Taiwan, China

Overview
Currently, there are more than 4.9 million people over 50 years of age in Taiwan.

According to projections to 2020, over three billion USD will be spent treating 29 453 persons having osteoporotic hip fractures. By 2050, the cost will increase to five billion USD for treating 58 896 persons.

In Taiwan, the ratio of DXA machines to the general population is 0.3:10,000 and ultrasound machines to population ratio is 1.2:10 000, respectively. These scans are reimbursed by national health insurance; people need to pay 22 USD for DXA and 15 USD for ultrasound.

Medical treatment including bisphosphonates, hormone replacement therapy, selective oestrogen receptor modulators (SERMs), calcitonin, parathyroid hormone, and strontium ranelate are available and reimbursed with restricted criteria by national health insurance.

Key findings
The total population in Taiwan is approximately 23 million, 22% of this population is over 50 years (2 519 184 women and 2 460 577 men). It is estimated that the Taiwanese population will be 23.5 million in 2020 and around 20 million in 2050 (figure 1).

Due to the industrialization of this region and the rapid ageing of the population, it is expected that the number of persons afflicted with osteoporosis will be 7.5 million in 2020 and will reach 9.5 million in 2050. Consequently, the number of osteoporotic hip fractures will increase to 29 453 cases in 2020 and 58 896 in 2050.

A retrospective study based on the National Health Insurance Research Database of Taiwan has estimated the incidence of hip fracture in Taiwan from 1996 to 2000\(^1\). The incidence of hip fracture in this population increased with increasing age and was about 1.6 times higher among women than men in all age

Because osteoporosis is recognized as a major health problem in Taiwan, The Taiwanese Osteoporosis Association (TOA) promotes a health program called Bone Care and a diagnostic program with mobile DXA. TOA was authorized to amend the guidelines for osteoporosis drug therapy by the government.

Figure 1 Taiwan population over 50 years

Figure 2 Taiwan population and osteoporosis cases
groups. Figure 1 shows the age- and gender-specific annual incidence of hip fracture estimated among this population and the results from Hong Kong (1997-1998) and Beijing (1990-1992).

After standardization according to the age distribution of the US white population, the incidence rates of both genders were substantially higher than those of Beijing (3-5 times) and Hong Kong (1.2 times), except after age 85. The incidence rates of Taiwanese women were close to those of Western countries but the age-specific incidence rates of hip fracture of elderly Taiwanese men was even higher, compared with US white men in 1989. The age-specific incidence rate of hip fractures for men was about 65% of that for women, which is a higher male to female ratio than those reported elsewhere for various ethnic groups.

**Figure 3** Age-specific incidence rates (10^5 person-year) of hip fractures in Taiwan, Hong Kong and Beijing

All hip fractures are treated surgically and the average hospital stay is 11.2 nights. Actual direct hospital costs are estimated at 2079 USD per case and global costs for 1 year are over 2.9 million USD. It is projected that global cost for hip fractures will reach 3 billion USD in 2020 and 5 billion USD in 2050.

### Table 1 Hip fracture treatment and cost

<table>
<thead>
<tr>
<th>% surgically treated</th>
<th>average hospital stay (nights)</th>
<th>direct hospital cost (USD)</th>
<th>global cost for 1 year (USD)</th>
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<tr>
<td>100</td>
<td>11.2</td>
<td>2079</td>
<td>2.9 million</td>
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The usual approved drug therapies for osteoporosis are available in Taiwan but reimbursement is limited to hormone replacement therapy; bisphosphonates and SERMs are reimbursed with certain conditions. Osteoporosis is recognized as a major health problem in Taiwan and the Taiwanese Osteoporosis Association is active in providing guidelines for osteoporosis prevention and treatment and organizing prevention campaigns (Mobile DXA examination).

Although patient and health care professional awareness about osteoporosis is reasonably good in Taiwan, there is still a need to increase individuals’ awareness by frequent education about prevention and treatments of osteoporosis. Financial support is needed from the government or other communities, mainly for CME meetings, media and public education sessions.

### Reference