To even the most casual observer, the elderly are a very heterogeneous population. Some individuals remain fit and active into their ninth or tenth decades, whilst others show evidence of infirmity during their early sixties in the absence of an acute physical illness. This dissociation of biological and chronological age represents a continuum bounded by, in the parlance of contemporary gerontology, the terms 'fit' and 'frail' [1]. The lack of an agreed operational definition, however, has resulted in conflict and confusion in the gerontological literature. We propose a definition which, we believe, describes these extremes.

The fit elderly are individuals, over 65 years of age, living independently at home or in sheltered accommodation. They are freely ambulant and without significant hepatic, renal, cardiac, respiratory or metabolic disorder on either clinical examination or laboratory investigation. They do not receive regular prescribed medication.

The frail elderly are individuals, over 65 years of age, dependent on others for activities of daily living, and often in institutional care. They are not independently mobile - whilst they do not have overt cardiac, respiratory, hepatic, renal or metabolic disease minor abnormalities may be revealed on laboratory investigation. They may require regular prescribed drug therapy. Conditions contributing to frailty commonly include Alzheimer's disease, multi-infarct cerebrovascular disease, Parkinsonism, osteoporosis, osteoarthritis, and healed fracture events.

Although the distinction we propose is based primarily on social and functional criteria it is paralleled by psychological and physiological differences. These biological correlates are manifest, primarily, by a reduced capacity to adapt to changes in either the internal or external environments. The frail elderly may also show evidence of impaired mental function with a reduced mental test score [1]. Metabolic accompaniments, especially in the presence of malnutrition, include reduced total body potassium [2] and alterations in cellular electrolytes [3]. Decreased serum albumin is also common [4, 5]. Patients with Alzheimer's disease, in particular, lose weight but this is not necessarily associated with poor food intake [6].

In the fit elderly there are biological alterations, such as reductions in glomerular filtration rate [7, 8] and liver mass [6], which are normal accompaniments of ageing. The consequences for renal and hepatic drug clearance have been considered previously [4]. In the frail elderly hepatic drug metabolism is further impaired [9] but whether there is an additional decrement of renal function, and hence of renal drug clearance, is as yet uncertain. The frail elderly will also show diminished plasma drug protein binding which is largely attributable to changes in serum
albumin concentration [4, 5]. Furthermore, with their trend towards impaired homeostatic mechanisms and reduced adaptability, the frail elderly would be expected to show exaggerated responses to many drugs. Indeed, inappropriate prescription and use of psychotropic agents may precipitate iatrogenic frailty in otherwise fit elderly individuals [9, 10].

The distinction between the fit and frail elderly has important implications for gerontological research and geriatric practice. Much research in the elderly has failed, adequately, to define the population that has been studied. Many investigators, moreover, have concentrated on fit individuals and made implicit (though in our view unwarranted) extrapolations to frail patients. The temptation to do this is in some ways understandable. The fit elderly lack the potential for confounding from prescribed medication and can provide free, valid and informed consent to participate in invasive research. The frail will often be receiving drugs that interfere with a range of physiological, biochemical and pharmacological studies, and their mental infirmity frequently poses ethical objections to their participation in experimentation. For geriatric practice, the implications are primarily in the field of therapeutics. The frail elderly are likely to be more intolerant of drugs than their fit contemporaries [4], and are particularly at risk from Type A adverse reactions [11]. These are the predictable, dose-dependent and common manifestations of toxicity [12] that cause considerable morbidity in the frail population.

Whilst we accept that some individual elderly patients fall between the boundaries of 'fit' and 'frail', we believe that the wider adoption of these concepts will clarify both understanding and practice.

REFERENCES