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Evaluation of the Osteoporosis Secondary Fracture Prevention Program at Queen Mary Hospital: Successful Recruitment is Associated with Lower Re-fracture Rate and Mortality Rate at One Year

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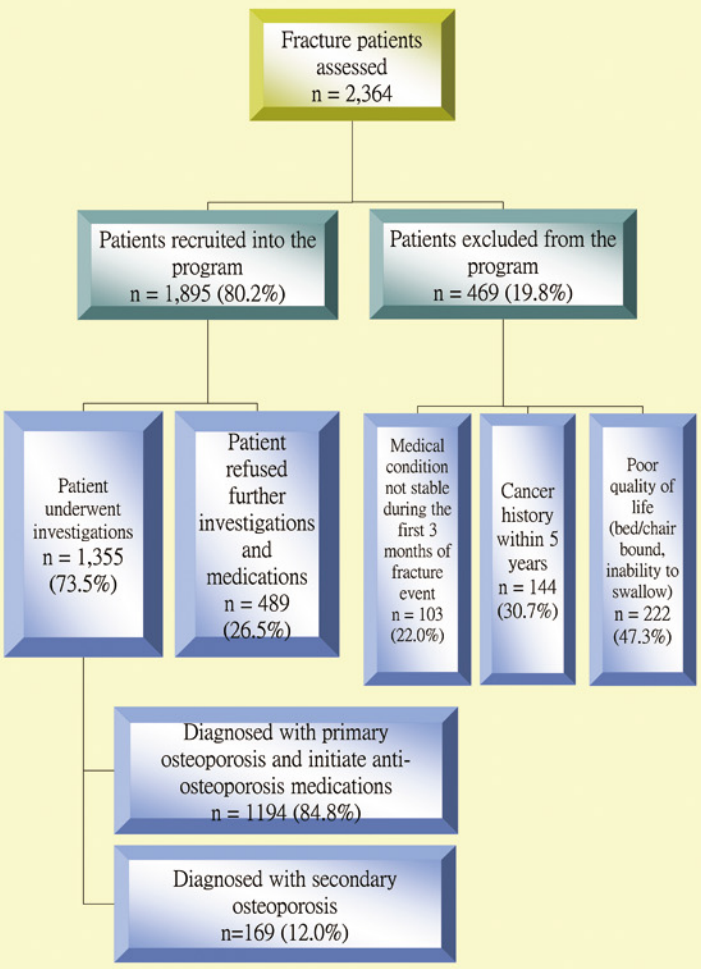
Introduction:
Osteoporosis is a silent metabolic bone disease and it only manifests itself with the complication of fracture. The mortality and re-fracture rates are high especially in the first year after the fracture. Anti-osteoporosis medications reduce fractures with prolonged treatment. With rapid aging of the population, the number of fractures and its cost of treatment will be expected to increase exponentially. A structured triage protocol is necessary to identify patients who will benefit most from osteoporosis drug treatment.

Objectives:
1) To establish a registry for patients with osteoporotic fractures
2) To develop a triage protocol for an osteoporosis secondary fracture prevention program
3) To establish a cost-effective program for the use of anti-osteoporosis medications

Methodology:
Patients admitted to Queen Mary Hospital with fractures underwent a multidisciplinary, structured triage protocol to identify patients for evaluation and treatment. The triage was done by a registered nurse in-charged of the program. Recruited subjects underwent investigation were offered education and medical consultation, lifestyle modification and drug treatment for osteoporosis. The outcome of the program was assessed at one year by the following criteria: (1) recruitment rate; (2) drug treatment rate; (3) re-fracture rate, and (4) mortality rate.

Figure 1. Recruitment and drug treatment rates at one year



Results :
Recruitment and drug treatment rates at one year: (Figure 1)
2,364 fracture patients admitted to Queen Mary Hospital between 1999 and 2009 were assessed. 1,895 (80.2%) patients recruited and 469 (19.8%) patients were excluded from the program. Among those recruited into the program, 1406 (74.2%) patients underwent investigations: 169 (12.0%) patients were diagnosed with secondary osteoporosis, 1194 (84.8%) patients were diagnosed primary osteoporosis initiated anti-osteoporosis medications. 489 (25.8%) patients recruited into the program but refused further investigations and medications. 222 (47.3%) patients were excluded from the program due to poor quality of life (bed/chair-bound, inability to swallow), 103 (22.0%) were excluded due to unstable medical conditions within 3 months post-fracture, and 144 (30.7%) had a history of cancer within 5 years.

Re-fracture and Mortality rates at one year: (Table 1)
Patient recruited into the program and on anti-osteoporosis medication had lower mortality rate and re-fracture rates at 1 year (2.7% mortality rate and 2.1% re-fracture rate) compared with patient recruited into the program but refused further investigation and/ or medication (6.4% mortality rate and 2.3% re-fracture rate). Patients being excluded due to (1) poor quality of life had a 0.9% mortality rate and 1.4% re-fracture rate; (2) unstable medical condition at assessment had a 9.5% mortality rate and 5.2% re-fracture rate; and (3) cancer within 5 years had a 26.2% mortality rate and 2.4% re-fracture rate.

Conclusion:
The triage protocol for secondary fracture prevention was successful in identifying subjects with good quality of life and more likely to benefit from treatment. The program was associated with a reduction in re-fracture rate and mortality rate at one year. Unfortunately, despite active recruitment, elderly patients with osteoporotic fractures had low acceptance of this program. Education and promotion of the secondary fracture prevention program is urgently needed.

Table 1. Mortality and Re-fracture rates at 1 year

		Mortality Rate	Re-fracture Rate
1	Patient recruited into the program and put on anti-osteoporosis medication	2.7%*	2.1%*
2.	Patient recruited into the program but refused further Investigation and/or anti-osteoporosis medication	6.4%*	2.3%*
3.	Patient excluded from the program due to:	16.5%*	2.2%*
	a. Poor quality of life	0.9%*	1.4%*
	b. Medical condition not stable when assessed	9.5%*	5.2%*
	c. Cancer within 5 years	26.2%*	2.4%*

* $p< 0.001$