

Preventing the Next Fracture: The Role of Fracture Liaison Services

Markus Seibel

The University of Sydney and Concord Hospital



Mrs A.S.

- March 2015: Left hip fracture after a simple fall
- Surgically managed → rehab → home
- Difficulties with walking and ADLs
- Assessed by Concord Hospital Secondary Fracture Prevention Service in May 2015





Mrs A.S.

Assessment reveals:

- Left wrist fracture after a fall at age 57 years
- Two rib fractures at age 61 years
- Right wrist fracture after a fall at age 65 years

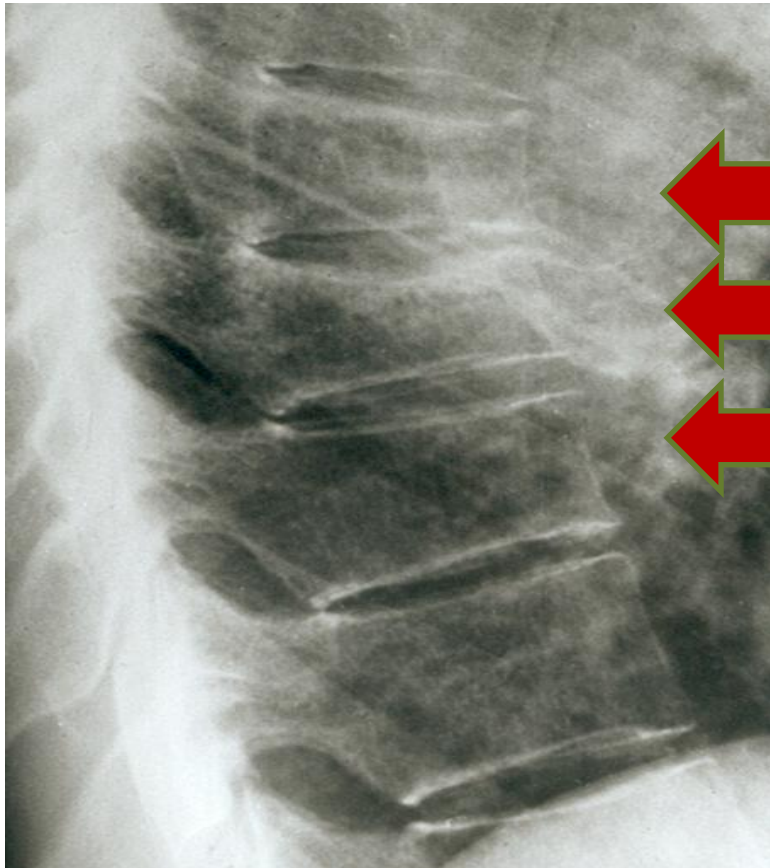
Current medication:

- Paracetamol 500mg tds





Mrs A.S.



Multiple vertebral
fractures



Mrs A.S. - A typical case

- Previous minimal trauma fractures
- Conservative / surgical fracture management
- No further assessment for underlying illness
- No diagnosis of osteoporosis

No treatment



Post-Fracture Management at a Tertiary Hospital in Australia



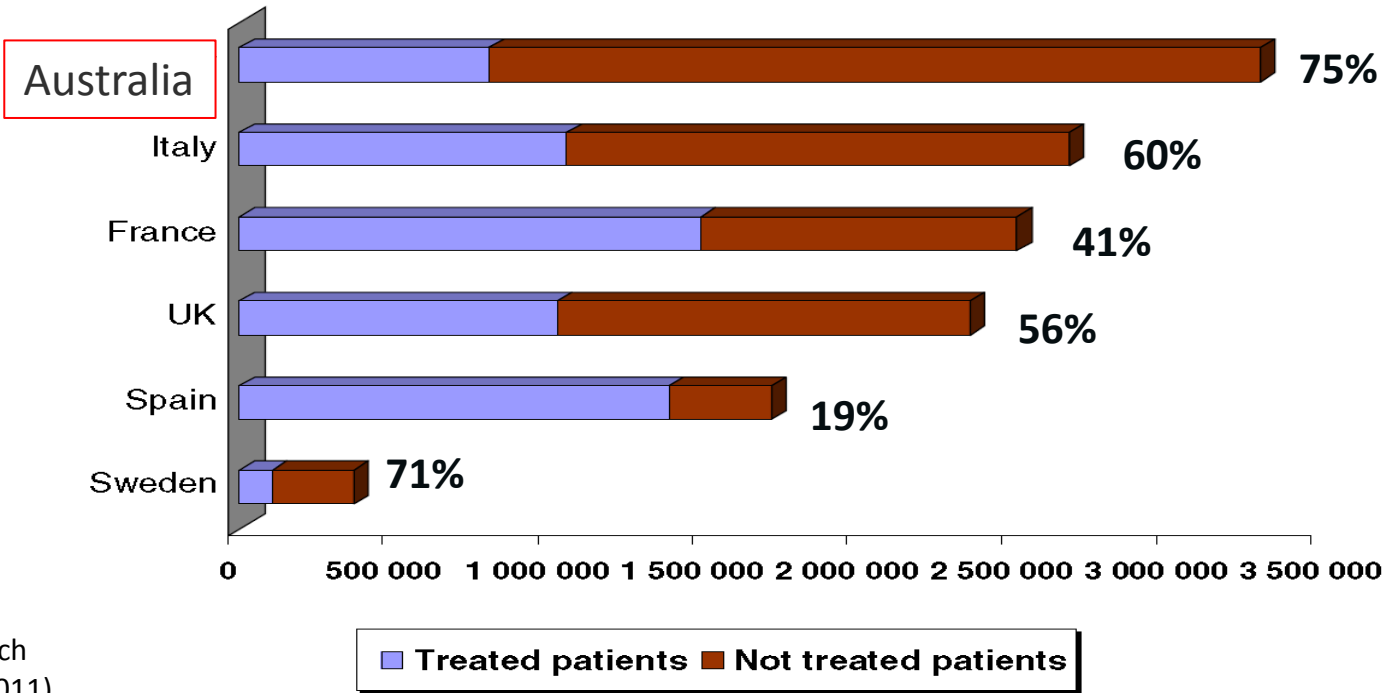
No Therapy	65.4%
Multivitamin alone	2.7%
Calcitriol alone	4.1%
Testosterone therapy alone	0.3%
Calcium supplement alone	4.8%
Vitamin D supplement alone	3.8%
Calcium and vitamin D only	3.4%
Anti-resorptive Rx (BP, RLX, HRT)	15.5%
Calcium + anti-resorptive Rx	
Vitamin D + anti-resorptive Rx	
Calcium + vit D + anti-resorptive Rx	

85.5%



The Osteoporosis Care Gap

Proportion of treated women compared to total female population above 50 years assumed to be eligible for treatment (2008).



Ström et al. Arch Osteoporos (2011)

Despite the availability of safe, effective and inexpensive treatments for osteoporosis, 80% of all women and men who suffer a fragility fracture go undiagnosed and untreated.

Just a reminder...The year is 2016!

Why is this completely unacceptable?

- People fracture again
- People get sicker with each fracture
- People die from fragility fractures and their consequences



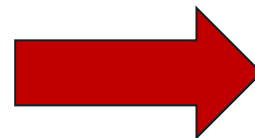
People fracture again and get sicker

Half of all women who present with a hip fracture have sustained a prior non-hip fracture.

Lyles et al. ASBMR 2006

Edwards et al 2007

McLellan et al. 2004



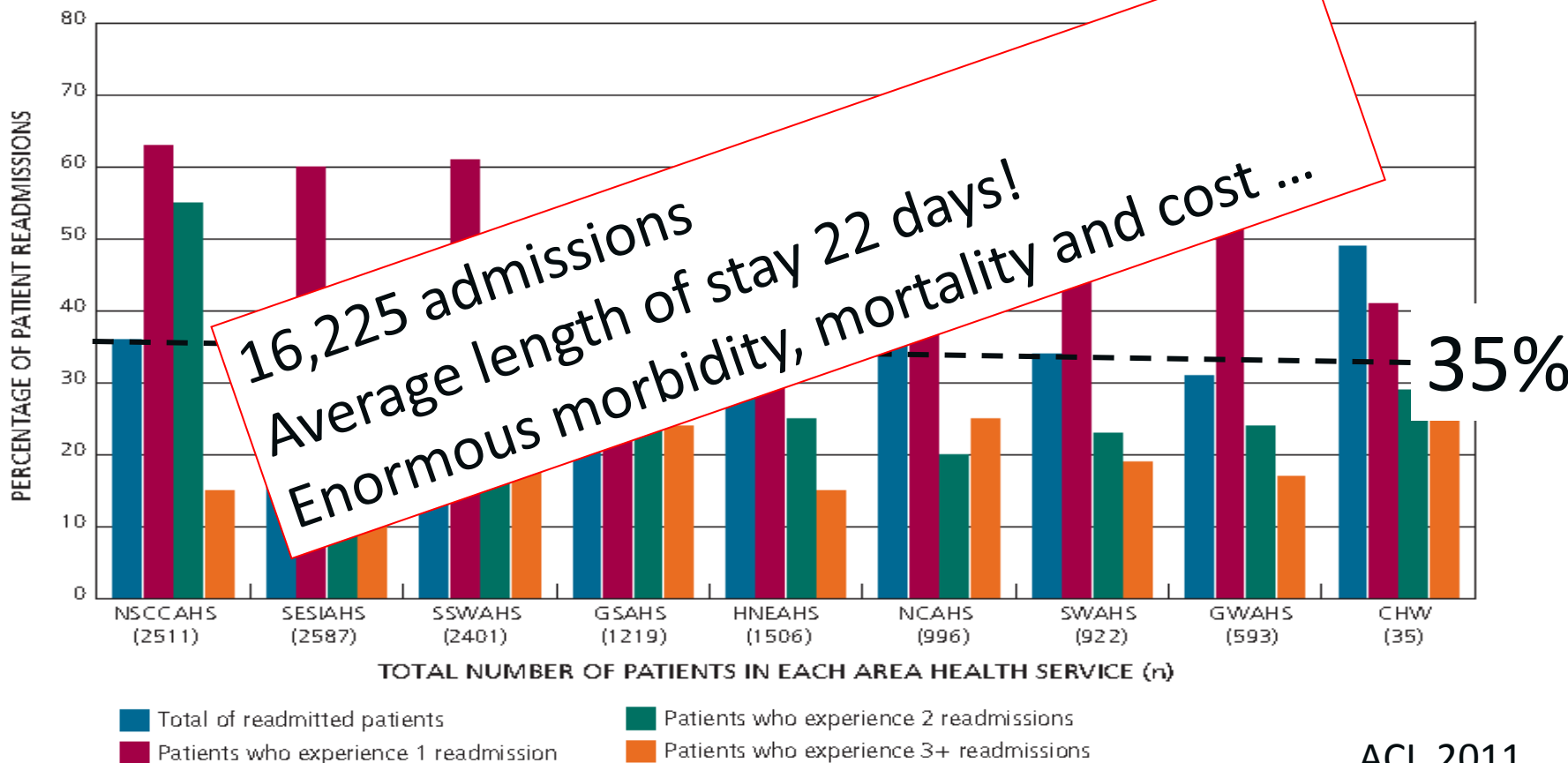
Up to 75% of those who are independent before their fracture can neither walk independently nor achieve their previous level of independent living within 1 year following their fracture.

Magaziner et al. 2000

Readmissions to NSW Hospitals for Refracture



2002 - 2008



How can we close the care gap that exists for patients with osteoporotic fracture?

Which Interventions are Effective?

NOT EFFECTIVE

- Patient education alone or letter to GP

Moderately EFFECTIVE

- Patient education of in-patients with telephone support
- Orthopaedic or GP protocols

MOST EFFECTIVE

- **Fracture Liaison Service with dedicated staff**

The Principles of Fracture Liaison Services



The Principles of Fracture Liaison Services

Actively identify patients presenting with a MTF

- Dedicated human resources!
- Close co-operation with Orthopaedic Surg., Geriatric Medicine, ED

Actively refer patients to FLS for review

Actively initiate investigations into cause of MTF

Actively establish diagnosis

Actively initiate treatment as appropriate

Example: The Fracture Liaison Service at Concord Hospital (est. 2005)

2010:

Analysis 'FLS' vs. 'Standard Care' over 4 years

Outcomes:

- Refracture Rates
- Cost effectiveness

2012:

Analysis 'FLS' vs. 'Standard Care' over 6 years

Patients Presenting with a Non-Vertebral Fracture

May 2005 - Dec 2007

N=1544

Not eligible by entry criteria

N= 850

Eligible

N= 694

Attended

MTF Service

N=288

Not attended

MTF Service

N=406

Contacted at study completion

N= 288

Contacted at study completion

N= 246 *

Died, n= 1

Died, n= 17

Lost to Follow-up N= 42

Died, n= 1

Institutionalised, n= 5

Insufficient English, n= 9

Not contactable, n= 27

Lost to Follow-up N=89

Died, n= 17

Dementia, n= 12

Refused participation, n= 6

Insufficient English, n= 13

Not contactable, n= 41

MTF Intervention

N=246

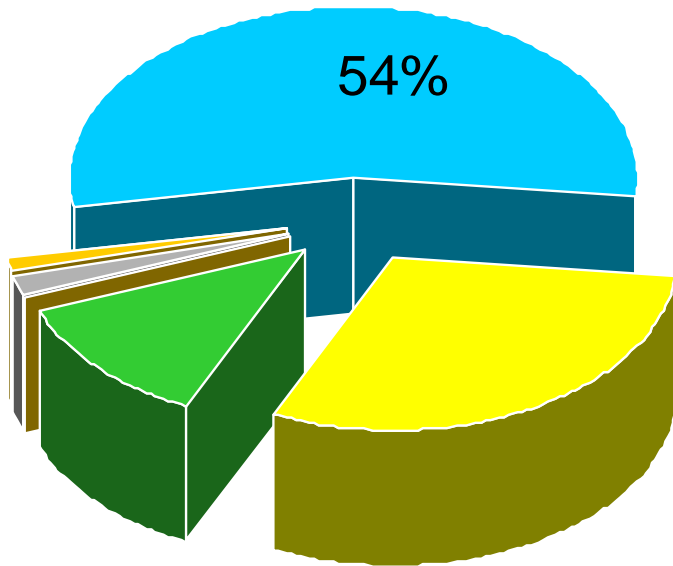
Controls

N=157

*random sample

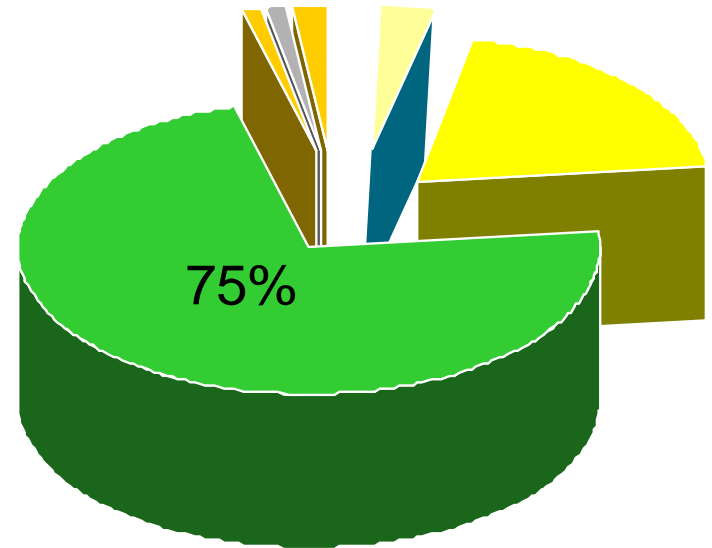
Anti-Osteoporosis Medication: Before and After

At Time of Capture



< 15% on active treatment

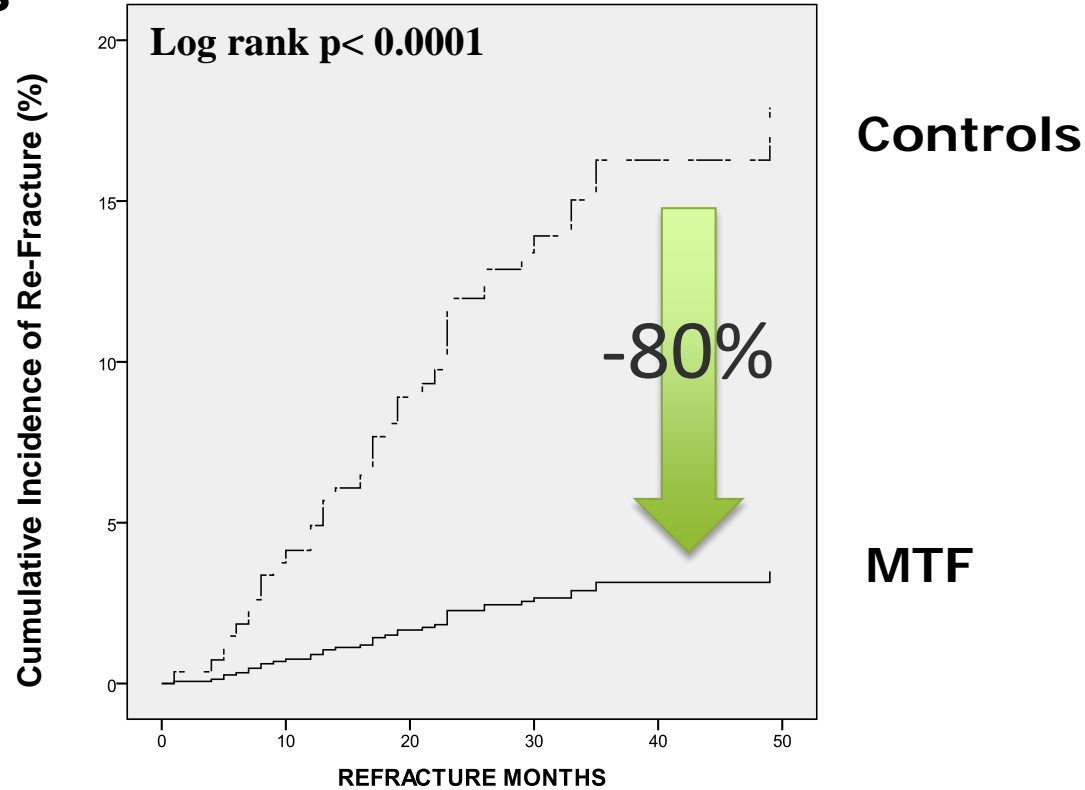
At time of Discharge from MTF Clinic



75% on active treatment

Cumulative Incidence of Refracture

All patients



Is this cost effective?

- 0.8 QALYs per patient over 10 years.
- Under all assumptions tested health economic effectiveness was within limits considered cost effective by Australian standards (\$7,000 – 32,000 per QALY)
- It is excellent value for money

Fracture site	Total no. of Fractures since 2001
---------------	-----------------------------------

41,553 excess deaths

Hip	308,392
Non-Hip-Non-vertebral	1,075,468
All	1,248,258

Courtesy Kerrie Sanders



ASSUMPTIONS

- Fx rates remained the same between 2001 and 2015 inclusive
- “All Fx” excludes skull, toes, fingers and facial
- Adults aged 50+ years only and using ABS population projections (published in the late 1990’s)
- Fx rates are based on Geelong rates
- 15% of patients with fractures were commenced on bone pharmaceuticals. The savings quoted here relate to the scenario if another 35% were commenced on appropriate drug therapy and that this reduced the Fx risk in these ppl by 50% (for that year)

The SOS Fracture Alliance

Making the First Fracture the Last

- Attempts by individual organisations to persuade the government to improve the osteoporosis care gap by introducing Fracture Liaison Services have repeatedly failed.
- November 2015: Founding of the SOS Fracture Alliance
- July 2016: 25 organisations have joined the SOS Fracture Alliance
- Currently preparing a cost-benefit analysis of Fracture Liaison Services
- Early 2017: Talk with federal government officials to urge action

Conclusions

Active identification, investigation and management of patients with minimal trauma fractures requires dedicated resources and close co-operation between disciplines.

If implemented, active management reduces the long-term risk of re-fracture by about 80%.

Health economic analyses indicate that Fracture Liaison Services are highly cost-effective to the society.

The SOS Fracture Alliance will work hard to make Fracture Liaison Services a reality across all of Australia