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Make the  
FIRST break  
the LAST

FRACTURE LIAISON SERVICES

# Fracture Liaison Service (FLS)

The effective model of care to close  
the care gap



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# Interventions to improve osteoporosis investigation and treatment

- Sale et al, systematic review 2011
- 57 studies looking at care provided at 6 months after fragility fracture
- BMD testing and medication starts



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# Conclusions

- Education-based interventions improved rates of BMD testing, but limited success improving rates of treatment
- Patient education alone does not improve treatment rates



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# Conclusions

- All outcomes higher for interventions with **dedicated personnel** and those with **BMD testing and/or treatment** included in intervention
- Optimal levels of investigation and care for different patient groups must be defined



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# Models of care for secondary fracture prevention

- Ganda et al-systematic review and meta-analysis 2013
- 42 articles
- Types of models
  - 3i- identification, investigation, initiate treatment ←
  - 2i-identification, investigation ←
  - 1i-identification
  - 0i- patient education only



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# Conclusions

- 3i and 2i models cost effective
- Some 3i models showed significant decreases in re-fracture rates
- Fully coordinated, intensive models were more effective than approaches using alerts or education alone.



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A Fracture Liaison Service (FLS) is a specific system-based model of care for secondary fracture prevention where a dedicated coordinator:

1i

Identification

- systematically and proactively identifies patients aged 50 years and older presenting to a hospital with a new fragility fracture and/or with a newly reported vertebral fracture;

2i

Investigation

- organizes appropriate investigations to determine the patient's fracture risk;

3i

Initiation

- facilitates the initiation of appropriate osteoporosis medications.



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# FLS in UK – efficacy of program

- *Before FLS:* <10% of fracture patients referred for DXA and further evaluation.
- *FLS in 2000:*

## Non-FLS center

- Hip fracture cases assessed and/or treated: **25%**
- Wrist fracture cases assessed and/or treated: **21%**

## FLS center

- Hip fracture cases assessed and/or treated: **97%**
- Wrist fracture cases assessed and/or treated: **95%**

McLellan AR, Gallacher SJ, Fraser M, McQuillan C. *Osteoporos Int* 2003; 14:1028-1034.

McLellan AR, Reid DM, Forbes K, et al. NHS Quality Improvement Scotland. Effectiveness of Strategies for the Secondary Prevention of Osteoporotic Fractures in Scotland. 2004. [http://healthcareimprovementscotland.org/previous\\_resources/audit\\_report/osteoporotic\\_fractures\\_audit.aspx](http://healthcareimprovementscotland.org/previous_resources/audit_report/osteoporotic_fractures_audit.aspx)





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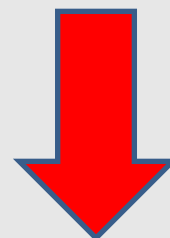


## Real world changes in hip fracture rates between 1999 and 2010

UK (37% of localities operate an FLS)

Glasgow (full FLS service since 1999)

 17%

 7%

Universal access to FLS could be provided across the UK for just 0.6% of the annual cost of hip fracture to the UK economy.



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# 3i FLS in Australia

- Re-fracture rates after 4 years:

Control group 19.7%

FLS group 4.1%



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## 8 Essential Elements of FLS

- Dedicated coordinator (1)
- Pro-active case finding, ortho services (2)
- Needs to be the right fractures (3)
- Needs to get to at least 2i (4) + use fracture risk prediction tool that works (5)
- Need to start or recommend Rx (6)
- Need to communicate with family doc (7)
- Need to monitor outcomes (8)

# Breaking the Cycle of Recurrent Fracture in BC

Implementation of a Fracture Liaison Service in British Columbia, Canada

Sonia Singh, MD, MHSc,  
Medical Director Research, Fraser Health Authority  
Dept Family Practice, University of British Columbia



# Fraser Health Authority –BC

Health care for 1.7 million people and in 2011/2012

- \* **Patients with new hip fractures: 1266**
- \* **Total cost of osteoporosis related fractures: \$92,233,976**  
for hospital, MSP and pharmacare

# Why the big care gap?

- \* Emergency staff have little time for preventative care
- \* Orthopedics surgeons busy fixing the fracture
- \* Family physicians - do not see the patients early on
- \* Allied health busy with the rehab
- \* Patients themselves are more focussed on recovery from fracture

# Barriers to addressing care gap

- \* Lack of access to BMD testing
- \* Lack of access to osteoporosis medications
- \* Perceptions in our province
  - \* medications are not effective
  - \* fall prevention/exercise will prevent all fractures

# Opportunities

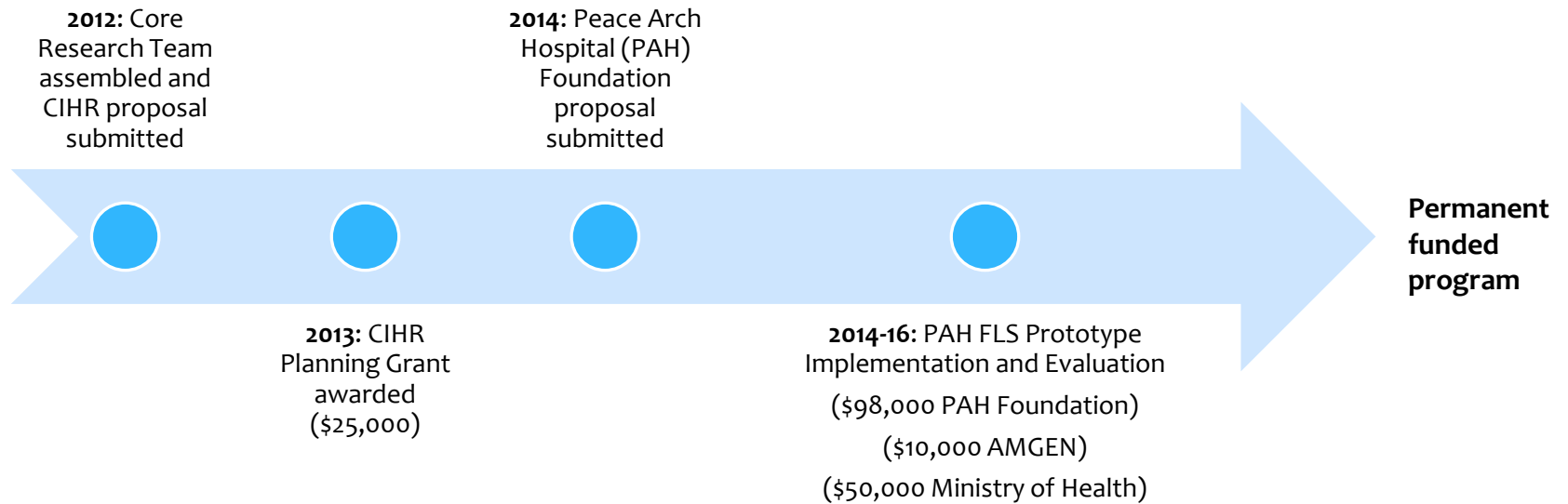


Opportunities  
straight ahead

- \* Number of local secondary fracture prevention initiatives
- \* Interested endocrinologists prepared to follow-up patients
- \* Supportive orthopedic surgeons already referring patients
- \* MOH investment in falls prevention



# Timeline



USA- Kaiser Permanente California  
Canada -Ontario Osteoporosis Strategy  
UK -Oxfordshire  
New Zealand -Paul Mitchell  
Osteoporosis Canada –FLS toolkit

# Secondary Fracture Prevention Team

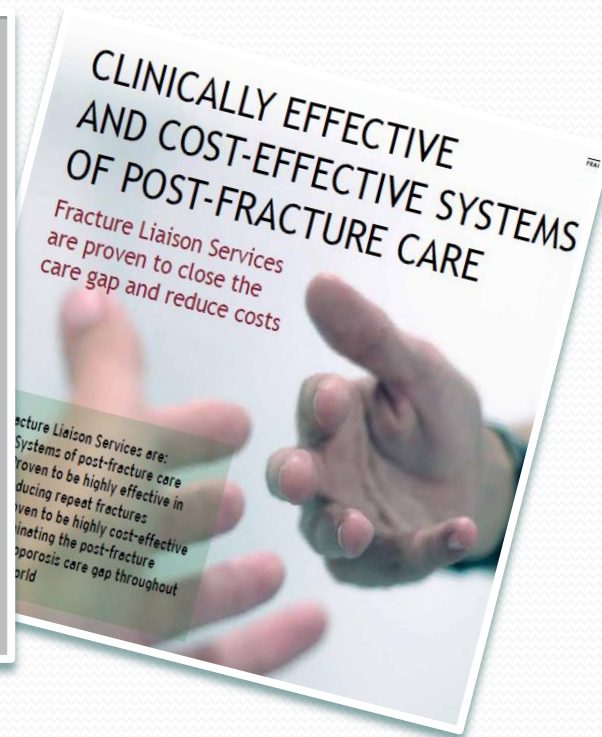
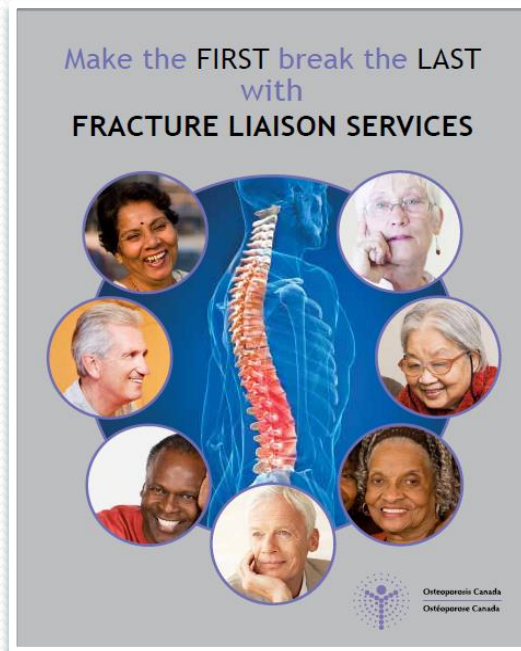
- \* Kathleen Friesen
- \* Fabio Feldman
- \* Ann Davidson
- \* Valerie MacDonald
- \* Kerstin Gustafson
- \* Ashdin Tavarria
- \* Sarah Metcalfe
- \* Dana Hayward
- \* David Whitehurst
- \* Larry Funnell
- \* Vicky Scott
- \* Liz DaSilva
- \* Ming Leung
- \* Jodi Koertje
- \* Supna Sandhu
- \* Nancy Parmar
- \* Jamie Dunwoody

Project Coordinators: Ashley Tisseur,  
Gabrielle Napoleone, Amandeep Gill

# Partnerships

- \* Fraser Health Leads
  - Orthopedics
  - Home Health
  - Emergency
  - Older Adult
  - Primary Care / Divisions
  - Information Management
  - Public Health
  - Health economics
  - Nutrition /pharmacy
- \* Centre for Hip Health and Mobility
- \* BC Osteoporosis Clinic
- \* Ministry of Health
- \* Osteoporosis Canada
- \* Patient Representatives

# FLS Toolkit and Appendices



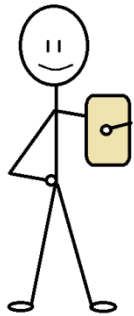
# 3i -FLS integrated into Orthopedic Outpatient Care

- \* Peace Arch Hospital, White Rock, BC
- \* FLS nurse practitioner Nancy Parmar: 0.6 FTE
- \* Identification- Screening using cast clinic lists
  - \* Hip, femur, pelvis, humerus, wrist, spine
  - \* Over age 50, low trauma



# FLS CARE at PAH –Feb 25, 2015

- \* FLS coordinator will link up with you while you are at the cast clinic:
- \* Talk to you about risk of another fracture
- \* Order tests: BMD, X-rays of spine, blood tests
- \* Assessment of future fracture risk (FRAX)
- \* Assess risk of falling



# FLS CARE

Education =



**I-Connect Centre next to hospital**

Osteoporosis Canada Patient  
Volunteers

# FLS CARE

## Treatment:

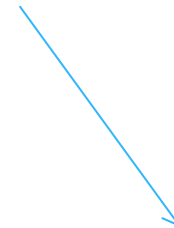
Referrals and  
recommendations



Medication  
for high risk



Connect with  
primary health  
provider



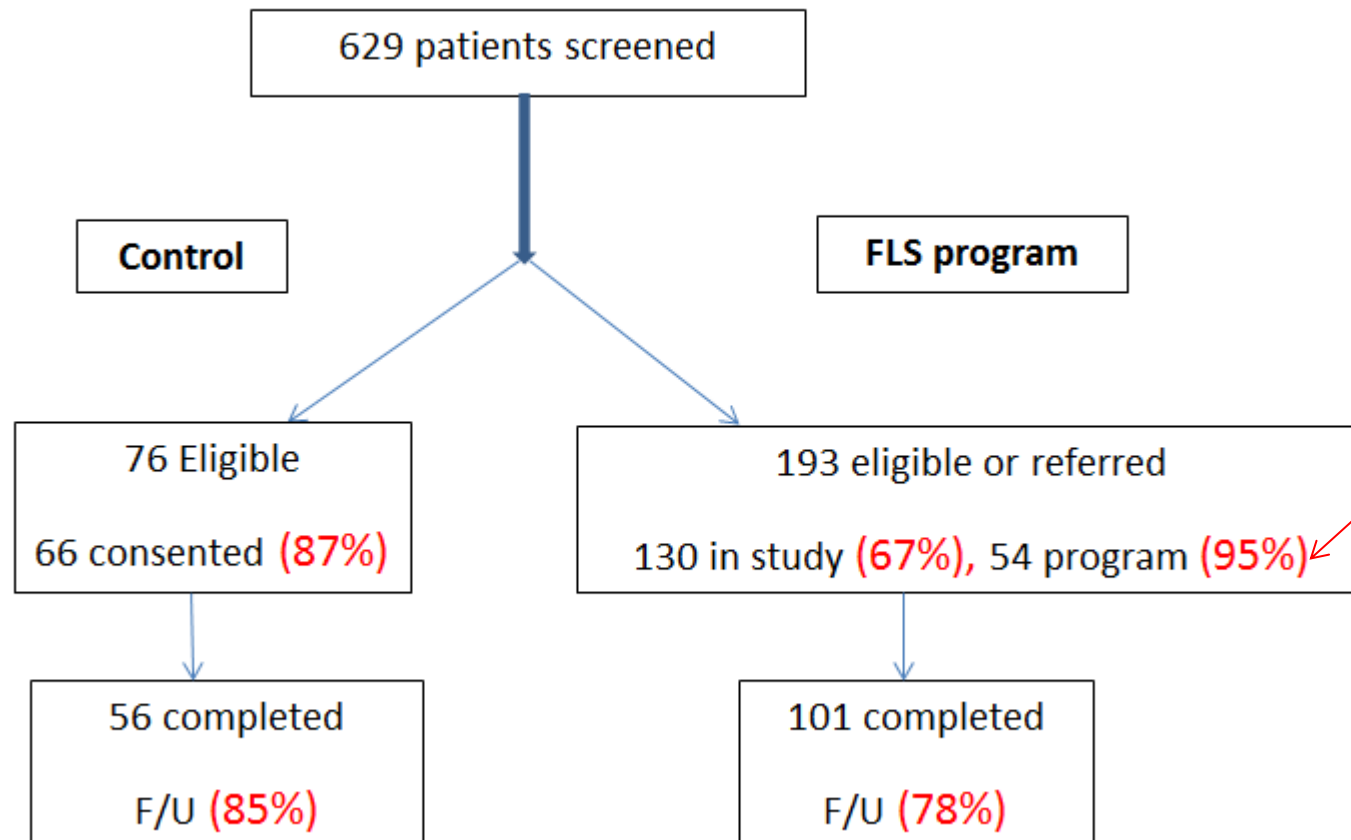
Connect  
with  
specialist



# How well did it work?

- \* Study –pre and post FLS implementation
  - \* New BMD study ordered
  - \* Composite outcome of “appropriate care” in high risk:
    - \* Already on medication, consultation to change treatment  
OR
    - \* Started on osteoporosis medication  
OR
    - \* Referred to specialist because of complex issues

# Results-Oct 27, 2014- Jan 28,2016

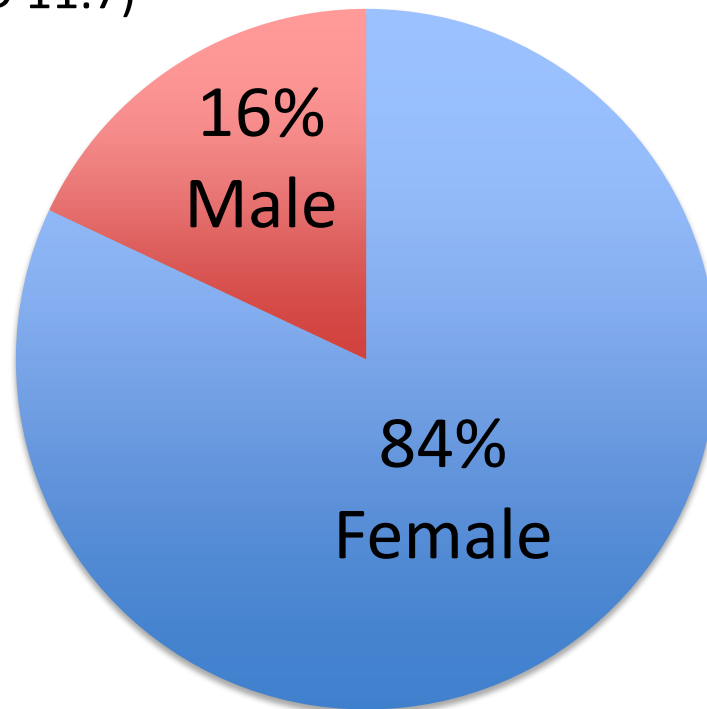


# 198 patients presenting with low trauma fractures

## Demographics

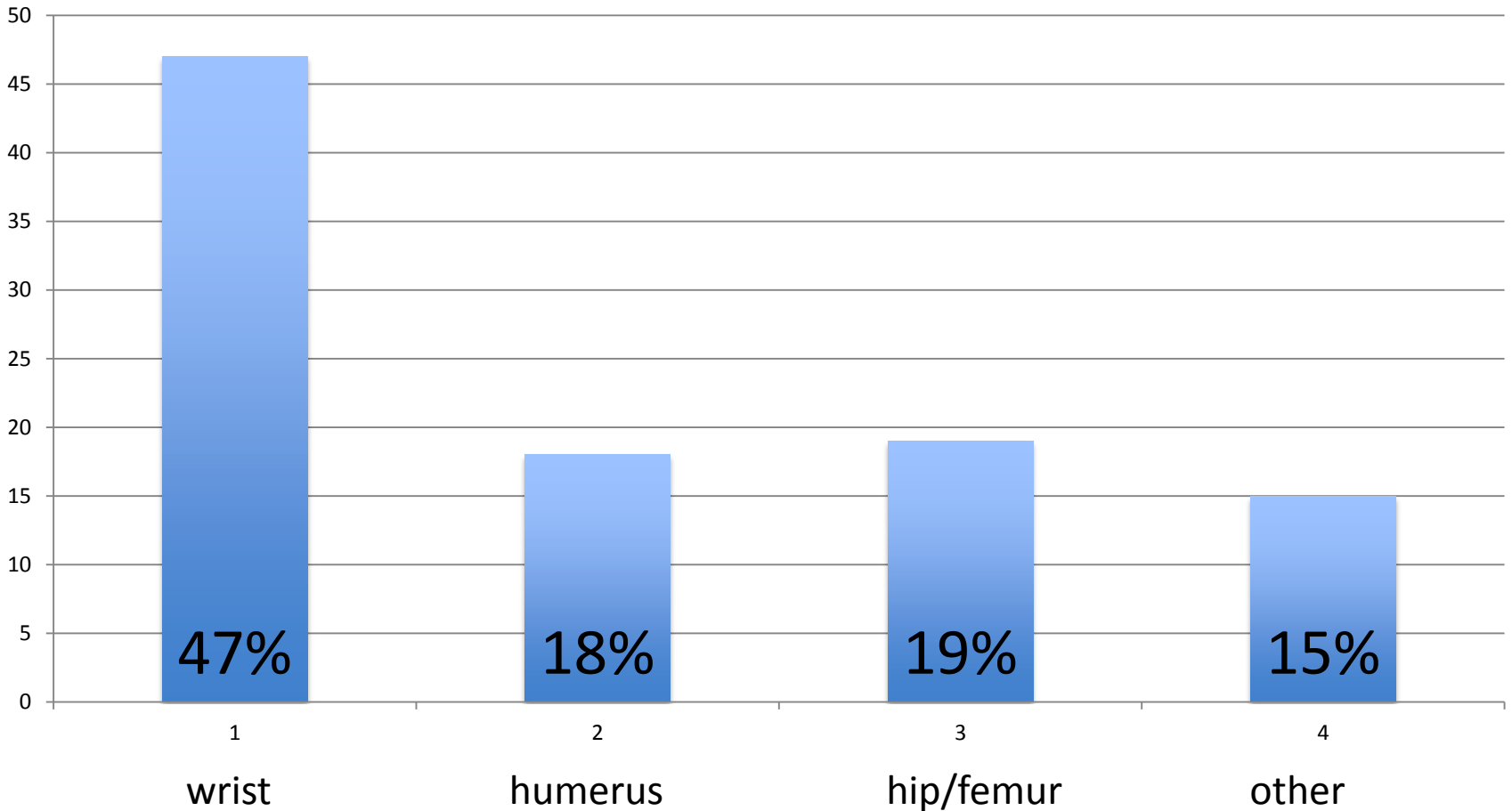
Average age: 70.6 years (SD 11.7)

35% had prior fracture

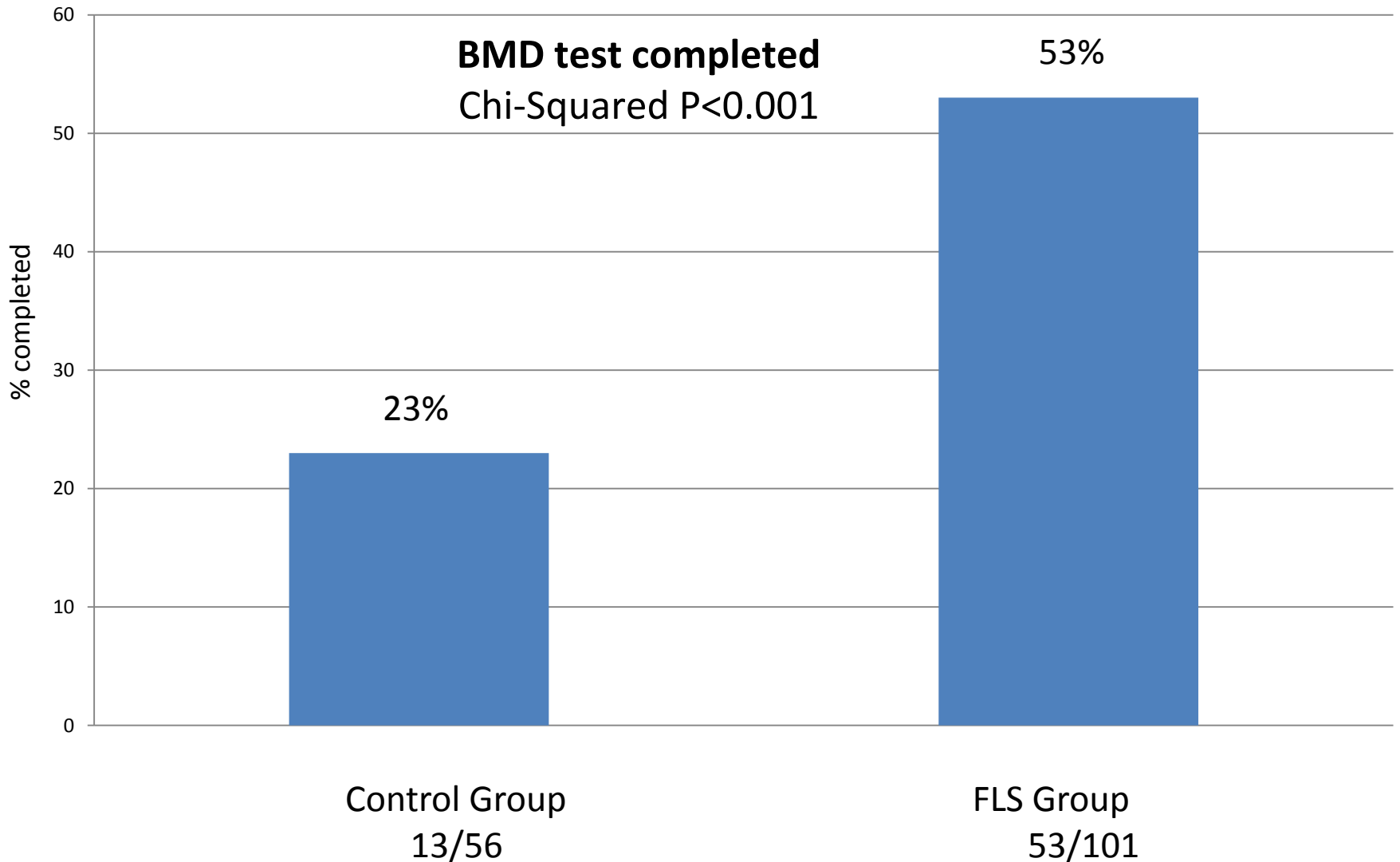


# 209 fractures in 198 patients

Types of Fractures

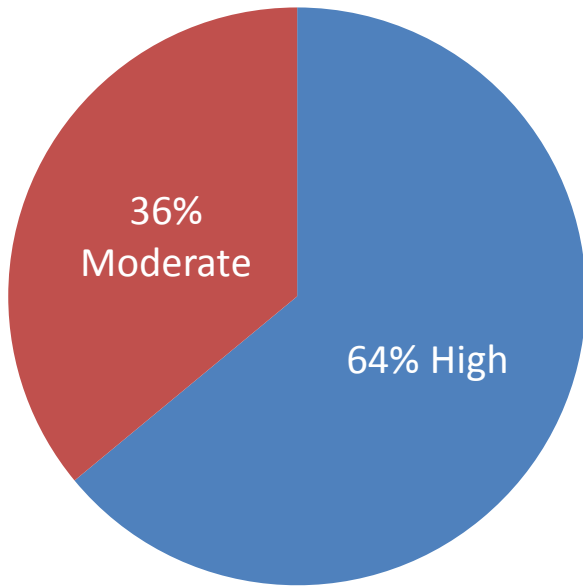


# Bone Mineral Density Testing

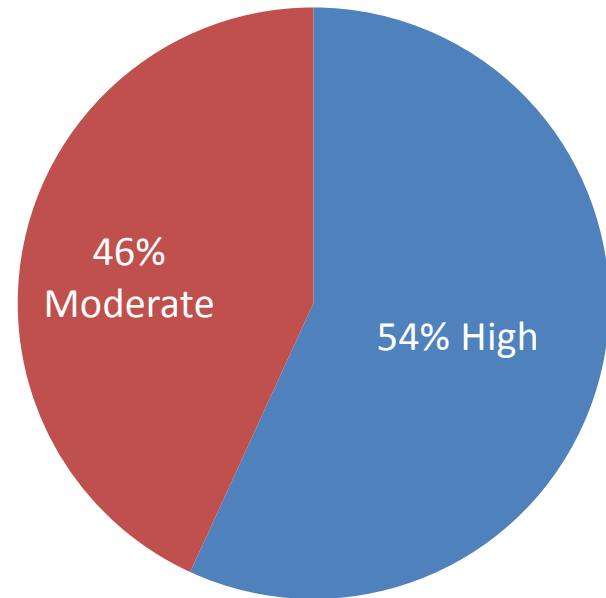


# Risk of Future Fracture

Usual Care



FLS program

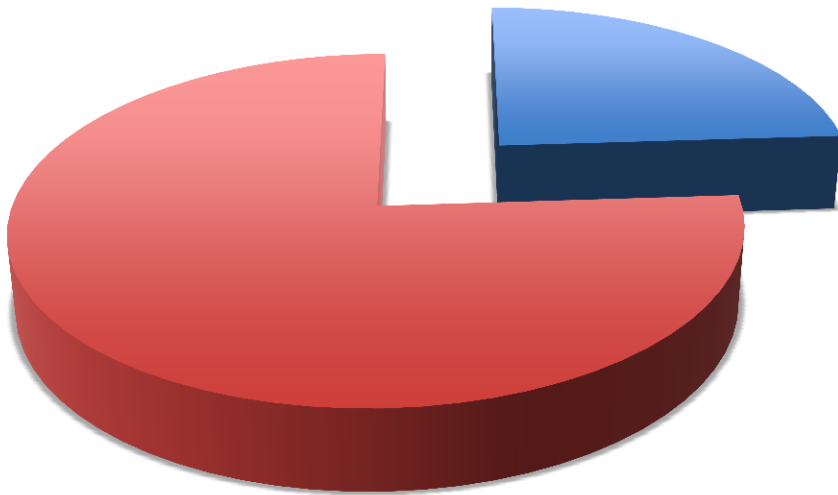


FRAX with or without BMD

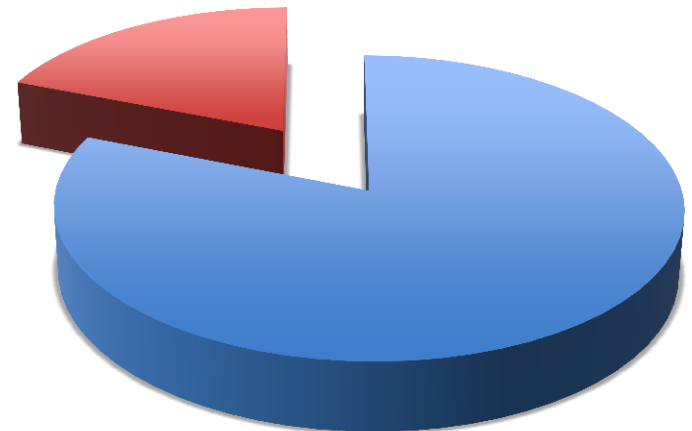
# Appropriate treatment in High Risk Patients

Chi-Squared  $P < 0.001$

22% achieved



Usual Care (8/36)



76% achieved

FLS program (41/54)

# Falls in past year

- \* Usual Care

- \* 33 with none

- \* 16 with 1-2

- \* 7 with 3 or more (11%)

- \* FLS

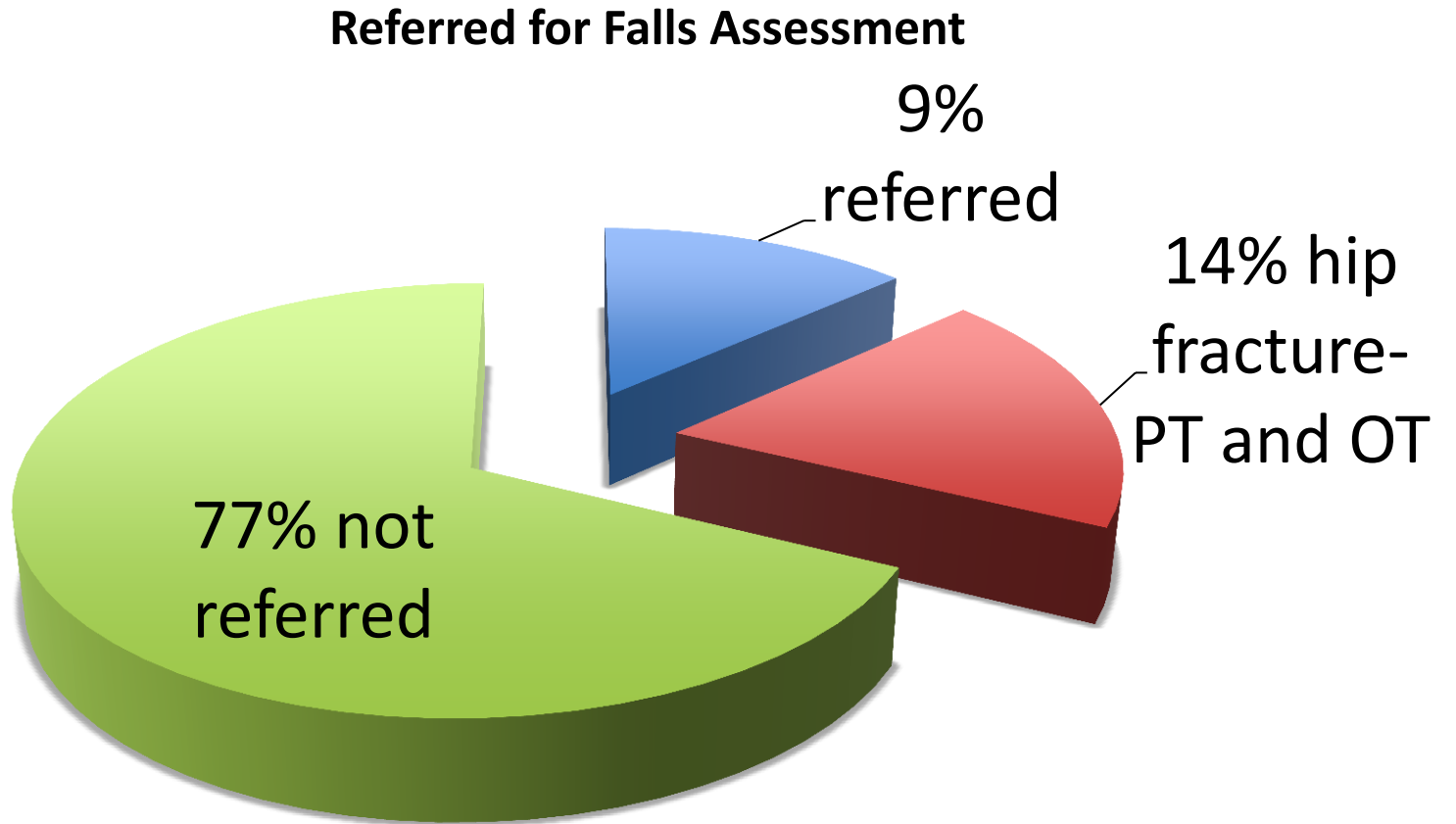
- \* 71 with none

- \* 22 with 1-2

- \* 5 with 3 or more (5%)



# FLS program patients



No patients in the control group referred for falls prevention

# Patient Experience

- \* 50 respondents:
- \* 84% believed that their understanding of osteoporosis and bone health had improved
- \* 76% rated the help they received as 7/10 or better
- \* 82% rated their experience as 7/10 or greater. (30% rated it a 10/10!)

# Keys to success

- \* Full support of Ortho Surgeons and cast technician
- \* Integrated FLS directly into the clinic
- \* Patients think it is all part of ortho visit

The Fracture Liaison service has been an invaluable addition to patient care in the fracture clinic. This much needed service fills a gap in osteoporosis management



# Keys to success

- \* Stakeholder engagement
  - \* Specialized seniors clinic staff
  - \* ER staff
  - \* Family Physicians-Division

“This is a very helpful service.”

“Include all patients ie inpatients to the service”



# Key to success

- \* Engaging osteoporosis patients on the team
- \* Provide their “real life experience”
- \* More meaningful impact when approaching decision makers

*“Appreciate thoroughness of bone assessment, education package, time that Nancy spent with me and my family to answer all our questions.”*



# Challenges: Need timely BMD tests

- \* When we started-3-6 month wait
- \* Negotiated with BMD site-1-2 months
- \* FLS coordinator could book dates and times
- \* 80% of BMD studies ordered were completed even though testing site 30 minute drive

# Challenges: FLS costs \$

- \* Osteoporosis specialist cannot implement a FLS program on their own!
- \* Decision makers policy makers key partners right from the beginning
- \* Challenge is that they change! And partnerships need to start all over again.

# Keys to success-Tie into Health Priorities

- \* Capacity for care across all sectors
  - \* Reducing LOS by reducing hip fracture admissions
  - \* Better coordination for care between hospital and community-based care
- \* Quality and safety
  - \* Providing best quality of care for secondary fracture prevention (FLS quality standards)
- \* Patient centred-ness
  - \* Bringing appropriate osteoporosis management at the point of fracture care



# Next Steps

## Where do we go from here?

- \* Strengthen linkage with GPs-long term adherence an issue, not renewing medications
- \* EMR system to embed FLS and track outcomes
- \* Challenge of time for FLS coordinator in a 3i system

# Next Steps

## Where do we go from here?

- \* Sustained at one site.
- \* Looking for opportunities for a stepwise rollout of FLS in Fraser Health
- \* Developing a guide to FLS tailored to BC