ADDRESSING THE CARE GAP IN SECONDARY FRACTURE PREVENTION IN A SINGAPOREAN HOSPITAL: “OPTIMAL”

Manju Chandran, M.D, FACP, FACE, FAMS

Senior Consultant and Director, Osteoporosis and Bone Metabolism Unit, Department of Endocrinology, Singapore General Hospital
Singapore

- Population: 5.4 million
- Multiethnic
- Chinese (74.2%), Malays (13.2%), Indians (9.2%) and others (3.4%)
- 100% urban
- Health Care financing: Twin philosophies of individual responsibility and affordable health care to all
- Subsidies on health care: Provided through general taxation and through nationalized compulsory health insurance plan - Medisave that can be used for chronic diseases and hospitalization bills
- 70-80% of Singaporeans obtain their medical care within the public health care system
- Primary health care provided by mix of 18 polyclinics and 2000 private GP’s

Singapore Population census 2013
Singapore

- Osteoporosis is major public health problem
- Number of people aged 65 and older will triple from 350,000 today to 960,000 in 2030

Http://www.singstat.gov.sg
• FRAX ® model exists for all 3 major ethnic groups.
• 27 DXA machines for the population of 5.4 million
• Osteoporosis is recognized by the Government as a National Health Priority.
Post Fracture Osteoporosis Management Models

• Breaking the „fragility fracture cycle“ is an international challenge

• Interventions based on public and health care education alone unlikely to improve osteoporosis management

• Many feasible models possible

• Models based on Clinician Champion + Coordinator involvement circumvent the challenge of where clinical responsibility resides for care of the fragility FX patient

• Cost of antiosteoporosis treatment has to be factored in especially in countries where health care is largely self pay

OPTIMAL
Osteoporosis Patient Targeted and Integrated Management for Active Living

MOH Funded

7 Government Hospitals and 18 Polyclinics

Age more than 50 years, male or female

*Fragility Fracture

Able to comply with intervention and follow up for 2 yrs

* Exclude skull, below ankle and beyond wrist
**OPTIMAL**

**Osteoporosis Patient Targeted and Integrated Management for Active Living**

Clinician Champion and Dedicated Coordinator

- Case Finding & Education
- DXA
- Basic Labs
- Medication Recommendation
- OTAGO exercise- Fall Prevention

Centralized Data Entry System (CCRD)

*Structured OTAGO exercise program (balance and strengthening): 10 one hour sessions over 6 weeks followed by recommendations for continuing at home/community gym or individual PT over the next 2 years*
Background to OPTIMAL

• Pilot HSDP Project on Osteoporosis Management: 2003-2007
• 1069 patients recruited from 3 hospitals across Singapore
• Audit conducted prior to HSDP Project: Only 16% of patients on appropriate anti osteoporosis treatment after sustaining a fragility fracture
• Improvement to 44.9% after implementation of HSDP
• Overall reduction in fracture rate: 42.4%
How did we set it up?

• Identified the problem

• Who would take charge? – Clinician Champions

• Examined whether we should start from scratch or whether there were facilities and resources already available at each public hospital
Our Proposal--

• Allied with Key Strategic Directions of MOH
  - Risk Stratification
  - Evidence based Guidelines
  - Case Management
  - Outcomes tracking

• Key Performance Indicators: Volume Indicators and Clinical Indicators
  - A reduction in patients who have recurrent fractures since sustaining the first fracture within the 2 year period (40% reduction, including hip fracture)
  - An increase in the proportion of patients who have evaluation of osteoporosis and assessment of future fracture risk after sustaining a fracture, and had received appropriate treatment when indicated. (85%)
  - Adherence to treatment (70%)

• Expenditure and Income Projections

Armed with the preliminary data and this proposal we lobbied MOH (for health care funding) and top level management at individual hospitals for setting up the program
• Hired Case Managers with **clear Job Descriptions**
THE PATH- HAS NOT BEEN EASY!
SGH: Largest tertiary teaching hospital in SE Asia: 1590 Beds

Estimated number of osteoporotic fractures seen annually: 1500

SGH Osteoporosis Prevention and Treatment Initiative already initiated and Hip Fracture pathway updated at time of OPTIMAL implementation in 2008

Most number of Departments involved in “buy in” for OPTIMAL

Most number of patients screened and recruited, and currently in follow-up
Patient with fragility fracture (any time after age 50 or new #) identified by thrice weekly perusal of A&E fracture record, referral from Specialist OP clinics or wards.

**Figure 1: Work Flow of OPTIMAL showing follow up visits**

- **Screening**
  - Fragility fracture patients identified
  - Enroll into OPTIMAL
  - Initiate osteoporosis education

- **Second visit**
  - Essential investigations including DXA
  - Initiate osteoporosis medications
  - Falls assessment
  - Physiotherapy

- **Third visit (6th week to 3rd month)**
  - Assess compliance to medications and exercise
  - Document side effects, falls or fractures

- **Fourth and Fifth visits (9th and 15th month)**
  - Can be telephonic follow-up
  - Assess compliance to medications and exercise
  - Document side effects, falls or fractures
  - Order DXA for 24th month

- **Sixth visit (24th month)**
  - Assess compliance to osteoporosis medications and exercise
  - Document any side effects, falls or fractures
  - Review DXA
  - Complete end-of-OPTIMAL questionnaire
COSTS

Non-Recurrent Costs:
• Initial training of personnel (Case Manager/Physiotherapist/IT)
• Initial purchase of Equipment (Laptops/ Data entry software, Physiotherapy (Falls assessment) equipment)

Recurrent Costs
Manpower
Rental of facilities/room
Operation Cost (Administrative support)
[Medication subsidy if any
Cost of Investigations and DXA subsidy if any]
OPTIMAL at SGH

7137 patients screened to date

1820 patients with fragility # recruited so far

98% of above patients had baseline DXA and 64.3 % had baseline and 2 year follow up DXA scan

Patients with prior fragility fractures after age 50

Patients with new fragility fractures

Male or Female age>50 years old

Agreed to participate in the program and able to comply with intervention and follow up

Mean MPR : 72.8+-34.5 % at 2 years
Proportion of patients with MPR >=80% at 12, 18 and 24 months were 83, 75 and 50% respectively
Secondary prevention of osteoporotic fractures—an “OPTIMAL” model of care from Singapore

M. Chandran • M. Z. W. Tan • M. Cheen • S. B. Tan • M. Leong • T. C. Lau

Adherence to osteoporosis medications amongst Singaporean patients

M. H. H. Cheen • M. C. Kong • R. F. Zhang • E. M. H. Tee • M. Chandran

Commentary

Secondary Fracture Prevention: Plucking The Low Hanging Fruit
Manju Chandran, 1,2 Harriet Svensson, Kristina Akesson, 3,4,5,6,7,8

Fracture Liaison Services in an Open System: How was it Done? What Were the Barriers and How Were They Overcome?
Manju Chandran
Where the Ball was Dropped- The System Level Challenges

Dropping the Ball and Falling Off the Care Wagon. Factors Correlating With Nonadherence to Secondary Fracture Prevention Programs.
Chandran M, Cheen M, Ying H, Lau TC, Tan M.

- Failure to identify all fractures presenting to the hospital
- Inadequate capture of Vertebral fractures
- Failure to recruit all patients who were evaluated
- Decanting (“Right Siting” to polyclinics) slow
- Primary recruitment by Polyclinics lower than expected
- Manpower issues
Why do patients fall off of the Band Wagon of Secondary Fracture Prevention Programs?

Reasons for defaulting OPTIMAL program

- Too time consuming/No one to bring for TCUs: 27%
- Fearful of side effect: 15%
- Unable to tolerate medication: 10%
- Osteoporosis is not important: 5%
- No show/Reason unclear – include unable to comply with follow-up: 4%
- Medication too expensive: 4%
- More than 1 reason: 15%
- Other reasons (did not remember appointments, overseas patients etc.): 15%
SUMMARY

• The OPTIMAL program has succeeded in identifying, evaluating and treating a large number of patients with fragility fractures at Singapore General Hospital.

• All components of highly facilitated program appear to have contributed towards potentially decreasing care gap in management of fragility fractures.

• High compliance rates with medication seen.

• However, ultimate success of program will be measured by fractures prevented over long term follow-up and cost effectiveness.

• Goal: To ensure that no patient with fragility fracture is missed and that the first fracture will be the last.
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  Orthopedic Surgery
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  Endocrinology
  Rheumatology
  Geriatrics
  Family Medicine and Continuing Care
  Obstetrics and Gynecology

AND

THE OPTIMAL TEAM AT SGH
Proposed Improvements in OPTIMAL II

• Involving GPs for better right siting of care
  – Follow up
  – Recruitment

• Tai Chi at Community Centres

• Use of Medisave (Compulsory Health Insurance Savings Scheme) for OP investigations and treatment to improve acceptance of program

• Integrating the Orthogeriatrics hip fracture care management program running at some hospitals with OPTIMAL
Involving General Practitioners

• Right siting of care
  – GP training courses to familiarize them with the OPTIMAL program
  – Care coordinator to liaise with GP/Family Medicine Care for follow up
  – Investigations can be done at GP/FMC (cost to be made comparable)
Integrating with Hip Fracture Care

• Advantages:
  – Integration of seamless care
    • Hip fracture care—care management up to community hospital.
    • OPTIMAL- step down to GPs
  – Better resource sharing and utilization
  – MOH may fund both programs together
Best Practice Framework- 13 internationally endorsed standards to guide FLS- Decide what to include in your service model

<table>
<thead>
<tr>
<th>BPF Standard</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
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</thead>
<tbody>
<tr>
<td>1. Patient Identification</td>
<td>Patients Identified not tracked</td>
<td>Patients identified; are tracked</td>
<td>Patients identified, tracked and independently reviewed</td>
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<tr>
<td>2. Patient evaluation</td>
<td>50% assessed</td>
<td>70% assessed</td>
<td>90% assessed</td>
</tr>
<tr>
<td>3. Post fracture assessment timing</td>
<td>Within 13-16 weeks</td>
<td>Within 9-12 weeks</td>
<td>Within 8 weeks</td>
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<tr>
<td>4. VF identified</td>
<td>Known VF assessed</td>
<td>Routinely assess for VF</td>
<td>Radiologists identify VF</td>
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<tr>
<td>5. Assessment guidelines</td>
<td>Local</td>
<td>Regional</td>
<td>National</td>
</tr>
<tr>
<td>6. Secondary causes of OP</td>
<td>50% of patients screened</td>
<td>70% of patients screened</td>
<td>90% of patients screened</td>
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<tr>
<td>7. Falls prevention services</td>
<td>50% of patients evaluated</td>
<td>70% of patients evaluated</td>
<td>90% of patients evaluated</td>
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<tr>
<td>8. Multifaceted risk assessment</td>
<td>50% of patients screened</td>
<td>70% of patients screened</td>
<td>90% of patients screened</td>
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<tr>
<td>9. Medication initiation</td>
<td>50% of patients initiated</td>
<td>70% of patients initiated</td>
<td>90% of patients initiated</td>
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<tr>
<td>10. Medication review</td>
<td>50% assessed</td>
<td>70% assessed</td>
<td>90% assessed</td>
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<tr>
<td>11. Communication strategy</td>
<td>Comms to Drs</td>
<td>Comms to Drs with 50% criteria</td>
<td>Comms to Drs with 90% criteria</td>
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<tr>
<td>12. Long term management</td>
<td>1 year follow-up</td>
<td></td>
<td>6 month follow-up and 1 year follow-up</td>
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<tr>
<td>13. Data base</td>
<td>Local</td>
<td>Regional</td>
<td>National</td>
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AND THOUGH WE MAY NEVER BE ABLE TO ACHIEVE THIS
HOPEFULLY THIS CAN BE A THING OF THE PAST----
Thank you

谢谢您

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Terima Kasih

NANDRI

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