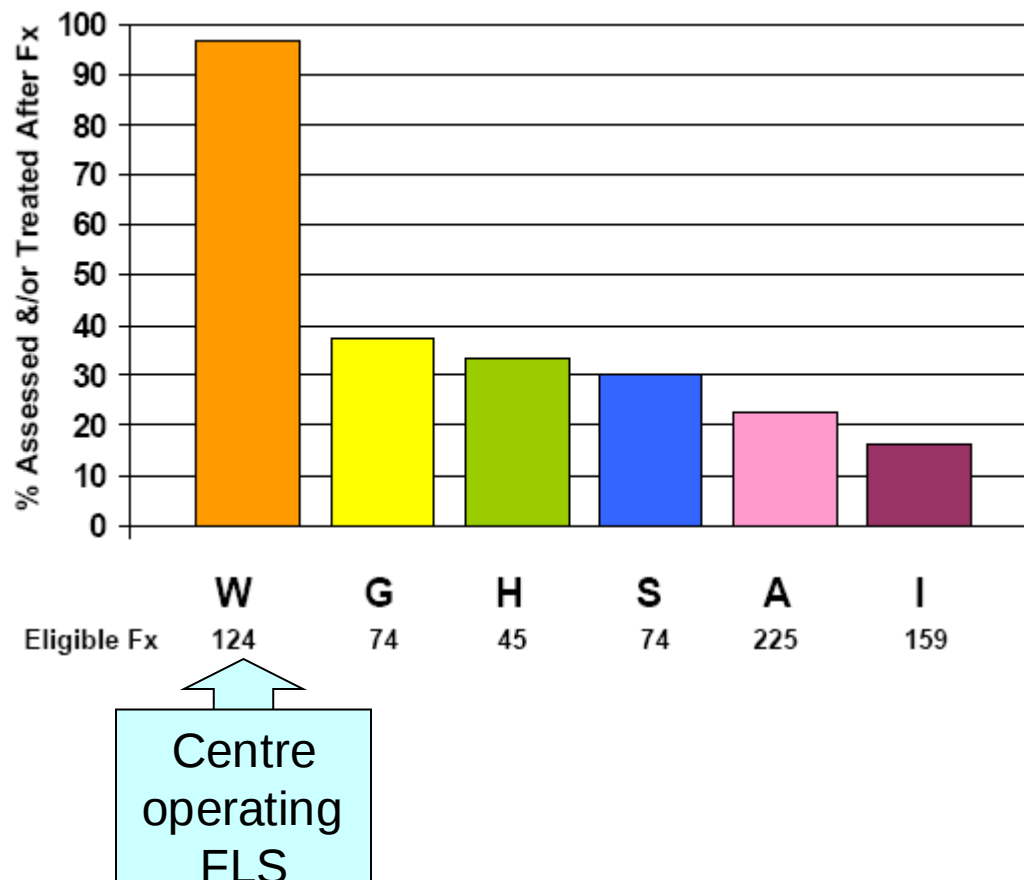


(Adapted from) BOA-BGS 2007 Blue Book. <http://www.nhfd.co.uk/>

* Older patients, where appropriate, are identified and referred for falls assessment

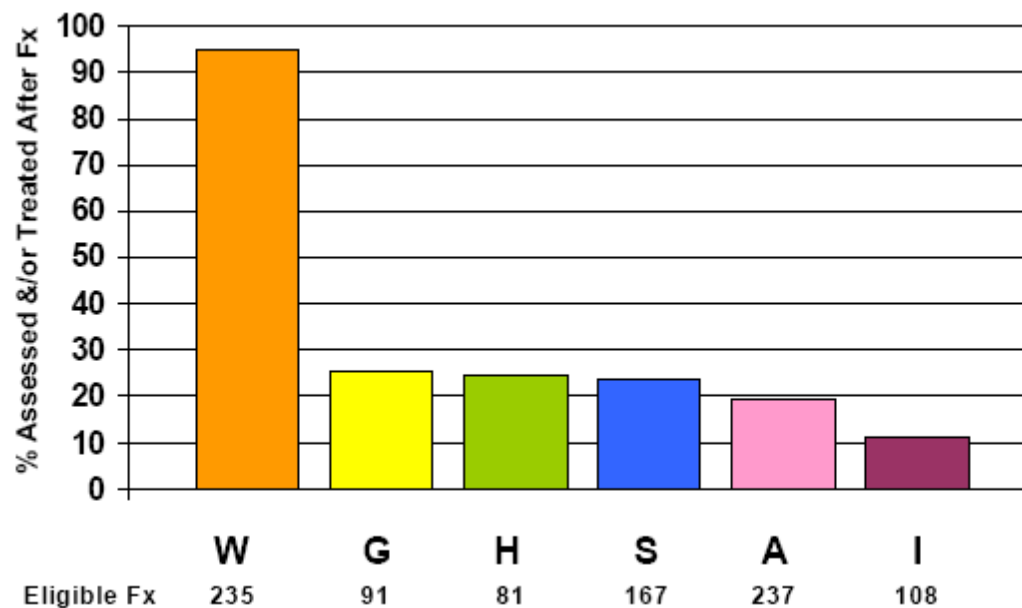
NHS Quality Improvement Scotland national audit

FLS vs other models: Outcome after hip fracture by centre



NHS Quality Improvement Scotland national audit

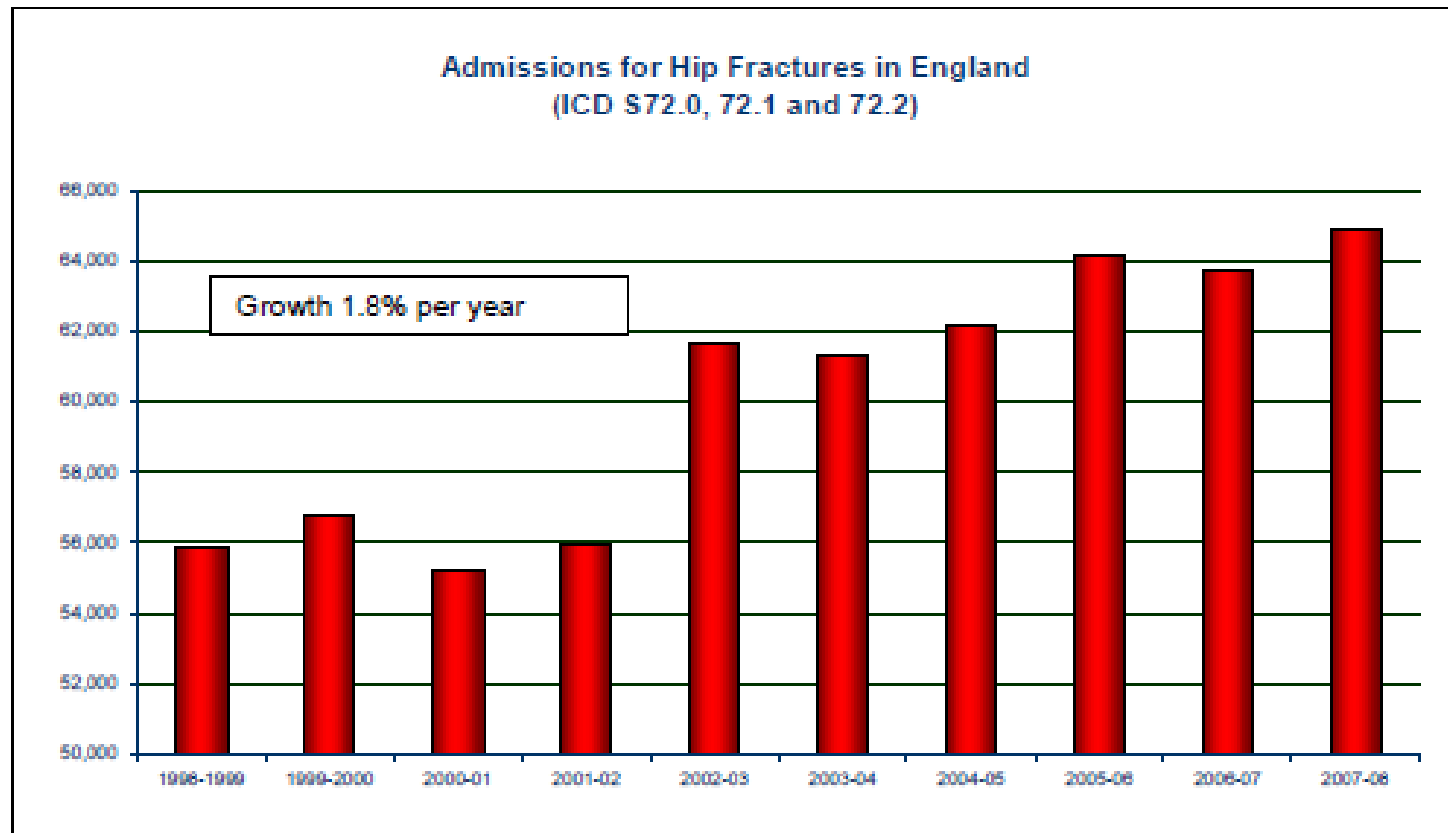
FLS vs other models: Outcome after wrist fracture by centre



Centre
operating
FLS

The Bone and Joint Decade in England

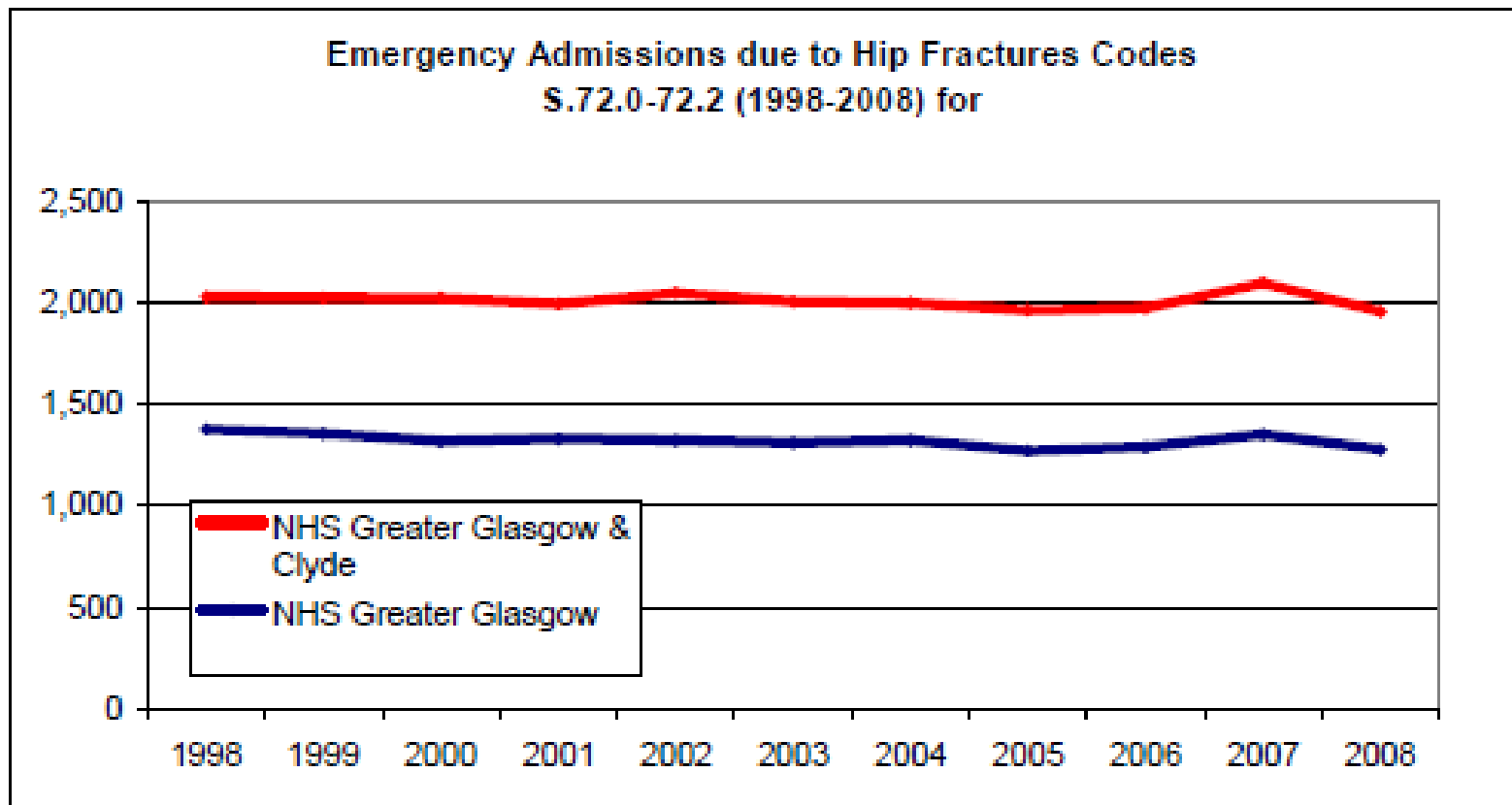
Hospital admissions for hip fractures



The Bone and Joint Decade in Glasgow

Hospital admissions for hip fractures

Emergency admissions with hip fracture (codes S.72.0-72.2) ↓ by 7.3%



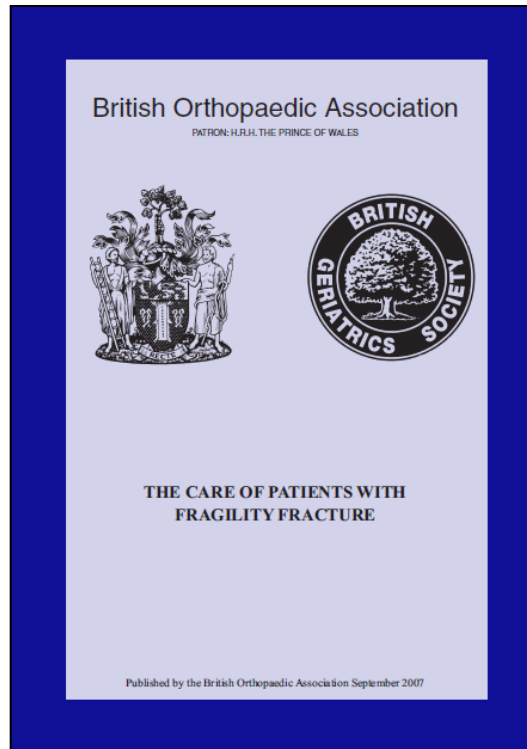
The Glasgow Fracture Liaison Service

A cost-saving intervention

- In May 2011, a formal cost-effectiveness analysis of the Glasgow FLS was published
- This study concluded that 18 fractures were prevented, including 11 hip fractures, and £21,000 was saved per 1,000 patients managed by the Glasgow FLS versus UK 'usual care'

Hip fracture care and prevention in the UK

A consensus on a systematic approach



**Professional
organisations**

Professional consensus guidance on hip fractures 2007 Blue Book and National Hip Fracture Database

- **A systematic approach to hip fracture care and prevention¹⁻³**
- Hip fracture **care**
 - Blue Book Chapter 1
 - Effective ortho-geriatric services for hip fracture patients
 - Universal National Hip Fracture Database participation
- Hip fracture **prevention**
 - Blue Book Chapter 2
 - An FLS for every hospital to identify all **new** fragility fracture patients
 - Pro-active case-finding of all unassessed **prior** fragility fracture patients

Adoption of FLS across the UK

The National Osteoporosis Society Manifestos

FIVE CHALLENGES

Five challenges

1: The management of falls, fragility fractures and osteoporosis

The challenge:

We want a Fracture Liaison Service linked to every hospital that receives fragility fractures, to ensure that every fragility fracture patient gets the treatment and care they need.

4. The indicators that influence primary care

We want healthcare professionals working in primary care to be offered meaningful financial incentives to find and treat those at a high risk of fragility fracture.

5. Public awareness and education

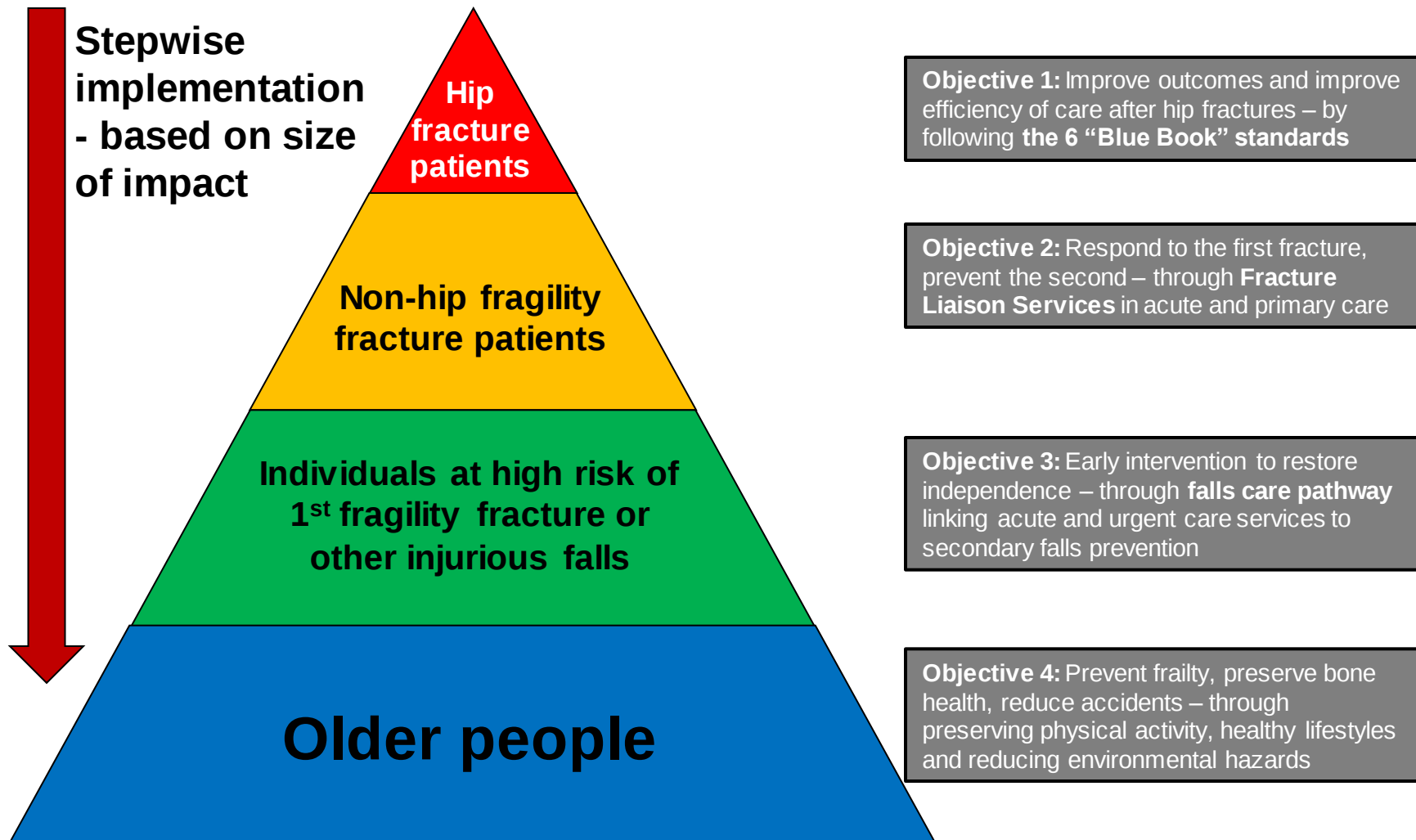
We want measures to improve understanding of bone health amongst individuals of all ages, with positive messages communicated in schools.

3



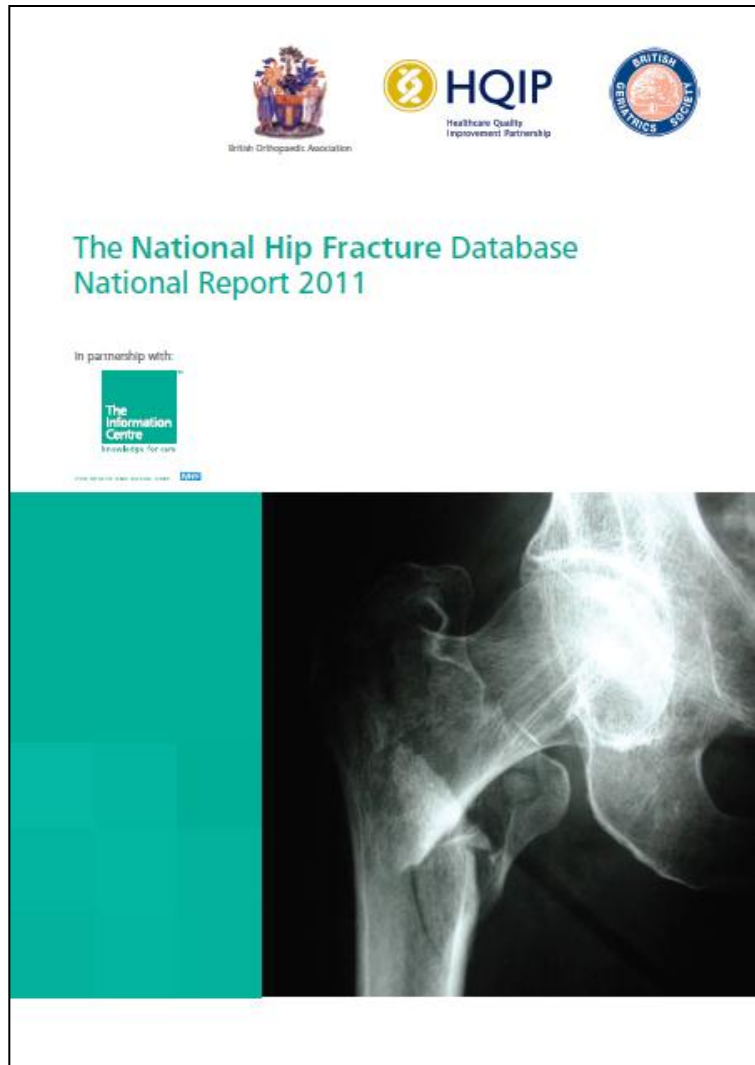
Falls and fracture care and prevention

A road map for a systematic approach



2011 National Hip Fracture Database Report

Fracture care & secondary prevention for 53,433 cases



Issue
01
January
2012

Towards a National Hip Fracture Registry

Enhancing Outcomes for Older People




Who are we?
In October 2011 a group of clinicians representing all Australian States and New Zealand gathered in Sydney with the shared goal of improving care of hip fracture patients.

As a first step toward this goal it was agreed that a National Hip Fracture Steering Group be set up to drive the establishment of a National Hip Fracture Registry. In the absence of any current funding, members were selected based on willingness to roll up their sleeves and undertake the ground work needed to make it happen.

Over the coming months we will introduce all the members of the Steering Group as well as reporting on progress with development of the Registry.

Steering Group
Jacqueline Close – Co Chair (ANZSGM)
Ian Harris – Co-Chair (AOA)
Laura Ahmad
Paul Mitchell
Stewart Fleming
Hannah Seymour
Mellick Chehade (OA)
Roger Harris
Rebecca Mitchell
Betty Ramsay
Richard Halliwell (ANZCA)

Why a National Hip Fracture Registry
Hip fracture is the most serious and costly fall-related injury suffered by older people. There were an estimated 16,518 hip fractures among Australians aged ≥40 years in 2006-07 and 3,803 among New Zealanders in 2007. As 450 million baby boomers begin to retire, healthcare systems throughout the world must prepare to develop systematic approaches to hip fracture care and prevention.

The quality of care provided those who sustain a fractured hip has been shown to be dependent upon orthopaedic and geriatric service configurations. In the absence of effective systems of care, key markers of quality - including time to surgery, complication rates, re-admission rates and length of stay - have been demonstrated to vary considerably. Furthermore, a growing body of published literature suggests that provision of secondary preventative care post hip fracture, (osteoporosis assessment / treatment and falls prevention strategies), is not routinely delivered. This secondary prevention care gap leaves hip fracture patients needlessly exposed to risk of subsequent falls and fractures.

As stated previously on more than one occasion:
"It costs less to provide high quality care"

2011 National Hip Fracture Database Report

Blue Book core standards

1. 58% admitted to an orthopaedic ward within four hours
2. 87% receive surgery within 48 hours
3. 3% reported as having developed pressure ulcers
4. 37% assessed preoperatively by an ortho-geriatrician
- 5. 66% discharged on bone protection medication**
- 6. 81% received a falls assessment prior to discharge**

Secondary prevention in primary care

The Lanarkshire experience

CURRENT MEDICAL RESEARCH AND OPINION
VOL. 21, NO. 4, 2006, 475-482
© 2006 LIBRAPHARM LIMITED

0300-7995
doi:10.1185/030079906X331810
All rights reserved: reproduction in whole or part not permitted

ORIGINAL ARTICLE

Closing the osteoporosis management gap in primary care: a secondary prevention of fracture programme*

Eamonn Brankin^a, Caroline Mitchell^a and Robin Munro^b
on behalf of Lanarkshire Osteoporosis Service

^a Coatbridge Local Health Care Co-operative, Coatbridge, Lanarkshire, Scotland

^b Wishaw General Hospital, Wishaw, Lanarkshire, Scotland

Address for correspondence: Dr Eamonn Brankin, Church Street Practice, 7 Church Street, Coatbridge, Lanarkshire, ML5 3EE, Scotland. Tel: +44-1236-422678; Fax: +44-1236-431811; email: Eamonn.Brankin@lanarkshire.scot.nhs.uk

Key words: Bisphosphonates - Fracture - Osteoporosis - Predictors

ABSTRACT

Background: Effective treatments are available to reduce fracture risk in patients with osteoporosis. Prioritisation of assessment and treatment for those patients at highest risk of fracture will ensure the optimal utilisation of healthcare resources.

Objectives: To confirm prior fracture to be a strong predictor of osteoporosis, evaluate a simple means of identifying patients with osteoporosis, assess the current management gap in this high risk patient group and to enable initiation of treatment where appropriate.

Research design and methods: All women ≥ 65 years of age living at home and registered with a general practitioner (GP) in Coatbridge, Lanarkshire, Scotland (4045) were mailed an osteoporosis questionnaire. Participants were from an area of generally low socioeconomic background, where 16% of the population are over ≥ 65 years and ≥ 90% are Caucasian. Those who had sustained a fracture or had ≥ 2 osteoporosis risk factors and had not previously been screened for osteoporosis were invited for a Dual energy X-ray Absorptiometry scan.

A second group of women at high risk of osteoporosis were referred by their GP for a scan. Bone mineral density (BMD) was determined and treatment was reviewed and prescribed according to national guidelines.

Results: 2396/4045 women returned the questionnaire (response rate 59%); 2296 were correctly completed and made up the sample size. Eight hundred and fifty two had sustained ≥ 1 fracture(s), of whom 43 (5%) had previously had

BMD testing and 80 (9.4%) were receiving treatment. There were 1434 women with no history of fracture that had ≥ 2 risk factors for osteoporosis. Of 395 women referred by their GP, 113 had sustained fractures. Following the audit, 1054 women were scanned, including 463 women who had not sustained fractures that had ≥ 2 osteoporosis risk factors. Of the 1054, 591 women had sustained 763 fractures: 46 (6.0%) hip, 284 (37.2%) wrist, 37 (4.8%) humerus and 396 (51.9%) other bones (mainly ankle or rib). Eighty (13.1%) women with a fracture history had normal BMD, 204 (34.5%) were osteoporotic and 307 (51.9%) were osteoporotic. Older women were more likely to have osteoporosis: overall, 12.8%, 46.8% and 63.0% of women were osteoporotic in age groups < 65 years, 65-75 years and > 75 years, respectively. Treatment was prescribed according to Lanarkshire's osteoporosis guidelines for 670 (63.6%) patients; 90.0% received bisphosphonate + calcium/vitamin D and 10% received calcium/vitamin D.

Conclusions: A simple scan identified patients with prior fracture and with osteoporosis. Prior fracture was confirmed to be a strong predictor of osteoporosis: 86.4% of women with a fracture history had low BMD and 51.9% had osteoporosis. Similar disease management programmes elsewhere in primary care to identify high risk patients and ensure appropriate prescribing would, in addition to implementing national guidelines, be pharmaco-economically prudent and improve management of patients with fragility fracture across the UK.

* Presented at the National Osteoporosis Society Tenth Conference, 28 November-1 December 2004, Harrogate, UK



Secondary prevention in primary care

The Lanarkshire experience

- | | |
|------------------------------------|-----------------|
| • 617 women with 1 fracture | 53 on treatment |
| • 161 women with 2 fractures | 12 on treatment |
| • 50 women with 3 fractures | 11 on treatment |
| • 15 women with 4 fractures | 4 on treatment |
| • 9 women with 5 fractures | 1 on treatment |
| • 852 women with ≥ 1 fracture | 81 on treatment |

Secondary prevention in primary care

The Lanarkshire experience

Key Findings

- 21% of women ≥ 65 had suffered a prior fracture
- 86% had low bone mass
- 52% were osteoporotic
- 70% of women ≥ 75 with fracture are osteoporotic
- Before programme, 9% of fracture patients treated
- After programme, 64% of fracture patients treated
- National guidance implemented

The final piece of the UK policy puzzle

The UK GP Contract 2012-13

- OST1: The practice can produce a register of patients:
 - Aged 50-74 years with a record of a fragility fracture after 1 April 2012 and a diagnosis of osteoporosis confirmed on DXA scan
 - Aged 75 years and over with a record of a fragility fracture after 1 April 2012
- OST2: The percentage of patients aged between 50 and 74 years, with a fragility fracture, in whom osteoporosis is confirmed on DXA scan, who are currently treated with an appropriate bone-sparing agent
- OST3: The percentage of patients aged 75 years and over with a fragility fracture, who are currently treated with an appropriate bone-sparing agent

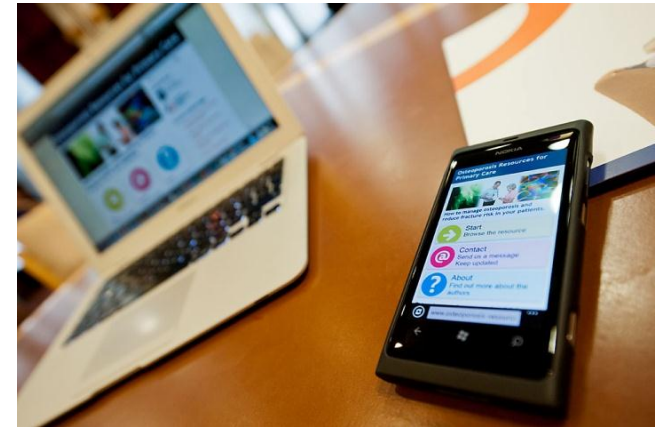
Osteoporosis Resources for Primary Care

www.osteoporosis-resources.org.uk

Clear, concise information
on all aspects of
osteoporosis management

How to implement QOF,
and much more

Keep updated by joining
our email list



Supported by



Royal College of
General Practitioners



Osteoporosis Resources for Primary Care

www.osteoporosis-resources.org.uk

The 7 I's of osteoporosis management:

- **Introduction:** An introduction to osteoporosis, its causes and the impact it has on society
- **Identification:** Case-finding individuals that are at high risk of fractures or an injurious fall, or who have already suffered a fragility fracture
- **Investigation:** Using diagnostic and risk assessment tools to assess those older people that will benefit most from treatment
- **Initiation:** Treatment options, lifestyle changes and other interventions to reduce fracture risk
- **Information:** Effective communication between healthcare professionals and with patients to deliver optimal long-term care
- **Incentives:** How the Quality and Outcomes Framework and other incentives reward good management of fracture risk
- **Implementation:** Putting best practice into every practice

Supported by



Osteoporosis Resources for Primary Care

www.osteoporosis-resources.org.uk

Launched February 2012



Supported by

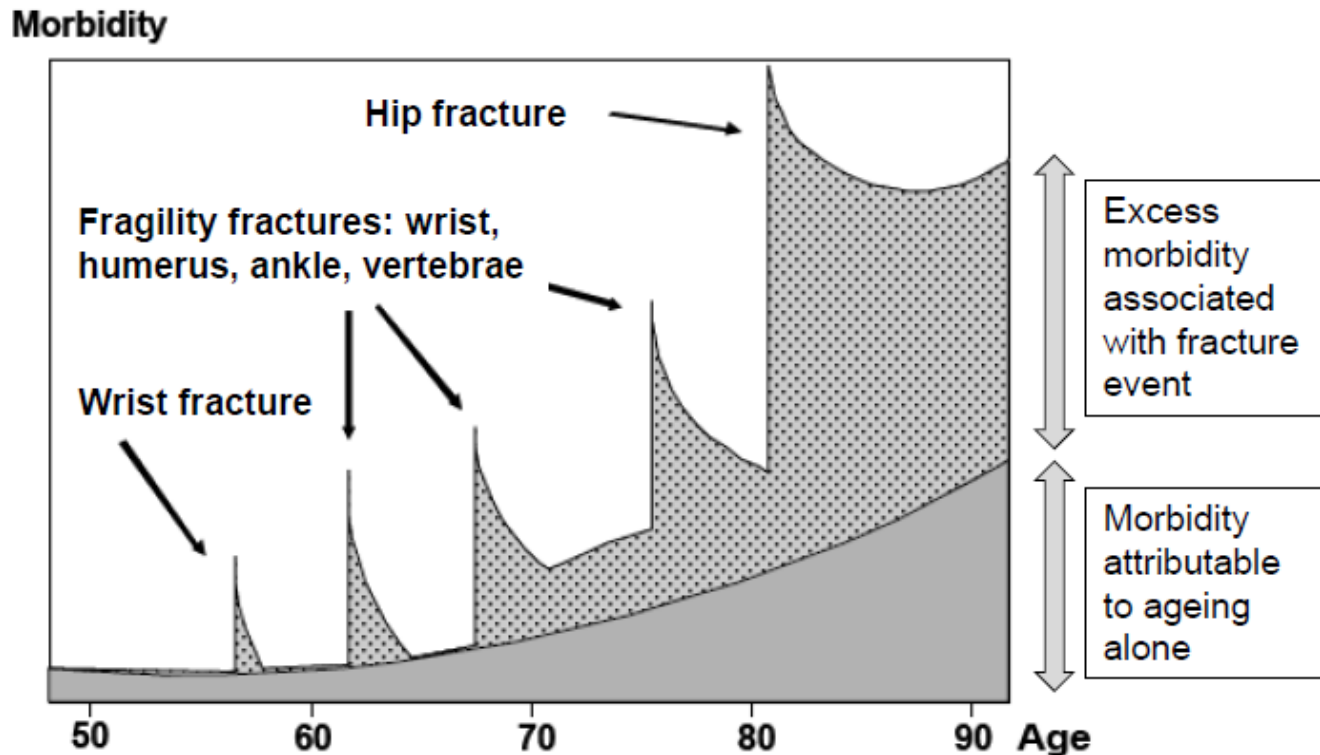


Royal College of
General Practitioners



Osteoporosis is a long-term condition¹

Only General Practice can deliver long-term solutions



'Hip fracture is all too often the final destination of a thirty year journey fuelled by decreasing bone strength and increasing falls risk'²

1. *J Endocrinol Invest* 1999;30:583-588 Kanis JA & Johnell O

2. *Osteoporosis Review*. 2009;17(1):14-16 Mitchell PJ

Whilst we have been talking,
342 people have had a fragility fracture,
60 people have broken their hip
30/60 let us know they were coming

Acknowledgements

- The work from the UK described in this presentation represents the efforts of numerous colleagues and their respective organisations over the last decade
- Major contributions from the following individuals should be highlighted:
 - **Professionals and their organisations:** Dr. Alastair McLellan (Western Infirmary, Glasgow), Dr. Stephen Gallacher (Southern General Hospital, Glasgow), Sister Mayrine Fraser (Western Infirmary, Glasgow), Sister Carol McQuillan (Southern General Hospital, Glasgow), Dr. Eamonn Brankin (Coatbridge, Scotland), Dr. Jonathan Bayly (University of Derby), Dr. Alun Cooper (Crawley, England), Professor David Marsh (British Orthopaedic Association), Dr. Finbarr Martin (British Geriatrics Society), Dr. Colin Currie (NHFD), Dr. Robert Wakeman (NHFD), Maggie Partridge (NHFD), Professor David Reid (University of Aberdeen), Professor Roger Francis (Newcastle University), Professor Opinder Sahota (Nottingham University), Professor Cyrus Cooper (Universities of Oxford and Southampton), Professor Juliet Compston (University of Cambridge)
 - **Policymakers:** Professor Keith Willett (Oxford University and Department of Health in England), Professor David Oliver (City University and Department of Health in England), Anne Macleod (Department of Health in England), Nye Harries (Department of Health in England)
 - **Patient society:** National Osteoporosis Society – Anne Thurston, James Cooper, Juliette Brown
 - **Pharmaceutical manufacturers:** Dr. Femi Adekunle (Novartis Pharmaceuticals UK Ltd), Emma Gilbert (Amgen), Eddie Kerr (Roche Products Ltd), Mark Waker (London, England), Alan Potter (Stroud, England), Chris Boulton (Amersham, England)

