<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>A secondary Fracture Prevention Programme to reduce fractures, hospital admissions, and mortality rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Loong, CHN; Chan, YY; Lau, TW; Leung, F; Bow, CHY; Soong, SS; Ma, LF; Leung, E; Yee, A; Yeung, SC; Luk, KDK; Kung, AWC</td>
</tr>
<tr>
<td><strong>Citation</strong></td>
<td>The 16th Hospital Authority Convention (HAC 2010), Hong Kong, 10-11 May 2010.</td>
</tr>
<tr>
<td><strong>Issued Date</strong></td>
<td>2010</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10722/126440">http://hdl.handle.net/10722/126440</a></td>
</tr>
<tr>
<td><strong>Rights</strong></td>
<td>This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.</td>
</tr>
</tbody>
</table>
A Secondary Fracture Prevention Programme to Reduce Fractures, Hospital Admissions, and Mortality Rates

Loong CHN1, Chan YY1, Lau TW2, Leung F2, Bow CH1, Soong SS3, Ma LF3, Leung E1, Yee A1, Yeung SC1, Luk KDK2, Kung AWC1

Department of Medicine1 and Department of Orthopaedics & Traumatology2, Queen Mary Hospital, Hong Kong, China

Introduction:
Osteoporosis patients with a prior fracture have a higher risk of re-fracture. Anti-osteoporosis medications reduce fractures only with prolonged treatment. In 2000, a Secondary Fracture Prevention Programme was piloted in Queen Mary Hospital to evaluate and treat patients with osteoporotic fractures.

Objectives:
1) To triage and identify post-fracture patients with good survival and quality of life to minimize unnecessary osteoporosis drug treatment;
2) To reduce re-fractures;
3) To minimize hospital admissions;
4) To reduce mortality with osteoporosis drug treatment;
5) To lower cost for hospitals to treat preventable re-fractures.

Methodology:
Patients with low traumatic fractures underwent a structured evaluation and triage system for treatment and systematic follow-up programme. The triage was done by a registered nurse in-charged of the programme. Outcome measures include: (1) Re-fracture rate, (2) Re-admission rate, (3) Mortality rate at 1, 5, and 10-years, using survival analysis.

Results:
2,364 (1606 female and 758 male) fracture patients admitted to Queen Mary Hospital between 1999 and 2009 were screened. 1,078 (45.6%) had hip fractures, 565 (23.9%) spine fractures, 311 (13.2%) distal radius fractures and 410 (17.3%) fractures at other sites. 80.2% of patients fulfilled the inclusion criteria and were included into the program. About 80% of these patients were started on anti-osteoporotic medications.

The re-fracture rate at 1-, 5-, and 10-years of patients who received anti-osteoporosis medications were significantly lower than those who did not receive medications (both p<0.05). Patients who satisfied the inclusion criteria but did not receive anti-osteoporosis medications had significantly higher re-admission and mortality rates at 1, 5, and 10 years (all p<0.05). Patients who were excluded from the program have significantly lower re-fracture rate but higher re-admission and mortality rates due to other causes at all time-points (all p<0.05) (Figure 1, 2, and 3).

Anti-osteoporosis medications reduced risk of hip fractures by 88.8%, spine fractures by 88.3%, and other fractures by 82.8% at 12 months. The average cost of bisphosphonates, an effective anti-osteoporosis medication, is $1,400/patient-year. The Hospital Authority statistical report for 2007 recorded a total of 25,713 fractures. Based on these data, the secondary fracture prevention programme is estimated to provide a cost-saving of $100,260,300 per year.

Conclusion:
A structured triage and management programme for secondary fracture prevention was effective in identifying patients with better quality of life who are more likely to benefit from anti-osteoporosis medication, therefore reducing unnecessary drug prescription. Judicial use of anti-osteoporosis agents was effective in reducing re-fractures, re-admissions and mortality and achieving cost-savings.