ASBMR Symposium
Systems Approaches to Secondary Fracture Prevention:
Doing Something that Actually Works

The Glasgow UK Experiment: What a Working System Can Deliver

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Disclosures: none

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Quality improvement in fracture secondary prevention: the problems we needed to solve?

In 1998, with our 'usual care' service:

- Only 4-11% with Colles' or hip fractures received Rx to prevent secondary fractures
- Inequality of access to assessment & treatment
- Need for referral by primary care back to 2^{y} care for DXA
- Referral for DXA by primary care >6-12 mo after fracture
- More DXAs for lower risk groups than fracture patients
- Secondary care physician-led osteoporosis clinics lacked capacity to cope with entire fracture workload

Quality improvement in fracture secondary prevention: what we needed to do?

In 1999, FLS, system change & the 3'i's

Identification

Ensure all F&M age 50+ with new 'low trauma' fractures are identified & offered post-fracture assessment

Investigation

Provide post-fracture risk assessment including DXA

Intervention

Ensure patients who need, receive fracture secondary prevention care package

Quality improvement in fracture secondary prevention: how should we do it?

1999, FLS system change

- Tailor ‘identification’ to patients’ acute fracture care pathways
- BUT different ‘identification’ processes for vertebral fractures & for previous fractures
- Take ownership & responsibility for the 3'i's without changing any other clinicians’ modes of practice for highest risk
- Provide FLS post-fracture ‘investigation’ & ‘intervention’ 6 weeks after fracture at a ‘one-stop' clinic
- All activity recorded in FLS EMR for communication & audit

Quality improvement in fracture secondary prevention: who should do what?

1999, FLS system change & the role of Lead Clinician

- Local champion for FLS
- Support for & supervision of the nurse specialist
- Assessment of ~3% of FLS patients who don’t fall into the treatment protocols

Quality improvement in fracture secondary prevention: who should do what?

1999, FLS system change & roles of the Nurse Specialist

Identification of fracture patients in ortho ward & clinics

- Identification of vertebral fracture patients from Radiology reporting system (CT, MR, plain X-ray)
- 'One-stop clinics' with nurse specialist consultation & risk assessment including DXA
- Nurse-specialists better than doctors at working to protocols
- Real-time entry of clinical data into FLS EMR

NEW FRACTURE PRESENTING TO A&E / ORTHO / TRAUMA

NEW RADIOLOGY REPORT OF FRACTURE

PREVIOUS FRACTURE

Identified by GPs

NON-FRACTURE HIGH RISK

Identified by GPs / SCCs

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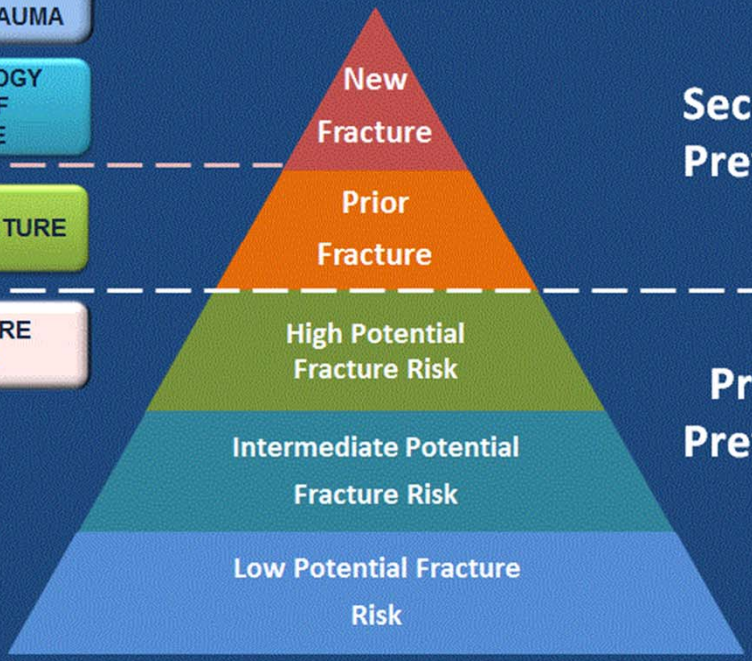
NON-FRACTURE HIGH RISK

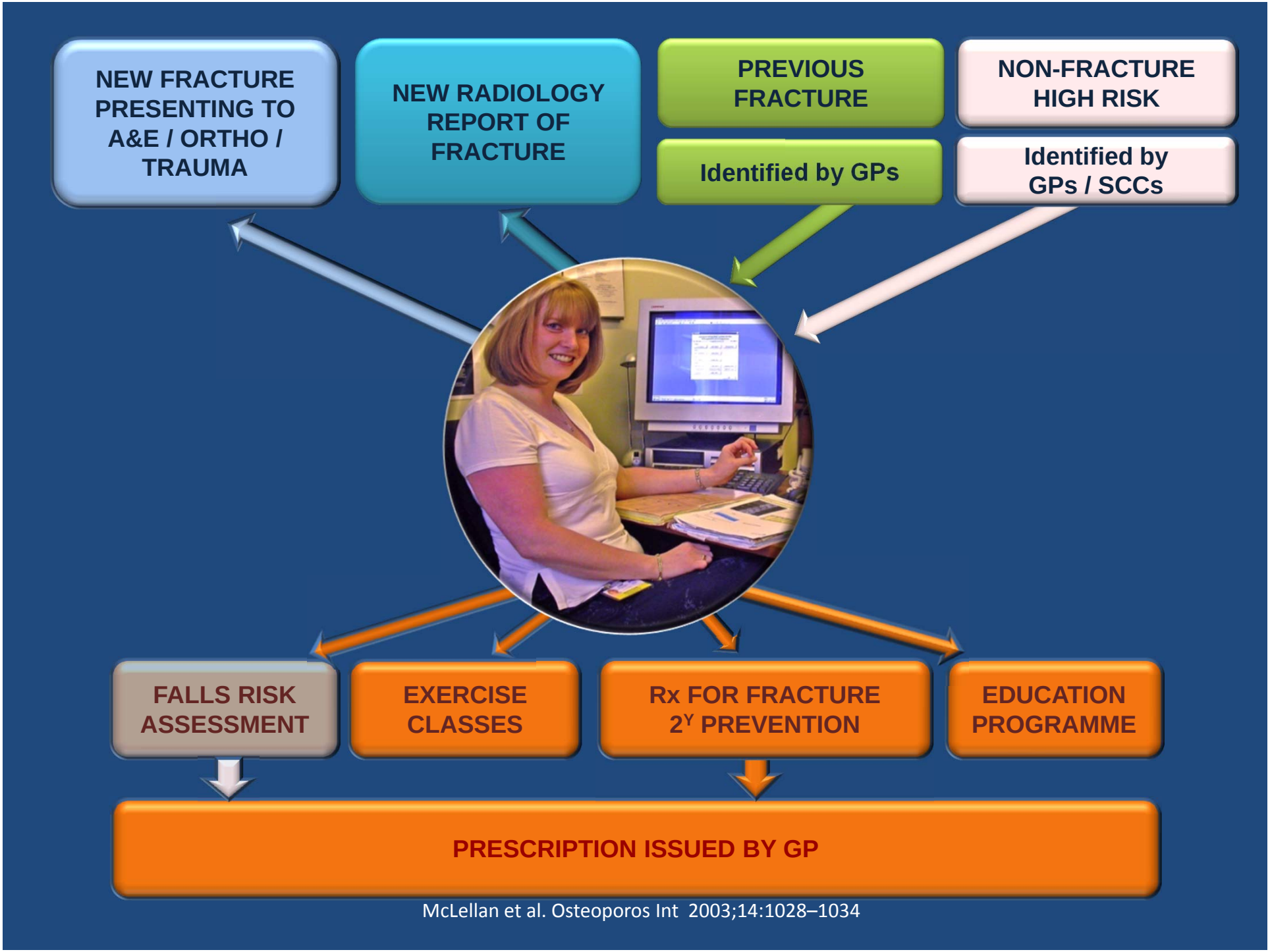


Secondary Prevention

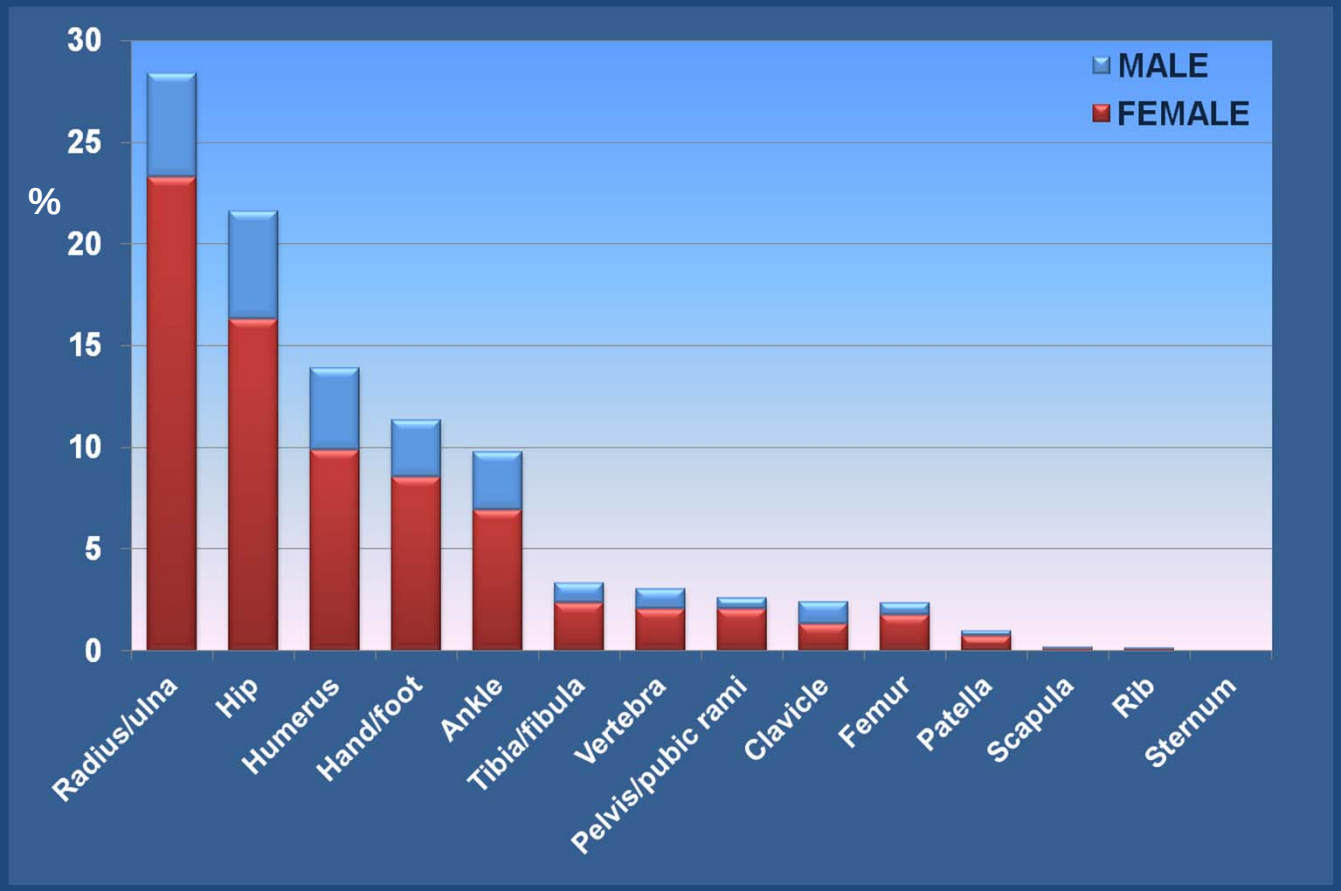
Primary Prevention

‘Investigation & intervention’ at ‘one-stop’ FLS clinic

McLellan et al. Osteporos Int 2003;14:1028–1034



McLellan et al. Osteoporos Int 2003;14:1028–1034

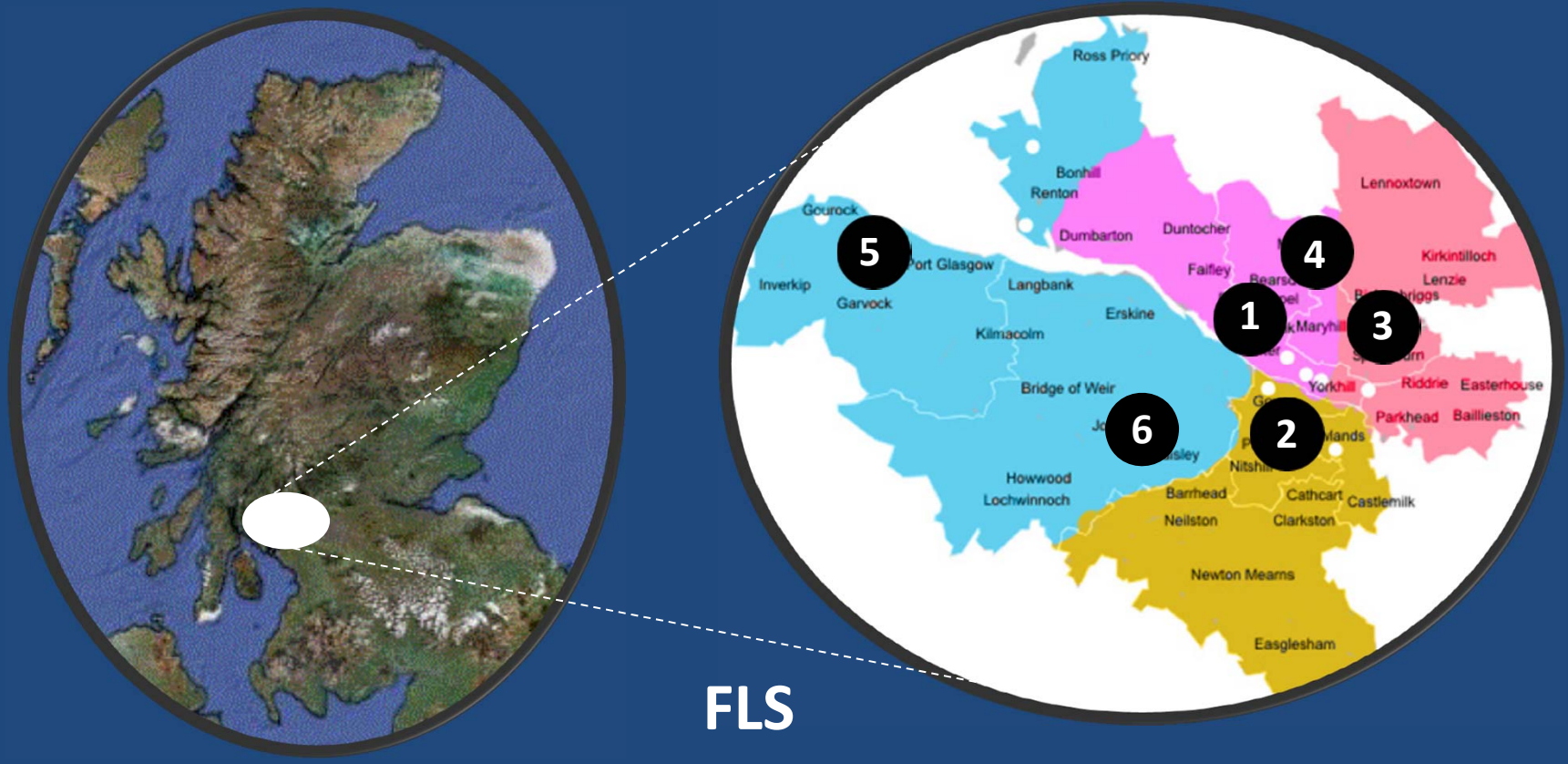


The FLS-Radiology link improves identification of vertebral fractures.
Now 12% of new fracture workload are vertebral fractures

Also

DXA Vertebral Fracture Assessment identifies vertebral fractures in ~20% of the FLS 'new clinical fracture' cohort

4-6% age 50-59, 14-18% age 60-69, 26-35% age 70+ (Howat et al Clin Endo 2007)



FLS

Coverage for <u>entire</u> 1.4million patient population

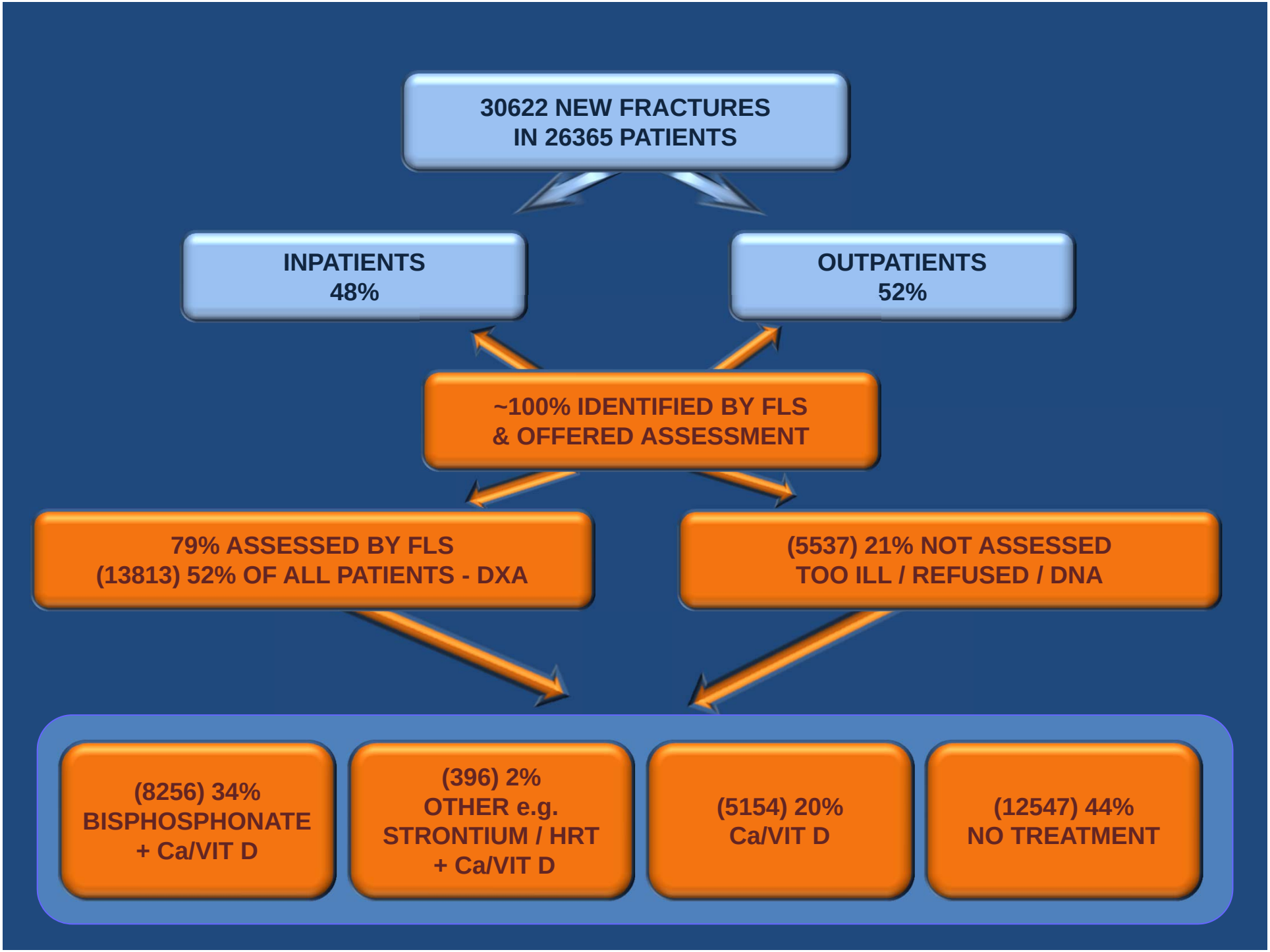
Addresses the secondary fractures prevention needs of

9,800 new fractures each year

1,000 past fractures each year

8.5 Nurse Specialists

Has processed >70,000 fracture patients so far….


30622 NEW FRACTURES
IN 26365 PATIENTS
INPATIENTS
48%
OUTPATIENTS
52%
~100% IDENTIFIED BY FLS
& OFFERED ASSESSMENT
79% ASSESSED BY FLS
(13813) 52% OF ALL PATIENTS - DXA
(5537) 21% NOT ASSESSED
TOO ILL / REFUSED / DNA
(8256) 34%
BISPHOSPHONATE
+ Ca/VIT D
(396) 2%
OTHER e.g.
STRONTIUM / HRT
+ Ca/VIT D
(5154) 20%
Ca/VIT D
(12547) 44%
NO TREATMENT

Fracture liaison services for the evaluation & management of patients with osteoporotic fracture: a cost-effectiveness evaluation based on data collected over 8years of service provision.

McLellan et al Osteporosis Int 2011; 22:2083-2098

Cost-effectiveness Model

Cohort health-state transition model (Markov model)

Models prevention of subsequent fractures of hip, wrist & humerus

Model health states & parameters based largely on the SHEMO[a] model (developed for NICE)

Two identical cohorts of patients with a fragility fracture[b] entered the model

- One cohort assessed by the FLS
- The other cohort followed the usual-care pathway

Data Sources

West Glasgow FLS 8 yrs' audit data (1999 – 2007)

Resources for setting up & running FLS

- ONS time, consultant time, DXA scans etc.
- Proportion of patients assessed & Rx recommendations

Resources for 'usual care' - published audit data for the UK

Baseline refracture risk with no Rx (derived from Robinson et al. 2002)

Data compiled for NICE

- Rx efficacy
- Cost of refractures

FLS is cost-effective & cost-saving

McLellan et al Osteporosis Int 2011; 22:2083-2098

Per 1000 fracture patients assessed by FLS

- 18 fewer fractures 95%CI(10 to 24)
  (including 11 fewer hip fractures 95%(4 to 16))
- 266 bed days saved
- 3 life-years saved 95%(1 to 5)
- 22 QALYs gained 95%(7 to 37)
- £21K saved over remaining lifetime

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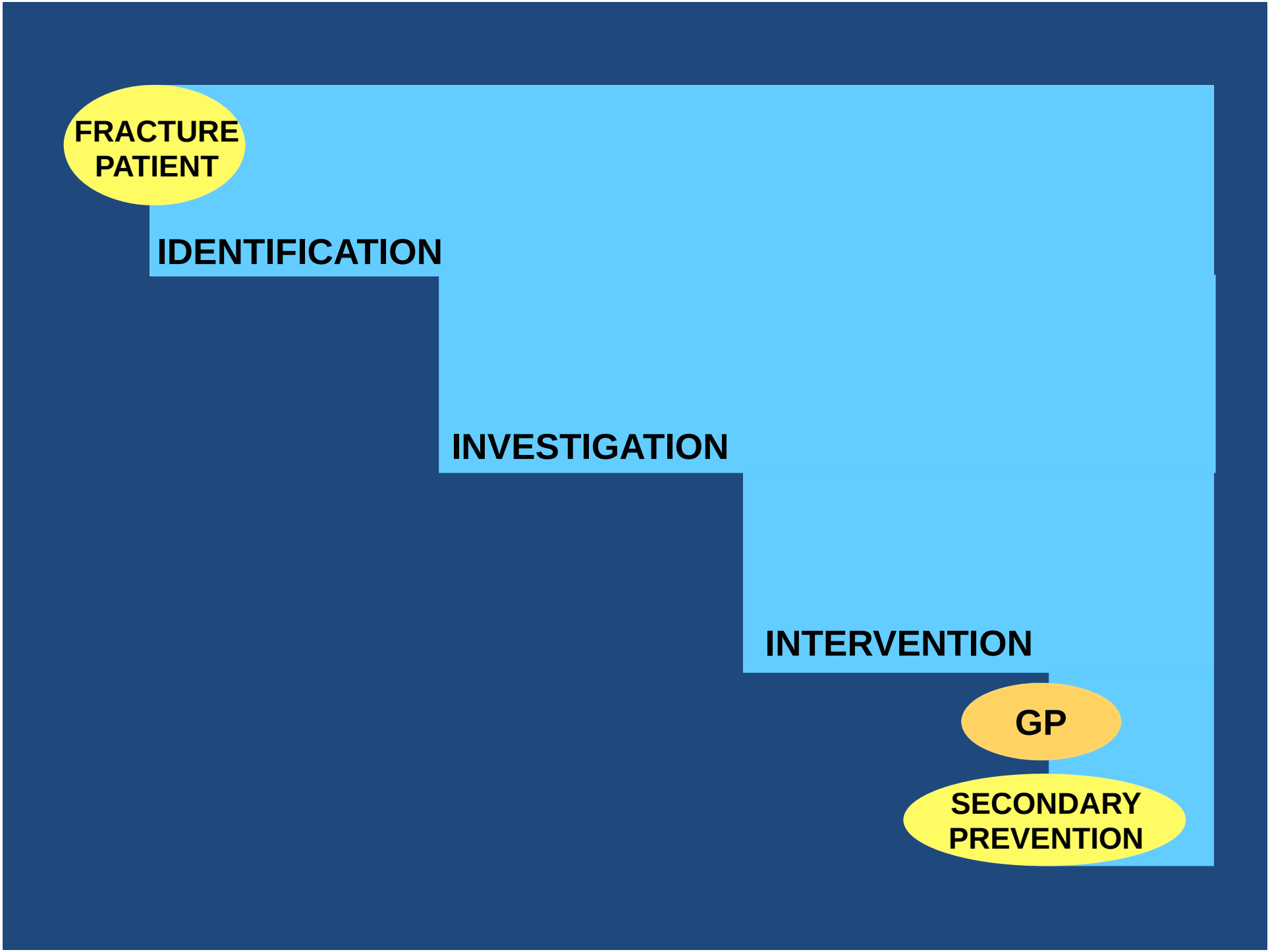
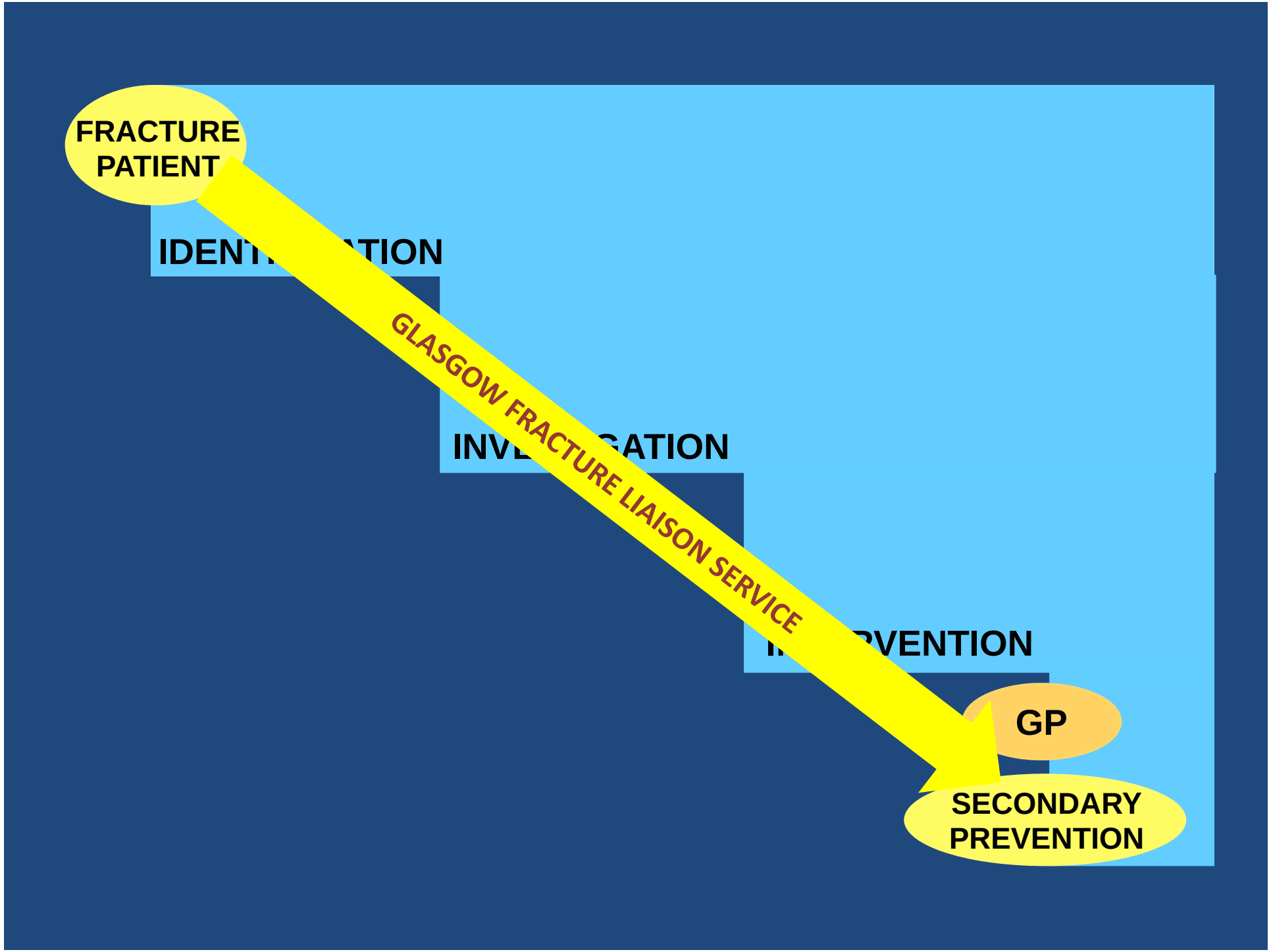
Key drivers of cost-benefit

FLS identification & investigation by nurse specialist

Generic alendronate accounts for at least 80% of BP treatments


FRACTURE PATIENT
IDENTIFICATION
INVESTIGATION
INTERVENTION
GP
SECONDARY PREVENTION


FRACTURE PATIENT
IDENTIFICATION
INVESTIGATION
INTERVENTION
GLASGOW FRACTURE LIAISON SERVICE
GP
SECONDARY PREVENTION

Quality improvement in fracture secondary prevention: keys to success?

- Lead clinician role – *a local champion is essential*
- Right people in right roles – *essential role of nurse specialist*
- Takes the service to the patients – cuts out need for referrals
- EMR – integrates patient management with audit facility
- Ensures equitable access of patient to treatment
- Aligns fully to Institute of Health's 6 dimensions of quality
  Person-centered, Safe, Effective, Efficient, Equitable, Timely
- PDSA approach informs rapid service development
- Stakeholders involved in FLS service design

The FLS delivers

The *right* assessment
for the *right* treatment,
to the *right* patients,
at the *right* time……

& it's cost-effective & cost-saving!