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Future Health Issues and Delivery Needs of the Elderly

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ABSTRACT

We have 6.9% of the population who are 65 years and older in June 1996. This figure will increase to 18.4% in 2030. In absolute numbers, the increase will be from 209,700 to 789,600 million in 2030. The majority of these however, will be ambulant and independent. Our important task in the health context is to help ageing persons maintain function and quality of life to achieve the maximum life-span potential. To achieve this, we need to focus on individual preventive efforts to develop the medical profession in the new medicine paradigm, to provide care and we need to develop at the societal level the well network, the activating network and the health & nursing care network as an integrated seamless service. We also need at a societal level, to invest in the determinants of good health and disability-free life, namely, financial independence, acceptance by the family and recognition of the elderly, as valued members of society.

THE DEMOGRAPHIC TRANSITION

Singapore, like all countries in the Asia Pacific region, will have more and more older people in the years to come. The median age of Singapore's population has increased over the years. In 1957, it was 18.8 years. It jumped to 24.4 years in 1980 and 31.4 years in 1990. By 2030, the median age is expected to reach 41 years[1].

Size of aged population

We have 6.9% of the population who are 65 years and older in June 1996. This figure will increase to 18.4% in 2030. In absolute numbers, the increase will be from 209,700 to 789,600 million in 2030. Also, the proportion of those 75 years and older (the old-old) will increase at a faster rate than those 65 - 69 years. In 1994, there were 2.5% of the total population who were 75 years and older. The corresponding proportion in 2010 and 2030 will be 3.4% and 7.6%. In absolute numbers, those 75 years and older were 72,000 in 1994 and will be 122,600 and 300,000 in 2010 and 2030 respectively[1].

Health status

In the 1995 national survey of senior citizens in Singapore, a large majority regarded themselves to be in "good" health. For those 65 - 74, this was 82.0% of those surveyed. For those 75 years and older, it was 77.5%. This compares with 89.6% for those 55 - 64 years old[3]. For those 65 and above, 92.8% were independent. For those 75 years and older 88.7% were independent[2].

Old age dependency problem

As Singapore's population ages, the support from working adults will be stretched. Today, seven adults aged 15 - 49 years support one elderly person aged 60 years and above. By 2030, there will be only two or three adults supporting one elderly person.

With better educational attainment, better health status and longer life expectancy, there is a need for new thinking about what old age and unfitness to work are. For the young-old, engaging in part-time work may have a positive effect on quality of life and economic well-being, besides developing a relationship with people around. This will also help to lessen the old age dependency problem.

HEALTH ISSUES IN THE ELDERLY

The biological effects of ageing have important implications on the health issues in the elderly. They can be discussed under the headings of individual, professional and societal dimensions.

Individual dimension

The major burdens of disease that kill and disable old people are cardiovascular disease, malignant neoplasms, respiratory disease and injuries[3]. This clinical pattern is reflected in the hospital discharge statistics shown in Fig 1. Shah Ebrahim noted these conditions to be the constant features of ageing populations[4].

The individual has the potential to reduce the burden of disease that inflicts him or her. In the elderly, treatment and prevention of diseases is equally or even more effective when compared to a situation of a younger patient[4]. This is because the elderly is more likely than a younger patient to be affected by the adverse consequences of disease.

Fig 2 shows what the individual can do to reduce the burden of disease. In the short term, immunisation will prevent morbidity, disability and death from infections; immunisation against influenza and pneumococcal pneumonia have

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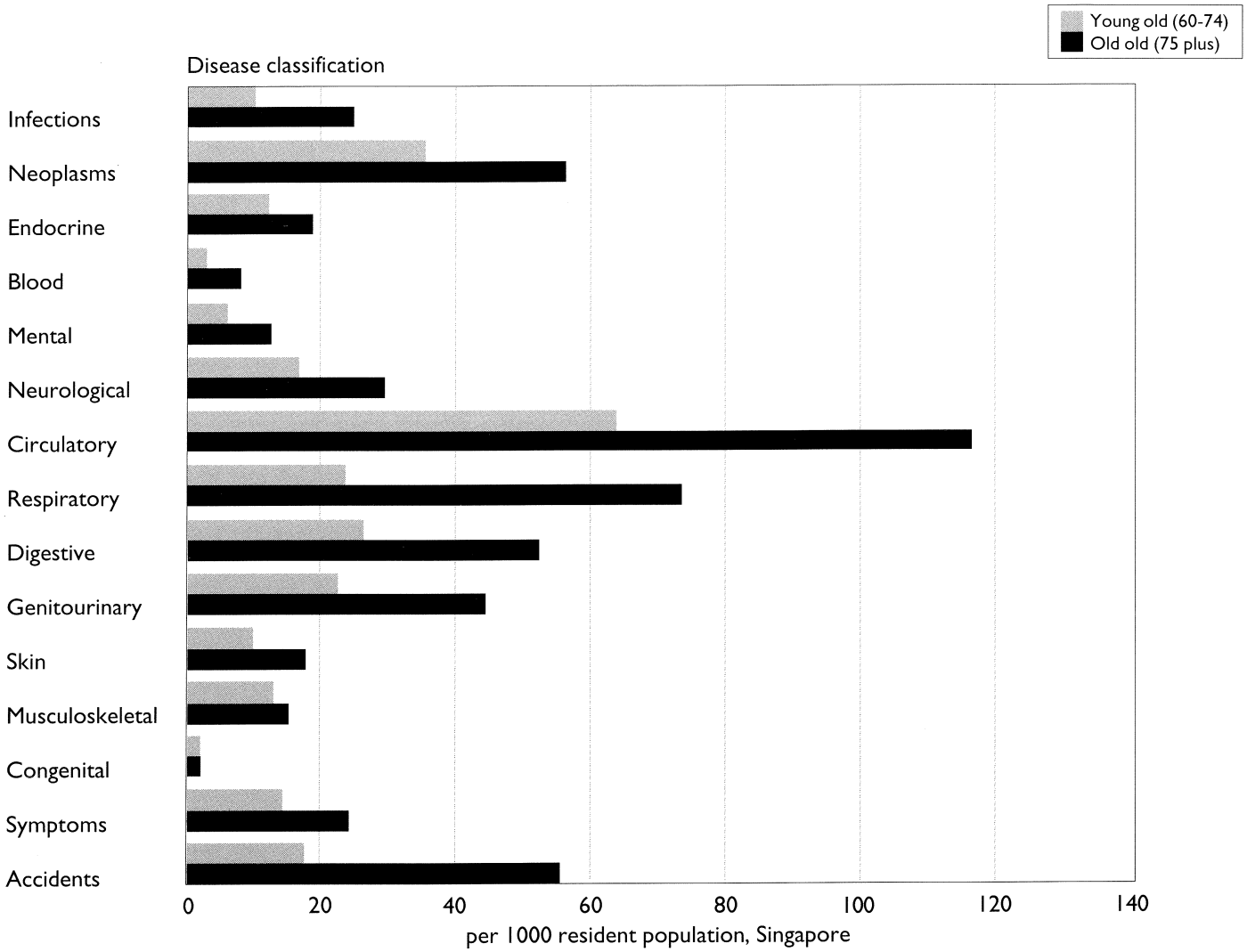
Fig 1 - Hospital Discharges (1994)



Source: Population Planning Section, Monitoring and Evaluation Department

greater benefits in older patients than younger ones. Attention to factors causing falls will reduce injuries and prevention of the vicious cycle of being bedridden, bronchopneumonia and death. In the medium term, appropriate treatment of hypertension will reduce cardiovascular disease, strokes and vascular dementia. Control of diabetes mellitus reduces the multisystem morbidity and mortality from this common disease.

In the long term, attention to diet, exercise, reducing smoking and alcohol help to reduce the burden of disease from malignant neoplasms, cardiovascular disease and pulmonary disease. Keeping dietary sodium to not more than 2g per day, reduction of body weight and exercise are important in hypertension control. Increased aerobic exercise has a beneficial effect on the cardiovascular system and helps to prevent osteoporosis. Cessation of smoking reduces the risk from lung cancer, chronic obstructive pulmonary disease and coronary artery disease and stroke. Reduction of body weight also reduces the risk of osteoarthritis.

Professional dimension

To care for the elderly appropriately, doctors need a paradigm shift from the medicine paradigm that we have been taught. Hitherto, the medicine paradigm that is taught to all doctors stem from the experience of disease management of younger people who generally have the following profiles: only one disease afflicting the unwell (and thus one has to try and fit the symptoms and signs into one condition and this is called the law of parsimony) and in a setting of organs that have good functional reserve, so that the symptoms are always referable to the organ system that is diseased.

Short term	immunisation fall prevention
Medium term	treat hypertension and diabetes mellitus
Long term	diet exercise reducing smoking and alcohol

Fig 2 - Individual dimension. What needs to be done?

The new medicine paradigm

The biological effects of ageing shift the paradigm of diagnosis and treatment in the following ways:

- diseases often present atypically
- aggressive medical attention is necessary
- the law of parsimony does not hold
- function is more important than cure
- a period of rehabilitation is generally needed
- drugs are often the cause of medical problems

All these features stem from a concept of the biology of ageing known as homeostenosis[5,6]. This concept states that individual organ systems suffer restriction of its homeostatic reserve, making the systems more vulnerable to acute insults. The concept of homeostenosis implies that a functional elderly person may maintain health into old age but become increasingly vulnerable to stress and illness because of a lack of physiologic reserve.

Different organs decline at different rates for a given person and from person to person at the same age. The weakest link in the chain is the one that gives way first. Thus, for a given disease, the disease in the elderly may not manifest the way it will do so in the young, but reflects the organ system that is the most restricted in homeostasis. This is often the brain, the cardiovascular system, and the renal system. Diseases thus present atypically. Indeed, irrespective of the underlying cause, the ill elderly may manifest with confusion, instability and incontinence.

Aggressive treatment is necessary to prevent the domino effect of illness. Take the example of a respiratory tract infection - that a younger person would be able to cope without difficulty. To the old-old, the waning immunity response may not be enough to shake off the infection. With the assault of the infection, his organs may be less able to respond because of the lost physiologic reserve. Thus, the higher metabolic rate that comes with the stress of infection may result in heart failure because of the limiting cardiac reserve. At this point, the physiologic changes may begin to cause a domino effect, and other organs with similar loss of physiologic reserve may then be stressed and fail, leading to renal failure, decreased brain perfusion and other consequences. Not only timely diagnosis, aggressive intervention is necessary to preserve existing organ function.

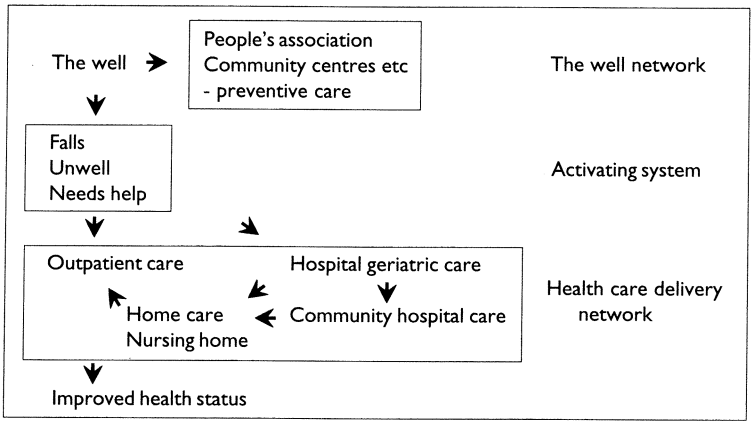


Fig 3 - The total network for elderly care

Symptoms in older people are often due to multiple causes, so the diagnostic "law of parsimony" so valid in medicine of the younger person, does not apply anymore. Hence, it is important to disregard what has been applicable for younger patients of trying to tie every phenomenon into a single disease entity. For instance, fever, anaemia, retinal embolus, and a heart murmur, prompt almost a reflex diagnosis of infective endocarditis in a younger patient, but are more apt to reflect aspirin-induced blood loss, a cholesterol embolus, insignificant aortic sclerosis and a viral illness in an older patient.

The old-old is likely to have experienced many assaults of disease and these leave their marks. Hence, one should not treat those abnormalities that are not giving trouble and concentrate only on functional disabilities. Hence, the knee joints may be deformed but if the patient has no symptoms, leave them alone. A corollary is that, since many homeostatic mechanisms may be impaired, functional improvement can be expected even in situations where nothing much can be done to one underlying disease. Dementia is a good example.

Age-related physiologic changes could complicate drug therapy in the elderly. Care needs to be exercised to avoid anti-cholinergic drugs because they cause blurring of vision, urinary retention and mental confusion. Excretion of benzodiazepines is prolonged because there is relatively more fat in the body in the elderly than the younger person. Drugs that require liver and renal function to eliminate them will have prolonged effects due to the decrease in physiologic reserves of these two organs. Examples of the former are anti-convulsants, warfarin, and benzodiazepines. Examples of the latter are digoxin, NSAIDs, and angiotensin converting enzyme inhibitors.

What needs to be done?

Physicians need to be aware of the ramifications of the aging process, especially with regard to decreased functional reserve and changes in drug actions. Thoughtful clinical application of this concept improves purely medical outcomes and surely enhances patients' quality of life in their later years.

Societal dimension

Towards an integrated seamless network of services

The various health and medical service delivery components needed to help maintain the health and well-being of the elderly are many. Integration of the components into a seamless system is necessary for the elderly who are less likely to be able to source and assemble the required services together. Three component networks can be visualised, namely the well network, the activating network and the medical & nursing care services network. A conceptual plan of an integrated network is shown in Fig 3.

Acute and rehabilitative care

- Frontline doctor (GP, A&E doctor) to:
  - make appropriate diagnosis
  - provide aggressive acute care
  - prescribe wisely
- Specialists trained in broad specialties as the core hospital care providers
- Rehabilitative care services for the major disease burdens: cardiovascular diseases (IHD and stroke), malignant neoplasms, accidents and chronic obstructive pulmonary disease
  - at home
  - in senior citizens' health care centres
  - in community hospitals
  - in nursing homes

Long-term care

Facilities for the chronic, disabling problems
– the long-term effects of strokes, dementia, osteoarthritis and some accidents eg. traumatic paraplegia

Fig 4 - The medical & nursing care delivery network

The well network

The well network teaches, enables and reinforces individual healthy lifestyle behaviours. Community grass root organisations are the best organisations to take leadership in this task.

The activating network

The activating network consists of manned communication devices that can respond to the day-to-day needs of the elderly, as well as to function as an alerting system for help. Various systems are now available. Essentially, an alerting device is strapped to the wrist of the elderly person who can press a button that will set up communication connections to answer the needs of that elderly person, and if no response is forthcoming, to alert a rescue system.

The medical & nursing care delivery network

The medical & nursing care network consists of the outpatient care service, the acute hospital, the community hospital, the home care service and the nursing home service linked together. The idealised links in such a network are shown in Fig 4.

Family, friends and society

At the end of it all, we must not forget that ultimately, it is the health promotive effects of the individual, the family and society at large that will be instrumental in the well-being and disability-free life in the elderly. Financial independence, acceptance by the family and recognition of the elderly as valued members of society are important determinants of health. Investment in these determinants will mean we will need to depend less on medical & nursing services.

CONCLUSION

The future health needs of the elderly are preventive, curative and rehabilitative. Attention to factors of social well-being are also important. They help to reduce the need for medical and nursing care.

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