Health of the elderly

Report of a
WHO Expert Committee

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Geneva, 3–9 November 1987

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HEALTH OF THE ELDERLY

Report of a WHO Expert Committee

A WHO Expert Committee on Health of the Elderly met in Geneva from 3 to 9 November 1987. The meeting was opened by Dr Lu Rushan, Assistant Director-General, who welcomed participants on behalf of the Director-General. He asked the Expert Committee to consider what countries could do to strengthen primary health care for the elderly and reminded it that the Organization's programme on Health of the Elderly was one of several WHO programmes concerned with health promotion.

1. INTRODUCTION

1.1 Basis for national action in relation to health of the elderly

The goal of health for all by the year 2000 has given impetus to activities by Member States of the World Health Organization on behalf of their elderly citizens. The movement emphasizes that all people of the world have equal value, rich and poor, women and men, young and old. This principle of equality is defined in the Declaration of Alma-Ata, which states:

“The existing gross inequality in the health status of the people particularly between developed and developing countries as well as within countries is politically, socially and economically unacceptable and is, therefore, of common concern to all countries.”

The goal of health for all fixes attention on the year 2000. By that date there will be some 600 million elderly persons (aged 60 years or more) in the world, two-thirds of them in developing nations.

1.2 Definitions

It is not possible to give a single definition of “the elderly” that could be applied consistently or would be useful in all contexts. Biologically, aging begins at least as early as puberty and is a continuous process throughout adult life. Socially, the
characteristics of members of society who are perceived as being old vary with the cultural setting and from generation to generation. *Economically*, the elderly are sometimes defined in terms of retirement from the work-force but, especially in societies with a normal or statutory retirement age, many individuals cease economic activity for reasons unrelated to aging and many of those who cease to work continue to contribute indirectly to their society’s economy through support to working family members, voluntary work, or deployment of wealth. *Chronologically*, age has long been used as an indicator of expected residual life span. Recent changes in mortality rates have changed the predictive significance of chronological age, and refinement of care objectives has shifted the emphasis from prolonging life expectancy to increasing life expectancy free of disability. In discussing these matters, the Committee felt it could not improve on the use of an arbitrary chronological age to define the elderly, although recognizing that the relationship between chronological age and biological, social, and economic criteria would vary from country to country.

In 1980, the United Nations defined 60 years as the age of transition of people to the elderly segment of the population.¹ This report follows that definition. Health data from developed countries suggest that it is often useful to characterize an “old” old group of people and this report defines that group as aged 80 years and over.

In brief, except where stated otherwise, this report refers to the heterogeneous population of those aged 60 years and over as elderly people and encourages the presentation of separate statistical data for individuals aged 80 years and over, as did the 1973 Expert Committee on the Planning and Organization of Geriatric Services (1).

1.3 Growth of the elderly population of the world

Progress towards the goal of health for all implies increasing survival; it is the aspiration of countries that, by the end of the century, more of their citizens should be living longer. A consequence of this increased survival, and of the successes achieved in reducing fertility, is that the proportion of the elderly in the total world population is increasing very rapidly. The present Expert

Committee was convened as part of the Organization’s response to this demographic phenomenon.

1.4 Progress since 1973

Since the Expert Committee on the Planning and Organization of Geriatric Services met in 1973 (1), the World Health Organization has established a worldwide programme on Health of the Elderly. The activities of the programme were first reported in the Director-General’s biennial report on the work of WHO for 1982–83 (2). It was in 1982 also that WHO adopted the theme “Add life to years” for World Health Day, which commemorates the day on which the WHO Constitution was ratified on 7 April 1948.

Some global and regional publications and unpublished documents from the Health of the Elderly programme, selected for their relevance to this report, are listed on page 89.

1.5 Preparations for the work of the Expert Committee

In preparation for the work of the Committee, a Delphi study was carried out to provide background information and several background papers were prepared.

1.5.1 The Delphi study

A modified Delphi survey was undertaken to find out what experts in different countries considered to be the most significant advances since the meeting of the WHO Expert Committee in 1973 (1) in the fields of biology, care of the elderly, and social policies towards the elderly.

In biology, the leading areas of progress appear to have been in studies of the processes underlying Alzheimer’s disease, of genetic mechanisms of aging, and of the role of the immune system.

Strategies for the care of the elderly have been affected by the momentous shift that is occurring in the balance of aging throughout the world, such that by the year 2000 two out of every three elderly people will be living in developing countries. One of the greatest advances in care has been the wider appreciation that many of the illnesses and disabilities that were formerly considered inevitable in the elderly can now be regarded as remediable. More emphasis is being given to home care as an alternative to institutional care and
improvements in housing are considered to have a central place in strategies for changing the pattern of long-term care services. One of the major challenges to be faced is that of assuring and improving the quality of long-term care.

The most pressing issue in the field of social policy is that of assuring adequate incomes for the elderly. Efforts to improve the functional capacities of the elderly by appropriate modifications of both health and the environment seem more feasible than does the broader strategy of health promotion through behaviour change, although emerging data do point to benefits from smoking cessation and exercise.

1.5.2 The background papers

Experts were invited to prepare articles on many of the topics on the Committee’s agenda to provide reviews summarizing current knowledge and progress in these fields and identifying significant issues for the future. The authors of these articles are listed in Annex 1 and the texts are to be published by Oxford University Press in a volume entitled Improving health in older people: a world view.

2. HEALTH AND FUNCTIONAL STATUS

2.1 What is unique about the elderly

A basic issue in planning for the consequences of demographic aging is whether elderly people should be considered a specific target group for the development of services, or whether their needs should be catered for within the context of planning for the population as a whole. One approach to a rational policy on this issue is to consider the nature of human aging, and for this it is necessary to view together the physical, psychological, and social dimensions of aging. The conceptual model presented here is heuristic and therefore tentative and subject to further refinement, and presumably replacement, in the light of increased knowledge. Its intended functions are to illuminate the principles that health services for the elderly should embody and to identify some of the impediments likely to be encountered. At an operational level, however, the widely different social and cultural contexts of economically developed and developing countries will preclude there being any single appropriate response to what should be acknowledged as a range of situations.
Aging in the sense of senescence involves the loss of adaptability of an individual organism over time. A starting point for the scientific appraisal of human aging is the comparison of young and old people. Differences between young and old may, however, also arise through processes other than aging.

Some of the sources of differences between young and old are listed below:

<table>
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<th>True Aging</th>
<th>Intrinsic</th>
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<td>Extrinsic</td>
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<td>Non-Aging</td>
<td>Selective survival</td>
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<td>Cohort effects</td>
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<td>Differential challenge</td>
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2.1.1 Differences between young and old not due to aging

Differences between the young and the old that are not due to aging include selective survival, since those who survive to their ninth decade have different characteristics from those in the same cohort who die at earlier ages. Cohort effects are also not age-related. For example, age-associated changes in psychological function in cross-sectional studies are due in part to cultural differences between generations, which usually exaggerate the changes associated with aging, but may partially obscure them. The phenomenon of differential challenge reflects the fact that older people are often exposed to more severe environmental challenges than are the young. Elderly persons, who are more vulnerable to cold, are more often in poorer housing with inadequate heating than are the young. There are also well attested examples of elderly patients being given poorer medical care than is offered to the young but, in such cases, because old people are expected not to recover so well when they are ill, the fact that they are doing worse than they might, because of substandard care, remains undetected.

2.1.2 True aging differences

True aging is a result of the interaction between intrinsic (genetic) factors and extrinsic (environmental) influences. Extrinsically determined aging is recognized in the variation that occurs in aging patterns between groups of people living under different environments.
Intrinsic factors. Evidence suggests that a fairly small number of gene loci have an important effect on the determination of intrinsic aging—on the processes that determine the maximum potential life span of our species. Nevertheless, biological theory suggests that the processes of intrinsic aging are multiple and have given rise to a common maximum life span through evolution. A further consequence of evolution by natural selection has been that the human species became adapted to environments different from those in which most of us now live. Some intrinsic aging processes may therefore be seen as examples of maladaptive selection; this may underlie such age-associated disorders as the vascular disease caused by modern diets, and the osteoarthritis that may follow damage to joints that have never adapted properly to the bipedal gait of the hominids.

Extrinsic factors. Using the classical risk factor approach of analytical epidemiology, it is possible to compare the health and function of people in populations with different exposures to extrinsic aging factors. For example, although the incidence of most adult cancers closely follows a power-law function of age (i.e., a function of age raised to a power greater than one), and cancers have therefore been regarded as a consequence of intrinsic aging processes, variations in incidence around the world indicate that approximately 70% of cases are due to cumulated exposure to environmental carcinogens. The age-specific incidence of stroke also follows a power-law function of age, but clearly also has extrinsic determinants that are reflected in regional and secular differences in incidence. Presbycusis is probably an example of an intrinsic aging change in hearing that is reinforced by extrinsic factors such as cumulative exposure to environmental noise.

Thus, the conclusion seems inescapable that we cannot expect in the short term to increase the maximum life span of the species, or to remove those aspects of disability in later life that reflect intrinsic constraints, but we may seek by modifying extrinsic aging to increase the proportion of the population who achieve in an undisabled state their genetic potential for longevity.

2.1.3 Aging and disease

These concepts lead to the definition of aging as the effective outcome of all the processes leading to reduced adaptability. We
may assess the aging of a particular individual as being more or less optimal, but there is little value, and there are undoubted dangers, in the tradition of arbitrarily designating some (but not all) extrinsic aging effects as "disease" and some (but not all) intrinsic effects as "normal". The main danger of the approach lies in the different reactions of society and professionals to these two categories of phenomena. An old person with a "disease" may receive sympathy and support. In contrast, "normal" aging tends to be regarded as the common lot of mankind, deserving neither sympathy nor the attentions of the caring professions, even to ameliorate disability. In practice, it is crucial to identify the treatable components of a functional problem afflicting an elderly person and provide appropriate therapeutic interventions, while also considering prosthetic interventions for untreatable conditions.

2.1.4 Aging and variability

One of the consequences of deterioration of homoeostatic mechanisms with age is increased intra-individual variability in physiological function. For example, repeated measurements of a physiological variable may be necessary in an old person to achieve a given level of precision in a diagnostic decision, when one would suffice in a younger adult. There will also be greater inter-individual variability among older than among younger people as the extrinsic effects of differences in life-style and environmental exposure have had longer to accumulate. This greater heterogeneity of older people offers a particular challenge to professionals concerned with the health and social well-being of older people and also introduces a need for special caution in extrapolating findings about the elderly from one country to another, or from one time period to another.

2.1.5 Implications for health care

A number of characteristic properties of illness in old age have implications for the health and social services. These arise from the nature of aging—a loss of adaptability—and the cumulative exposure to both extrinsic and intrinsic processes. These characteristics include:

—multiple pathological conditions,
—nonspecific presentation of disease,
—rapid deterioration if no treatment is provided,
—high incidence of complications of disease and treatment,
—need for rehabilitation.

The health and social services must therefore respond to these properties of illness in old age by integrating holistic diagnosis and assessment with systems for treatment and rehabilitation. If such integration is not achieved, the consequences will include both unnecessary suffering and prolonged dependency among the elderly population.

2.2 Demographic and public health aspects of population aging

2.2.1 Aging is an important issue for both developed and developing countries

Population trends. By the year 2000, roughly two out of three of the world’s 600 million elderly people (i.e., those aged 60 years or more) will be living in the developing countries, compared with about 50% in 1960 (Fig. 1). The increase in the elderly population will be particularly marked in Asia, primarily as a result of the rapid growth expected in the number of the aged in China and India. This trend is illustrated in Fig. 2, which shows, for the 20 countries with the largest elderly populations in 1980, the expected growth of the elderly population by the year 2020. In China and India alone, there will be a further 270 million elderly citizens by this date. The size of the aged population is expected to rise by more than 20 million in both Brazil and Indonesia, and by roughly half that number in Mexico, Nigeria, and Pakistan.

On the other hand, much smaller absolute increases in elderly populations are anticipated for the European countries, where the process of population aging began much earlier. As a result, these developing countries will gradually replace the European nations in the ranking of countries with the largest elderly populations. Indonesia, for example, is expected to move from tenth place in 1980 (see Fig. 2) to sixth in 2020, just ahead of Brazil, which had the eleventh largest elderly population in 1980. By the year 2020, Mexico is expected to have the ninth largest elderly population, ahead of Italy (tenth), France (eleventh) and the United Kingdom (thirteenth).

In several developing countries, the population aged 60 years and over is increasing at a faster rate than the population as a whole. Thus between 1980 and 2020, the total population of the developing
Fig. 1. Population aged 60 years and over, by major world regions, 1960–2020*

Fig. 2. Projected increase in the elderly population between 1980 and 2020 for the 20 countries with the largest elderly population in 1980.

Countries ranked in decreasing order of the size of the elderly population in 1980.
world is expected to increase by 95%, whereas the elderly population will probably rise by almost 240%. This will have a number of implications for the social and economic support of the elderly by the working-age population. Moreover, not only is the aged population increasing, but the elderly population is itself getting older as more and more people survive longer. In fact, the "older" elderly place the greatest demand on health and social services.

The “greying” world population is a new phenomenon to which even the technically most advanced countries are still trying to adapt. A longer life used to be the privilege of comparatively few, until as recently as the first decades of this century, but is now a prospect for more and more people throughout the world. Desirable as it is, the aging of populations brings with it new challenges and new demands that have particularly important implications in the context of the goal of health for all by the year 2000.

*Mortality.* The assessment of health status among the elderly on an international basis is essentially limited to the use of mortality data since these are the only comprehensive data available. It must be recognized from the outset that mortality data do not always accurately reflect the underlying morbidity, and are particularly inappropriate for many conditions for which the fatality rate is low, yet which are important causes of morbidity among the elderly. Mortality data are also less reliable for the elderly than for other age groups owing to the multiple pathological conditions often present at the time of death. Nevertheless, with few exceptions, comprehensive morbidity data are not available for the elderly and hence health status can only be assessed through analyses of mortality.

Roughly 50% of all deaths at ages 65–74 years, in the developed countries at least, are attributable to cardiovascular diseases. Among males in this age group, ischaemic heart disease alone accounts for one-quarter of deaths, while 11% are due to cerebrovascular disease (stroke). For women, one-fifth of deaths are attributed to ischaemic heart disease and only slightly less (15%) to stroke. Cancer accounts for one-quarter of deaths among men and women aged 65–74, with lung cancer alone being the cause of almost one-tenth of all deaths among elderly males. Roughly 7% of deaths are due to respiratory conditions and about 3% to external causes.

With regard to mortality levels, there is considerable heterogeneity, even among the developed countries. Life expectancy
Fig. 3. Trends in life expectancy at age 65 years, in selected developed countries, 1950–1986 (calculated as 5-year averages)
Fig. 4. Trends in life expectancy at age 65 years, in selected developing countries, 1955–1984 (calculated as 5-year averages)
at age 60 varies from 19.1 years in Japan to 14.6 years in Hungary for men (based on data for the period 1980–84) and from 23.2 years (Canada) to 18.4 years (Romania) for women. Male life expectancy at age 60 exceeds 18 years also in Canada, Greece, Spain, Sweden, and Switzerland. Women reaching the age of 60 can expect to live at least 23 years in France, Japan, the Netherlands, and Switzerland. In Europe, the lowest levels of life expectancy for both sexes occur in Eastern Europe.

Trends in life expectancy at age 65 are shown in Fig. 3 and Fig. 4 for selected developed and developing countries, respectively. Again, at least for the developed countries, the heterogeneity of male mortality trends is clear, with little change in Denmark, an increase in Hungary since the late 1950s, and decreases in the three other countries shown in the graph (France, Japan, and USA). Female life expectancy has increased in all five countries shown, but a much slower rate of increase is apparent for Hungarian women than for women in Denmark, France, Japan, and the USA. Perhaps the most salient feature of the trends in the developing countries shown in Fig. 4 is the decline in life expectancy prior to the late 1960s and the substantial gains thereafter. These trends are evident for both males and females but may in part be spurious, owing to higher coverage of deaths, as the vital registration systems have improved in these countries.

The trends in the leading causes of death at ages 65–74 years for selected developed countries are shown in Fig. 5. Between the periods 1950–54 and 1980–84, death rates from all malignant neoplasms rose slightly for men but remained essentially unchanged for women, except in France where death rates declined by approximately 15%. Much more marked declines in mortality are apparent for heart diseases in Australia and the USA where death rates have fallen by 25–30% since the late 1960s. Male mortality has also fallen in France and Japan, but has risen in Hungary. A similar pattern of change is also apparent for females, although in Hungary there has not yet been a substantial rise in mortality.

Mortality from stroke has also declined in most countries shown in Fig. 5, particularly in Japan, although the timing and extent of the decline has varied from country to country. For example, death rates from stroke in Japan only began to fall in the mid-1960s, declining by almost two-thirds by 1984, whereas among Australian males the decline commenced 10 years later and has been more modest (40%).

(continued on p. 28)
Fig. 5. Trends in mortality from leading causes of death at ages 65-74 years, in selected countries, 1950-1984 (calculated as 5-year averages)
Fig. 5. (continued)

ENGLAND & WALES

MALES FEMALES
MALIGNANT NEOPLASMS
HEART DISEASES
CEREBROVASCULAR DISEASES
RESPIRATORY DISEASES

Rate per 100,000


23
In other countries, such as England and Wales, France, and the USA, rates have been falling since the 1950s. The trend in mortality from respiratory diseases is less clear, with little evidence of a sustained and comprehensive decline, although some progress in reducing mortality from these diseases is apparent for Australia and England and Wales over the last decade or so.

Mention should also be made of the substantial impact that mortality change has had on the aging of populations. In comparison with projections from 1950, based on constant mortality rates (at 1950 levels), and controlling for migration, it has been estimated that the actual size of the elderly population in 1980 in the USA, for example, was 12.6% greater for females than what it would have been had mortality remained constant at 1950 levels; for males, the impact of the decline in mortality rate has been to increase the size of the elderly population by 6.7%. In Switzerland, the effect of this decline has been to increase the aged population (60 years and over) by 13.9% and 21.9%, for males and females respectively. The impact has varied from country to country depending on the extent of the change in mortality rate; in France, the increases in the aged population have been 14.5% and 20.7%, respectively, for males and females, in the Netherlands 1.5% and 14.9%, in Hungary 0.1% and 9.2%, and in the United Kingdom 8.8% and 13.0% (3).

Sex differences in longevity. The lower age-specific mortality rates for females across all ages, which reflect in part certain inherent biological characteristics, are of recent origin in the economically developed countries and have continued to evolve in recent decades. In the United Kingdom, the ratio of male to female age-specific mortality rates was constant over the adult age span at about 1.2 in 1911 but by 1971 had developed two peaks with ratios above 2.0 at ages around 20 and 65. This phenomenon would appear to be largely a consequence of behavioural differences between the sexes during the 20th century. There are several reasons (e.g., biological, behavioural, environmental) to expect that women will continue to live longer than men, and as long as women continue in general to marry men older than themselves, the disproportionate numbers of elderly widows will be a feature of economically developed communities.
Morbidity. There is controversy over the extent to which falls in mortality rates have been achieved by improvements in survival by patients with disabling conditions. An alternative explanation is that mortality rates have fallen because the incidence of disabling diseases has fallen. Clearly, in distinguishing between these hypotheses, the issue is whether morbidity in the population is rising or falling. Data on trends in population morbidity are not adequate at present to resolve this issue. Both mechanisms may be operating and it may be that the mechanisms of the fall in mortality vary from country to country.

In Canada, the proportion of the elderly (defined as those aged 65 years and over) who were institutionalized rose from 6.4% in the early 1960s to 7.8% in 1984. In the United States of America, the proportion of the elderly living in nursing and personal care homes increased from 3.7% in 1969 to 4.8% in 1977. Much of this trend can be accounted for by the aging of the elderly population itself, with a rise in the proportion of the “old” old among the elderly.

With regard to disability, the total number of disability days per person per year appears to have increased in the USA in the 1970s for the population aged 65 and over, although prior to 1970 the trend had been in the opposite direction. In Canada, between 1951 and 1978, disability days increased for females but not for males.

Overall, the results of a recent study for the USA indicate that morbidity from leading causes of ill-health (cancer, heart disease, diabetes, hypertension, and arteriosclerosis) has increased, while there has been a concomitant decline in morbidity among the elderly from other conditions including skin diseases, visual and hearing-related problems, and multiple orthopaedic problems.

Socioeconomic inequalities. Recent data from England and Wales have shown that social class differences in mortality rates that are well substantiated among workers are also found among the elderly. Elsewhere, differences have also been demonstrated in morbidity rates among the elderly according to socioeconomic status. A

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1 The sources of the data cited for Canada and the United States of America are:
prospective study of elderly persons in Massachusetts (USA) showed that the elderly poor had 2.4 years less of remaining disability-free life expectancy than their better-off counterparts, and a study of elderly Canadians in the early 1980s showed a similar disparity (2.9 years). Data from a national health survey in Canada indicated that 11.4% of poor Canadians aged 65 years and over were unable to perform "major activities of daily living" compared with 4.5% of the wealthiest pensioners. Furthermore, the rate of disability among elderly Canadians having fewer than eight years of education was double that for persons with a university degree (43.4% compared with 22.5%).

2.2.2 The third age in the third world

In general, developing countries are experiencing the effects of rapid urbanization, industrialization, and modernization, together with those related to socioeconomic change and changes in traditional social values. There will be increasing pressures on the traditional multigeneration family as a result of changes in housing provision, migration, the number of women in the formal work force, and cultural perspectives.

Studies of the health and functioning of the elderly population in developing countries, including the WHO Four Country Study, Aging in the Western Pacific (4), have demonstrated that the physical, mental, and social accompaniments of the aging process are very similar to those that have been described in European studies.

It is critical that the basic policy development, planning, and education programmes required to meet this challenge in the developing world be established now. Emphasis should be placed upon prevention, health promotion and health maintenance, and support of the family in its traditional role. Already there is evidence of an increasing demand for institutional long-term care, where previously there was little or none. The determinants of institutionalization in these settings require more research.

It is necessary now to collect together the available information on the aging population in developing countries, to include the aged (in some instances by systematic oversampling) in national surveys concerned with health status and well-being, and to fill the gaps in information by systematic research. On the basis of this information, it is then important to ensure the development of policies and
programmes that recognize both the strengths and the vulnerabilities of the elderly within the general population. By addressing these issues now, it should be possible to avoid many of the pitfalls that have beset developed countries in the development of services and care for the aged and to minimize the otherwise very substantial social and economic effects of disability and dependence among the many millions of people who will live to an older age in the developing countries of the world in the coming decades.

2.3 The biology of aging

2.3.1 Evolution and aging

In the past 15 years there has been considerable progress in understanding the biology of aging, but much remains to be elucidated. At present, no single model explains aging satisfactorily, and there are theoretical reasons for expecting the aging process to be multifactorial. Longevity depends on the realization of an individual's genetically determined programme of life and development. Recent developments in theoretical biology include the newer developments of Darwin's theories and the recognition that energy-resource switching is a fundamental biological mechanism at both evolutionary and physiological levels. Intrinsic aging is now thought to be due to incomplete repair of random damage to body components. The incompleteness of repair has not been eradicated during evolution because of the necessary trade-off, in terms of genetic survival, between investing energy resources in repair mechanisms and investing in a higher rate of reproduction.

2.3.2 Aging and adaptation

Several contributors to gerontological theory have emphasized the diversity of adaptive-regulatory mechanisms. Nevertheless, in various biological systems, there is a progressive decrease in viability, especially after the active reproductive period. Unfavourable conditions of life and, to a greater degree, an unhealthy life-style accelerate such processes, shape the association with age of pathological manifestations, and increase the risk of death. As already noted, some of these life-styles are detrimental because the human species adapted during its evolution to environments very different from those in which most of us live.
today. An analogous phenomenon can be observed in animal models. For example, the life span of several genetically homogeneous strains of laboratory animals has changed over years of observation, and it may be that some of the phenomena being studied in some animal models are not part of intrinsic aging but extrinsic effects resulting from life under suboptimal conditions.

2.3.3 Cell culture

Other laboratory models for gerontological study are derived from cultured cell lines, especially human fibroblasts, which have served to delineate a number of processes that precede the failure of such lines to proliferate indefinitely. Aging is related to changes in protein synthesis and in enzyme activation that lead to the development of altered molecules. Cellular changes associated with aging include alterations in the compactness of chromatin and in cell metabolism, and impaired DNA replication. A number of lines of evidence suggest that disorder in the deployment of the genetic programme is involved in some of the phenomena of aging, but this somatic mutation theory of aging has come under increasing criticism in the last decade. It now seems that the important factors in intrinsic aging are more likely to be related to the mechanisms of control of the genetic programme rather than to damage to the genetic information itself.

Interest has also focused on pathological epidemiology, for example on the contrast between the universal loss of ovarian oocytes (in the human) and the sporadic loss of central nervous system neurons. The underlying explanation might lie in the effects of extrinsic factors or in random damage to the systems that control genetic activity.

2.3.4 Molecular biology

Soon, advances in molecular biology can be expected to bear fruit in the field of gerontology. Restriction enzyme polymorphisms may lead to the identification of some of the genes responsible for the segmental progeroid syndromes, which although in themselves of doubtful direct relevance to aging may illuminate some of its mechanisms. The identification of a gene that increases the wild-type life span in an invertebrate species offers the prospect of more relevant insights into the mechanisms of aging. Recently described
linkages between HLA genotypes and longevity may provide a stimulus to studies of the immunological components of aging.

2.3.5 Alzheimer's disease

Much attention has been devoted to Alzheimer's disease. Some cases are determined genetically, and in one pedigree an association with loci on chromosome 21 has been demonstrated. This is of particular interest in view of the high incidence of Alzheimer's disease in people with trisomy 21 (Down's syndrome). However, other direct genetic links, for example with amyloid production, have not been demonstrated as clearly as was hoped.

2.3.6 Biological markers

Attempts to identify biological markers as a measure of biological aging (to estimate the remaining life span) have not yet succeeded in improving on chronological age, although risk factors such as "dyslipidaemia" and high blood pressure are useful in predicting mortality. Approaches include the integrative analysis of indices of performance of the major physiological and metabolic systems.

2.3.7 Modifying intrinsic aging processes

The complex combination of age-associated processes results in a number of borderline states in old age that are easily transformed, under appropriate conditions, into clinical syndromes, such as atherosclerosis, diabetes, and osteoporosis. Decisive progress in the prevention and management of such diseases will require research into the biological basis of aging of physiological systems and of metabolism. The strategic objective is the development of "geroprotectors" that modulate the mechanisms of damage with age or foster the organism's repair processes. Age-related changes in laboratory animals have been shown to be responsive to factors in diet, hormones, and drugs.

2.4 Functional abilities

The assessment of function is fundamental to both the delivery of services to elderly individuals and population-based research. However, the objectives of these two fields of activity, and therefore the techniques, measurements, and analyses used, are often different.
2.4.1 Assessment of the individual

Central to the assessment of an elderly person who comes into contact with health or social services is identification of the problems in functional terms. These will be defined essentially in terms of activities that the environment demands but which the elderly person cannot perform, or in terms of the discrepancy between what the individual wants to do and what he or she is able to do. A second, and essential, stage in the assessment is identification of the mechanisms that have produced the problem, in order to be able to specify an appropriate therapeutic response or prosthesis. The mechanisms may well include pathological changes that are conventionally identified as "diseases". Full medical diagnosis is necessary, since an estimate of prognosis is required for the formulation of a care plan. In practice, functional assessment requires not only the assessment of the activities of daily living, but also assessments of the mental and physical states, and of socioeconomic and environmental conditions, since these place constraints on the options for intervention. The focus on functional capacity is also important for assessment of the outcomes of intervention.

In assessing the individual, it is essential to consider the whole person and his or her support system, not just isolated aspects of the person. In order to achieve this, one must establish assessment procedures that look first at the strengths of the individual and the available supports. Only after assessing these strengths should one consider what deficits exist. A substantial deficit in one or even several areas does not mean that strengths may not exist in other areas. The areas that are most critical to assessment of the functional status of elderly people may be described in outline as follows:

1. Activities of daily living of the following three types:
   (a) mobility;
   (b) instrumental activities of daily living—or being a functioning member of society, coping with domestic tasks; and
   (c) physical activities of daily living—or maintaining basic self-care functions.

2. Mental health functioning including:
   (a) cognitive functioning; and
   (b) presence of any psychiatric symptoms.

3. Psychosocial functioning or emotional well-being in a social and cultural context.
(4) Physical health functioning, which includes:
   (a) self-perceived health status;
   (b) physical symptoms and diagnosed conditions;
   (c) health services utilization;
   (d) activity levels and measures of incapacity (i.e., bed-days).

(5) Social resources, being both:
   (a) the accessibility of family, friends, and a familiar community;
   and
   (b) the availability of these resources when needed.

(6) Economic resources, which are typically assessed by comparing income against an external standard such as a poverty level.

(7) Environmental resources, including both:
   (a) adequacy and affordability of housing; and
   (b) siting of housing in relation to transportation, shopping, and public services.

2.4.2 Functional assessment in research

Within a population, the use of standardized functional assessment schedules permits more rational planning of services, and evaluation of their efficacy, particularly in situations where the circumstances of the target population are changing through improvements in health or as a result of economic development. The need to develop systematized and standardized approaches to the definition of functional problems has received much attention in the last decade. A number of rating scales of established reliability and validity have been published.

Functional assessment is also a necessary technique for cross-national studies. Cross-national research will give clues to the extrinsic factors in aging, and make it possible to compare different patterns of health and social care delivery. A central methodological difficulty is the design of interview schedules and other survey instruments that can be used cross-culturally and translated reliably between languages. Further work is urgently needed on these problems; a 1984 review (5) identified some 40 completed studies that represent the beginnings of an international data base, but the review noted that more rigorous methods were needed for the conduct of such studies. The WHO initiative in producing the International classification of impairments, disabilities and handicaps
(6) has been a valuable contribution to the methodology of cross-
national comparisons.

3. PROGRESS IN SPECIFIC AREAS

3.1 Falls

Falls are a well known cause of morbidity and suffering among older people, and there is an extensive, and occasionally contradictory, literature on the subject. The contradictions arise partly from differences in the ways subjects have been selected for studies. For example, the picture of falls provided by epidemiological studies in population samples will differ from that deduced from studies of people presenting with fractures, or because of falls.

3.1.1 Incidence and complications

Most studies report age-specific prevalence rates of falls that increase steeply with age above 65 years, and higher rates in women than in men. The consequences of falls include direct trauma in the form of contusions, lacerations, fractures, and head injuries and their possible sequelae, including subdural haematoma. Various complications of falls may occur in victims who are unable to rise again and cannot summon assistance; these include pneumonia, hypothermia, pressure sores, and rhabdomyolysis. Another consequence of falling, which may be of much greater significance than is generally realized, is the fear of further falls, in both the victim and the carers. Fear may inhibit mobility, and this is likely to increase the risk of further falls by impairing neuromuscular function and fitness. Fear of falls may lead carers to seek the provision of services, such as home helps and nursing auxiliaries, which may reinforce the old person’s pattern of reduced activity. Fear of falls may lead to premature and unnecessary institutionalization.

3.1.2 Causes of falls

Factors contributing to the incidence of falls involve the faller, the environment, and the interaction between the two. Aging, with its
general loss of sensitivity, speed, accuracy, and persistence of homoeostatic mechanisms, may be associated with impairment of sensory, motor, and information-processing mechanisms. On the sensory side, proprioceptive mechanisms seem to be more impaired on average than vision and the older person becomes more dependent than a younger subject on vision to maintain vertical posture. Slowness and weakness of the motor limb of homoeostatic mechanisms may arise through lack of exercise and immobility (in which case it will be partly reversible by exercise that increases the flexibility of joints and increases muscle bulk) or through specific mechanisms such as spasticity or parkinsonian rigidity. The integrative processing of information by the nervous system is impaired in dementia, an established risk factor for falls, and this mechanism may underlie the positive association between the use of long-acting or daytime tranquilizers and falls.

3.1.3 Environmental factors

There have been many reports on factors in the environment, such as loose carpets or stair rods, that may cause falls, but there is now a growing literature on the features of the environment that can interact with specific neuropsychological difficulties common among older people. Stairs are particularly hazardous to the old and care should be taken that stairways used by older people are well lit, have clearly visible step edges, and do not have repetitive carpet patterns that may produce a false perception of depth in those with defective visual fixation. Stairways can also be hazardous if there are irregularities in the height or depth of treads or any other feature that requires a change in the natural rhythm of walking. There is evidence that long single flights of stairs are more dangerous to old people than stairs divided into shorter flights, with turns and landings in between. Escalators, with their repetitive patterns of tread and confusing presentation of stimuli to the peripheral visual field are particularly hazardous to older people.

In some temperate countries increases in falls by old people have been noted in cold weather. To some extent this is due to falls caused by snow and ice out of doors, but there have also been increases in falls occurring indoors. In some instances this may be due to a minor degree of hypothermia leading to neuromuscular slowing and incoordination, although the evidence for this is at present indirect.
Other environmental factors relevant to falls by older people include the design of public transport facilities, and the failure of some urban developments to provide sufficient cues for cognitive mapping. Even in a more supportive environment, an older person may take longer than a younger one to form a cognitive map; an older person in unfamiliar surroundings, for example in hospital or residential care, should be regarded as being at high risk of falling during the first day or two.

3.1.4 Management of falls

Provided the victim does not sustain significant injury, a single fall by an old person need not be regarded as an ominous event. The excess subsequent mortality among unselected elderly fallers over the course of a year is of the order of 30%. Attention should be directed towards identifying any environmental factors that might precipitate a recurrence. It is also important to provide rehabilitation in the form of reassurance and, where appropriate, physiotherapy in order to prevent the fear of further falls leading to impaired mobility.

Repeated falls by an old person raise the possibility of there being some, possibly remediable, medical cause. Lists of possible medical causes of falls can be found in most modern textbooks of geriatrics, and can be divided into cardiovascular and neuromuscular groups. In economically developed societies the commonest seem to be the various causes of intermittent hypotension, often brought on or exacerbated by prescribed drugs, and unstable knee joints due to arthritis with quadriceps inhibition and wasting. It is helpful for primary health care workers to be provided with simple algorithms to help in identifying fallers who might benefit from empirical treatment (for the unstable knee for example) or from referral for further investigation. Such algorithms need to be devised with a knowledge of what referral and treatment facilities are available locally. An old person who has suffered from recurrent falls can be made to feel more secure, and institutionalization may be prevented, by training in techniques of rising again after a fall or by the provision of an alarm system that would enable the individual to summon help in the event of inability to rise after a fall.
3.2 Osteoporosis

Fractures are a common source of morbidity in older people. Osteoporosis, defined in terms of a low content of mineral in a static measurement of anatomical bone, is correlated with bone strength and hence is a risk factor for some fractures, particularly spontaneous crush fractures of the vertebrae. There are other determinants of bone strength, however, that are not reflected in bone mineral content, including the quality of the collagen matrix, crystal size and, possibly, rate of turnover and elimination of microtrabecular fatigue fractures. Bone strength is itself only one of the factors affecting the incidence of fractures; the incidence of falls and the integrity of the faller’s protective responses are also important.

There are international differences in the prevalence of osteoporosis, as measured by indices of bone mass, and in the incidence of fractures, particularly of the proximal femur in the elderly. These two are not always correlated and some population groups with a high prevalence of osteoporosis seem to have a low incidence of fractures. Such differences offer important opportunities for elucidating the environmental factors involved in the etiology of osteoporosis and other determinants of fracture.

There is controversy over a number of aspects of the pathogenesis, prevention, and treatment of osteoporosis, but there have recently been two conferences\(^1\) in which much common ground was identified.

3.2.1 Bone loss and turnover

The amount of mineral in bone during adult life is determined by the amount present at the end of the adolescent growth period and by the rate of loss thereafter. Of great importance in the generation of fractures in elderly women is the phase of very rapid bone loss that occurs over a period of 5–10 years following the reduction of ovarian estrogen secretion at the menopause.

Net loss or accretion of bone occurs through the balance between osteoblastic and osteoclastic activity during the process of bone

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\(^1\) A consensus development conference on osteoporosis organized by the European Foundation for Osteoporosis and Bone Disease in conjunction with the International Symposium on Osteoporosis in Aarhus, Denmark, October 1987; and The National Consensus Conference on Osteoporosis organized by the United Kingdom National Osteoporosis Society in London, England, October 1987.
remodelling. Research is continuing on the basic physiology of these
two types of cell, the control of their activity, and the
communication between them. Until more is known of these basic
processes the approach to the prevention and management of
osteoporosis has to be empirical and provisional.

3.2.2 Dietary calcium and exercise

Bone mass at puberty is partly under genetic control, but
modifiable factors thought to have some influence include exercise
levels and dietary calcium intake. While during adult life an intake
of 800 mg of calcium a day is sufficient to reduce loss of bone mineral
to a minimum, a dietary calcium intake of the order of 1500 mg daily
is desirable during childhood and adolescent growth and again in the
postmenopausal period in women when absorption of dietary
calcium is reduced. Dietary calcium supplements have been found in
one study to have a beneficial effect on cortical bone but it is unlikely
that supplements will have any effect if dietary calcium is already at
adequate levels and there may be some risks in increasing calcium
intake above 2 g a day. (Similarly, vitamin D therapy and sunlight
exposure will only be of benefit to those subjects who are deficient
in vitamin D, as some elderly residents of towns in northern Europe
seem to be.)

During childhood, exercise is thought to be beneficial in
generating bone mass, perhaps through a piezoelectrically mediated
stimulation of osteoblastic activity, although exercise of sufficient
intensity to induce amenorrhea in adolescent girls will reduce the
peak bone mass. Bed-rest will lead to bone loss in elderly subjects
and should be minimized, but while exercise undertaken in later life
will be of benefit in maintaining muscle strength and joint flexibility,
it is not yet established that exercise of feasible levels of intensity will
increase the bone mass of elderly subjects.

3.2.3 Estrogen and progestogen therapy

Estrogen therapy (with progestogen if the patient has not
undergone hysterectomy), given to appropriately selected women
and under careful surveillance at and after the menopause, can delay
the onset of the rapid phase of bone loss, and will lead to a lower age-
specific risk of fractures in later life. The risks of estrogen therapy are
now known to be small, and therapy should be given, in the absence
of contraindications, following surgical or premature menopause and should be available for other women who could benefit from it and who desire it. Estrogen therapy can be used in primary health care settings if protocols for selection and surveillance are followed, but facilities for secondary referral will also be required. Since about one in four women will suffer a fracture attributable to osteoporosis in old age, a research priority is to identify those women entering the menopause who will be at high risk. Approaches employing measures of bone density and other factors such as weight/height ratio and urinary calcium excretion require further evaluation.

3.2.4 Other factors

Maintenance of body weight at, or slightly above, ideal weight will encourage the retention of bone. Cigarette smoking reduces bone mass by reducing weight and reducing the age at menopause, and possibly as a result of anti-estrogenic effects. Excessive alcohol consumption is also associated with reduced bone mass in later life.

3.2.5 Treatment of osteoporosis

Treatment of established osteoporosis, as distinct from prevention, remains controversial. The principles include adequate reassurance and pain control, the maintenance of mobility and the avoidance of bed-rest, the search for any dietary inadequacies, and consideration for estrogen therapy in appropriate cases to retard further deterioration in bone. The use of fluoride, calcitonin, anabolic steroids, thiazides, parathyroid hormone, diphosphonates, or combination therapies requires further evaluation.

3.3 Vision

Vision is the most valued of the human senses, and eye care is directed to improving the quality of life rather than the postponement of death. Age-associated changes in contrast sensitivity, dark adaptation, and visual fixation may cause problems in some situations, but the commonest important form of age-associated visual impairment is presbyopia, which appears to be due to intrinsic aging processes in the lens. Although not a cause of blindness, presbyopia may have an important effect on the quality of life and the economic contribution of older people who depend on
near vision for recreational activity or work. Simplified techniques for the assessment of refractive errors and the provision of appropriate spectacles have been devised for use by non-medically qualified personnel in primary health care situations in economically developing countries.

3.3.1 Blindness

On a worldwide scale, WHO has identified trachoma, onchocerciasis, xerophthalmia, and cataract as the commonest causes of blindness. In some countries cataract causes more than 40% of the total burden of blindness. In economically developed countries, senile macular degeneration and glaucoma are also important causes of blindness among the elderly.

3.3.2 Senile macular degeneration

Although intensive studies are being carried out on the effects of photocoagulation and laser therapy on early senile macular degeneration, these have not yet been sufficiently successful to be widely used, and they are unlikely to be available in the developing world in the near future.

3.3.3 Glaucoma

Screening for susceptibility to glaucoma, and for the detection of early disease, is technically difficult and costly since three methods of investigation are involved—measurement of intraocular pressure, assessment of optic disc cupping, and detailed measurement of the visual field. Only a small proportion of subjects identified as having raised intraocular pressure go on to develop visual field loss, and there is interest in finding a means of identifying the high-risk groups. There appear to be some ethnic differences in the incidence of glaucoma; rates appear to be high in black Americans and low in the Innu. A family history of glaucoma and the concomitant presence of vascular disease also appear as factors associated with an increased risk of raised intraocular pressure being followed by field loss. At present, there does not appear to be a well established basis on which to justify population screening for the prevention of glaucomatous loss of vision in the elderly.
3.3.4 Cataract

There is current interest in the possibility that the development of age-associated cataracts may be prevented or delayed by drug therapy, and WHO has drafted guidelines for the clinical investigation of such drugs. At present, however, the approach to the control of blindness due to cataract has to be through the increased use of surgical treatment. Promising approaches to the problem in the economically developing countries include the mass treatment of affected populations through the deployment of field teams and the assembly of patients from a wide geographical area. Another approach is the training of technicians able to carry out cataract surgery without medical supervision and using a minimum of expensive equipment. The International Eye Foundation has been active in encouraging this approach (7).

However effectively present approaches to the prevention and treatment of causes of impaired vision are deployed, there will remain a proportion of blind or partially sighted old people. For these it is necessary to provide as supportive an environment as possible. Even the minor changes in vision associated with aging can be helped by attention to such matters as the intensity and placement of lighting to improve contrast perception and to prevent dazzle, and to the design of internal and external environments to reduce the risks of falling and of traffic accidents.

3.4 Hearing

Speech communication is a fundamental human characteristic and the effects of communication difficulties on the social participation of the individual can be devastating. Cheap hearing aids have become available in recent years but there is still uncertainty about the economics of providing communication aids to elderly people, despite the cost to society and the individual of not providing them. The provision of hearing aids to elderly people varies greatly in different countries. In some industrialized countries, almost one in three elderly people have hearing aids whereas in Mexico only some 5000 persons of all ages are fitted with these devices annually.

For elderly deaf persons, the objectives are to enable them to communicate with others and to participate in society—activities that will remove the stigma of disability and contribute to their well-being. Deaf old people can be at special risk in some situations, for
example in traffic. A crisis can also be provoked by transferring a
deaf person to a hospital or to a nursing home from his or her own
home, where the hearing impairment has been well compensated for
by a spouse.

3.4.1 Priorities

Priorities should be: to establish appropriate screening, using
verbal cueing as opposed to pure tone testing; to provide hearing
aids; to employ alternative technologies and non-technical aids
based on early detection and adapted to the specific individual.
Proper attention should be paid to speech as well as hearing. In part,
this is essential in order to maintain social networks and personal
support, but it also serves to reduce the risk of depression and
sensory deprivation-induced paranoia.

3.4.2 Presbycusis

Presbycusis is the hearing impairment most commonly associated
with advancing age. Audiometric data indicate that almost one in
three persons aged 65–74 years has impaired speech perception.
Noise exposure, whether from the work site or from leisure activities,
probably contributes to the etiology of this problem.

3.4.3 Tinnitus

Approximately 4–5% of elderly persons spontaneously report
"annoying sounds" or tinnitus. Tinnitus can also be described in
quantitative terms by various tests or, more simply, by asking the
person to grade the tinnitus on a scale of 0–5 (unbearably loud
tinnitus).

The annoyance of tinnitus tends to decrease with time and
habituation is often facilitated by psychological counselling. Trained
personnel may help by providing a hearing aid, a tinnitus masker, or
other means of relief.

3.4.4 Service requirements

Health care personnel and social workers should be better
informed about the indications for referral, the wide spectrum of
devices available for dealing with hearing disorders (including new
appliances), non-auditory interventions (such as counselling and instruction in lip-reading), and the excellent opportunities for rehabilitation. Professional groups in contact with elderly people (as well as the elderly themselves) should be taught how hearing aids are handled, how ear-moulds are kept clean, how to change batteries and cords, how to place the aid, and how to adjust the volume. These approaches will facilitate demedicalization of screening for hearing defects and of rehabilitation.

A number of studies have shown that one-fifth or more of elderly people fitted with hearing aids do not continue to use them. This is partly a reflection of the unsatisfactory technical design of hearing aids, which sometimes results in the amplification of the noise as well as the speech frequencies; there is also evidence that insufficient attention may be given to instruction of the recipient in the use of the instrument and to subsequent support. Rehabilitation must include an examination by a person with professional training, such as an audiological adviser, capable of evaluating the options for intervention. The adviser must teach clients not only how to use a hearing aid, but also hearing tactics and practical details of modifying the acoustic characteristics of their surroundings. It is essential to create a better understanding of hearing difficulties within the family and among friends. In particular, friends and relatives should be taught how to speak to a deaf person in order to give him or her as many non-auditory cues as possible to help communication. This may have an important benefit by making it possible to maintain supportive social networks.

3.5 Mental health

3.5.1 Aging and psychological function

Many people, including professionals, have an exaggerated and over-pessimistic view of age-associated changes in mental capacity. This is in part derived from cross-sectional studies in rapidly changing societies that confuse age-associated changes with cohort

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1 This section follows traditional clinical terminology. Although the proposed tenth revision of the International Classification of Diseases does not contain any section devoted to "old age disorders", it includes two groups of mental disorders of special relevance to the elderly: "Dementia in Alzheimer's disease" and "Vascular dementia", the former containing "Dementia in Alzheimer's disease with early onset (Type 2)" and "Dementia in Alzheimer's disease with late onset (Type 1)", enabling those who regard the two as separate diseases to label them differently.
effects due to the often profoundly different cultural milieux in which the old and the young grew up and were educated. When people are tested by longitudinal (follow-up) studies against their own former selves rather than against different younger people, the decline in mental function with age is found to be much less than cross-sectional population studies suggest. It is indeed important to emphasize to carers for the elderly that some aspects of behaviour by older people that strike the young as unusual or even bizarre represent bygone cultural norms and not mental decline.

Some forms of psychological function may decline with age. For example, memory capacity and information-processing capacity may become restricted from quite early in adult life but these impairments are usually well compensated for by the use of external helps, such as aides-mémoire, and by psychological adaptations, such as increased concentration.

3.5.2 Mental illness in the elderly

The prevalence of a number of mental health problems increases with age. This is partly a consequence of organic changes, partly a consequence of the increasing prevalence of physical disorders that impair brain function, and partly a consequence of environmental and psychosocial stresses that afflict the elderly more often than the young. Loss of autonomy, bereavement, poverty, and isolation are well recognized examples. Nevertheless, surveys indicate that the majority of the elderly are in good mental health.

Most mental disorders can start at any age; the majority of such disorders occurring in the elderly are not due to aging, and they have the same course and the same response to treatment as they would have in younger people. Nevertheless, it is a widespread misconception that mental illness in the elderly is inevitably progressive and that treatment can only be symptomatic. It is of great importance to eradicate this misunderstanding, which often leads to therapeutic nihilism.

3.5.3 Dementia and delirium

One of the most important aspects of primary care for the elderly in the field of mental health is to recognize delirium, which is often a reversible manifestation of treatable physical disease, and to distinguish it from dementia, a chronic usually progressive disorder
requiring different management. A good history from an informant is crucial in elucidating the onset of the illness and its progression. In an elderly person with previously good functional status, an acute recent onset of symptoms with fluctuation in intensity during the day and with evidence of impaired consciousness is typical of delirium, and appropriate investigation for underlying physical disease is a matter of urgency. It needs to be borne in mind that delirium and dementia may coexist, and indeed a person with dementia is particularly susceptible to delirious reactions to physical disease, but here again the crucial assessment is the history of recent abrupt deterioration in function.

Dementia occurs most often as “senile dementia of Alzheimer’s type”; it has, at least in its familial forms, a partly genetic (and probably heterogeneous) background. Physiologically it is characterized by failure of acetylcholine-mediated nervous transmission, although, particularly in cases with younger age of onset, a wider range of neurotransmitter abnormalities can be demonstrated. This progressive disorder may be complicated by transient delirious episodes due to intercurrent physical illness, and by confusional episodes due to decompensation of the dementia consequent on disruption of a familiar and supportive environment—for example by removal to hospital or loss of a spouse.

Treatment of senile dementia of Alzheimer’s type is mainly psychosocial, aiming at preserving as much continuity as possible, so as to avoid unprepared environmental changes that may lead to decompensation with acute confusional episodes. Detection and management of intercurrent illness are also an important part of management, as are support and counsel for the carers of the afflicted patient. Behavioural modification therapy can be of help in improving some of the more disturbing manifestations of the disease. Drug therapy aimed at compensating for the neurochemical defects has not as yet given convincing results.

Senile dementia of Alzheimer’s type should be distinguished from multi-infarct dementia due to cerebrovascular disorders, which is characterized by episodes of rapid deterioration in function that may or may not be followed by a permanent defect. Since many patients with multi-infarct dementia recover mentally, and often have patchy preservation of function, whereas patients with senile dementia of Alzheimer’s type suffer under the more global impairments of that condition, those with the former disorder often respond better to rehabilitation measures. The distinction is therefore of importance.
Other organic disorders that may occur in the elderly include alcoholic delirium and dementia and Korsakov’s psychosis. The dementia sometimes associated with Parkinson’s disease is of significance, since it may render the victim particularly susceptible to delirium induced by the anticholinergic and dopaminergic actions of antiparkinsonian drug therapy.

3.5.4 Depressions

These are the most frequent form of mental disorder in the elderly. Some of them are "psychogenic", e.g., as an understandable reaction to physical incapacity, others being "endogenous", often of bipolar type with occasional manic states. The fact that an old person has reason to be depressed does not automatically mean that the depression is reactive; and many apparently psychogenic depressions respond to treatment as endogenous states. These disorders react favourably to drug therapy or to electric convulsive therapy, the latter, when applied with modern unilateral techniques, being tolerated excellently in the elderly, whereas drug therapy demands careful supervision. Preventive medication is possible, especially in the form of lithium therapy. Depression in the elderly is often misdiagnosed, as it may present in atypical ways. Weight loss, persistent pain, behaviour disorder, and drug abuse are common examples. Anxiety and panic states in the elderly are also most often expressions of depression. Less common but important to recognize is the depression that presents as “pseudodementia”. It is one of the most important (and rewarding) tasks of community mental health work to ascertain and treat such cases. Depressive disorders in the elderly imply a considerable risk of suicide and this makes their early identification and treatment a matter of urgency.

3.5.5 Paranoid psychoses

In the elderly, paranoid psychoses may be of schizophrenic nature. Late-onset schizophrenia has a relatively good prognosis and good response to drug therapy, and even schizophrenia that has started in youth may improve significantly in old age. Other paranoid psychoses are psychogenic, caused by sensory deprivation, usually as a consequence of deafness; most of these patients respond well to a combination of improvement in hearing, reduction of isolation, and, initially, drug treatment.
3.6 Incontinence

Approximately 10% of elderly people have problems with incontinence. Many elderly incontinent people do not receive adequate diagnostic evaluation, possibly because of the embarrassing nature of incontinence but also because of the widespread misapprehension among both professionals and the general public that incontinence is an untreatable consequence of old age. More positive attitudes towards continence management are needed, since there is growing evidence that interventions can be effective in curing or ameliorating incontinence in elderly people.

3.6.1 Urinary incontinence

(a) Classification

*Acute* incontinence may be precipitated by illness, unaccustomed immobilization, delirium, or urinary tract infection. Postmenopausal changes in the urinary tract may render women particularly susceptible to the effects of acute problems of this sort. Treatment is directed at the underlying cause, with, if appropriate, a short-term course of local estrogen therapy in women.

*Persistent* incontinence is recognized from the clinical history and is now classified into four mechanisms, more than one of which may coexist in an individual patient:

*Stress* incontinence—the involuntary loss of small amounts with coughing, laughing, or exercise;

*Urge* incontinence—the leakage of larger volumes because of an inability to inhibit bladder contractions and so delay voiding;

*Overflow* incontinence—resulting from pressure in an over-distended bladder;

*Functional* incontinence—due to difficulties in reaching or using a toilet, inconvenient or ill-designed facilities, or impaired physical or mental function.

A detailed clinical history is necessary for the identification of these types of incontinence. It is also necessary to bear in mind that some classes of drug can affect continence, for example: psychotropic drugs, through their effects on mental status and mobility; diuretic drugs, which increase nocturnal urine production; anticholinergic drugs, which impair bladder contractility, and may
lead to constipation and obstruction of the bladder outlet; and adrenergic agonists and blockers, which alter the tone in the bladder outlet and urethra.

Physical examination of the incontinent patient should focus on mental status and mobility, as they relate to toileting skills, abdominal, rectal, and pelvic examination, and lumbosacral innervation. Investigation should include determination of the post-voiding bladder residue by sterile catheterization within 5–10 minutes after voiding. This will also provide an uncontaminated urine specimen for analysis and culture to identify glycosuria (which may contribute to incontinence through osmotic diuresis) and bacteriuria. Although urinary infection is often relevant, its presence does not establish its responsibility for the incontinence, because urinary infection can be a consequence as well as a cause. A trial of appropriate antimicrobial therapy, with demonstrated eradication of the infection and follow-up evaluation of the patient's symptoms, is necessary to establish the causal role of infection in incontinence.

(b) Treatment of persistent urinary incontinence

A variety of interventions are available that may be relevant for different patients. These include behavioural, pharmacological, and surgical approaches. In addition, a number of therapeutic and prosthetic devices are available, and environmental manipulation (for example making toilets more accessible) may also be useful.

Among the forms of behavioural therapy available is biofeedback, which has been used effectively for stress and urge incontinence. Another is bladder training; fixed toileting schedules, for example, can improve functional incontinence.

Drug treatment with anticholinergic drugs is used primarily for stress and urge incontinence, although side-effects can be quite bothersome—dry mouth, constipation, blurred vision. Stress incontinence in women may be ameliorated by adrenergic agonists which increase sphincter resistance, but these must be used with caution in those with hypertension and cardiovascular disease and are not in general use. Surgical therapy is preferable where appropriate. Similarly, alpha-adrenergic blockers have been used in men with bladder outlet obstruction, but usually only where there are contraindications to surgery.

Therapeutic devices include electrical stimulators and artificial sphincters. Electrical stimulation from an electrode inserted in the rectum or vagina has been used to treat stress or urge incontinence
in women. However, these devices, and the various forms of artificial sphincter, have only a limited role in elderly persons with refractory incontinence.

Prosthetic devices include specially designed undergarments and pads made of superabsorbent polymer. These are actively marketed, but should not be used as a first-line solution. Condom-type catheters are frequently used to manage functional incontinence in men, although their use has been associated with urinary tract infection. Continuous in-dwelling catheterization is used more often than necessary in the management of incontinence, especially in nursing homes. The detailed nursing care and management of indwelling catheters is often unsatisfactory and those responsible for the supervision of patients with such catheters should work to clearly defined standards. The use of toilet substitutes such as bedpans and bedside commodes will be required in the management of some incontinent patients, but these reduce dignity and should not be deployed as devices of first resort.

Architectural features are important in the management and prevention of functional incontinence, as regards the identification, accessibility, and suitability of toilet facilities. These important aspects of design should be incorporated into public and private buildings that are used by older people.

(c) Continence clinics and continence organizations

Special workers (continence advisers) and special clinics for the evaluation and treatment of incontinence have appeared in some countries in recent years and private organizations have been developing and distributing educational materials for people afflicted and for nurses working in long-term care or home care settings.

3.6.2 Faecal incontinence

Occasional or persistent faecal incontinence is profoundly disabling socially, and recent surveys suggest that it is a more common problem, in both the old and middle-aged, than is generally realized. In particular it has been identified as being especially common in residential homes for older people where it contributes significantly to the difficulties of care in such settings. Faecal incontinence in the elderly may appear as a late feature of dementia or other brain damage, but should not be attributed to this cause.
until other, treatable, causes have been excluded. Most commonly in
the elderly, faecal incontinence is due to faecal retention as a result
of impaction in the rectum, or, less commonly, at the rectosigmoid
junction. Other obstructive lesions such as carcinoma or stricture
need to be considered. Frequently, drugs with an anticholinergic
action are a contributing factor, as are constipating drugs given in
misguided attempts to treat the incontinence. Drugs may also
contribute to faecal incontinence by producing diarrhoea or
confusion, and the possibility of unsuspected self-medication with
laxatives has to be considered. A few cases of faecal incontinence will
be due to denervation of the anal sphincter, but even in these cases
the problem can be helped by judicious nursing techniques using
combinations of constipating drugs with regular enemata. Geriatricians claim that with experienced medical and nursing
assessment and care the majority of cases of faecal incontinence can
be greatly improved or cured.

3.7 Stroke

3.7.1 Acute stroke

Approximately one-third of stroke victims die within a month of
onset of acute stroke and a substantial proportion of the survivors
are left with physical or mental disability. Data from the USA show
that the case fatality of stroke has improved to some extent in the last
three decades, in the absence of any dramatic changes in specific
therapy. A number of types of therapy for acute stroke are under
evaluation, for example glycerol infusions, vasodilators, and
haemodilution. Careful randomized trials have raised serious doubts
about the efficacy of carotid endarterectomy in the treatment of
stroke.

The methodological difficulties associated with randomized
controlled trials of stroke therapy are considerable, not least because
the relevant measures of outcome have to assess function and well-
being and not just survival. An additional problem is the great
heterogeneity of the neurological damage produced by stroke, since
this makes the matching of experimental and control groups a
difficult task. In an effort to overcome these difficulties, stroke
research groups have been set up in some countries to design and
administer multicentre trials of the treatment of stroke patients.
Good cooperative ventures of this sort deserve support.

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3.7.2 Epidemiology

Stroke incidence increases as a power-law function of age, and is slightly higher in men than in women. As noted earlier, mortality rates have been falling in Australia, certain European countries, and North America for some decades, with a recent acceleration in some countries which some commentators attribute to the wider use of antihypertensive treatment. Data from Japan and the USA show that most of this fall in mortality is due to a fall in incidence of stroke. The reasons for the fall in incidence, which in the USA occurred before the widespread use of antihypertensive medication, are obscure.

There are regional and cross-national differences in stroke incidence, some of which have been identified in WHO-sponsored studies. Individual risk factors show some overlap with those for coronary heart disease, but with a different order of importance. High blood pressure is the dominant risk factor in most studies, although there is some evidence that its importance may be less in the elderly of some population groups than in others. Heart disease of any form, atrial fibrillation, and evidence of peripheral vascular disease or diabetes mellitus also emerge as risk factors in most studies. Cigarette smoking and "dyslipidaemia" are more important predictors of stroke in the young than in the old. Transient ischaemic attacks are powerful predictors of stroke particularly in the short term. Excessive alcohol intake has recently appeared as a risk factor; it may act both through its hypertensive effect and also possibly through a short-term mechanism.

3.7.3 Prevention

In young adults, there is no doubt that the effective treatment of high blood pressure reduces the risk of stroke; a recent cooperative European study has produced similar evidence for patients aged 60–79 years. There are potential hazards in the treatment of high blood pressure in older people. If the findings of the European trial lead to widespread treatment of high blood pressure in older people, care must be taken that the standards of selection (especially the definition of elevated blood pressure) and surveillance of patients match up to the standards of the original trial. In many primary care situations it may not be possible to achieve this. There is also satisfactory evidence that the use of aspirin can reduce the risk of subsequent stroke in people who have suffered a transient ischaemic
attack, although doubt still remains about the best dose. Refraining from smoking and avoiding excessive alcohol consumption are also prudent preventive measures, although their efficacy in reducing stroke incidence has not been clearly demonstrated.

3.7.4 Rehabilitation

Although there have been no trials of the benefits of modern nursing practice for the acute stroke patient, clinical observation suggests that attention to posture and early mobility have reduced the sequelae and improved the residual function of stroke patients in recent decades. The benefits of intensive rehabilitation in the post-acute phase have been studied, but methodological difficulties have frequently been encountered, including difficulties with clinical stratification and matching and with identifying precisely the components of the therapy being tested. Many trials have been too small, and the measures of the initial condition and of the outcome have sometimes lacked precision. The results of some studies suggest that, after primary triage of those patients who are too frail for intensive rehabilitation therapy and those who are so slightly affected that spontaneous recovery seems certain, only a small proportion (about 10–15%) are appropriate for therapy. At present the evidence indicates that intensive rehabilitation is of marginal benefit in the medium term (3–6 months) but that this advantage may not be seen in the longer-term follow-up. This suggests that rehabilitation might be more effective as an “intermittent continuum” than as a single intensive treatment. Good rehabilitation practice for the stroke patient employs a multidisciplinary team whose activities involve advising and training the future informal care-givers as well as the patient. It is not yet possible, on the basis of research findings, to judge which of the many activities of the team are, in practice, the most effective.

3.7.5 Barriers to recovery from stroke

A number of specific problems may impede a patient’s rehabilitation from stroke, and these need to be looked for actively by those responsible for the care of stroke patients. Motor loss in stroke is obvious enough but the more disabling sensory loss is often overlooked. The commonest barrier to rehabilitation is probably depression, which may present in masked form and simply as failure
to respond to rehabilitation. Communication difficulties in the various forms of aphasia are easily recognized, but more subtle but disabling neuropsychological problems may occur. These include apraxia and agnosia, sensory inattention, and hemi-neglect. The patient may be taught to compensate for some of these defects but it is very important, although often difficult, to explain the nature of the patient's difficulties to family carers. Even more stress may be placed on relatives by personality changes, usually loss of emotional inhibition, that may follow frontal lobe damage.

3.7.6 Good practice

Much remains to be done in the evaluation of care for stroke patients. The standards of good practice developed in specialist geriatric units should for the time being be implemented as widely as possible since they represent the results of successive refinement of clinical care in the light of experience. Perhaps the most important feature of current good practice is the support and encouragement it provides for the patient and the family. Although randomized trials of therapy are sorely needed, great difficulty will be faced in mounting pertinent trials. They must be concerned with the nature of such care, including both the formal components and the sense of rehabilitative potential conveyed by active treatment units; given the current expectations for stroke care, it may prove unfeasible and perhaps unethical to test these aspects precisely in a randomized controlled trial.

3.8 Iatrogenic disorders

The loss of adaptability which characterizes aging means that the elderly will be susceptible to ill-effects from challenges that younger adults could cope with. This is seen most clearly in the genesis of iatrogenic disorders and reflects the greater risk of unwanted side-effects of drug therapy and other interventions in older people. Although the etymology of the term "iatrogenic" restricts it properly to conditions produced by doctors, it is useful to extend its meaning to comprise the results of all forms of intervention by health and social services. A number of specific types, and mechanisms, of iatrogenic disorder have been described.
3.8.1 Labelling

Making a diagnosis or categorizing a person in a particular way can have a number of undesirable consequences. Numerous examples could be quoted but a few must suffice. Intercurrent treatable and distressing problems, such as incontinence due to urinary tract infection, may not be recognized and treated if the patient has been labelled as demented, since it is assumed that the urinary incontinence is due to the dementia. A patient who is labelled as having cancer may receive pain-killing medication for symptoms that are due to the depression induced by the diagnosis rather than to the organic invasion of the disease. Because of the social pressures to adopt the sick role, patients who have been labelled with a diagnosis may behave in a more dependent way than is necessary or desirable for their rehabilitation. The overuse of bed-rest by patients who see themselves as “ill” is a common example, and is particularly relevant to the elderly for whom bed-rest is especially likely to cause undesirable consequences, such as the loss of bone mineral, muscle bulk, and strength. As a final example, a patient who has been labelled “geriatric” will elicit a different range of reactions from health and social service staff than a patient of the same age and disability who is a “medical” patient, and these reactions may not be appropriate to the patient’s actual needs.

3.8.2 Over-investigation

While labelling can lead to inadequate investigation of an old person, health services that are too narrowly focused on diagnosis and therapy may over-investigate older people and expose them to the risks and discomforts of investigations and treatment from which no benefit could be expected. As a general rule, investigations should be carried out on old people (and indeed on people of any age) only if one or more of three conditions are met: (a) the investigation may lead to the recognition of a disease that would be treatable with benefit to the individual patient under consideration; (b) the investigation may lead to the identification of a disease with an adverse prognosis that might be made more favourable by a care plan for the patient and attending relatives; (c) the patient is taking part, with informed consent, in a research project for which precise diagnosis is required.
3.8.3 Institutional neurosis

People who find themselves in an institution, be it a hospital, residential or nursing home, or even a prison, may adopt a behaviour pattern characterized by passivity, dependence, and depression. This is a survival strategy and once established may be difficult to reverse; the resident becomes psychologically dependent on the institution and unwilling to contemplate life outside it. Prevention of the syndrome requires efforts to protect the resident’s privacy, individuality, and autonomy, by permitting as much choice as possible over activities and by insisting that the resident exercises that choice. Good quality care for the elderly in institutions requires specific attention to these aspects.

3.8.4 Risk avoidance

Absolute safety cannot be provided for old people without compromising the independence and autonomy that are the primary objectives of care. Paradoxically, attempts to avoid risks may on occasion actually increase the danger of harm. An old person thought to be at risk from falls may become overprotected; such a person may no longer try to do the shopping, no longer go upstairs to bed, and become increasingly physically unfit and liable to falls. The nursing staff in hospital may be so fearful of an elderly patient falling out of bed that they put up side rails on the bed, the consequence being that the old person tries to climb over the rails to get out and so falls from a greater height than if the rails had not been present.

3.8.5 Drug therapy

The first essential for appropriate drug therapy is an accurate diagnosis. But even with an accurate diagnosis there may still be problems with adverse drug reactions. These may be classified as:

— dose-related, as an extension of a wanted reaction, e.g., hypotension due to antihypertensive therapy;
— dose-related, as an unwanted reaction, such as hypothermia due to phenothiazine therapy;
— not dose-related and unpredictable or idiosyncratic, such as cholestatic jaundice due to chlorpromazine therapy;
— drug interactions.
There have been substantial advances in knowledge about age-associated changes in pharmacokinetics in the last decade. For example, the volume of distribution of drugs may change with alterations in body composition; first-pass metabolism may be reduced with reduced hepatic blood flow; and a fall in glomerular filtration rate leads to a slow renal excretion of drugs. There have also been studies of the pharmacodynamic aspects of drug therapy in old age; changes in the number and affinity of some drug receptors have been found and impairments in some post-receptor systems identified. In clinical practice, there is so much variability between individual old people that pharmacological knowledge does not permit an accurate prediction of the likelihood of unwanted side-effects in an individual case. It is possible, however, to identify groups of drugs that should be prescribed for elderly patients only with special caution. These include cardiac glycosides, diuretics, antihypertensive drugs, antidysrhythmic drugs, oral antidiabetic drugs, oral anticoagulants, psychotropic drugs, and non-steroidal anti-inflammatory drugs. Drugs that are particularly likely to be involved in unwanted interactions include warfarin, oral hypoglycaemics, non-steroidal anti-inflammatory agents, digoxin, and cimetidine.

The elderly of today have a high expectation of drug therapy as they lived through the 1940s and 1950s when major advances in therapeutics were made. Health providers may need to persuade their patients that their expectations are unrealistic and that alternative approaches will be more effective.

4. HEALTH CARE OF ELDERLY PEOPLE

4.1 Primary care

Three types of care directed towards the elderly can be distinguished:

—Primary health care—as conceived in the Declaration of Alma-Ata (8), this comprises a broad range of "methods and technology made universally accessible to individuals and families in the community through their full participation". It includes the point of first contact with health services and elements of community education, community participation, and intersectoral activities, as well as traditional health services delivery.
—Primary medical care—usually provided through facilities associated with a general practitioner but not necessarily limited to care delivered by a physician.

—Geriatric care—typically provided under the aegis of a medical specialist, acting usually as a member of a multidisciplinary team.

These three types of care are not always easily separated. Not all will be provided in all situations.

4.1.1 Primary health care

Contrary to popular belief, the majority of elderly people are not disabled or dependent; they live in their own homes or in the houses of their relatives. Old age does not of itself indicate a need for specialist geriatric care. The majority of health care of the elderly will therefore be in the form of primary health care, especially because in many parts of the world geriatricians are in short supply.

The organization and structure of primary health care will vary. It will often involve both professional and lay care-givers. In Thailand, for example, priests and border police are numbered among the resources of primary health care; Cuba has used community centres with grandparents' clubs as part of the primary health care system. In other situations, nurses and other personnel in the existing primary care structures, such as maternal and child clinics or family planning centres, have the potential to contribute to the primary health care of the elderly if they are appropriately reoriented and trained to take on this responsibility. It is obviously essential that primary care practitioners have the skills, knowledge, and techniques to facilitate good care of the elderly. This can be facilitated by giving special attention in primary care training to the needs of the elderly, with emphasis on recognizing the early signs of dysfunction, together with protocols for safe, cheap, and effective empirical interventions.

In some countries, there is a need for a more wide-ranging reorientation of the established health delivery system; this is the case where diagnosis and therapy are the main concerns, rather than the more holistic, rehabilitative, and prosthetic approaches which good care of the elderly requires.

Because much of the care for the elderly requires the recognition of subtle changes in an older person’s condition against a background of pre-existing chronic conditions, systems for continuous record-keeping are essential. One of the most effective
forms of prevention in the elderly is the early detection of disease and disability; this requires a clear record of the patient's baseline functioning. Simple data cards with columns to record the date and the level of some basic variables (e.g., blood pressure, vision, hearing, gait, activities of daily living, cognitive performance) can summarize useful information and indicate immediately any change in a person's functional status. The specific parameters of interest may vary with the patient's situation. For example, a person already receiving long-term care may be followed for a set of measures that emphasizes activities of daily living and cognition, whereas for a person of similar age living independently and actively in the community, attention might be more appropriately focused on screening measures, such as recording medications used, walking time, vision and hearing, and immunization status.

In the daily practice of care of the elderly, practical judgements must be exercised continually about the extent to which changes in a person's state should be evaluated in order to identify when useful interventions can be applied. These interventions can take two basic forms: they can be therapeutic and attack the underlying pathology to alter its natural course; or they can be prosthetic and deal with the sequelae of the pathological change to minimize the consequent functional loss. Because new problems in the geriatric patient often present against an already extensive background of underlying problems and initiated therapies, each new event presents a special set of difficulties. The appearance of the new problem may be masked by the manifestations of existing conditions. The treatment plan for the new event must take into account the possibility of interactions with other remedies already in use. The addition of the new problem may be sufficient to tilt the delicate functional equilibrium of the elderly person to create a level of dysfunction that requires the mobilization of external support systems on a temporary or permanent basis. Each such intervention must be planned to avoid the imposition of enforced dependency. Efforts must be made continually to maintain the prospect of rehabilitation in which the older person is encouraged to use his or her resources towards recovery and not to fall into a passive role.

4.1.2 Geriatric services

Geriatrics has been defined as that branch of medicine concerned with the clinical, preventive, remedial, and social aspects of illness in
the elderly. Comprehensive geriatric services comprise home visiting, outpatient clinics, day hospitals, and long-stay, rehabilitation, and acute assessment facilities. Some geriatric services are now available in various forms in most economically developed countries.

Specialist geriatric care focuses on maintaining the independence and autonomy of disabled elderly people, and should be necessary for only a small subset of the total elderly population at any time. In many parts of the world, geriatricians are in scarce supply, if they exist at all. Where it is affordable, some source of geriatric expertise is useful to manage the very complex cases and to provide advice to primary care-givers. Often this primary care is given around a core of geriatric assessment in which the patient is comprehensively assessed in terms of both physiological and functional performance to determine both diagnoses and prognosis.

In some instances, patients presenting difficult problems in management should be referred to specialist facilities for therapeutic trials to establish appropriate medication levels. Geriatric centres also serve as a base for research activities into both clinical care and health and social services.

Where geriatric expertise is not sufficiently available to be routinely involved in the management of elderly people, its priorities should be in education and in devising and deploying the protocols and practice aids for use in primary care that are alluded to above and elsewhere in this report.

4.2 Family care

4.2.1 Developed countries

Although there is a considerable and growing use of formal services in both institutions and the community in developed countries, the family continues to be the mainstay of care for the elderly. There is no evidence that the provision of statutory services for the care of the elderly reduces the willingness of families to care for their elderly members. With the increase in numbers and proportion of the very old, many of the family care-givers are themselves elderly. Community support services should be developed to enhance family care, whenever possible through mechanisms such as “respite care” (to relieve the burden on caring relatives or friends), day care, and home-help services, but they must
also recognize that many elderly people either lack families or that the care-givers are themselves elderly.

In some developed countries, however, though positive attitudes among the general public towards family care of the elderly are well preserved and the family continues to be the main source of care for the elderly, there has been a significant decline in the availability of family care in the past several decades. This change can be traced to several demographic and social trends: improved housing availability has permitted young people to have their own houses separate from their parents; the family size has declined; young people now migrate more often and further in search of employment opportunities; and many middle-aged women have returned to full- or part-time employment. There is therefore a greater need for external programmes (often government-funded or combined with private arrangements) to support informal care. Although elderly people are more likely to live independently than ever before, the family continues to provide the bulk of their ongoing support despite a heavier burden on family care-givers. In some developed countries, despite the strenuous efforts of the government to preserve family care of the elderly, the proportion of institutionalized elderly has increased significantly.

There is a rapid increase in women entering the labour force throughout the world. Nevertheless, women still provide most of the informal long-term care. In some countries efforts are being made to compensate family members financially for the care they provide to the handicapped or the elderly in the form, for instance, of direct cash payments or the extension to family members of the attendance allowances available for the handicapped in need of outside help. More indirect means of compensation may also be used, such as crediting relatives with the time they have spent in the care of handicapped or elderly persons for the purpose of calculating their old-age pension. It is not clear that this serves as a major incentive to attract family members to give such care, but equity considerations are relevant here as well as the importance for the community of recognizing the value of family care.

A growing problem in developed countries is the availability of a cadre of persons, whether family members or paid personnel, able to provide an adequate level of personal long-term care for the elderly.
4.2.2 Developing countries

In developing countries, the existence of an extended kin network in which parents, children, uncles, aunts, and other relatives are in regular and frequent contact with one another is a fundamental part of the traditional welfare system. One major common feature in these societies is the family’s collective responsibility towards all household members, old and young, strong and weak. Caring for the elderly, the handicapped, and the young is an accepted and shared responsibility of all family members. The most important attributes of the “extended family” in sustaining this collective responsibility are the interactions among family members and the roles and responsibilities assigned to different age groups. The work roles assigned to family members stimulate social interaction and a feeling of both economic and psychological worthiness among the elderly members.

The family continues its traditional role of caring for the elderly. In fact, the family remains the only source of support and long-term care for the elderly in most developing countries.

Extended kin networks are observable in a majority of the developing countries, but the “extended family” as a traditional household unit is generally disappearing. The advent of modernization, industrialization, and urbanization results in extended family households being found mainly in rural areas. The well-known symptoms of modernization described for the developed countries are now also being exhibited in developing countries, including the negative symptoms of alienation and cultural disorientation.

Migration and urbanization have contributed to the undermining of traditional living arrangements and the destabilization of the traditional values which sustain the elderly in an age-integrated family system. The young and able-bodied with some schooling migrate to cities and large centres in search of jobs, leaving behind the elderly, who become increasingly isolated in the rural areas. If the elderly are brought to the urban centres there are problems of overcrowding and poverty.

In view of these developments, new service infrastructures will be required unless family support is strengthened. They will become substitutes for, or expansions of, the traditional informal support systems. Given the competing demands from a large youth population and the restricted economic resources, the feasibility of
creating new systems of care for developing countries may be questioned.

The policy options being considered place the main emphasis on strengthening both family resources and the motivation to continue caring for the elderly. These include policies for financial support in the form of allowances, indemnities, subsidies, and tax relief to families caring for the elderly. In some countries, provisions for establishing family-based, income-generating projects\(^1\) are being discussed, together with proposals for assistance in the acquisition of multi-generation housing units and for "day centres" to provide companionship, institutional support, elementary medical care, recreational facilities, and continuing education.

Other types of benefit that could be supportive to families with elderly relatives are rent discounts, as well as discounts in the prices of medicines and basic foods. There will always be those who need institutional care and their needs will have to be addressed. Voluntary organizations can play a crucial role in this respect. Developing countries should guard against age-specific programmes in planning for the welfare of the aging; care of the elderly ought to be an integral part of each country's health care strategies for the population as a whole. The need for individual national studies cannot be overemphasized.

### 4.3 Community and institutional long-term care

Much of the confusion in discussing long-term care derives from an inappropriate definition of the proper approach to effective care. Community care has been incorrectly proposed as a substitute for institutional care rather than as a viable part of total care, in its own right. This so-called "alternatives mentality" has led to much unprofitable work. Because most older people much prefer to remain in the community as long as possible, community services are more correctly viewed as the first approach to providing services to those who need care. Some persons will require a more structured environment but should not lose their eligibility for community services. The emphasis on substituting community care for institutional care may distract attention from the critical issue of

\(^1\) Income-generating projects aim to supplement family income through self-help. Examples of such projects include growing vegetables and raising poultry and pigs at home; cottage industries for the processing of food for local consumption; and weaving, dyeing, and other local crafts.
ensuring a high quality of care in institutions. Any efforts to use community care in lieu of institutional care must be directed very precisely to those who are truly at risk of entering an institution. To date, we have been unable to identify “accurately” those at greatest risk of institutionalization early enough in the process of debilitation to demonstrate cost-effective intervention. In the United Kingdom, the absence of family support and the presence of dementia rather than physical disability are among the risk factors for institutionalization. It seems that the tolerance of informal care networks is less for mental than for physical disability, partly because of the continuous or unpredictable care needs of the demented.

4.3.1 Special circumstances

Particular attention needs to be given to providing culturally appropriate services to ethnic minorities. A special case results from migration; both migrants and those left behind may be socially isolated and bereft of family support.

4.3.2 Assessment

Although community care is preferable in most cases, it is misleading to view all institutional admissions for long-term care as inappropriate. Comprehensive multidimensional assessments of functional capacity can determine the levels and types of care needed, but the most appropriate location of care can be determined only by a thorough assessment of the patient’s own resources, the capacity of the informal support system, and the formal care system. In some instances, the use of geriatric assessment units or teams is the most efficacious manner of performing such assessments.

Caring for a dependent person can impose great hardship on the family and the informal support system. There is no clear-cut line of distinction between what care can and should be provided in the community and what is best provided in an institution. Careful attention must be paid to avoiding a person being maintained in the community when it is not in the best interest of either the older person or the support system. Sometimes other combinations of service are possible, including respite care, day care, or even care in a day hospital. The degree of involvement of the patient, the
informal support system, and the formal care-givers varies according to the service programme.

4.3.3 Demand for institutional care

The rates of both institutional and community-based long-term care vary among the developed nations and according to type of care. Definitions of types of care are equally variable, making accurate comparisons very difficult. Developing countries face special problems in developing long-term care programmes because of shortages of resources. Because the supply of community services can be more readily expanded and contracted to meet needs and to respond to financial resources than can institutional care, developing countries should be discouraged from developing long-term care institutions. The evidence suggests that availability of institutional places is a major determinant of use. Developing countries are still in a better position than the developed nations to gain and retain control over the use of institutional care. However, there is already evidence of increasing demand for institutional long-term care in some developing countries.

4.3.4 Case management

With the increasing complexity of managing health and social care, mechanisms for matching client needs and available resources will be necessary. This task is often described as case management or coordination and can take many forms. At one end of the continuum, the case manager acts as a gatekeeper, assessing clients' needs and distributing resources to maximize the informal system of maintenance at the lowest cost. At the other extreme, the case manager acts as an advocate for the patient, procuring as many appropriate services for the patient as possible.

In the future, services for the elderly are likely to the more flexible and to be separated into their component parts, so that they may be "packaged" to meet the needs of individual patients. As the patient's condition changes, the services provided can be modified. To a greater extent, services will be brought to the patient rather than the reverse. Special pains must be taken to avoid an artificial distinction between the technical quality of care and concerns over the "quality of life". Long-term care programmes must recognize both aspects,
because the attention to the quality of the environment is an essential part of care.

4.3.5 Housing

Housing programmes, including investment in housing stock, in repair and maintenance, in rent or tax subsidies, and in supportive services, can provide community options that are both preferred by older persons and capable of precluding institutionalization. Policies that support such programmes are necessarily intersectoral in that they must bridge social, health, and housing policies and involve local and often national governmental authorities. Appropriate policies will often involve both the public and private sectors in providing the necessary options. Without adequate and affordable housing that makes it feasible to provide supportive services, e.g., shopping, meals, transportation, and surveillance, the elderly will become inappropriate consumers of long-term care services, e.g., home care, day care, nursing home care, or even hospital care.

The design of housing to be used by elderly people requires careful attention to the problems of mobility and cognition that some of them may suffer from. While the conventional approach to the housing difficulties of older people is to provide special accommodation for them, this has a number of disadvantages. There are difficulties in administration, for example, in ensuring that high-dependency housing is available at short notice for people who become disabled, and there are the undesirable effects on such patients of having to give up their original homes at a time when they are rendered particularly vulnerable psychologically owing to their new disability. On the other hand, if older people move into high-dependency housing before they need it, an expensive resource is not being employed appropriately. The alternative strategy is to ensure that all housing is of a design that would be practicable, perhaps with minimal and low-cost adaptation, for the needs of an old person who became moderately disabled while living there. This strategy would foster the home care of disabled people by letting them remain close to the social networks they have built up over years of residence.

4.4 Introducing new techniques for the care of the elderly

When considering what resources should be made available to the elderly, some countries have established formal or informal limits as
regards their eligibility for certain expensive services. Some have criticized this approach of reserving certain services for the young as being weighted too heavily towards future social productivity. Moreover, in the light of the wide variation in response to treatment of the elderly, chronological age, while being administratively attractive, may not be appropriate as a rationing criterion.

4.4.1 Criteria for assessing the efficacy of health care

The criteria originally used to study the efficacy of periodic health examinations can be profitably applied to judging the efficacy of all health interventions. These criteria place the greatest weight on the results of randomized clinical trials, then on evidence from well designed cohort or case-control studies, and from comparisons between places with and without the intervention or over time, and finally on the opinions of respected authorities. As an alternative, some have argued for criteria based on demonstrated efficacy of the health intervention within the designated age group.

Since the publication of the report of the WHO Expert Committee on the Planning and Organization of Geriatric Services, the elderly have been included in several randomized controlled trials. In some cases, specific trials on the elderly have been conducted, for example in the case of hypertension. In a growing number of instances, the importance of including elderly subjects in trials has been recognized. This reverses the trend which excluded persons over the age of 65 years because they were felt to be too complicated to assess. In such cases, the failure to establish the efficacy of an intervention in the absence of data should not be misinterpreted as evidence for the lack of such efficacy. Elderly persons should not be denied services on the basis of such gaps in information. Additional efforts should be directed towards specific efforts to include older persons in future clinical trials of interventions that might be useful for them. Age alone should not be a criterion for exclusion from clinical trials.

4.4.2 Potential bias against the elderly

An allied problem occurs in endeavouring to measure the effects of alternative methods of treatment. Health and social care policies are concerned with increasing the length and improving the quality of life. In attempting to measure the way in which alternative
treatment regimens achieve these objectives, the concept of “quality of life years” has been developed. Use of this measure in cost–benefit analyses that compare effectiveness in different groups discriminates against the elderly and other groups with shorter life expectancy.

Some would recommend that the elderly be excluded from benefiting from expensive new techniques. Modern technology has contributed a great deal to the improvements in diagnosis through non-invasive methods, to the provision of more appropriate treatment, and to the quality of life of elderly people. Each individual patient must be treated on his or her own merits and there are no grounds for the exclusion of any group from treatment purely on the grounds of chronological age.

Predictions about the impact of new techniques on the care of the elderly vary widely. Some forecasters consider that major breakthroughs by the turn of the century are unlikely; they anticipate that the significant changes will come as a result of alterations in the level of informal support and the subsequent development of new patterns of care organization. Others foresee that major investments in new technological developments have the potential for use for the benefit of the elderly.

4.4.3 Ethics

The elderly have a right to have a say in choosing among options for their treatment and care, no less than young people. But special attention needs to be given to people who, owing to disease, are not capable of making their own decisions. In most countries, many ethical matters related to the care of the elderly, particularly those concerned with dying, are so much a part of the social and cultural pattern that they can be decided only by the appropriate national bodies.

4.5 Health promotion, disease prevention, and disability postponement

There has been great enthusiasm of late for the concept of promoting “wellness” among the elderly. Those recommending attention to diet and exercise claim great benefits in terms of improved function and enhanced well-being. Unfortunately there is very little evidence to support this enthusiasm.
One potential problem lies in confusing interventions that affect risk factors with interventions that affect risk; they are not synonymous. In some cases, the risk factor may be associated with permanent changes in the organ at risk. For example, diastolic hypertension is a well known risk factor for heart disease and stroke, but its effects may be due to changes in the vessel wall already in place. Lowering the blood pressure may thus have less effect than measures that lower the risk of thrombosis.

Recent data from Sweden describe impressive improvements in the physiological performance of successive birth cohorts of 70-years-olds, separated by only five-year birth intervals. Although these reports suggest that such improvements are the result of alterations in life-style, it has not yet been demonstrated which life-style changes produce the desired ends.

4.5.1 Primary and secondary prevention

A number of areas of potential preventive action for the elderly have been identified. Some involve primary preventive strategies, others screening. The former include immunization for influenza and pneumococcal pneumonia, and smoking cessation. Elderly cigarette smokers can markedly reduce their risks of lung cancer and heart disease by stopping smoking even when they are in their 70s. Screening tests are appropriate if they have a reasonable chance of uncovering medically and economically treatable conditions. Thus vision screening for cataracts can be very helpful. So, too, can audiometry uncover remediable conditions. Certain laboratory tests such as thyroid screening can uncover treatable pathology. Other candidates for secondary preventive efforts are screening for breast, cervical, and colorectal cancer, oral examinations, detection of alcohol abuse, attention to nutritional status, evaluation of blood cholesterol levels, and accident prevention. These areas deserve further investigation to ascertain their potential benefit for the elderly, but specific trials are required before they can be broadly advocated.

As discussed elsewhere in this report, the problem of preventing fractures is an excellent example of the complex nature of preventive activities in the elderly. The growing body of information about osteoporosis suggests that the judicious use of estrogens can retard the onset of the condition with acceptable risks, given appropriate supervision. Exercise may have a useful, if modest, contribution to
delaying bone loss. It also seems to improve the sense of well-being and for this reason alone it should be encouraged. Improvement in osteoporosis can reduce the risk of fractures, but other factors contribute to this problem. For example, hip fractures are often the result of falls (occasionally the cause as well). Such fractures occur more often in the presence of osteoporotic bone. Preventive strategies can be usefully directed towards reducing the propensity to fall by altering the environment to remove hazards and by identifying and treating correctable causes of falling, or towards teaching older people how to fall more safely.

4.5.2 Preventing iatrogenic disorders

More careful medical attention may prevent the onset of certain diseases or, if disease occurs, slow the transition to disability. Some of this prevention requires care from a sustained source over time to observe subtle signs of change against what is often a busy background of symptoms associated with multiple chronic diseases. With proper attention the care-giver will often notice early signs of degeneration that would otherwise be dismissed as unimportant. Preventive work designed to reduce disability must include attention to the patient’s wide range of needs. Sensitivity to such problems as depression, changes in speech and hearing, cognitive impairments, and incontinence can lead to timely intervention.

4.5.3 Postponement of disability

Disability can be reduced even after a chronic problem has developed by careful attention to structuring the patient’s physical and social environment so as to promote autonomy. Physical modifications of various types can make things more accessible and manageable, but more subtle effort is required to establish a rehabilitative climate where patients are encouraged to attempt as much as possible on their own. There are strong pressures from regulatory agencies and those concerned with the patient’s safety to encourage care-givers to do things for patients instead of encouraging autonomy.

4.5.4 Special concerns

Many preventive strategies that benefit the elderly involve efforts best directed at younger groups, who will then be in better health at
the time they enter old age. This observation means that resources that benefit the elderly may, in time, be redirected towards other age groups. It is also useful to appreciate that investments in preventive activities are often difficult to sell to governments more concerned with short-term events than with those that may not yield results for some years to come.

At the same time, there is some danger in withholding preventive services from the elderly on the grounds of lack of demonstrated benefit. In a sense, the elderly are the victims of discrimination. They have been systematically excluded from most trials of prevention. Thus the absence of evidence should not be confused with the inability to find such evidence when it has been sought.

5. PERSONNEL, EDUCATION, AND INFORMATION DISSEMINATION

5.1 Estimates of personnel needs in the health care of the elderly

5.1.1 Projections

Useful estimations of future personnel needs should be based on present and expected mortality, morbidity, and disability rates; on present and expected service utilization; and last but not least, on the social definition of desired care for the elderly and their families. Estimates of requirements are derived from calculations based on the frequency of disease and disability in various subgroups disaggregated according to variables such as age, sex, and geography (e.g., urban as compared with rural). The subgroup-specific rate is then multiplied by the estimated number of persons expected in that subgroup at some point in the future, on the basis of demographic forecasts.

This approach relies on several assumptions: (a) that the number of persons alive in the specific subgroup can be correctly predicted; (b) that the variables describing the subgroup are sufficiently stable to permit rate extrapolations; and (c) that the conditions of caregiving will be similar in the future.

These assumptions are not always justified. Although the number of persons seems safely predictable once one knows the size of the adult cohort, there is considerable room for error. Earlier population projections have been erroneously low because of
unexpected survival of the elderly. The area of greater doubt is associated with expectations of patterns of morbidity. At present, there is great uncertainty about whether the improvements in survival are associated with greater or less morbidity and disability among the survivors. Arguments can be made for both positions. Survival of persons who would otherwise have died may increase the number of the chronically ill elderly. Conversely, basic improvements in health that contribute to improved survival may also lead to less morbidity and less disability.

Similar sources of variance can be expected in using provider/population ratios for one period to apply to another. Differences in the way care is delivered are likely. Observations within developed countries suggest that changes in payment for and/or supply of services, as well as new technologies, can substantially change the patterns of practice.

5.1.2 Models of care

Personnel planning is not only a function of the feasibility of accurate predictions; it also assumes some consensus in a given society of what kind and level of care is desirable and should be provided to a given population segment. There is substantial variation in both the resources different countries have at their disposal, and the basic assumptions of what a society owes to its citizens and where priorities are set. Manpower planning is thus a function not only of wealth, but also of "ideology". Given these differences all health personnel will have to be prepared to care for the elderly. The highly qualified personnel, such as geriatric specialists in medicine, nursing, social work, physiotherapy, and occupational and speech therapy, as well as those educated in the social, behavioural, and biological sciences, require long lead times to prepare. It seems that developing and developed countries alike will require a certain number of such specialists in each field to teach generalists and less well prepared personnel. They are also vitally needed to create the knowledge base crucial to progress in the field.

5.2 Education of health professionals

The curricula of all health professions being trained in care of the elderly must be "gerontologized", by the addition of aspects concerning aging to all basic subjects, e.g., physiology, psychology,
pharmacology, and sociology. Health professionals require an understanding of demographic factors and of age-related changes, as well as an appreciation of the mechanisms of disability in old age.

5.2.1 General concepts

Primary care providers need to learn more about how diseases present in older people and how such patients respond to various treatment approaches. They must be sensitive to the often difficult distinction between remediable problems and those that must be approached prosthetically. Today’s primary care practitioners need exposure to positive models of geriatric practice. They should be able to identify and interpret age-related changes, and need an accurate picture of the life expectancy of their older patients. They should be sensitive to the increased variation associated with aging. Misconceptions about the influence of age on performance must be dispelled.

5.2.2 Clinical skills and knowledge

Future practitioners will require specific skills and knowledge to treat the elderly. They must be taught how to assess a patient’s functional capacity and to plan an environment that can maximize remaining function. They should be comfortable managing the major problems that confront the elderly such as dementia, incontinence, and instability. They will require special knowledge of geriatric pharmacology, as well as practical information on how to improve drug-taking behaviours among the elderly and to reduce “polypharmacy”. Learning by experience is as important as the acquisition of theoretical knowledge and information.

Prevention and management of disability must be understood within both community and institutional settings. The principles of rehabilitation and self-care, with emphasis upon the elderly retaining maximum choice and control, are basic to developing intervention skills.

5.2.3 Attitude development

The sense of empowerment in approaching the health care of old people will promote more positive attitudes towards elderly patients. Creative learning activities must be designed to motivate students
and to encourage them to become aware of their own feelings in regard to aging, dependence, and death. Achieving such self-awareness is an essential part of the educational process and a prerequisite for effective functioning in care of the elderly. An understanding of the roles and skills of the various team members (physicians, nurses, rehabilitation therapists, social workers, and others) is an objective related to experiential learning in the field settings. The best available services and the best possible role models should be chosen in planning educational experiences in which the old person is considered the most important teacher in his or her own right. Every learning activity demands feedback and reflection to maximize the benefit to the student, whether a basic or an already experienced practitioner. Practical materials such as checklists, assessment tools, care plans, and records can be helpful in structuring learning, as long as their use does not become rote exercise.

5.3 Support for informal care

Eighty per cent of care for the elderly is informal. The efforts of the disabled elderly themselves and their informal carers need support and information from professionals if they are to be successful.

5.3.1 Self-care

Self-care programmes for old people and their families are a feature of the services being established in some developing countries. In Mexico, for example, self-care for old people is part of a national social programme for the development of the family, and a self-care manual has been published (9). One of the most useful features of manuals of this kind is a listing of the voluntary and statutory resources that are locally available.

5.2.3 Informal carers

Among the common problems with which informal carers have to cope is urinary incontinence, which may be experienced in some degree by as many as one in ten elderly people in the community; faecal incontinence is also more common than is generally realized. Dementia afflicts about 6% of people aged 65 years and over.
Although the behavioural problems associated with dementia are relatively poorly tolerated in the community, the great majority of demented patients remain in their own homes. Some 15–45% of persons aged 70–74 in developing countries have problems with mobility.

Care and assistance for the people living with these afflictions in the community are provided by family, friends, and neighbours—the informal carers—who usually receive little or no training. They are, moreover, rarely the target group for the learning materials produced by professionals. The materials that do exist are mainly produced by voluntary organizations or family support groups. Maintaining the morale of informal carers, who are typically middle-aged or even "young elderly", is greatly aided if they become more confident in their tasks as a result of being better informed about the nursing roles that they are performing. What these people particularly appreciate is practical information on how to manage everyday problems. In developed countries, libraries of videotapes that teach specific care skills are being accumulated; in some countries, visiting nurses train caring spouses at home.

Carers are not just passive recipients of professional advice. They have much to teach professionals about coping with the conditions that confront them daily. This first-hand experience can be exchanged through family support groups such as diabetes, and Parkinson's or Alzheimer's disease groups. Indeed these groups are often the only source of management information for family carers, and their popularity is growing. More experienced groups ensure that their members receive sound scientific information in the field through independent scientific advisers. This practice helps to avoid exploitation of afflicted families by those making claims for remedies of unproven efficacy. Such groups are an important ally for health professionals. In addition, they often play an advocacy role to press for increased public resources for services and research, sometimes with powerful effect.

The information made available to informal carers should not be limited to the disabilities of older people. "Wellness" checks and clinics, practical exercise, and good nutrition are features of several programmes that are organized typically by voluntary organizations and which generate printed material, in appropriate languages, well illustrated and in large type.
5.4 Public attitudes and the mass media

5.4.1 Public attitudes

There is incomplete but important evidence to suggest that in several areas of the world support for elderly people is strong. In an international comparative study of the attitudes of young people, carried out in 1983, in 11 countries including three developing countries, the majority of respondents indicated that the support and care of aged parents were their responsibility. In Japan, more than half of elderly people bedridden for longer than six months were being cared for in their own homes by relatives living with them (10). In the United States of America, several surveys have shown support for maintaining services to dependent elderly persons, although there is waning support for continuing financial assistance for all elderly people, many of whom are perceived as being financially well off. In a modest poll conducted on a sample of elderly persons in five developed countries (Australia, Canada, New Zealand, the United Kingdom, and the USA) several years ago there was general satisfaction with the medical care received, although those in the USA expressed more concern about issues of cost and access.

There have been numerous claims about bias against elderly persons, often termed “agism”. Misinformation can be classified into three general categories: (a) a mistaken belief concerning the homogeneity of the elderly, when in reality the elderly are more diverse than are the young, (b) a misconception that support was more frequently provided by the extended family in the past, when it appears that progeny were more likely then to move in with their parents than to take them into their homes, and (c) the persistent belief that family care has diminished.

5.4.2 The mass media

One source of influence on such beliefs is the mass media. From the use of specific words conveying positive or negative connotations about aging to the way older persons are portrayed, the media can shape opinions. As the media become more pervasive, they become more powerful.

The media can be used in several capacities. They can provide information to elderly people, to educate and inform them about common problems of aging, and techniques to be followed to
improve their health status. The media can also provide information about elderly people. This information can be both direct and indirect. Direct information refers to health-related information designed as health education, as well as to information provided as part of news material. One consequence has been the rapid dissemination of scientific information, often based on fragmentary and premature data. These stories may create confusion and a loss of confidence in scientific pronouncements in general, or over-optimistic expectations about the benefits of therapies. As a result, they can diminish the credibility of health education efforts. Some information about aging-related events may be accurate but discouraging; stories that dwell on the burdens associated with aging, for example, may create a quite negative view of aging and reinforce the myth that all elderly people are dependent.

The way elderly people are represented in the media can greatly affect the public’s perception of aging; for example, the specific choice of words used to refer to an older person can convey a strong negative connotation. In the developed world there has been a noticeable shift in the portrayal of older persons in the media, with the aging of the population. Whether motivated by a new sympathy or a growing market, older people are now shown more often, and in a more positive light. The incorporation of positive role models for older persons and their progeny in dramatic stories may be a very effective way of teaching the public about aging and how to respond to it. It remains to be seen whether such a change in programming will produce perceptible differences in attitudes towards the elderly.

Because the costs of employing the major public media are very high, efforts may be appropriately directed towards the resources of commercial enterprises, where these can further the interests of elderly people. However, there are occasions when commercial interests will not coincide with those of elderly people. For example, some products may be marketed that are not efficacious.

At the same time there is concern in some developing countries that the media’s portrayal of older persons may be negative. If older persons are satirized as being associated with an outdated culture, negative feelings are encouraged.
5.4.3 Events to honour elderly persons

In some countries the elderly are specially recognized and honoured. In China, Japan, and Thailand, for example, there are national holidays specifically honouring older persons. These are special occasions to show respect for the elderly and contribute to a positive image for older persons.

6. BALANCE BETWEEN IMPROVING PENSION INCOME AND PROVIDING SERVICES

6.1 Pensions and health care

The relationship between old age pensions and the health and social services for the elderly should be considered in the broader framework of the existing arrangements, in a given country, for meeting the social security income needs and the health needs of the population as a whole. Things are obviously different for the elderly according to whether social security income provision in the country is still limited, for instance, to a few provident funds that administer the savings of a very small segment of the active population, or has reached the stage where elaborate, multi-layer systems ensure extensive or even universal coverage through huge transfers of funds from the active to the non-active groups of the population.¹

¹ The social security schemes that have developed in the market economy countries now cover the great majority of the population. Some countries grant a so-called universal, flat-rate pension to all residents who have reached a certain age, including inactive persons, subject only to the condition that they have lived for sufficiently long in the country. These universal pension schemes are financed essentially by taxation, while other schemes, using social insurance techniques, are financed by contributions from employers and employees — to which a government contribution may or may not be added. It is clear that the coverage is more complete in the case of universal systems than with social insurance systems on a contributory basis that cater basically for the working population. Almost all the countries with flat-rate pension systems have now added to the basic scheme a second and sometimes a third tier of social security provision in which benefits are usually related to the individual’s earnings.

The social security schemes in the socialist countries cover all categories of workers, with very few exceptions. They are largely financed by the state, contributions being also required from the employers and, in some countries, from the workers.

The most marked contrast between developing countries and industrialized countries relates to the categories of the population that are covered by social security schemes. Civil servants and military personnel are among the first to be covered, and
Similarly the situation of the elderly varies significantly depending on the type of organization that exists at national level for providing health care to people and for covering its cost — whether there is a national health service, or compulsory sickness insurance scheme, or the possibility of voluntary, optional arrangements only.  

6.2 The elderly are disadvantaged

Whatever the broader context, the elderly are generally in a less favourable situation than the rest of the population as regards the coverage of their health care costs. One pertinent factor is obviously that older persons are large “consumers” of health care whereas they have in most cases a lower capacity to contribute — a problem that tends to become more acute with advancing age, and which is worsened in contributory systems by the fact that, when people are not working, there are no employers’ contributions available. Apart from the solution adopted in some countries to this latter problem in the form of contributions paid to the sickness insurance schemes by the old age insurance schemes on behalf of their pensioners, much progress has been made in recent decades in maintaining the standard of living of retired persons through more effective pension schemes. However, the deteriorating ratio of income to the cost of health care for the very old remains a problem to be solved.

there are some countries in Africa and in Asia in which they are still the only groups enjoying retirement benefits. Social security schemes cover the wage earners in the modern sector of the economy, and as a rule legislation concerning them is very broad in scope, but gradual in its application. Administrative difficulties explain why the extension of application is frequently slow and also determine the lack of protection for rural workers, self-employed persons, and domestic personnel in numerous developing countries.

There are a few English-speaking countries in Africa, Asia, and the Caribbean where social protection of older persons is given by provident funds, an elementary form of social security which simply represents compulsory individual savings — the period of saving terminating with the payment of a lump sum corresponding to the contributions paid plus interest.

1 National health services — to be found for instance in the United Kingdom and in most socialist countries — are universal schemes in which it is one and the same body that finances and dispenses care. Compulsory health insurance schemes, e.g., in France, Federal Republic of Germany, and the Nordic countries, make entitlement to medical care (or the reimbursement of expenses incurred) subject to the payment of contributions by the insured persons and, in most cases, by the employers. In countries like Switzerland and, for the larger part of the population, the United States of America, health schemes are still optional.

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6.3 Pension income versus service programmes

While an adequate level of pension is essential, it is also true that the needs of older people are numerous and that the response to them should reflect their diversity. Thus, if old age tends to reduce the autonomy of individuals and to make them more dependent on various services provided by the community, the existence of such services should not be taken for granted. The availability of those services may become more important for the well-being of those concerned than the level of their income. It is clear, therefore, that cash payments which the beneficiaries are free to spend as they wish are not necessarily the best way in which the resources available to meet the needs of older persons should be used; and that a concern for the optimum use of resources can in certain cases lead one to allocate them on a different basis.

Social security benefits for specific purposes make it possible to direct the consumption of health care in a manner that the community—or the competent authorities—see as preferable. Such benefits may be a powerful stimulant or, on the contrary, a powerful brake to the introduction of new technologies. This is why, in a number of industrialized or developing countries, social security agencies have been called upon to use part of their resources in the form of services—as a contribution to the development of the health infrastructure. Their contribution consists in building and administering a variety of establishments, or in subsidizing outside institutions. Specific benefits, or service programmes, actually appear to be in the best interests of the individuals concerned to the extent that they would not otherwise have at their disposal the health services they need, or would have less effective ones.

6.4 Responsibilities of the social security system

In countries where social security systems are divided into several branches, including sickness insurance and old age insurance, interventions regarding the health of the elderly normally fall within the responsibility of the sickness insurance branch. However, the old age insurance schemes may also have a direct contribution to make, particularly — according to the experience of a number of countries — in assisting with the provision of non-medical social services that are part of comprehensive programmes of care for the aged, including community care and home care. The pension schemes also have an indirect, but nevertheless powerful, influence on the health
of the elderly, not only because of their role in determining the level of income of the individuals concerned, but also because of the importance of easing the transition between working life and retirement. Rigid provision for withdrawal from the labour force at a prescribed age may adversely affect the health of the elderly. In this respect, the progress made in recent years towards the development of the so-called flexible—or gradual—retirement schemes should be especially welcomed.

7. CONCLUSIONS AND RECOMMENDATIONS

The recommendations that follow are timely, since not only are developing countries beginning to plan health and social care for their elderly citizens, but even industrialized countries are restructuring their health and social services for older people (Annexes 2 and 3).

7.1 Planning services

1. The elderly should be recognized as a specific group for the purposes of planning services, although many of these services can and should be provided within a broader context. A gerontological approach, which fosters the effective combination of social and health services, is to be encouraged. At the same time, it is important to recognize and respect the individual variation among the elderly.

   (a) Meeting the needs of the rapidly increasing numbers and proportion of the elderly will often require collaboration between several sectors of government, health and welfare professionals, and voluntary agencies.

7.2 Primary care

2. Health care services for the elderly need to be fully integrated with primary health care.

   (a) Primary health care approaches directed to the elderly will need to be adapted in individual countries to reflect the level of socioeconomic development, the structure and organization of health services, and the cultural characteristics of the country concerned.

   (b) In both developed and developing countries, the majority of elderly people will continue to be treated by primary care
practitioners. Health of the elderly should be an identifiable element in community-based programmes at every level, including the primary care activities of community health and social workers, public health nurses, primary care physicians, etc.

(c) These primary care workers should be educated in gerontology and geriatrics to a level where they can recognize and deal with common problems in the elderly.

(d) All primary care workers should be encouraged to assess functional capacities (described in section 2.4), as an integral part of their care of elderly persons.

(e) Geriatric specialist services, provided by multidisciplinary teams capable of comprehensive assessments, should be available to support these primary care workers, but in developing countries this service must be balanced with the need to expand basic primary care resources.

(f) Even in developing countries, geriatric expertise is needed as an educational and research resource.

3. Primary care activities for the elderly should emphasize the identification and treatment of common remediable conditions, such as depression and urinary and faecal incontinence.

(a) Because hearing and vision problems are common and often remediable causes of dysfunction and suffering, they should be important concerns of primary care. Untreated sensory deprivation also contributes to some forms of mental ill-health.

7.3 The family

4. The informal support system, most often the family, remains central to the care of the elderly. The primary function of formal care is to help the informal system maintain older individuals in the community whenever feasible.

(a) Special emphasis should be given to programmes that assist the family in its traditional role of supporting the elderly.

(b) Frail elderly persons without family support will often require more formal support systems to permit them to remain in the community.

(c) Where traditions of respect for elders are under threat owing to cultural change, efforts should be made to reinforce and foster them, especially among the young.
7.4 Long-term care

5. Institutional long-term care services should be provided only after other alternatives have been competently explored. Necessary institutional services should be provided in as homely an environment as possible, which preserves the autonomy of the resident to the greatest extent possible.

(a) Efforts to minimize the use of long-term care institutions will depend on a policy of controlling bed supply.

(b) Persons with dementia often have special needs for care and safety. Institutional services for them should be designed flexibly, and incorporated into more general long-term care units where feasible, but the importance of special units for those who are disturbing other residents must be recognized.

(c) The elderly themselves should have an active voice in decisions about services provided for them.

7.5 Health promotion, disease prevention, disability postponement

6. Health promotion and disease prevention play important roles in preventing disability in the elderly.

(a) Efforts to prevent disease in younger persons will mean that they will be healthier when they enter old age.

(b) In the elderly, there is good evidence to support primary preventive efforts and greater efforts at case-finding. Smoking cessation and hormone replacement therapy to prevent osteoporosis are examples of the former; the latter include greater attention to problems such as depression and incontinence and difficulties with vision and hearing as part of primary care.

(c) An important component of health promotion in the elderly consists of efforts to minimize the transition from disability to handicap by careful attention to functional problems.

7.6 Education

7. Geriatric and gerontological information should be a part of the education of all health professionals. Education should concern practical information and skills as well as theory. Special efforts should be directed towards creating positive experiences and role modelling, which exert a positive effect on the attitudes of the students.
(a) Gerontological content should be included in the basic training curricula of all health and social service professionals.

(b) Postgraduate educational opportunities in geriatrics should also be available.

(c) Continuing education, or in-service education, must be maintained to update knowledge and skills for all those working in this rapidly changing field.

(d) Training efforts for informal care-givers and orientation or in-service training for those paid persons who serve in a similar capacity (e.g., aides) should cover both the common problems of aging and means for dealing with them. Such efforts will both improve the quality of care and increase the satisfaction of the care-givers.

8. The mass media should be used more effectively to improve care of the elderly.

(a) Efforts should be aimed at explicit education about both conditions associated with aging and means for dealing with them.

(b) Special attention should be paid to the potential of the media for shaping the public's image of older people through the way they are portrayed. Efforts should be directed towards humanizing the image of elderly people's daily life.

7.7 Environmental design

9. In planning housing and public facilities (such as public transport), special care should be taken to use designs that will foster the independence of older persons.

7.8 Resource allocation

10. Resource allocation decisions, at either the collective or the individual level, should be made on the basis of need rather than chronological age.

(a) The needs of one group within the population should not be used as a basis for denying services to another group.

(b) The potential for improvement among older persons is often underestimated. Satisfaction is an important component of all measures of effectiveness.

(c) Countries should be encouraged to develop national plans for their elderly populations as part of a comprehensive and coordinated approach to policy formulation and programme development.
(d) Intersectoral support will be essential in achieving health goals for the elderly. Attention should be given to such factors as housing, environment, transport, rural development, and social welfare. Nongovernmental organizations may have a significant contribution to make by innovative approaches.

(e) The special needs of minority and immigrant groups in both developed and developing countries should be recognized in planning programmes for the elderly.

11. Welfare and health services should be closely coordinated. Economic status is an important determinant of health, and concern about lack of income and consequent inability to acquire essential services has been demonstrated in a number of national studies. Efforts should therefore be directed towards an adequate programme to maintain the income of older persons.

Different approaches should be considered and applied as appropriate to the needs and resources of individual countries. These include:

(a) Extending social security arrangements to broader segments of the population, with the ultimate goal of providing universal income security for the elderly.

(b) The provision of a range of concessions for the elderly themselves, and where appropriate their families, in such areas as housing, food purchases, transport, and medical and pharmaceutical services.

(c) The promotion of income-generating projects involving the elderly and their families so that they can achieve some degree of self-sufficiency.

(d) Varying the balance between cash benefits, such as pensions, and benefits earmarked for specific uses; the latter will encourage the provision of services.

(e) More flexible retirement benefits and employment opportunities to permit retirement at different ages.

7.9 Information dissemination

12. Innovative efforts throughout the world in the provision of health care for the elderly should be documented and the experiences and evaluation of such programmes shared. Both developed and developing countries will benefit from the sharing of such information.
7.10 Research

13. Efforts should be made to develop standard population survey instruments that measure the levels of physical and mental function and the degree of social and economic dependence of aged individuals in different cultural, environmental, and socioeconomic settings. Such instruments, used in conjunction with careful attention to sample design, would allow for the establishment of international data bases useful for the planning of health and other services based on the needs of the elderly and for the understanding of the aging process.

(a) WHO should consider setting up a global reference centre for study and trial protocols, and for survey instruments. Accessible data bases on health and aging should be created at national, regional, and global levels.

14. National and cross-national longitudinal studies should be carried out to study the risk factors for, and the implications for care of patients with, chronic diseases.

(a) Specific efforts should be directed to studies of means of intervention rather than to descriptive studies.

(b) Studies are needed to examine cohort differences, as a basis for predicting the morbidity of subsequent cohorts.

15. Health services research is needed in both developing and developed countries to compare the impact on health of different care delivery systems in a variety of contexts.

(a) There is a need to develop measures of effectiveness of health interventions that are free of bias from chronological age.

16. More research is needed to elucidate the etiology, pathogenesis, and therapy of disorders common in the elderly.

(a) Randomized controlled trials are needed to test the efficacy of agents proposed for therapy in the elderly.

(b) The elderly should be included in randomized controlled trials of new therapies and interventions proposed for the general population wherever appropriate.

(c) Randomized controlled trials are needed to test the efficacy of any care-giving intervention, whenever standards of good practice have not been established.

17. The efficacy of health promotion programmes, with special attention to strategies to change health behaviours, needs to be evaluated using the principles of randomized controlled trials.
whenever feasible. Further demonstrations of effectiveness in practice may be required after efficacy has been established.

18. Research is needed to clarify the impact of economic and demographic changes on the role of the family as a care-giver to its elderly. Special attention must be paid to the adverse effects of caring on the care-giver.

ACKNOWLEDGEMENTS

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REFERENCES

SELECTED READING

The aspects of the health of the elderly considered in this report are covered in greater detail, and in several languages, in the WHO publications and documents listed below. The language versions available are included in parentheses, under the abbreviations: A = Arabic; C = Chinese; E = English; F = French; I = Italian; R = Russian; S = Spanish.

1. Health and functional status


2. Progress in specific areas


3. Health care of elderly people

Drugs for the elderly. Copenhagen, WHO Regional Office for Europe, 1985 (A, E, F, I).


CHAMBERS, L.W. Quality assurance in long-term care: policy, research and measurement. Paris, International Centre of Social Gerontology, 1986 (Published on behalf of WHO Regional Office for Europe) (F; E out of print).
4. Health promotion, disease prevention, and disability postponement


5. Personnel, education, and information dissemination

Health care of the elderly: a review of training programmes in Asia and Oceania Region. Report on an international workshop of WHO and IAG. Copenhagen, WHO Regional Office for Europe, 1983 (E). (Unpublished document IRP/ADR 114; available from Health of the Elderly, World Health Organization Regional Office for Europe, Copenhagen, Denmark.)
CONTRIBUTORS OF BACKGROUND DOCUMENTS

The work of the Committee was greatly assisted by the contributors listed below, who prepared background papers on the topics specified. These papers are to be published by Oxford University Press in a volume entitled Improving health in older people: a world view.

The role of primary health care for the elderly.
Professor G.R. Andrews, Chairman, Primary Care and Community Medicine, School of Medicine, The Flinders University of South Australia, Australia

The role of the family in the care of the elderly in developing countries.
Ms N.A. Apt, Senior Lecturer and Coordinator, Social Administration Unit, Department of Sociology, University of Ghana, Ghana

The role of geriatrics in the care of the elderly.
Dr R.A. Barker (former Director-General of Health of New Zealand)

The introduction of new technologies and inventions for the elderly.
Professor H. Becker, Faculty of Social Sciences, University of Utrecht, Netherlands

Iatrogenic disorders among the elderly.
Professor F.I. Caird, Department of Geriatric Medicine, University of Glasgow, Scotland

The role of aging in establishing social priorities: an ethical perspective.
Dr A. Caplan, Centre for Biomedical Ethics, University of Minnesota, Minneapolis, USA

Prevention in the aging.
Professor A.M. Davies, School of Public Health and Community Medicine, The Hebrew University of Jerusalem, Israel
What is unique about the elderly?

and

Balance, falls and locomotion.
Professor J. Grimley Evans, Geriatric Medicine Division, Nuffield Department of Clinical Medicine, Radcliffe Infirmary, Oxford, England

Educating health professionals in the care of the elderly.
Dr C. Ewan, Associate Professor, School of Health Sciences, The University of Wollongong, Australia

The health and functional status of the elderly.
Dr G. Fillenbaum, Associate Medical Research Professor, Center for the Study of Aging and Human Development, Duke University Medical Center, Durham, North Carolina, USA

Progress in the biology of aging.
Dr C. Finch, Andrus Gerontology Center, University of Southern California, Los Angeles, California, USA

Social factors affecting the health of the elderly.
Dr M. S. Gore, Tata Institute of Social Sciences, Bombay, India

Hospice care for the elderly.
Dr D. Greer, Dean of Medicine, Brown University, Providence, Rhode Island, USA

The efficacy of dementia treatment.

and

Mental health of the elderly.
Professor B. Gurland, Center for Geriatrics and Gerontology, Columbia University, New York, USA

Home care and day care for the elderly.
Ms B. Havens, Provincial Gerontologist, Department of Health, Government of Manitoba, Winnipeg, Canada

Nursing-home care for the elderly.
Ms M. J. Hirschfield, Senior Lecturer, Sackler Faculty of Medicine, Department of Nursing, Tel Aviv University, and National Coordinator, Care of the Aged and Chronically Ill, Kupat Holim Sick Fund, Israel and Ms R. Fleishman, Brookdale Institute of Aging and Adult Development, Jerusalem, Israel

Pension programmes for elderly persons.
International Social Security Association, Geneva, Switzerland
Mental health classification systems in the elderly.
Dr A.V. Jablensky, WHO Collaborating Centre for Research and
Training in Mental Health, Medical Academy, Sofia, Bulgaria

Social policy for the elderly.
Professor M. Johnson, Department of Health and Social Welfare,
The Open University, Milton Keynes, England

Results of Delphi study of progress since 1974.
Professor R.L. Kane, Dean, School of Public Health, University
of Minnesota, Minneapolis, USA

Assignment in case management of the elderly.
Professor R. Kane, Division of Health Services Research and
Policy, School of Public Health, University of Minnesota,
Minneapolis, USA

The role of the family in developed countries.
Mr D. Maeda, Director, Department of Sociology, WHO
Collaborating Centre for Health of the Elderly, Tokyo
Metropolitan Institute of Gerontology, Tokyo, Japan

The efficacy of treatment of problems of vision.
Professor B. Nizetic, Epidemiology and Social Medicine
Laboratory, Free University of Brussels, Belgium

Osteoporosis.
Professor B.E.C. Nordin, Institute of Medical and Veterinary
Science, Adelaide, South Australia

The use of drugs among older persons.
Dr L. Offerhaus, Directorate-General of Public Health, Ministry
of Welfare, Public Health and Cultural Affairs, Netherlands

Economic factors influencing the health of the elderly.
Professor N. Ogawa, Population Research Institute, Nihon
University, Tokyo, Japan

The efficacy of treatment of stroke.
Dr T. Omae, Director, National Cardiovascular Centre, Osaka,
Japan

The efficacy of continence treatment.
Dr J.G. Ouslander, Assistant Professor of Medicine, School of
Medicine, University of California, Los Angeles, USA
The efficacy of geriatric assessment units.
Dr L. Rubenstein, Associate Professor of Medicine, School of Medicine, University of California, Los Angeles, USA

The efficacy of treatment of problems of hearing.
Dr G. Salomon, Audiology Department, Gentofte Hospital, Denmark (Reprinted from the Danish medical bulletin, which was published with the support of the Kellogg International Health and Aging Program sponsored by the School of Social Work at the University of Michigan and the Institute of Social Medicine at the University of Copenhagen, with financial support from the W.K. Kellogg Foundation)

Does better care produce less morbidity?
Professor R. Wallace, Department of Preventive Medicine and Environmental Health, University of Iowa, USA

Manpower needs in the health care of the elderly.
Dr T.F. Williams, Director, National Institute on Aging, US Department of Health and Human Services, Bethesda, USA

The role of aging in establishing social priorities: an economics perspective.
Mr K.G. Wright, Centre for Health Economics, University of York, England
Annex 2

THE ROLE OF INDIGENOUS HEALTH WORKERS AND POLICIES FOR CARE OF THE ELDERLY IN THAILAND

Who are the indigenous health workers?

In Thailand, two main groups of people can be classified as indigenous health workers—traditional medical practitioners and members of volunteer groups.

Traditional medical practitioners, most of whom are elderly women (usually traditional midwives), are still being used throughout rural areas.

The volunteer groups can be classified as

—village health volunteers,
—village health communicators,
—priests,
—teachers,
—border patrol police.

In each village, there is one village health volunteer supported by ten village health communicators. Their role includes health care of the elderly.

There are about 300,000 priests in the country. They are respected by most people, and besides performing religious duties, serve as indigenous health workers by distributing information and by counselling.

Teachers may also play a role, since knowledge of primary health care, including care of the elderly, can be passed through schoolchildren to their families.

In remote areas, village health work can be performed by the border patrol policemen.

In which areas are they utilized?

The areas in which the indigenous health workers are most active are:

—primary health care—prevention of diseases in the family, including the elderly;
—counselling services— for members of the family, for those who care for the elderly, and for the elderly themselves;
—distribution of essential information on health care, including care for the elderly.

**How can they serve the elderly?**

Indigenous health workers can be prepared to care for the elderly through formal education, or through special short training courses (1–2 days) offered in the towns or villages where they work.

**Special policies for the elderly**

On the basis of experience in Thailand, it is recommended that:

— all health services for the elderly should be integrated with the family health care services;
— the elderly should remain with the family and in the community;
— day-care centres should be organized in the community—either adjoining the child day-care centre or in the temple area.

**Goals for the elderly**

To make the best of their remaining years, it is recommended that the elderly should attempt to maintain:

— good mental and physical health;
— a proper participating role in the community as advisers;
— an adequate stable income.
Annex 3

THE ORGANIZATION OF HEALTH CARE FOR THE ELDERLY IN THE USSR

In the USSR, care of the elderly is being restructured to comprise a complex of medical and social measures.

1. At the local outpatient level, all elderly people living alone are registered with their local district doctor.

2. The local district doctor and the local social workers determine the health care needs of old people who live alone.

3. Health visiting services are being introduced at old people's homes and district social security departments. These services provide assistance to those who live alone, as instructed by the local district doctor and the local social workers.

4. Elderly people who would otherwise live alone are accommodated in residential homes on a permanent (or sometimes temporary) basis when necessary, if they so wish.

5. The duties of all (medically qualified) district nurses/health visitors of the Red Cross and Red Crescent Society include the medicosocial care of people who live alone.

6. It has been decided to give local trade union committees, at the enterprises (works or factories) where elderly people worked before their retirement, responsibility to oversee their welfare.

7. A housing construction programme has been adopted to provide accommodation for single elderly people or elderly married couples in a complex with special social and physical amenities.

8. A programme has been adopted to construct medicosocial centres (73 in the first stage), comprising permanent residential buildings (old people's homes), day centres, domiciliary care services for those living alone, and a social centre.

9. A general restructuring (perestroïka) of the health service is being undertaken.

(a) Senior specialists in geriatrics are being appointed to the ministries of health of all the republics, regional centres, municipal health departments, and district health departments in the large cities.

(b) Geriatric consulting surgeries are being introduced in the polyclinics (1 surgery per 100 000 adult population).
(c) Training programmes in all specialties relating to gerontology and geriatrics have been established for students at medical schools and institutes of advanced medical training.  
(d) Pensioners are given financial concessions when they obtain medicines from chemists.

10. Under the social plan, All-Union, Republic, and local councils of veterans of the Second World War and retired workers have been set up, and play an active part in the development of the state's policy in respect of the elderly.
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<tr>
<td>739</td>
<td>Epidemiology and control of African trypanosomiasis</td>
<td>127</td>
<td>16.90</td>
</tr>
<tr>
<td>740</td>
<td>Joint FAO/WHO Expert Committee on Brucellosis, Sixth report</td>
<td>132</td>
<td>18.90</td>
</tr>
<tr>
<td>741</td>
<td>WHO Expert Committee on Drug Dependence, Twenty-third report</td>
<td>84</td>
<td>9.90</td>
</tr>
<tr>
<td>742</td>
<td>Technology for water supply and sanitation in developing countries</td>
<td>38</td>
<td>7.90</td>
</tr>
<tr>
<td>743</td>
<td>The biology of malaria parasites</td>
<td>229</td>
<td>32.90</td>
</tr>
<tr>
<td>744</td>
<td>Hospitals and health for all</td>
<td>82</td>
<td>12.90</td>
</tr>
<tr>
<td>745</td>
<td>WHO Expert Committee on Biological Standardization, Thirty-sixth report</td>
<td>149</td>
<td>20.90</td>
</tr>
<tr>
<td>746</td>
<td>Community-based education for health personnel</td>
<td>89</td>
<td>12.90</td>
</tr>
<tr>
<td>747</td>
<td>Acceptability of cell substrates for production of biologicals</td>
<td>29</td>
<td>5.90</td>
</tr>
<tr>
<td>748</td>
<td>WHO Expert Committee on Specifications for Pharmaceutical Preparations</td>
<td>50</td>
<td>9.90</td>
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<tr>
<td>749</td>
<td>Prevention and control of intestinal parasitic infections</td>
<td>86</td>
<td>12.90</td>
</tr>
<tr>
<td>750</td>
<td>Alternative systems of oral care delivery</td>
<td>58</td>
<td>9.90</td>
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<tr>
<td>751</td>
<td>Evaluation of certain food additives and contaminants</td>
<td>57</td>
<td>9.90</td>
</tr>
<tr>
<td>752</td>
<td>WHO Expert Committee on Onchocerciasis, Third report</td>
<td>167</td>
<td>24.90</td>
</tr>
<tr>
<td>753</td>
<td>Mechanism of action, safety and efficacy of intrauterine devices</td>
<td>91</td>
<td>12.90</td>
</tr>
<tr>
<td>754</td>
<td>Progress in the development and use of antiviral drugs and interferon</td>
<td>25</td>
<td>5.90</td>
</tr>
<tr>
<td>755</td>
<td>Vector control in primary health care</td>
<td>61</td>
<td>9.90</td>
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<tr>
<td>756</td>
<td>Children at work: special health risks</td>
<td>49</td>
<td>9.90</td>
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<td>757</td>
<td>Rational use of diagnostic imaging in pediatrics</td>
<td>102</td>
<td>14.90</td>
</tr>
</tbody>
</table>
758 (1987) The hypertensive disorders of pregnancy
Report of a WHO Study Group (114 pages) ............................................. 16.—

759 (1987) Evaluation of certain food additives and contaminants
Thirty-first report of the Joint FAO/WHO Expert Committee on Food
Additives (53 pages) .................................................................................. 9.—

760 (1987) WHO Expert Committee on Biological Standardization
Thirty-seventh report (203 pages) ............................................................. 28.—

761 (1988) WHO Expert Committee on Drug Dependence
Twenty-fourth report (34 pages) ............................................................... 6.—

762 (1988) Training and education in occupational health
Report of a WHO Study Group (47 pages) ................................................. 6.—

763 (1988) Evaluation of certain veterinary drug residues in food
Thirty-second report of the Joint FAO/WHO Expert Committee on
Food Additives (40 pages) ...................................................................... 6.—

764 (1988) Rheumatic fever and rheumatic heart disease
Report of a WHO Study Group (58 pages) .............................................. 8.—

765 (1988) Health promotion for working populations
Report of a WHO Expert Committee (49 pages) ..................................... 8.—

766 (1988) Strengthening ministries of health for primary health care
Report of a WHO Expert Committee (110 pages) .................................. 12.—

767 (1988) Urban vector and pest control
Eleventh report of the WHO Expert Committee on Vector Biology and
Control (77 pages) .................................................................................... 9.—

768 (1988) WHO Expert Committee on Leprosy
Sixth report (51 pages) ............................................................................. 8.—

769 (1988) Learning together to work together for health
Report of a WHO Study Group (72 pages) .............................................. 9.—

Third report of the WHO Expert Committee (63 pages) ...................... 8.—

771 (1988) WHO Expert Committee on Biological Standardization
Thirty-eighth report (221 pages) ............................................................... 26.—

772 (1988) Appropriate diagnostic technology in the management of cardio-
vascular diseases
Report of a WHO Expert Committee (41 pages) .................................... 6.—

773 (1988) Smokeless tobacco control
Report of a WHO Study Group (81 pages) .............................................. 11.—

774 (1988) Salmonellosis control: the role of animal and product hygiene
Report of a WHO Expert Committee (83 pages) .................................... 11.—

775 (1989) WHO Expert Committee on Drug Dependence
Twenty-fifth report (48 pages) ................................................................. 6.—

776 (1989) Evaluation of certain food additives and contaminants
Thirty-third report of the Joint FAO/WHO Expert Committee on
Food Additives (64 pages) .................................................................... 8.—

777 (1989) Epidemiology of work-related diseases and accidents
Tenth report of the Joint ILO/WHO Committee on Occupational
Health (71 pages) ..................................................................................... 9.—

778 (1989) Health guidelines for the use of wastewater in agriculture and
aquaculture
Report of a WHO Scientific Group (74 pages) ..................................... 9.—