to be answered about fatigue and CFS. However, when seeing a patient with fatigue, GPs can now be more confident about who is at risk for chronicity and what should be done to prevent this. Even when chronicity does occur, there are evidence-based interventions available. Managing non-specific symptoms will always present challenges, but in the case of fatigue, the mounting evidence will hopefully provide increased hope and guidance for GPs.

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A fractured service:
the latest advice on osteoporosis

Fragility fractures are common and place a heavy burden on individuals, health, and social care services. One in two women and one in five men will suffer a fracture after the age of 50 years.[1] About 20% of patients suffering a hip fracture die within a year as a result.[2] Each year, fractures account for 2 million hospital-bed days in England. This is more than cardiac ischaemia, diabetes, heart failure, or chronic obstructive pulmonary disease.[3] Patients with hip fractures occupy one in five orthopaedic beds.[4] Half of those can no longer live independently as a result of the injury and one in five need residential care.[5] Considering the growing burden, fracture prevention is of great importance especially as the robust evidence for pharmacological treatments has shown them to be cost-effective irrespective of age.[6]

In this issue of the *BJGP* a Dutch team examines a case finding tool that is widely used in general practice in the Netherlands to select patients for referral for DXA (dual energy X-ray absorptiometry) scanning.[7] Specificity was found to be high (85.9%) but sensitivity was very low (19.5%). The team concluded that the tool 'is of little value to select patients for DXA measurement' and that the Dutch case

finding instrument showed the poorest outcomes of the eight tools compared. Using the tool, a substantial number of osteoporotic patients would remain undiagnosed. However, while bone mineral density (BMD) is widely recognised as a major predictor of fracture, it has all too often been used as a sole surrogate marker for risk of fracture. We need a tool for predicting risk of fracture and be aware of the risks of using surrogate markers for a more appropriate outcome measure.

In recent years many guidelines for the prevention and treatment of osteoporosis have been published. In the Netherlands the Dutch Institute for Healthcare Improvement published its second revised guideline in 2002[8] and the Dutch College of General Practitioners (NHG)[9] in 2005. The guidelines in the UK included those produced by the Royal College of Physicians in 2000 for prevention and treatment of postmenopausal osteoporosis[10] and in 2002 for men and women taking oral glucocorticoids.[11] In January 2005, NICE focused its guidance on the secondary prevention of osteoporotic fractures in post-menopausal women with osteoporosis.[12] In October 2008 this was reviewed (TA161)[13] and, in addition, a Technology Appraisal for Primary prevention (TA160)[14] was published.

The guidance recommends a range of treatments, depending on a woman's age, BMD and how many risk factors she has for fracture or the number of indicators of bone fragility. The National Osteoporosis Society has however, criticised the guidance for being complex, inflexible, and unethical. A judicial review in January 2009 found that NICE had failed to disclose its economic model. NICE must now disclose this and permit all consultees to make further submissions in response. NICE may further revise the Technology Apprasials.

The World Health Organisation defines osteoporosis as 'a progressive, systemic, skeletal disorder, characterised by low bone mass and micro-architectural deterioration of bone tissue and consequent increase in bone fragility and susceptibility to fracture.' It is the end result of fragility fracture that is important to the individual and society. The measurement of BMD, expressed as the T score is only part of the assessment of a patient at risk of fracture. Osteoporosis and the risk of fragility or low impact fracture should be considered as a chronic, asymptomatic disease, the acute event of which is the fracture. Primary care is best placed to manage chronic conditions (hypertension, hypercholesterolaemia) the acute outcomes of which are best managed in secondary care (stoke, myocardial infarction). British GPs are used to using a tool to predict the 10-year probability of a person developing cardiovascular disease. The World Health Organization has developed a similar tool that generates the 10-year fracture risk probability of major osteoporotic fracture (wrist, humerus, vertebrae and hip) details of which can be found at: http://www.shef.ac.uk/FRAX. The diagnostic thresholds for osteoporosis differ from intervention thresholds for fracture prevention for several reasons. A person's risk of fracture varies with age, even with the same T score. In addition, there are other clinical risk factors that influence fracture risk, some of which are independent of BMD. However, it needs to be remembered that these risk factors alone, nor in combination, are not, a guarantee of accurate fracture risk assessment. It will only be after extensive use of the FRAX® tool that we will refine its sensitivity for fracture prediction. Finally the cost-benefit ratio also needs to be considered.

Until recently this widely used tool has not been incorporated into current guidelines. The National Osteoporosis Guidelines Group (NOGG) in association with, among others the Royal College of Physicians (RCP), the National Osteoporosis Society, and the Primary Care Rheumatology Society, has updated the original RCP guidance. It includes the assessment of men as well as women, all interventions currently in use, glucocorticoid therapy, and incorporates the WHO fracture algorithm.[15]

In previous guidelines intervention thresholds have been based on a history of fracture and/or T scores measured by DXA. However other clinical risk factors increase risk of fracture at least in part independently of BMD (Box 1). In FRAX® these factors are included to improve fracture risk prediction to target those people at high risk who would benefit from treatment. In the NOGG guideline the intervention threshold is set at the level that is equivalent to already having suffered a fracture.[16] This can be compared with initiating a statin in a patient with diabetes for whom the risk of suffering a myocardial infarction is comparable with that of a second heart attack in a previous sufferer. All the NOGG recommendations for treatment are cost-effective assuming that approximately 80% of patients are treated with generic alendronate; the alternative bisphosphonates, raloxifene, or strontium ranelate being reserved for the remaining 20%.[17]

The NOGG Guideline is web based (http://www.shef.ac.uk/NOGG). The initial assessment is by using the country specific FRAX® tool, without the need for BMD assessment. The result is presented graphically with the patient result in a zone that represents no treatment, or referral for DXA recommended, or thirdly, a zone that represents those patients in whom treatment should ideally be initiated. Men and women with probabilities below the lower threshold can be reassessed in 5 years. Men and women with results above the intervention threshold should be

Box 1. Factors associated with increased risk of fracture and/or low BMD

- Increasing age
- Female sex
- Low body mass index (≤19 kg/m^2)
- Previous fragility fracture
- Parental history hip fracture
- Current glucocorticoid treatment
- Current smoking
- Alcohol intake ≥3 units/day
- Secondary causes osteoporosis including:
  - Rheumatoid arthritis
  - Untreated hypogonadism in men and women
  - Prolonged immobility
  - Organ transplantation
  - Type I diabetes
  - Hyperthyroidism
  - Gastrointestinal disease
  - Chronic liver disease
  - Chronic obstructive pulmonary disease

BMD = bone mineral density.

considered for treatment. Those in the intermediate zone should be considered for referral for DXA and the fracture probability recalculated using FRAX®. In the UK we have poor provision of DXA scanners. Using the FRAX® tool for triage could make the use of these machines more focused.

In general, smoking and alcohol are weak risk factors, use of steroids and diseases associated with osteoporosis excluding rheumatoid arthritis are moderate risk factors, and parental history of hip fracture is a strong risk factor. In postmenopausal women who have sustained a fragility fracture it is often appropriate to commence treatment without measurement of BMD. However, in younger postmenopausal women, BMD measurement should be considered, especially if the degree of trauma causing the fracture is not clear.

The recent advances in fracture risk prediction, with or without the measurement of BMD, together with advances in cost-effective treatments should be combined in an active strategy toward fracture prevention. The current recommendation is for a case-finding strategy and not screening, but this needs to be an active process, perhaps using fracture liaison services.

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The role of exercise in the treatment of menstrual disorders:
the evidence

Two of the most commonly experienced menstrual disorders are premenstrual syndrome (PMS) and primary dysmenorrhoea (that is, menstrual cramps or period pain), which can both adversely effect women's functioning and quality of life.[1–3] Several evidence-based treatments are available for these menstrual disorders such as oral contraceptive pills, non-steroidal anti-inflammatory drugs and gonadotropin-releasing hormone (GnRH) agonist treatment. In terms of non-pharmacological treatments, it is popularly thought that exercise participation reduces the frequency and/or severity of PMS and primary dysmenorrhoea. Studies[4] have shown that clinicians often recommended exercise and women frequently use it for symptom management,[3] but this in itself does not constitute evidence of effectiveness. The American College of Obstetricians and Gynecologists has stated in their patient information leaflet (http://www.acog.org/publications/patient_education/bp057.cfm) that 'for many women aerobic exercise lessens PMS symptoms', although the frequency and duration of exercise required to gain relief from symptoms is not specified. Similarly in the UK, the NHS direct website (http://www.nhsdirect.nhs.uk/articles/article.aspx?articleId=578&sectionId=11) which offers advice to women about possible