

more variable among these individuals. As age increases the effects of standard doses are difficult to predict. Increased drug use, decrease predictability of response, and increased susceptibility to adverse reactions are among the factors that complicate effective therapeutic interventions in elderly patients.

#### **Synopsis of important principles**

1. In elderly patients, decreased renal and hepatic clearance of some drugs increases the risk of adverse drug reactions.
2. Drug concentrations achieved for a given dose, the duration of drug activity, and the organ response to a given drug concentration may be altered in elderly patients.
3. Normal homeostatic responses to drug-induced perturbations are impaired with aging.
4. Elderly patients frequently experience multiple illnesses and take many drugs concurrently.
5. The combination of altered drug activity, impaired homeostasis, and the use of multiple drugs by elderly patients result in frequent adverse drug reactions.
6. Although, difficult to recognize in elderly patients, adverse drug reactions are a frequent cause of morbidity and may precipitate hospitalizations.
7. The risk of adverse drug reactions increases with the number of drugs taken, it is important to discontinue any treatment that is not efficacious.
8. Due to neurological, visual and auditory disabilities, elderly patients may have difficulty complying with drug regimens.
9. Some chronic diseases in elderly patients cannot be effectively treated with drugs.
10. The importance of a critical and conservative approach to drug therapy in elderly patients cannot be overemphasized.

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### **Osteoporosis in the Elderly**

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Osteoporosis is a complex endocrinological disorder of bone and mineral metabolism. Osteoporosis -i.e. porous bone is reduced bone mass per unit volume with a normal mineral to matrix ratio. Fracture is the single morbid event and the most significant clinical manifestation of osteoporosis. Osteoporosis is a major global health problem of the ageing population and

ranks as one of the five costliest diseases of ageing after diabetes, hyperlipidemia, hypertension and heart disease. It has a profound impact on the socio-economic and psychological health of the ageing population and the society at large. Over the last two decades, substantial advances have been made in pathogenesis, diagnosis and management of osteoporosis; yet there is a lack of knowledge and controversies exist for definition and screening of osteoporosis, but there is no controversy in the statement that "prevention is better than cure".

1232 menopausal women with history of hysterectomy, back pain, joint pain, thyroid dysfunction and asthma underwent BMD testing by DEXA of the spine. The following results indicate the magnitude problem. It was found that 36% of the women were osteoporotic, 40% were osteopenic, 185 had normal density & 6% had high density ( Data from Personal & Vomed, Diagnostic centre, Hyderabad).

The treatment of osteoporosis falls in the preview of the gynaecologists, rheumatologists, endocrinologists, family physicians, orthopedicians, surgeons, paediatricians and dentists too.

Incidence of osteoporotic fracture increased dramatically with age. Hip fracture is the most debilitating outcome as 12-20% die within one year, more than 50% become dependent and more than 30% have permanent disability. Spinal fracture causes loss of height, kyphosis, back pain and prolonged disability.

Strategies should be aimed at prevention of trauma and maintenance of bone mass in the elderly. The older the individuals the morbidity for osteoporotic fracture is much greater than in the young individuals. This is due to the associated co-morbid conditions like compromised health status, fragility, medications, declining cognitive function, poor eyesight and nutrition added to the psychosocial and environmental factors.

The goal is to prevent the first fragility fractures and further fracture if one has already occurred. Treatment modalities aim at stabilizing and increasing bone mass, relief of symptoms with improved functional status and independence.

At a community level attention need to be paid regarding innovative building solutions of home and living environment of the elderly to prevent falls. At an individual level diet and planned exercise programme, checking of any inappropriate medication contributing to falls should be looked into. The use of personal hip protection in the high risk population should be encouraged.

Various pharmacological therapies are available for the management of osteoporosis in the elderly.