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Osteoporosis International

Short Report

Report on Osteoporosis in the European Community: Current Status and Recommendations for the Future

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Background

The morbidity and mortality attributable to osteoporotic fractures and their high financial costs are well documented. In recent years there has been significant progress in our knowledge of the causes, diagnosis and treatment of osteoporosis but these have not always been fully exploited by health care systems and much remains to be learned. Although awareness of the enormous suffering and medical, social and financial burden created by osteoporosis has grown, insufficiently high priority is currently given to the disease by governments and health care providers. This has resulted in inadequate provision of diagnostic facilities in many European Union member states and failure to provide optimal care for all individuals suffering from osteoporosis.

To address these concerns, a Working Party of experts from the European Union member states was set up by the European Commission Directorate General V to produce a report on osteoporosis. The Report on Osteoporosis in the European Community provides a detailed analysis of the epidemiology, pathogenesis and clinical management of the disease throughout the European Union with particular emphasis on prevention in the future. The report examines differences between member states with regard to prevalence and incidence of osteoporotic fractures, future demographic changes, nutrition, diagnostic resources and patient support groups. A number of specific recommendations are made that are primarily targeted at improving prevention of osteoporosis and reallocating health care resources to meet the growing demands in the future. This paper provides a summary of the contents of the report and concludes with the recommendations of the Working Party.

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*See Appendix for details of the Working Party.

Summary of Contents

Epidemiology and Economic Considerations

The age-specific incidence of hip fracture and prevalence of vertebral fracture in European Union member states has been compiled from published data or information obtained by personal communication, using survey data (direct assessment of fracture rates in defined populations) or official health services administrative data. In five member states, no information on fracture incidence/prevalence was available and information from other countries was substituted. As previously reported, there are large variations between member states for both types of fracture.

Demographic forecasts indicate an increase in the population of the European Union member states that will level off around the year 2015 and thereafter decline rapidly. The potential labor force will show similar trends but the number of men and women aged 65 years or older will increase steadily so that by 2040 the current number will nearly have doubled; after 2040 the number of pensioners will level off. However, the most dramatic changes will occur in the very elderly population (aged 80 years and above), in whom the incidence of osteoporotic fracture is greatest, with an estimated trebling in numbers. Overall, these changes will result

in a dramatic fall in the ratio of providers (i.e., those in the labour force) to pensioners, particularly when the very elderly population is considered.

Forecasts for osteoporotic fractures over the next 50 years have been made, based on the assumption that age-adjusted incidence will be stable over this period of time; if, as some studies suggest, there will be an increase in age-adjusted incidence the projections represent an underestimate of the true number of fractures of between 50% and 300% over the 50-year period. However, when no adjustment for secular trends is made, the total number of hip fractures occurring in European Union member states each year is estimated to rise from 414 000 at the turn of the century to 972 000 fifty years later, representing an increase of 135%. The total number of prevalent vertebral fractures is estimated to increase from 23.7 million in the year 2000 to 37.3 million in 2050, representing a rise of 57%.

The financial implications of these huge increases in the number of osteoporotic fractures have to be considered in the light of demographic changes and the resulting pressures on health care and social welfare systems. The proportion of hospital beds required for patients with osteoporotic fracture is estimated to increase at least 2-fold but, overall, reallocation of financial resources from health care to social services may be required. The needs for more hospital beds and for reallocation of resources will vary considerably between different member states, depending on their current health care system and the projected increase in number of osteoporotic fractures for that country.

Nutrition

Nutritional factors, particularly calcium and vitamin D, are important for the maintenance of skeletal health. Although information is not available from all member states, data from those in which dietary calcium intakes have been established demonstrate that a significant proportion of some populations have intakes below the recommended levels. Furthermore, policies for the fortification of food with calcium vary widely between the member states, being strict in some countries and more liberal in others. The addition of calcium to foods is not compulsory in any European Union member state with the exception of the United Kingdom, in which calcium is added to all flours. Age- and gender-specific recommendations for daily dietary allowances of calcium are provided.

Vitamin D deficiency is common in many elderly populations in western Europe and is believed to contribute to the pathogenesis of fracture, particularly at the hip. In the majority of subjects the main source of vitamin D is from endogenous synthesis, but in the elderly, particularly those who are housebound or institutionalized, dietary intake becomes increasingly important. Data on dietary vitamin D intake are not available in many European countries; fortification of foods and vitamin D varies considerably between European Union member states and is not always compulsory. Age-specific recommended dietary allowances are provided.

Diagnosis

Bone mineral density measurements currently provide the best assessment of fracture risk. Since population-based screening cannot be justified at present, selection of subjects for bone densitometry is made on the basis of clinical and historical risk factors. At present, dual-energy X-ray absorptiometry (DXA) is the method of choice for the diagnosis of osteoporosis but other methods, particularly broadband ultrasound attenuation and velocity, are currently being evaluated. Furthermore, the use of biochemical markers of bone turnover in addition to measurements of bone mineral density may improve the assessment of fracture risk.

Facilities for bone densitometry in European Union member states vary widely. Austria, Greece, Belgium and Portugal have the greatest number of DXA systems, ranging between 13 and 18 per million population; the lowest number of these densitometers is seen in the United Kingdom, Ireland and Sweden (between 2 and 4 units per million population). At present, DXA systems predominate over single-energy X-ray absorptiometry and ultrasound in all European Union member states except Italy and Sweden, in which ultrasound systems are most abundant. When all types of densitometry are taken into account, provision is best in Austria (32 units per million population) and worst in the United Kingdom and Ireland (4–5 units per million population).

Prevention of Osteoporotic Fractures

Approaches to the prevention of osteoporotic fractures may include both non-pharmacologic and pharmacologic interventions. The former, which include physical activity, improved nutrition and fall prevention, may theoretically reduce fracture risk by increasing peak bone mass, reducing age-related bone loss, decreasing the risk of falling, improving the protective neuromuscular responses associated with falling or reducing the impact of falls. Firm evidence supporting the antifracture efficacy of many of these approaches is lacking at present, although the effectiveness of hip protectors has been definitively established.

A number of pharmacologic agents are now available for the prevention of osteoporotic fractures. These include hormone replacement therapy, bisphosphonates, calcitonin, calcium, vitamin D, vitamin D metabolites and sodium fluoride. Evidence for the antifracture efficacy of these agents varies widely; this mainly reflects the differing trial designs and, in the case of hormone replacement therapy, almost exclusive reliance on observational studies. There is increasing evidence that substantial reductions in fracture rate may be

achieved in patients with established osteoporosis despite relatively modest treatment effects on bone mineral density.

Evalution of the economic costs of osteoporosis prevention is complex and has so far been based on modeling studies related to the use of hormone replacement therapy. The cost-effectiveness of different treatment strategies is likely to vary between different European Union member states as a result of the differing incidence of the disease and the relative differences between acquisition costs and other treatment costs; in particular, there are large variations in the costs of treating a hip fracture in different member states. The use of bone densitometry to target for or monitor treatment and the level of risk of fracture in patients selected for treatment also have important effects on cost-effectiveness.

Management of the Patient with Osteoporosis: Rehabilitation and Self-Help Groups

Symptomatic and supportive treatment of patients with osteoporosis is a vital part of their management. General measures include early mobilization after fracture with pain relief using analgesics, transcutaneous electrical nerve stimulation, hydrotherapy and physiotherapy as required. Physiotherapy may also be useful in improving postural abnormalities, increasing confidence and reducing the risk of falls. Advice about avoiding activities such as heavy lifting and reducing the risk of falling should be given where appropriate and the use of aids to help with daily activities should also be considered.

Psychosocial support is also an essential component of the management of patients with osteoporosis. Self-help groups have an important role in this respect and also serve to improve the patients' understanding of the disease and to provide information about measures that they themselves may take to reduce the risk of subsequent fractures. Although some European Union states have very active self-help groups, for example the United Kingdom and Germany, in other countries self-help groups are limited or absent. Active groups have productive communications with relevant organizations such as insurance companies, health authorities and hospital associations.

Recommendations

The recommendations in this report address both the fuller utilization of presently available diagnostic techniques and therapies and the need for further research. They also emphasize the inequality of resources throughout European Union countries and the urgent need for greater dissemination of information amongst both the public and health professionals.

1. The Report on Osteoporosis in the European Community provides compelling evidence that fractures caused by osteoporosis pose a major and growing threat to the health of elderly populations in Europe. It is recommended that osteoporosis is explicitly adopted as a major health priority by the European Union and the governments of the 15 member states. Prevention of osteoporosis should be a major priority in health promotion, education and training both for the general public and health professionals.

2. More information is required about the incidence and prevalence of osteoporotic fractures, particularly in those countries in which very little information is currently available. Differences between countries may provide important clues about causes of osteoporosis and potential preventive strategies, and further research is required to explain these geographical variations. It is recommended that a coordinated system for the monitoring of fracture rates, with particular reference to secular trends, is set up at a national and European level. This would facilitate more accurate documentation of osteoporotic fractures in European Union member states and enable better estimation of the costs involved in its prevention and treatment.

3. The number of osteoporotic fractures occurring over the next few decades in European Union member states will rise dramatically. It is recommended that national systems are coordinated throughout the European Union in order to plan effectively for the resulting increase in demands on health care and to institute appropriate resource reallocations. These should take account of country-specific demographic forecasts, financial resources and health care systems.

4. Nutritional factors, particularly calcium and vitamin D, play an important role in skeletal health. Nonetheless, dietary calcium intakes are below recommended levels in many European Union member states and vitamin D deficiency is common, particularly in the elderly. It is recommended that policies are developed and implemented to advise the general public and health professionals about calcium and vitamin D nutrition, based on agreed recommended intakes, at all stages of life. In some countries, fortification of certain foods should be considered.

5. Better provision of bone densitometry systems throughout Europe is a major priority. Bone density measurements currently provide the best diagnostic approach for osteoporosis, but resources in Europe are patchy and often inadequate and many doctors and their patients do not have access to bone densitometry systems. In addition, reimbursement for bone density measurements is absent or incomplete in some countries, thus limiting the use of this facility even where resources are available. It is recommended that access to bone density measurements should be universal for subjects with accepted clinical indications and that reimbursement should be available for such individuals. Dual-energy X-ray absorptiometry is currently the method of choice, although other approaches such as broadband ultrasound attenuation are being evaluated and may become an acceptable alternative.

6. The number of agents available for the prevention and treatment of osteoporosis has increased in recent

years and others are currently being developed. There are wide variations in the use of these drugs in individual European Union member states; this is partly, but not wholly, a result of the lack of standardization of criteria for registration. It is recommended that a unified policy is developed to ensure optimal treatment strategies throughout the European Union, in which all member states use an evidence-based approach to determine which treatments should be advised. Reimbursement, for both pharmacologic and non-pharmacologic interventions, should be available for all patients receiving treatment according to accepted indications.

7. The role of national patient and scientific societies in providing support and information for sufferers, their families and the public is increasingly recognized. However, in some parts of Europe ignorance about osteoporosis is still common, amongst both health professionals and the public, so that sufferers remain isolated by their disease and are unaware of measures that can be taken to help them. It is recommended that governments actively promote these societies, providing financial support and helping to publicize their cause throughout the European Union; appropriate training of health care professionals involved in the management of osteoporosis should also be an important priority.

8. There are a number of areas where further research is urgently required. For many of these, long-term prospective studies involving collaboration between European Union member states are particularly appropriate. It is recommended that funding for such studies is given the highest priority in order to enable preventive strategies to be devised and implemented. (a) More information is required about modifiable determinants of peak bone mass, particularly exercise and calcium, and how these might be used to achieve higher peak bone mass in the population. (b) More research is required into the identification of risk factors for falling and the effects of fall prevention strategies on fracture. (c) Further evaluation is needed, in different age groups, of approaches to identify individuals at risk from fracture – for example the use of broadband ultrasound attenuation, biochemical markers of bone turnover and risk factors, either singly or in combination. (d) Although population-based screening in perimenopausal women is not recommended, studies are required to assess the cost/utility ratio of this approach in older women. (e) The causes and treatment of osteoporosis in men are important areas for future research.

Appendix. Members Working Party

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