(40%), moderate (19 to 29) in 28 (22%), and severe (30 and higher) in nine (7%). Half of the carers (64; 51%) reported three or fewer physical symptoms. Quality of sleep was rated as good by 57 (46%) of carers.

Depression was related (non-significantly) to age and female sex. Patient's behavioural disturbance, assessed by the behaviour and mood disturbance scale,[1] was the main independent correlate of carer's mood. An interaction of carers' affective state with carers' physical symptoms and poor quality of sleep was found; in depressed carers the frequency of physical symptoms and the quality of sleep were not influenced by patients' behavioural disturbance (table 1). In non-depressed carers the high frequency of behavioural disturbances was associated with poor perceived health—that is, more physical symptoms and poor quality of sleep. The two way interaction between depression and physical symptoms and between depression and quality of sleep was significant (P=0.022 and P=0.019 respectively on analysis of variance) even after carer's age, sex, living arrangements, number of people in the household, availability of a close confidant, number of hours of vigilance, and patient's age and score on the mini mental state examination were controlled for.

Our data suggest that patients' behavioural disturbances may act as a trigger for depression in a subgroup of carers; pre-existing characteristics of the carers could be risk factors for the development of depression, independent of demographic characteristics, social interactions, and burden of care.

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Developing a policy on osteoporosis

Dual energy x ray absorptiometry may not be the gold standard

EDITOR,—I wish to comment on one aspect of the debate on the prevention of osteoporosis.[1] Implicit in much current thinking is the view that dual energy x ray absorptiometry of the spine and hip is the method of choice for bone densitometry. The Advisory Group on Osteoporosis, for example, provided details only of the number of installations for this method in Britain. Those unfamiliar with the subject may assume that this is the only reputable type of densitometry.

I see many patients who, rightly or wrongly, have become concerned about the possibility of crippling osteoporosis in the future. Such patients should have bone densitometry to reassure them or to encourage them to take hormone replacement therapy. Others are referred after being told, often on inadequate evidence, that their symptoms result from osteoporosis. These patients, too, need densitometry to move their further investigation and treatment in a more rational direction. Do all these patients need dual energy x ray absorptiometry of the spine and hip?

If the object is to predict the overall risk of fracture then dual energy x ray absorptiometry of the hip and the spine has proved less effective than single photon absorptiometry of the calcaneus or distal radius.[2] It is often suggested that densitometric measurements should be made of only the "clinically relevant" parts. For assessments of the risk of vertebral fracture, however, dual energy x ray absorptiometry of the spine was found to be less effective than various measurements of the calcaneus, metacarpals, or phalanges and of similar effectiveness to densitometry of the distal radius.[3] For assessments of the risk of hip fracture dual energy x ray absorptiometry of the upper femur was superior to other methods in one study but not in others, in which it was equalled or surpassed by ultrasonography of the calcaneus or densitometry of the distal radius.[2 4]

It is often forgotten that dual energy x ray absorptiometry of the spine is subject to interference from osteoarthritis, aortic calcification, and fractures; precision falls rapidly with age.[5] Simpler methods of peripheral densitometry have good precision at all ages. Such methods may not only be more clinically appropriate but, being cheaper, allow more patients to be scanned for the same expenditure. The constant repetition, almost as a mantra, that dual energy x ray absorptiometry is the gold standard in densitometry should be questioned for the sake of both patients and taxpayers.

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Clinical risk factors alone are insufficient in decision making

EDITOR,—In so fervently decrying the evil they perceive in widespread screening of bone mineral density Trevor A Sheldon and colleagues do a disservice to people with osteoporosis.[1] However much they protest to the contrary, their utterances are widely interpreted by both clinicians and public health physicians as indicating that no benefit will be derived from measurements of bone mass under any circumstances. Such an extreme view is not justified in the light of present evidence, which indicates that measurement of bone mass is a useful predictor of the risk of fracture.[2] Furthermore, evidence shows that intervention with agents that increase bone mass leads to a reduction in the incidence of fractures.[3] Hence measurement of bone mass is a useful if not mandatory prerequisite for the administration of such treatment. Indeed, it might even be argued that prescribing bone sparing treatment without measuring bone mass is akin to giving antihypertensive treatment to prevent stroke in patients who present with headache but whose blood pressure has not been measured.

Many clinical situations exist in which bone mass might be affected by the underlying disease process and clinical management would be influenced by its measurement. Clinical risk factors alone are insufficient to detect patients in such cases,[4] and so to describe as a "semantic sidestep" the distinction of measurement of bone mass in such patients from screening shows a lack of insight into the processes involved in clinical decision making and management.

Our experience in a busy metabolic bone disease clinic suggests that the lack of appropriate facilities for measuring bone mass in the community can lead to inappropriate treatment based on unreliable criteria such as radiologically reported osteopenia. This not only exposes the patient to the potential hazards of unnecessary treatment but can also be costly: the cheapest proprietary combined hormone replacement therapy costs over £42 a year while more specific antiresorptive treatment can cost up to £334 a year (NHS prices, 1996). In our unit the cost of measuring bone mass is £50. Thus by preventing the use of the most expensive new treatments in one in six women in whom measurements are made the service will fully justify its cost.

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Bone densitometry is worth while

EDITOR,—Trevor A Sheldon and colleagues raise several controversial issues regarding the diagnostic value of measurements of bone density.[1] In many respects a bone densitometer is no more a diagnostic tool for osteoporosis than a measurement of blood pressure is for stroke or cardiovascular disease. In both instances the value measured is a risk factor. A favourable change in the relevant risk factor will reduce the risk of either a fracture or a cardiovascular event. Whether a clinician should use a measurement of either bone density or blood pressure to inform decisions about treatment should depend on an interaction between the accuracy of the test, its cost, the cost of treatment, the effectiveness of treatment, the incidence of the disease, and the severity and cost of the resulting disease that has not been prevented. In particular, the relation between the cost of the test and the cost of treat-