Overview

As in the rest of the region, the population in Thailand over 60 years of age is increasing rapidly. In studies, the prevalence of osteoporosis measured by DXA is 13.6% and 19.8% at the hip and spine respectively. This translates into a total number of 909 000 women with a BMD diagnosis of osteoporosis at the hip and 1.3 million at the spine.

In other studies, about 17% (7140 cases) of those who sustained a hip fracture died in the first year after treatment. These numbers are as high as 1 in 6 women with hip fracture and carry greater mortality than the rate found in breast cancer patients after one year (1 in 9 cases). Following these women who sustained a hip fracture to 5 years, it was found that mortality increased to 1 in 3, which makes it the sixth leading cause of death in Thai women. Similar mortality rates have been reported for Thai men.

A recent study from Chiang Mai in 2005 clearly showed the rising incidence of hip fracture in both women and men. Of all women and men who sustained hip fracture and survived, 22.1% were non-ambulatory, 10% had to use gait-aids, and the remaining (67.9%) were impaired in their quality of life, even if they could walk independently. Costs of treatment are high and the annual cost is almost double of the annual per capita income.

In conclusion, osteoporosis has significant mortality and morbidity which can significantly impact resources. Osteoporosis is not among the top ten health priorities of the government, even though the number of deaths caused by it is comparable to lung cancer. Improvement in awareness and education of the Thai population especially with regard to prevention is the best public health strategy. At the same time, there is an urgent need to lobby policy makers and to convince them about the need for placing greater importance to osteoporosis in the national health priorities.

Key findings

The total population of Thailand is approximately 66 million. The population will increase to 68 million by 2010; 11.5% (8 million) will be above the age of 60 years. It is estimated that the total population will increase to 71 million by 2020 and 73 million by 2050. Of this 16.4% (12 million) and 26.4% (19 million) will be above the age of 60 years respectively (figure 1).

Figure 1 Population projection for Thailand until 2050

Figure 2 Prediction of hip fracture incidence until 2050
Age-specific (>50) hip fracture incidence rates for men and women were estimated to be 114 and 289 per 100,000 respectively in a 1997 Asian study. The total number of hip fractures every year is projected to reach more than 36,000 in 2020 and 65,000 in 2050 (figure 2). The majority (90 to 95%) of hip fractures are surgically treated (table 1).

The prevalence of osteoporosis (by DXA) was 33% by femoral neck or lumbar spine BMD in Thai women aged 60 +/- 10 years. In addition to menopause, low dietary calcium and sedentary lifestyle were thought to be the main contributors to a low BMD in this population. Another study using DXA showed a prevalence of over 50% in women over 70. Application of the Osteoporosis Self Assessment Tool for Asians has shown mixed results in the Thai population.

A recent study showed a higher incidence of vertebral fractures in men than in women, and attributed it to more strenuous physical activity amongst men. In this study incidence of vertebral fracture in women and men over 50 was 32.1/1000 and 54.5/1000 person-year, respectively, and increased with advancing age.

A cohort study conducted from 2002 to 2004 revealed that the median total cost of hip fracture treatment in 1 year was 3384 USD as compared to heart disease (520 USD) and pulmonary disease (225 USD); the average direct cost was 1756 USD.

In Thailand, the average length of hospital stay for hip fracture is 17-22.7 days. The modified SF-12 health survey reveals that all patients suffered some degree of deficits in health perception, mental health, emotional, physical, social function and pain.

### Table 1 Hip fracture treatment

<table>
<thead>
<tr>
<th>% surgically treated</th>
<th>90-95</th>
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<tr>
<td>average hospital stay (days)</td>
<td>17-22.7</td>
</tr>
<tr>
<td>median direct cost (USD)</td>
<td>1756</td>
</tr>
<tr>
<td>total annual cost (USD)</td>
<td>3384</td>
</tr>
<tr>
<td>total cost heart disease (USD)</td>
<td>520</td>
</tr>
<tr>
<td>total cost pulmonary disease (USD)</td>
<td>225</td>
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Under government and private health plans both DXA and ultrasound are reimbursed if ordered by a doctor. Calcium intakes are low in Thailand (<400 mg/day), especially in the rural population, where nondairy sources like fish may predominate. Low calcium intakes (<138mg/day) were found to correlate with low BMD. There is limited data on vitamin D status. In one study vitamin D insufficiency (25OHD <75nmol/L) was found in 47% of ambulatory post-menopausal Thai women. Calcium supplements, vitamin D supplements and foods fortified with calcium or vitamin D e.g. fortified milks, spreads, juices, cereals are available. There are no structured lifestyle prevention programs for osteoporosis.

Calcium preparations are available without prescription. Prescription drugs approved by the Thai FDA include bisphosphonates like alendronate, risedronate, ibandronate, SERMs like raloxifene, calcitonin, strontium ranelate, PTH, vitamin D analogues and vitamin K.

Reimbursement from government insurance is variable and available only in government hospitals. Anti-osteoporosis drugs are not usually reimbursed under the social security program and reimbursement from private health insurance varies according to policy. The government does not recognize osteoporosis as a major health problem and neither are there any public or health professional awareness programs, covering prevention, diagnosis and management conducted by the government.

Treatment Guidelines for Postmenopausal Osteoporosis (PMOP) have been formulated by the Thai Osteoporosis Foundation (TOPF) and the Department of Medical, Ministry of Public Health.

There are a total of 50 DXA machines (0.008 machine per 10,000). Most of these are available in large urban medical centers and medical school hospitals. Figure 3 shows repartition of the Thai population between urban and rural area. Ultrasound machines are more widely available. The wait for DXA is not more than 1-2 weeks; for ultrasound there is no wait if the machine is available. The cost for DXA (hip and spine) is about 60 USD. The ultrasound cost is about 10 USD per test under government and private health plans both DXA and ultrasound are reimbursed if ordered by a doctor.

### Table 2 Diagnostic tools and costs

<table>
<thead>
<tr>
<th>total DXA machines</th>
<th>50</th>
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<tbody>
<tr>
<td>DXA machine / 10 000</td>
<td>0.008</td>
</tr>
<tr>
<td>cost of DXA scan (USD)</td>
<td>60</td>
</tr>
<tr>
<td>cost of US (USD)</td>
<td>10</td>
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<tr>
<td>income per capita per month (USD)</td>
<td>620</td>
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The Thai Osteoporosis Foundation (TOPF) conducts awareness programs and provides information on osteoporosis on its website.

The level of public awareness about osteoporosis, is at best, moderate, and is better in urban than in rural areas.

There is fair level of awareness among orthopaedic surgeons, rheumatologists, gynaecologists and endocrinologists. Awareness is poor among other doctors and also in the allied health services.

Lack of government recognition regarding importance and burden of osteoporosis is a drawback. Prediction of risk by use of age, weight and ultrasound has been shown to be useful and could be included by the government in its health plan strategies.

There is need for greater action to educate the public and health professionals, especially by the government.

References

1. U.S. Census Bureau, International Data Base