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ABSTRACT

This Technical Committee Report provides an overview and historical sketch of research in aging and proposes a need for new knowledge. An examination of key issues notes the difficulty in assigning priority to research topics, and identifies emerging issues of public concern including: (1) physical health (alcohol and drugs, falls and accidents, sensory impairments, nutrition, dental problems, health promotion, sex differences); (2) mental health (cognitive functioning, depression, senile dementia); (3) older Americans in a changing society; (4) retirement income; (5) older Americans as a national resource; (6) housing, transportation, and physical environment; (7) social and health aspects of long-term care; (8) family, social services, and support systems; (9) government roles; and (10) issues facing minorities. An examination of emerging scientific and technological concerns focuses on biomedical, behavioral, social science, evaluative, and policy-related research and research in epidemiology and demography. Issues in research facilitation, utilization, and funding are addressed and the roles of scientific and professional societies and federal agencies are examined. Eight recommendations to promote research in aging are enumerated along with a supplemental view of one committee member and an executive summary of this report. (NRB)

WHITE HOUSE CONFERENCE ON AGING, 1981

Research in Aging

Report and Executive Summary of the Technical Committee

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Report of Technical Committee on RESEARCH IN AGING

TCR-4

NOTE: The recommendations of this document are not recommendations of the 1981 White House Conference on Aging, or the Department of Health and Human Services. This document was prepared for the consideration of the Conference delegates. The delegates will develop their recommendations through the processes of their national meeting in late 1981.

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I. INTRODUCTION

A. Overview

The aging constitute the fastest growing segment of the nation's population. To help meet the critical challenge this presents to our present and future society, the Technical Committee on Research on Aging recommends that the White House Conference on Aging support the development of new knowledge about aging. Research on aging touches upon the most fundamental issues of human existence--not only in terms of the biological factors which make life possible, but also the social conditions that make life meaningful. In essence, it embraces research in the biological, psychological and social sciences, and extends to applications of that research designed to improve the quality of life for older adults. Indeed, delegates to the White House Conference on Aging must recognize the wide scope of the research that needs to be done.

The fact is, that while more people are living longer, we lack sufficient knowledge to help them maintain and achieve maximum independence, whether or not disabilities occur. To delay or to prevent the infirmities and disabilities that so often come with advancing age, we need the kind of knowledge that can only be gained through long range, painstakingly pursued, dedicated research. Only if our society supports this kind of basic inquiry into the fundamental processes of human aging will we be able to build the knowledge base needed to provide effective services to older Americans. Research and information about aging has not kept pace with the population growth of older persons, nor with their needs. As a result, our relative ignorance of the problems of aging jeopardizes the well-being of older people, and in turn the economic survival of our society. Through greater knowledge of the processes of aging, of health care delivery systems, of social support systems, and similar issues, we will be able to improve the well-being of older Americans and reduce the severe drain on the national economy. For example, if we could make even a small advance in understanding and preventing the mental and physical disabilities that so often accompany aging, we could lengthen the period of healthy, active life for older people. At the same time, we would save the nation billions of dollars in health-care and social service costs. Though much remains

to be learned, significant progress in aging research has been made since the 1971 White House Conference on Aging. Noteworthy are those findings which, taken together, have helped to form a clearer picture of America's elderly. In general, three distinct groups of older persons can be distinguished: the ill elderly, who require a considerable amount of health care and social services; the well elderly, for whom aging has been neither particularly kind nor particularly unkind, but rather a neutral factor; and the developing elderly, those who adapt to the demands of advancing age, manage to increase their sense of competence and independence, and by seeking new experiences expand their interests and mastery of life events. Clearly this broad range of individual differences among older individuals which have been identified requires a highly differentiated social policy if the nation is to provide appropriate opportunities for older persons to preserve their dignity and live meaningful lives.

Compared to the total federal expenditure for older persons, the amount spent on aging research is sharply limited. During the 1970's federal costs for health care, income maintenance, and service delivery for the aged more than tripled--from 44 billion dollars to 140 billion dollars. During this same period federal support for aging research remained at the negligible level of one-tenth of one percent of the total expenditure. This is far lower than the two to five percent of total expenditures typically invested in research and development by industry.

B. History

Today, research on aging is fast becoming a central topic of American science. Since the White House Conference on Aging of 1971, scientific organizations in America have increasingly devoted portions of their resources to research. Constructive steps have been taken in organizing federal agencies to deal with issues on aging--in particular, the formation of the National Institute on Aging of the National Institutes of Health, the organization of the Administration on Aging within the Department of Health and Human Services, and the Center on Mental Health Studies of Aging of the National Institutes of Mental Health. Nevertheless, efforts, training, and financial support are still in the early stages of development.

The federal government's commitment to improve the well-being of older Americans, and to provide research to aid the elderly, is historically recent. While the origins of governmental response to the concerns and needs of the aged are to be found in the events prior to the passage of the Social Security Act in 1935, its most dramatic initiative has taken place since that time. In taking legislative action on the aged's behalf, the federal government for the first time, assumed a stance of protective responsibility toward older people. Moreover, the establishment of the first institutional structure to assist the elderly set a precedent for the further creation and growth of federal bureaus, private agencies, and professional bodies to deal with the problems

and well being of older Americans. The growth of such organizations has played a critical role in patterning features which shape the the experience of growing old, and in generating knowledge about the physical, psychological, behavioral and socioconomic aspects of aging.

Although government today has gone far beyond the steps taken in 1935, changes in public policy reflect responses that have their historical roots in the political tradition, social reform efforts, and scientific research of earlier periods. The historical development of federal policy toward research on aging has advanced most dramatically since the 1940 establishment of the Unit on Aging, the first laboratory created for the purpose of developing a research program on aging. However, it is important to look back at the federal government's policy toward the elderly at the opening of the 20th century--a time when the visibility of the aged population was not yet heightened as it would be during the Depression.

In 1900 there was no governmental response to the aged's pressing needs. Even though the Federal government had assumed a protective role over the plight of children, as demonstrated by the 1909 White House Conference on Dependent Children and the creation of the U.S. Children's Bureau of 1912, it showed little concern for elders. It was clear that governmental priorities lay elsewhere, for calls made on behalf of the aged by the Social Democrats in 1900 and by the Progressive Party in 1912 failed to bring about federal intervention.

After 1914, social and political reformers tried to "salvage old age" on the state level by lobbying for old age pensions and by studying the problems of old age dependency. There were scattered signs of federal interest and legislative initiative as seen in the Civil Service Retirement Plan of 1920 and the establishment of the Federal Military Pension Program. Though the latter was not intended to provide for the aged's economic security, it did remain the primary basis of relief for those poor or disabled until 1935. Although there were no steps taken to support scientific study of old age, which by that time was an area of interest among various professional circles, the government did begin researching the care of aged Americans. In 1929, as a result of growing interest in the subject, the Bureau of Labor Statistics carried out a study on pension plans and private homes for the elderly. Although it reiterated then current policy trends, it did represent an attempt to bridge the gap between public efforts and the lack of social consciousness on the part of the federal government.

In light of this record, it is correct to state that, prior to 1918, the problems of the elderly, like the aged themselves,had been relegated to the background. Although the passage of the Social Security Act and the creation of the Social Security board proved that the Federal government was no longer a passive agent, Americans continued to recognize that the more complex problems facing older persons had not been met.

Private foundations took the lead in investigating the non-economic aspects of growing old; they thereby underscored the multidisciplinary approach---the coming together of researchers from both the biomedical and social sciences. As they began striving toward a common goal of enhancing the quality of life in later years, the government gave support to their cause. The 1950 National Conference on Aging and the White House Conferences in 1961, and 1971, reflect this ongoing concern.

The Federal government also demonstrated its commitment to gerontological research by developing an institutional framework which would promote the general well-being of the older population. The establishment in this decade of the National Institute on Aging, and the Administration on Aging, has proven critical in the developmental history of federal policy in the field of aging. Other departments have also played important roles: Labor, Commerce, Agriculture, the Veteran's Administration, and of course the various bureaus and advisory councils within the Department of Health and Human Services which have funded or directed important research.

While the private sector has always evidenced interest in research on aging, here too, we find it is a relatively new endeavor. The commitment of the private sector exists, but it cannot claim to be fully developed. Industry also evidences interest, but the financial support for research on aging has come almost solely from the federal government.

The need for coordinated research efforts on behalf of older people will be suggested later in this report. However, what may be stressed at this point, is that society take a comprehensive look at where it stands currently in regard to research, and where it is going in specific areas of gerontological research in the future. Such a comprehensive approach will help to clarify our ideas and attitudes about older Americans, and improve our knowledge of the processes and experiences of aging.

The scope of this report is intended to be comprehensive but not all inclusive. In this endeavor, the report presents brief discussions of various areas of research:

Basic biomedical research is concerned with such issues as biological theories of aging; immunology; cellular biology; and time-dependent degradation of bodily systems. Basic behavioral and social science needs and issues, including mental health aspects of aging, will be addressed.

Research in health and social services will examine public and private research facilities and financing, and the question of delivery of these services.

Research methodology will cover the conduct of research, dissemination and implementation of research, training for research, and manpower needs in the various scientific and professional disciplines.

Ultimately, it is our hope that material presented in the report will provide support and documentation for the recommendations presented to WHCOA delegates by the Technical Committee on Research on Aging.

II. NEED FOR NEW KNOWLEDGE

The population 65 and over is increasing at the rate of 1400 persons per day. An even greater rate of increase is shown by the population over 75, and it is anticipated that the number of persons 85 and over will more than double in the next 50 years. By the year 2000, the population over 65 will reach 32 million and by the year 2040, that number will increase to about 55 million.

There are profound implications for our society in the foregoing data. Elderly persons represented only a small proportion of the population in the past. When the first White House Conference on Children was held over 50 years ago the concern of society was to provide opportunities for the healthy growth and educational development of children. The orientation of society has shifted, however. We are now less child-oriented and more adult-oriented, and a much needed re-orientation of research issues on the course of human life is beginning to emerge.

We are, for example, still ignorant about the basic biological causes of aging. Many diseases and disabilities to which the elderly are prone--cancer, arteriosclerosis, arthritis and dementia--are not inevitable and can be alleviated or eliminated by an understanding of these causes. At present, we do not know why these diseases arise increasingly with age, or how best to treat them. Their prevention will yield tremendous savings in financial as well as human resources.

New knowledge is needed to treat the disorders of aging and to improve health care on the levels of dysfunction, disability, disease, and discomfort of older persons. Social factors are also powerful. The ways in which older people live, and the social supports and institutions to which they have access, can determine the nature and quality of their lives. Yet these factors are poorly understood. Information is needed to improve the physical environment and to insure older people's safety, mobility and independence. Additionally, comparisons show that in some cultures the elderly have greater capacity for active roles than is usually available to most older people in our country. Research may indeed aid in identifying various mechanisms for expanding those roles available to the elderly. New knowledge that will lead to increased opportunities for older

people in their exercise of personal responsibility is also needed. Lastly, we need to expand the opportunities for productivity of older persons who represent a growing national resource. Research on aging has shown that older adults need a combination of health and social service options to maintain an acceptable quality of life. At present, this is taxing the ingenuity of professionals, as well as institutions, since social and health services have tended to be organized and administered separately. Increasingly, research and demonstration projects are required to study provisions for continuity of care through an integration of these services.

It is not surprising that in a period of high technological and social change the elderly are placed in a disadvantageous position. They are more likely than other age groups to be alienated from the mainstream of society, without the resources to readapt their lives to accomodate to the demands of the high technology, computer-based society of today. In particular, older individuals of immigrant ethnic groups are placed at a disadvantage. The difficulties of adaptation that these persons experience is a particular issue for American society--one of the great strengths of which has been the diversity of its population in terms of national origin, ethnicity, and religious backgrounds. Not taking into account varied backgrounds in a context of technological change can result in a society which is insensitive to the needs of the older adult. While some individuals are disabled and require intensive social and health services, others are capable of productive work lives into an advanced age.

The skills and wisdom possessed by the older population must be used to the benefit of society as well as to contribute to the well being of older individuals themselves. In this respect, research is badly needed on a wide range of topics related to the issues of work and retirement.

Educational programs geared to the needs of the elderly must be dramatically expanded if older persons are to take advantage of opportunities to learn skills and enjoy leisure. Such education cannot merely be an adaptation of the methods and content used to facilitate the entry of children and adolescents into adult life, but should be appropriately geared to the needs and circumstances of older adults. Thus, a large area of significant research must be concerned with determining the qualities of older learners and the adaptation of educational technology to this audience.

In the vast array of practical and demanding issues surrounding the well-being of the elderly, the delegates are reminded of the need to support the pursuit of fundamental knowledge that can only be gained through long range, painstakingly pursued, and dedicated research.

III. KEY ISSUES

A. Emerging Public Concerns

It is extremely difficult to assign priority to research topics in the field of aging, since virtually all appear to have important implications for improving the quality of life. However, certain general issues of extreme public concern appear to be emerging. While overlaps among areas exist, the following represents those issues of major concern: physical health, mental health, older Americans in a changing society, retirement income, older Americans as a growing national resource, housing, transportation and physical environment, social and health aspects of long term care, family, social services, and other support systems, government roles, and issues facing minorities. A brief discussion of each area will point up some of the needs for research.

1. Physical Health

As one may expect, a decline in physical health in the later years markedly affects the quality of life of the older individual. The combination of increased and unique disabilities, illnesses, and diseases impose a tremendous physical and psychological strain on the older person. Thus the need for increased knowledge concerning the many facets of physical health of the elderly cannot be overemphasized. Research into health promotion, the maintenance of physical well being and the means by which elderly may most comfortably live with disability and disease, is of utmost importance.

Several areas of research are suggested:

a. Household surveys indicate that over half of the non-institutionalized population rate their own health as good; only about 10% say it is poor. The positive ratings do not indicate the absence of physical impairments but imply that these impairments do not significantly interfere with physical and social functioning.

b. Physical health problems of older people frequently affect multiple organ systems. Treatment for one illness may have negative effects on other organ systems.

c. Mental health problems frequently coexist with physical health problems although we do not have findings to indicate the amount of reciprocal interaction.

d. The effect of medications used in the treatment of physical disorders is significantly altered by aging. This factor plus the multiple medications required by some older people, 50% of which interact positively or negatively with one another, create an additional health burden.

e. Health care costs for the elderly are three times greater per capita than for younger segments of the population. Older persons tend to be hospitalized twice as often as people under 65 and remain in the hospital twice as long. The cost of health care and the fear of incurring such costs deter many older people from seeking health services.

f. Health care is not always available and accessible, and therefore is not obtained when needed. Research in health care requires the use of varied methodologies. There is need for cross-sectional research, needs assessment surveys, and cost-effectiveness studies. Even more acute, is the need for longitudinal research providing data through repeated examination of the health of the same population over a long time span. Through longitudinal research studies thus far, we have been able to learn that aging does not have a sudden onset, but is well underway in middle age.

(1) Drugs

While older people constitute 11% of the population, they purchase 25% of all prescription drugs, at a cost of three billion dollars a year. Those over 65 may be taking an average of five medications at one time.

Despite the fact that we are aware of high usage among the elderly, there is still much to be learned about the side effects of many drugs, the individual differences in effectiveness, and and other concerns relating to the quantity and frequency of the use of drugs. More specifically, research is required to develop drugs that have positive effects on diseases, and to determine the adverse effects of drugs and age, drugs and other drugs, and drug-nutrient interactions.

(2) Alcoholism

Demographic information suggests that problems of alcohol abuse among the elderly will increase at least in proportion to the population growth of that sector. While fewer older people drink and average alcoholic consumption declines with age, four factors determined to promote alcohol abuse are: (a) retirement, with attendant boredom, change of role status and loss of income; (b) deaths occuring among relatives and friends, and the awareness that more deaths are coming; (c) poor health and discomfort; and (d) loneliness, a particular problem among older women. Anecdotal evidence and several early studies, suggest

that a high proportion of elderly (10 to 15%), who seek medical attention for any reason, have an alcohol related problem. Furthermore. it apappears that elderly alcoholics are relatively easy to treat. If these findings can be confirmed, then detection during health seeking encounters could have great potential value. Research in alcohol detection and treatment is critical.

Research to develop a prevention strategy involving the cohort 55 to 64 years of age could have the dual effect of preventing subsequent alcohol problems among these people, and of offering a message that would be heard by those who are older and less accessible.

(3) Sensory Impairments

Visual impairment and hearing disorders should receive special research attention in the next decade. Basic research to date has led to discoveries that have major implications for preventive medicine. For example, the use of laser photocoagulation has been researched for educing the risk of blindness from proliferative diabetic retinopathy, one of the leading causes of blindness today. But controlled clinical trials are imperative to assess the safety and efficacy of such new treatments. All in all, needs and opportunities exist for research that will prevent visual and hearing losses in older people. For those who have already suffered losses, it is imperative that we find better ways to help them use their remaining ability and function in spite of impairments.

(4) Nutrition

At present, knowledge of the nutritional needs of older adults is based mainly on studies of young adults. In consequence, the Recommended Dietary Allowances for the U.S. (1980) has two categories for adults, those age 23 to 50 years, and those over 50 years of age. Though this situation has been imposed by inadequacy of data, it represents a lack of realism to assume that a 50-year-old and a 90 year-old person have similar requirements.

A fundamental question is whether a reduction in total food intake leads to deficiency disease in some old people. There is no empirical answer, since we do not know whether nutrient needs diminish with aging. Relying on clinical examination

and laboratory tests, in conjunction with dietary history, a report by the Department of Health and Social Security (1979) on old people in Great Britain concluded that 6% of men and 5% of women between 70 and 80 years of age, and 12% of men and 8% of women over 80 years of age, were suffering from one or more forms of malnutrition. There are few research successes in the field of nutrition and aging that are equivalent to the major discoveries in other areas of biomedical science. The best that can be said is that some areas show evidence of promise.

First, the striking advance in our understanding of vitamin D action using some recently discovered derivatives brings with it the possibility of controlling bone loss. Second, it has been found that some older people with gastrointestinal malfunction have impaired capacity to see in dim light (night-blindness) which is sometimes cured with vitamin A. A third observation of interest is the use of choline, a normal dietry constituent to stimulate brain function and to improve memory. The significance of these observations for aging in general has yet to be evaluated. An important research goal is to establish the nutritional needs of people who are already old, including those in nursing homes. First of all, we have to remember that food intake decreases with age and, in consequence, that the older person generally consumes smaller amounts of many nutrients. Because of the shrinkage of active tissue mass with aging, this may be appropriate. However, such a view is only speculation, especially especially since we have some preliminary evidence that uptake of nutrients from the blood into the cells of the body is possibly less efficient with aging. Accordingly, the amounts of each nutrient needed by individuals 65 to 95 will have to be determined. The criterion for such needs will be optimal maintenance of body functions; the aim, to reduce age-related impairment of health.

Some additional areas for research include the effects of drugs on nutritional status, the significance of adequate dentition in relation to dietary intake, and the impact of living conditions, such as living alone, etc. In all instances, it must be emphasized that measurements have to be made of the impact of these factors on the capacity of the aging individual to maintain health and bodily function, and that that a major objective will be to identify such monitoring procedures.

Such a program has the potential of reducing the cost of health care, not to mention adding to the the elderly person's enjoyment of life. The first area, the role of nutrition in the age-related loss of tissue function, requires a combination of studies on nutritional status of populations of aging people with evaluation of each body function. This implies assembling a nutrition evaluation team with access to a laboratory equipped to measure levels of nutrients in the blood and other body components. The second requirement is to be able to evaluate the function of the various systems of the body in the same aging population. Representative systems could be the nervous system and individual organs such as liver, kidney, etc.

Progressive age-related loss of function in these systems can then be compared with changing nutritional status for individual elderly subjects. Changes in body composition could be similarly related to long term and current nutritional changes in the same way. The second area is the role of nutrition in the occurrence of chronic age-related diseases such as arteriosclerosis, cancer, etc. These disease processes have already received much attention, including the significance of nutrition in their genesis, and it would dilute the effort of the Research Committee of the White House Conference on Aging to appeal for further major research efforts in this area. It would be more appropriate to emphasize building our knowledge of the nutritional status of populations as they are, as described in the preceding paragraph. Epidemiologists and others working on the incidence of such chronic diseases would then have better and more precise tools to evaluate the role of nutrition.

(5) Falls and Accidents

The problem of disturbed mobility in the elderly is highly complex. Gait disorders constrict activity physically and psychologically, and bone fragility makes falling dangerous. Research efforts of a multidisciplinary nature aimed at increasing understanding and treatment of gait disorders would be more than economically justified if the incidence of hip fracture alone could be lowered.

(6) Dental Problems

Projections of the growth curve for our elderly population indicate clearly that the preservation of oral health is an immense challenge.

Virtually all dental problems that appear in later life--e.g. loss of teeth, dysfunction of the jaw-joints, impaired chewing function, flaccidity of orofacial muscles, sagging and wrinkling of the face and lips--can be avoided or treated. For most people, dental problems are lifelong. It is clear that more intensive research efforts in care and prevention are needed to keep people from having to enter the dental care delivery system for costly remedial treatment in their later years.

(7) Implications of Sex Differences

Differential life expectancy raises many research questions. Sex differences in health and mortality in the older population have great scientific and social importance. Scientifically, we would like to know just what it is about gender that has such a profound relation to illness, injury, disability, and death. Socially, men's earlier deaths affect older women's life styles and economic situations immensely. Women's longer but more disabled lives are likely to prove uncomfortable for them both physically and emotionally and may place high demands on kin and social services.

Preliminary data indicate that women lose muscle mass at the same rate as males but show differences in the decline of oxygen consumption, have less cardiovascular disease, and a lower death rate from occupational hazards.

There is conjecture, but no research evidence, that the differences will not be so evident as women and men become more similar in their work and leisure activities, life styles, levels of stress and reactions to stress.

There are many more speculations than proven explanations about why health and mortality differ so greatly for older men and women. Most of the interpretations are hypotheses that deserve scientific study. The answers are important to guide policy and action on behalf of the older population.

(8) Health Promotion

It would appear that health promotion and disease prevention are useful approaches to health care at any time of life, including old age. Studies indicate that people who stop smoking can perform normally on pulmonary function tests within months after stopping. We have also learned that alcoholism can be prevented in the elderly; that nutrition can be improved; that exercise may help to maintain bone integrity, sustain cardiopulmonary stamina and reduce tension. And it is generally believed that social roles, activities and a sense of purpose can prevent physical and intellectual deterioration.

2. Mental Health

a. Intellectual and Cognitive Functioning

Considerable research is available describing age-related changes in adult learning and memory. While age-related deficits in performance on laboratory tasks have been observed, the magnitude of these differences is relatively small in healthy persons. For example, even if the observed age differences can be assumed to reflect age changes it appears that, to the oldest age typically included in experimental studies (60-70), an adult's learning and memory performance probably will fall within the same quarter of the population's distribution as it did in early adulthood. The point is that age does not turn out to be a particularly good predictor of performance.

One possible explanation of observed deficits in learning and memory is that they result from a decline in expectation. Thus, older adults' poorer performance may be partly due to their acceptance of the expected aging role. If this hypothesis is correct we would expect negative correlation between high expectation of learning and memory and lower performance. Longitudinal research is called for to investigate this hypothesis.

Another possible explanation of age-related learning memory decline deals with disuse. It is possible that acquired attributes, though once well established, may be forgotten or become less well established if not used often. Other explanations perhaps indicate that large proportions of older adults suffer from depression, and depressive subjects may have been over-sampled. This would

indicate the need for a separate assessment for depression. Also to be considered is the fact that poor health and biochemical changes may reduce an older individual's mental capacities. Again, research to develop new assessment tools is indicated.

b. Depression

The cornerstone of the development of the depressive syndrome is helplessness. Major symptoms of depression are feelings of hopelessness, apathy and lack of response to one's environment. These feelings are reinforced by the stereotypical view of older people as limited in activities and interests, insecure, asexual, physically and mentally deteriorated, and possessing negative personality traits. Unfortunately, many of these stereotypes are also adopted by health workers, as is indicated by talking to people employed in hospitals and long-term care institutions. Stereotyping the aged person as dependent, incompetent and chronically disordered with a poor medical prognosis, indicates to society that rather than responding to their behavior and needs, custodial and supervisory care is indicated. Thus, the individuality of the older person is lost and true helplessness results.

Society should counterbalance feelings of uselessness by providing older persons with productive social roles. Research should provide the basis for the development of these roles. Change at the societal level is a means of mental health promotion on a macrolevel, and can help to diminish the overall incidence of depressive symptomatology in the elderly.

c. Senile Dementia

Senile dementia is reported in from 4 to 20% of the population 65 and over. The rate increases with age and as this age group grows in size, more cases will surely appear. (However, no change in the rate itself has been documented.) More than half of patients diagnosed as having senile dementia have prominent Alzheimer's-like neuropathological changes. Aside from a strong positive correlation with age, no true pattern for senile dementia has been documented. Suggestions of an excess of cases among females, or among the less educated and less socially advanced, cannot be proved in light of present data. It would appear that the

disease can be clinical, neuropathological, or chemical, or contain elements of each, but in the absence of clearly defined patterns and risk factors, efforts are being concentrated on developing data on the full natural history of the disease.

Clearly, this brain disorder of old age presents one of the greatest challenges to gerontological research. More precise and comprehensive methods of assessment, more creative and appropriate treatment and maintenance methods, and procedures for early detection of dementia, all warrant further investigation. Furthermore, research concerning the family's role in providing care for the impaired person, appears a most promising area of investigation.

3. Older Americans in A Changing Society

As society changes, so does the group designated as older Americans. Longevity, life styles, and retirement patterns are significantly different from 50 years ago and the likelihood is for continuing change.

Older adults have grown in numbers and are more visible. They also have greater needs as many live longer, many are members of multigenerational families, and many have, or are at risk of having functional impairments. There is not a group that can be called "the elderly", but rather increasing numbers of individuals with different needs, abilities, and motivations. Chronological age is not a useful criterion for the future. The inference for aging policy is a more thorough analysis based not on the society of the past, but rather society as it is today and is likely to be in the next decades.

Older people are in a period of change that greatly influences societal change. Most importantly, the older population is healthier and more active and this pattern is continuing. Changes that accompany the extended period of well being indicate new needs in housing, transportation, education and socialization, illness prevention, and environmental concerns. Research knowledge will pioneer change as it works in both basic and applied sciences to determine the needs, and evaluate the means of achieving new patterns.

4. Retirement Income

Retirement income has become an issue of universal concern and therefore one that merits research in terms of programs as they exist, and as they will need to be changed in the future to better meet the demands of a changing societal structure. Evaluation research will lead to policy formulation.

Not only older individuals are concerned with retirement income. Younger workers are facing longer potential work lives, increasing contributions to Social Security, and the realization that they may not be able to leave the work force with an adequate income.

Another area that needs study is the ability and desire of many older people to continue to work on a full or part-time basis without any mandatory retirement restrictions, particularly as they affect income.

Retirement income in the future, will be more closely related to employment, as more women work and remain in the labor force for longer periods. The longevity of women exceeds that of men, and for this reason the number of women with retirement entitlement from their own employment, rather than that of a spouse, will increase. Employment for all older people should provide the opportunity for extended worklife. One issue for research is a determination of the types and numbers of opportunities that should and need to be available in the immediate years ahead. Planning and policy decisions are of particular relevance for changes that need to be determined now.

Expansions of the private sector should be explored, particularly in the light of strong benefit incentives for early retirement. Research should also be called upon for assistance in determining the adequacy of vocational, educational and manpower services. It is also important to determine the bases and weights of decisions such as health status, personal economic and social need, employment conditions, skill levels, and general economic conditions.

5. Older Americans as a Growing National Resource

There are many areas relating to both paid and volunteer work, such as skills and training needs, that should be explored as older persons increase in numbers, live longer, and are better educated.

Research should assess the extent of and changes in attitudes and stereotypes about the older individual,

particularly as they refer to work. Do older people prefer paid employment, self-employment or voluntary service? What are the community service needs and what is the potential for the expansion of roles in this sector? Should separate sections within the Department of Labor, United States Employment Service, and other agencies providing employment information and assistance be mandated for the provision of services to older people?

Older Americans as a growing resource is an area in need of exploration that should be developed based on research findings.

6. Housing, Transportation and Physical Environment

One of the recommendations of the 1965 Older Americans Act stated that older people should be entitled to adequate housing, selected by them, affordable, and designed and located according to their needs. There have been many efforts to achieve this goal. Congregate housing, weatherization, fuel assistance, improvements in design and safety features have been implemented. The magnitude of the cost of such programs suggests that research should conduct cost-benefit studies before additional funding or alternatives are considered. Additionally, investigation of the many housing alternatives which have been deemed appropriate for the elderly, i.e. group housing, shared housing, foster home care, etc. must attempt to determine their efficacy, and mechanisms for promoting their existence. Lack of public and private transportation has been a continuing source of great concern to the elderly. Lack of adequate transportation results in isolation and inaccessibilty to needed services in both the social and physical areas. Remedies for the inadequate transportation for older people is usually spoken about in terms of money. Research would determine means of improving coordination, the effect of price reductions and the use of private subsidized transportation.

In terms of the physical environment, crimes against the elderly and the fear of criminal attack, as well as residential burglary are increasingly becoming major concerns of the elderly. Research on crime and safety must become a priority.

7. Social and Health Aspects of Long Term Care

Long-term care has historically been thought of as institutional or nursing home services. Actually, long-term care, as recently conceptualized, is a continuum of services in many settings and is designed for per-

sons who cannot cope with the activities of daily living without assistance. For the frail and the disabled elderly, this involves an extended and extensive service system. Debate over long-term care settings, including both institutional and non-institutional settings, is growing. Such debate has been sparked by concern over the negative effects which institutionalization has on an individual, many instances of apparent inappropriate institutionalization of older persons, and the quality of care which exists in both the institutional and non-institutional setting. Also, heightened concerns are in part due to the fact that costs of such care--primarily paid by Medicare, Medicaid, and other insurance carriers--have escalated to the point of causing extreme and potentially catastrophic financial drains on the national economy. Research must address these areas of utmost concern, for at this point in time, research evidence is both sparse and inconclusive. Additionally, data collection in long term care is neither unified nor ordered, and for this reason, equivalent comparative data is not available. Indeed, long term care is an area deserving expanded research attention.

8. Family, Social Services, and Other Support Systems

These constitute three parts of a necessary continuum that that provides for the personal and social needs of older persons. While much is known about the family, the constellation of the family is changing as more women return to work and are no longer available as caretakers. The multigenerational family, including as many as five generations, the effect of changing marriage and divorce rates, the expansion of the interaction between old and young, are all changes that will continue to affect older persons in the family setting. Social Services are also tuned to different needs and Other Support Systems are increasingly being looked to as providers of care. Research should focus more on the positive aspects of change rather than the pathological aspect of disintegration, lack of caring, etc. Longitudinal studies are needed for better understanding of the ways in which these support systems can work together.

Family, Social Services and Other Support Systems provide, on a personal and societal level, the supports for the 80% of older people who have relatives and for the 20% who are alone and in need of increased assistance as they age. The scope of these supports should be available as a continuum of care for the well, the frail, and the ill elderly. Research shows that family ties of the elderly are strong. Research

may also show additional ways to strengthen these ties. Research shows that social services are needed. Research may also point the way to new services and more creative ways of using those services that exist. Research has only recently been able to document the role of friendship networks, which remain a relatively untapped resource for older persons.

9. Government Structures

As the percentage of older adults in our society continues to increase, it may be expected that there will also be an increase in formal government structures to meet their needs. The question is, what kinds of structures will be most useful?

At present, services available to the elderly through government structures are specialized, i.e., welfare, medical, recreational, housing, educational. The assumption has been that the elderly could satisfy their personal needs from the available smorgasbord. However, the old elderly and dependent individuals often do not have the capability to obtain the services they need. The fastest growing population of all is the age group over 80 years of age. In that age range, medical, social, and psychological needs are closely related to housing and the local environment. Older adults often do not take advantage of the services available. For instance, they may not seek the excellent care available at the modern medical or dental center because they live too far away, or because they do not know it exists. One may also point to the loose linkage between public services and private fee-for-services organizations; large gaps exist for the older person who may not have the energy, mobility, and knowledge to integrate these services.

Clearly, research on government structures is needed in order to meet the needs of the elderly and prevent the dependencies of a purely medical approach, or welfarization. Since it is likely that the future will bring greater government involvement, we need researchbased knowledge to aid us in minimizing the undesirable consequences of increasing professionalization of the services to all older persons.

It is necessary to distinguish the needs of different segments of the population. While the well elderly may require a de-emphasis of the role of the professional in their lives, dependent older adults may need assistance. For some, stress on individual responsibility may be very appropriate; for others,

an emphasis on institutional responsibility may be preferable. Professional services may have to be brought to the aged individual rather than the individual to the services. Given the inertia of institutions, we require research that will provide information about the directions in which they should change, as well as information concerning means of achieving these changes with a minimum disruption of service. Organizational adaptation is implied, and it is important that this take place in the near future while the population size of the very aged is still somewhat manageable.

10. Special Issues Facing Minorities

There is a great need for valid research concerning minority elderly, even though considerable progress in minority research has been made since the 1971 White House Conference on Aging. Among the recommendations at that time, delegates called for funding amounts for research and demonstrations at least proportionate to the population of minority elderly. Resulting studies have been primarily nationwide needs assessments of specific ethnic groups, or areaspecific studies of various ethnic groups, in terms of, for example, support systems and use of services. Research has been primarily concentrated in the social services arena.

Nonetheless, while minority aging research has increased, it remains in its infancy, and must be further nurtured and developed. It is critical to the full understanding of the aging process in our diverse nation. To facilitate its development, the following areas deserve special attention in the coming years.

Aging Patterns of Minorities

To date, the direction of research has been primarily focused on short-term assessments of current services to minority aged.

These research efforts are well-founded since it has been discovered that minority elders have greater need but less access to public benefits. However, a need exists to build a solid knowledge base in terms of physiological patterns; socio-economic, social, psychological and health characteristics; and family and lifestyles. For instance, research on the psychological well-being of minority aged might focus on the well-being of minority aged might focus on the special stresses they face, and the effects of acculturation and assimilation on the mental health of these individuals. Further inquiry might be made into the inequi-

ties which exist in the income of racial and ethnic groups. Lastly, racial mortality and family relations remain important topics deserving careful study. It is apparent, then, that research possibilities concerning the minority aged are very extensive. Despite the increased efforts of the past decade, much more research must be generated in order to establish an adequate knowledge base of the aging patterns of minorities.

Data Base on Minority Elderly

Thus far, there has been no comprehensive data base established on the life styles and status of ethnic minority elders. The lack of such a data base proved critical recently, when Administration on Aging (AOA) grantees encountered difficulties in obtaining uniform data from various federal agencies and, more importantly, data on ethnic backgrounds of their beneficiaries.

The Federal Council on Aging also cited the lack of data and research information on socio-economic characteristics of older minorities and recommended that "federal agencies develop accurate methods of collecting information on the quality and quantity of services to the older minority population, as well as reliable baseline data that provides comprehensive descriptions of the sub-group of older minorities (socio-economic, demographic, and health characteristics)." At best, we have data collected at different times by different researchers and agencies in different locales. Thus the development of a more comprehensive data base on the minority aged should be a major priority of research over the next decade.

Development of Policies, Programs, and Services from Research on Minority Elderly

Since so little is known about the effective modes of service delivery to minority aged, research on minority groups must continue to uphold dual objectives, i.e., research must provide reliable and valid data, and also provide useful data to improve conditions and services. For example, one of the major studies on minority elderly during the past decade has been conducted by the San Diego State University Center on Aging, on the Latino, Black, Guamanian, Japanese, Chinese, Philipine and Samoan elders in San Diego. It developed a community-based approach to research planning, data collection, and data analysis interpretation. Results from this cross-cultural study indicated the advantages of such an approach in achieving both valid data and data which may be utilized to the benefit of the community being studied. During the next decade,

research must continue to reflect the needs and desires of the minority elderly with an emphasis on impact for services and policies.

This brief documentation of major concerns includes only some of the areas related to aging in which research has played a role in expanding public awareness and raising questions. There are additional scientific and technological issues that await investigation.

B. EMERGING SCIENTIFIC AND TECHNOLOGICAL ISSUES

1. Scientific Issues

a. Biomedical Research

Although many of the difficulties experienced by the elderly lie in the social and economic spheres, there can be no doubt that many arise from, and can be traced back to, changes which aging induces in the marvelous machinery of the body and the brain. The remedy for these deficiencies and their eventual prevention lies in the proper utilization of existing knowledge, and equally important, of knowledge continuously acquired through research in the biological and medical sciences.

The new sciences of molecular biology and neurobiology have given us unprecedented glimpses of the working of the cell and of the brain. In that vision, it is possible to discern, albeit still faintly, a newer understanding of the causes of cellular aging, cancer, and dementia. Additionally, the opportunities for progress in biomedical research in its application to the relief of pain and handicap, have never been as promising as they are today. Microbiology, virology, and the subsequent development of drugs which abort or prevent infectious processes, have significantly increased the life span and reduced the ravages of diphtheria, tuberculosis, pneumonia and other infectious diseases which formerly were the leading causes of death. Heart disease, stroke, and cancer remain, at present, the major causes of death and disability, and biomedical research into these conditions which so drastically affect the elderly is needed. Substantial progress in biochemistry and pharmacology has already contributed to this endeavor by offering means to effectively control hypertension, a major cause of heart disease and stroke.

It would be foolish to relax our pursuit of new knowledge, and we cannot afford the illusory savings of reducing financial support. Instead, we must be

sure to maintain a prudent balance between research which promises to achieve quick and obvious benefits, and the research that must be pursued if we are ever to attain prevention and eradication of disorders.

In the context of ever-rising costs of medical care, it is appropriate to be reminded of the savings that medicine and biomedical research have brought about. Not long ago, another mental handicap--pellagrous dementia--accounted for a large proportion of institutionalized mental patients (as does senile dememtia today). As the result of work done at the U.S. Public Health Service and the sciences of epidemiology, biochemistry and nutrition, that disorder has virtually disappeared in the United States. No elaborate cost/benefit analysis is required to show that the savings this country realized from that accomplishment in public costs alone, would pay a hundred times over for all the research that made it possible. A similar statement could be made about general paresis, tuberculosis, and other once-prevalent diseases.

A generation ago, poliomyelitis still affected thousands of children and young adults, handicapping them for life. Much effort was appropriately spent on the only remedies we had--crutches, braces, iron lungs, various forms of massage and hydrotherapy. Fortunately, however, there were enough scientists interested in fundamental research in virology and cell biology, and sufficient support for their work to bring about the discovery of the virus that caused the disease and the subsequent development of the vaccines that have eradicated it. Were it not for that, we would still be building better and more expensive iron lungs.

There should be no quarrel with the thesis that science has a social responsibility and that biological and behavioral scientists have an obligation to deploy their talents and knowledge in the most effective way they know toward the alleviation of disease and suffering. The public can properly expect that the funds they spend on research will produce results. However, the most practical approach is not necessarily the most obvious and immediate one. The roadway for which the bridge is constructed, is the last component to be laid in place and this can be done only when the foundations are secure. This conviction is shared by many scientists and we could cite numerous anecdotal reports, but as scientists, we cannot for very long base our claims on anecdotes.

Recently there have been rigorous studies designed to examine the process of medical discovery. The most exhaustive and objective was carried out by

Conroe and Dripps, (Science: 1976). They first arrived at a consensus--among a large number of clinicians--about the major practical achievements in cardiovascular and pulmonary medicine. They then traced the history of each achievement by examining 4,000 publications and selecting 529 contributions crucial to the final practical results. This included new data, new concepts or hypotheses, new methods, new drugs, or a new approach essential to the ultimate development. Nearly half of these experiments were carried out by scientists who did not have in mind the accomplishment their work made possible. At the time the work was done it had no seemingly discernible relevance to the disease it eventually helped to diagnose, alleviate, treat or prevent. How does one do a cost-benefit analysis on a process wherein the benefits enjoyed today are the result of work performed, and costs incurred, 10 or 20 years ago? Science administrators have been struggling with that question for some time; yet there is an answer that is reasonable and logical. The Department of Defense, which first developed the cost-benefit requirement, does not attempt to estimate the benefit of a huge defense expenditure in terms of the end-product, national security. Instead, it counts the number of men-under-arms, and the planes, tanks, ships and guns acquired, on the assumption that these will lead to security.

Less hypothetical and more credible is the relationship between the number of scientists we train and support, the laboratories we build, the facts that are discovered, and the rate of growth of scientific knowledge, to our security from illness and suffering. It is not possible to predict when the conquest of cancer or arteriosclerotic disease will come to fruition. One can predict with confidence however, that basic research will eventually make it happen, and that decreasing the support of research will delay its achievement. The creativity and the motivation of the scientific community must be nurtured with every possible level of support.

b. Behavioral and Social Sciences Research

Aging is more than a series of biological processes. Life experience also does much to determine how a person ages. For this reason, research must be extended to include social, economic, and psychological factors.

The behavior, status and attitudes of older persons within the changing social and demographic structure of society, as well as their relationships with

institutions such as the family, employment, health and social services, and the political arena, need to be explored. In addition, the increasing number of well elderly needs to be studied in order that we may understand the pathways to successful aging.

Many issues are broad-based and cover physical and mental health as well as behavior. There is much to be learned about bereavement, support systems and ways in which people cope with loss and the pain of loneliness. Control of stress for older persons is another area about which little is known.

Issues of work and retirement cover the spectrum of behavioral and social science concerns. The decision of whether and when to retire, including the social, behavioral and economic effects of loss of the work role, have not been sufficiently explored. And the development of indices of performance that determine continuing capacity to work is yet another topic for social and behavioral research.

Research in the social and behavioral sciences has proven beneficial in a number of areas: For example, studies on cognitive function among older adults have demonstrated that intellectual decline is not an inevitable accompaniment of aging. Thus research has helped to modify age stereotypes. In the mass media all aged persons are no longer depicted as senile, deteriorated, or cranky. Realistic representations of older citizens provide a more congenial environment in America. Extensive research is needed on the relationship between health decline, nature and degree of disability, and social role changes. Additional studies might be done on labeling and its institutional underpinnings. We also need further methodological development in field studies, particularly in qualitiative and longitudinal methods; for example, development of paradigms for life history analysis.

While research on the institutionalized aged has dominated social science research for the past decade or more, research has been done on family relationships and informal social supports for the older population who are not in institutions. In this area, research still remains to explain: 1) Changing definitions of family, demographic shifts, age heterogeneous versus age-homogeneous communities and the evolution of non-familial group supports, and life style variations in old age; 2) The effect of longer life spans on inter-generational roles and responsibilities, rights and duties of families, and the concept of social justice among generations; and 3) Social and behav-

ioral outcomes of developing four-generational multi-generations of elders on society, with respect to dependency, power, etc.

Research on residence patterns and social networks has demonstrated that older people have major problems in adapting to changes that involve loss of friends, neighbors and other supports. Some research has shown that relocation of elderly individuals may hasten their death. These findings have led to greater caution when older persons move without adequate safeguards. We also need additional information on network theory and methods, including inter-generational relationships and supports, availablity of peers, how linkages are maintained, and creation of new types of households. Further research might be considered on the basic dynamics of migration, the loss of community and friendships.

A major contribution of social science research within the past decade has been to demonstrate that single solutions and monolithic programs for the elderly often fail because of the diversity of the population. For example, women have different needs than men: A longer life-span creates special problems, particularly for widows. Research on social class, ethnic, and geographic variables has pointed out futher disparities. We especially need research on gender differences with age group shifts. Comparative ethnography is required for this research.

Studies have been published on the legal problems of older persons and research on the following topics shows great promise: 1) social and cultural studies of conflict; 2) variation in perceived injury, grievance and redress; 3) the social impact of legal institutions; and 4) dependency, conservatorship, and protective services. Further work should be done on structural studies of power and dependency in stratified societies. Within this general area, studies are needed concerning social movements, resource control--particularly the impact of increased politicization of interest groups--political leadership and its relation to social movements, and age-stratified complex societies. A general area that must be addressed is that of the present inconsistencies in reporting demographic and health data. We need methodological research on ways to obtain comparability of data on population groups (for example, institutionalized versus community-based populations).

Lastly, there are many overlaps that complicate the task of labeling research. What characterizes "basic" versus "applied" research particularly in studies of the human services and delivery systems? A bridge is needed to connect the findings of research in the biological, medical, psychological and social fields with the provision of services. Major concerns are: a) to measure the magnitude of service needs in populations and the corresponding availabiltiy of manpower and facilities to meet these; b) the manner and extent to which these resources would be used; c) the ways in which service systems are organized and how they affect older people's well-being. Efforts to achieve a better balance between biomedical, and social services delivery research should be achieved through support for multidisciplinary research and not by a decrease in monies allocated for any particular field.

Studies of the scientific issues of basic and applied research on aging continue to be necessary. In addition, policy related research and the evaluation of practice issues remain underdeveloped.

c. Evaluative and Policy-Related Research

(1) Health Services Research

Assessment and evaluation are currently popular words used to define research efforts. Critical to either process, however, is the ability to identify and agree on the factors that should be measured and the technology for making such measurements. In some cases, scales and measurement systems have been developed, validated, and proven reliable through widespread testing. In most instances, however, measurement techniques need to be refined or new measures developed. Such work requires that each component be evaluated and that the entire instrument then be tested for accuracy, validity, reproducibility and reliabilty. Once measurement capability has been established, effectiveness of intervention can be examined.

In health services research as in all research dealing with the older population, long-term follow-up is important in order to permit analysis of patterns of recurrence and comparison of goals to outcomes. Studies are needed comparing effectiveness and cost of various configurations of living conditions and health care settings. For example, alternatives to nursing home placement are suggested as cost-effective; yet the literature contains some research indicating that such plans may be significantly more expensive. At the same time, it is not clear whether alternatives <u>are</u> more effective.

Health care is concerned not only with service, but also with prevention. This means that there is a need to identify environmental hazards, as well as the effects of early intervention, in avoiding or delaying disability, disease, and institutionalization. Nor can we overlook the issue of personal choice as it relates to health care research. What values does the older person and his or her family hold? Does the older person value independence above safety and security? Does research indicate any awareness on the part of the aged of the implications of alternate choices when decisions are made--often under enormous personal stress?

Other useful research might include self-assessment health surveys by the elderly themselves. Carefully designed surveys can generate personal health status data and complement data accumulated from other sources. It is essential to remember, however, that no generally understood definitions of such terms as "excellent," "fair," or "poor" presently exist. It is therefore important to clearly define the reference groups and standards against which respondents will formulate their answers. Research into the health perceptions, beliefs, attitudes, and practices of the elderly can also generate improvements in health care delivery, especially in preventive health education. Such research can identify misconceptions, stereotypical attitudes, and special needs and interests laying the groundwork for health education programs targeted at the older person.

It has been suggested that mail questionnaires are useful in health screening programs. The less mobile elderly population might welcome any innovation whereby health care could be enhanced without the incovenience of leaving home. The success of mail questionnaires, however, depends on personnel trained to interpret the responses, and to sort out those people who require treatment for previously undetected disease from those whose needs can be met simply by continued observation. Scant attention has been devoted to defining the health status of the elderly population in the United States, and to how their health maintenance requirements might best be met. Within the past 40 years little or no large scale research of this type has been conducted; more recently, however, there have been indications of interest on the part of Congress, the Administration on Aging, National Institute on Aging, the National Advisory Council on Aging, and others, in designing health maintenance programs to benefit the older person.

There is an urgent need for more demographic, medical, and social data in order to stimulate the creation of biomedical and social programs that will enrich the quality of life of older Americans. The recently com-

pleted 1980 census will provide valuable demographic data, but these questionnaires were not designed to elicit health status and social data relevant to the formulation of health policy. It is suggested that the Bureau of the Census give priority in the future to the collection of such data.

(2) Social Services Research

Unfortunately, the inadequacy of research funds has caused most social services research in aging to be ad hoc and fragmented, rather than comparable or cumulative. A more comprehensive and sustained program of research is especially needed in the following areas:

(a) Longitudinal Studies

Data on the impact and cost effectivenes of existing programs and services to the elderly are incomplete, because they are usually based on cross-sectional surveys taken at only one point in the life span. There is a vital need to establish a nationally representative longitudinal panel with periodic follow-up surveys of the same cohorts. This would not only significantly enhance knowledge about the processes of aging, but would also facilitate systematic assessments of the impact of a wide range of programs and services for the aged at different stages of their life cycles.

(b) Needs Assessment Surveys

While many needs assessment surveys of the aged have been conducted in communities throughout the nation, they tend to use widely different data collection instruments. Increased priority should be given to conducting better coordinated surveys on a regular basis using more standardized instruments and research designs. It is also important that such needs assessment surveys: (a) actively involve a broad range of community-based groups at all stages of planning and implementation, and (b) include adequate representation of the wide range of minority aged.

(c) Policy Analysis

The current trend toward policy-oriented studies of the aged from a family perspective should be an integral feature of social services research.

More systematic studies are needed to determine the appropriate mechanisms by which services from formal agencies can best reinforce and strengthen existing

informal support networks. In addition, more analyses are needed that compare the effectiveness of services provided by these informal networks (such as the extended family) with services provided by formal institutions.

(3) Work and Retirement

Critical economic issues face our nation now and in the decade ahead. The problems of inflation, recession, and unemployment, need immediate attention. At the same time, the burgeoning ranks of retired persons threaten the viability of the social security system and will increasingly burden private pension systems as well. Growing numbers find their retirement incomes inadequate and further eroded by inflation.

Numerous policy alternatives have been proposed for readdressing these problems, the most workable of which appears to be the development of policies to encourage and enable older persons to extend their work lives. Serious gaps in our knowledge base, however, hamper our ability to devise these policies. Specifically, research is needed in three key areas: 1) The labor force participation decisions of older persons; 2) Unemployment problems of older persons; and 3) Age factors in performance. Research priorities in each of these three areas are outlined below.

(a) Labor Force Participation Decisions of Older Persons

In order to encourage extension of work life, a better understanding is required of the factors which influence the decisions to remain in, exit from, or re-enter the labor force. While the analysis of existing longitudinal data on labor force participation should be supported, new research initiatives are needed in the following areas:

1. Health Status: Studies indicate that self-reported poor health is associated with early withdrawal from the labor force. Research is needed in order to better understand the relationship between real and perceived health status as it pertains to work, particularly by age, sex, race and occupation. The effect of health status on work performance needs to be examined as well. Additionally, research is needed to establish criteria for defining disability.

2. Alternative Work Options: Surveys indicate that many older persons would be interested in working longer, or in re-entering the labor force, if options such as time work were available. Addi-

tional information is needed about a) the personal and occupational characteristics of older workers currently employed in alternative work options; (b) the potential labor supply; c) the conditions under which older workers will choose these options. Costs and benefits of alternative work options to employers must also be identified, as well as the impact that expanding work options for older workers would have on the supply of jobs for younger workers.

3. Women in the Labor Force Statistics from the last quarter of the century indicate that women 55-64 years of age represent the greatest increase in the labor force, a trend which will apparently continue. How this trend will affect voluntary ret rement rates as this cohort reaches their mid-60's needs to be ascertained.

4. Unemployment The unemployment problems of older workers have received relatively little attention, despite the fact that, once unemployed, older workers are likely to be unemployed longer than their younger counterparts. Research in this area should include:

   Characteristics of Unemployed Older Workers:

   National unemployment statistics do not provide adequate details of age, race, sex and occupation. Additional research is needed to develop profiles of unemployed older workers which can be used to design training and job search programs and to develop incentive policies for employers.

   Job Search Behavior: Relatively little is known about either job search behavior of unemployed older workers, or the effectiveness of employment services and other labor exchanges in assisting them.

   Discouragement: Prolonged unemployment is believed to lead to discouragement and early involuntary withdrawal from the labor force. Additional studies are needed to identify the characteristics that discourage older workers and to examine associated factors, including age discrimination.

   Demand for Older Workers: Further studies are needed to identify the industrial sectors and occupations where employment and reemployment of older workers is most feasible and desirable.

(b) Age Factors in Performance

Raising the age of mandatory retirement for most workers from 65 to 70 has required employers to rethink and adjust personnel practices. While some data on the characteristics of older workers are available to guide these efforts, serious research gaps exist in the areas of:

(1) Functional Assessment: Additional research is needed to develop functional, as opposed to age-based, criteria for assessing ability. Studies should be conducted to identify the level of skill, knowledge and ability required to perform specific tasks.

(2) Training and Retraining: Extension of the work life and labor force re-entry of older workers will undoubtedly require increased training and retraining efforts. Research is needed to estimate the need for training by industry and occupations, in order to develop effective training programs for older workers.

(3) Job Redesign: Research is needed to assist employers in effectively modifying and redesigning jobs, where necessary and feasible, to better match the capacities and interests of older workers. Information on the costs and benefits to employers of job redesign is needed as well.

It is to be hoped that policies designed to extend the work life will be based on knowledge and fact, rather than conjecture and supposition. If this is to occur, we must quickly move forward with a systematic program of research. While topics outlined above are obviously not the only areas in need of support, it is clear that knowledge obtained from investigations in these areas will be critical to the formulation of sound policies relating to employment in the years ahead.

d. Epidemiology and Demography

Some define aging as "the sum total of all changes that occur in a living organism with the passage of time and lead to functional impairment and death". Although this definition is comprehensive and rational, it does not easily lead to hypotheses that can be tested by epidemiologic methods. Aging may represent the sum of cellular aging and may be largely dependent on intracellular events. Proponents of the view that the sum of cellular aging equals aging of the organism approach the problems in terms of progressive mutations, alternations in genetic coding, and defects in information readout. Aging may well represent the results of coding error or point mutation in DNA. If this is so, it is important to know if aging

is the result of intrinsic mutagenesis, dependent on generational number, or a result of mutation in post mitotic cells, dependent on the passage of time. Regardless of the answer, it is important to understand the difference in the apparent rates of aging in different tissues. There are other theories and definitions of aging, but the important issue is, what opportunities for research in aging exist for the epidemiologist? Indeed, research in epidemiology represents an extremely important means of enabling us to better understand the processes of aging.

Almost all data on man are derived from hospitalized patients. The data are largely cross-sectional and conclusions about aging man must be inferred from short term studies of different age groups.

There is a critical need for systematic longitudinal studies of human aging in representative human populations. Among the research opportunities available to the epidemiologist are longitudinal studies of the long-term effects of immunosuppressive drugs, hormonal therapy, ablation of lymphoid tissues, and diet, on the incidence of autoimmune diseases, cancer, and the human life span; and age-related changes in various immunologic indices, particularly autoimmune response and their relationships to the onset of degenerative diseases and life span.

Placing body systems under physiologic or psychosocial stress not only illuminates differences otherwise undetectable, but also demonstrates the declining abilitiy of the aging organism to withstand or respond adequately to stress. We need to measure serially and longitudinally over decades the rate of change of organ function and their capacity to respond to stress. The adaptability of the eye can be studied by dark adaptation or by requiring near vision; the cardiovascular and muscular systems by exercise; and the endocrine system by glucose load. We must learn through natural experiments or therapeutic trials that challenge the immune system. We must identify the rate of decline in responsiveness to stress in man measured over real time rather than inferred from cross-sectional data.

The rate at which these changes occur and the interrelationships between rates of decline in the various body systems will clarify much in the understanding of human aging.

It should be possible in the U.S. and elsewhere to identify a human population that is largely free of arteriosclerosis. In such a population we may study the rate of change in organs, tissues, homeostatic mechanisms and cells. We can ask whether organs, physiologic respon-

siveness, and cellular appearance and function alter at about the same rate, or determine that some changes predictably lead to others and may constitute determinants of subsequent age-related changes.

There are other important questions in the field of human aging that could be profitably studied by the epidemiologist. Among them are:

(1) What are the implications for morbidity and mortality of the high prevalence of a symptomatic carbohydrate intolerance in the elderly? What should be done about it, if anything?

(2) In elderly cohorts, how do endocrine and immune functions decline over time and how does the decline affect morbidity and mortality?

(3) How do the major life crises of older people such as bereavement, relocation, income loss, and the anxiety of impending dementia, affect the endocrine and immune functions?

(4) What aspect of socio-economic status is the most important predictor of longevity? Is it better medical care, better personal habits, greater ability to cope with life crises, greater feelings of security and of being in control of one's destiny?

(5) What living arrangements contribute to low morbidity and mortality rates for older people?

While epidemiology seeks a better understanding of the processes of aging, demography provides a means for the use of the knowledge as it pertains to particular ages and age groups. For example, increased longevity requires revision of the chronological age groups 65 and over. Present usage tends toward 10-year designations, specifically, 65-74 (the young old), 74-85 (the older old), and 85 and over (the old old). As these categories increase in size, the more definitive fiveyear groupings are desirable. It is also likely that the 85 and over classification will warrant refinement. The Bureau of the Census, the Bureau of Labor Statistics, Social Security Administration, Health Care Financing Administration, and the National Center for Health Statistics should work together to expand existing data collection instruments and studies to more precisely consider age and age-related phenomena.

The needs of the frail elderly must be studied. The very old are often very frail, but what are the potentially existing physical and health problems that are particularly evident in this group. What treatment

modalities are helpful? How do drugs affect the very old? Since many of these older people will not have living relatives, what are the most desirable living arrangements? And what community supports are needed?

Research efforts should be accelerated to keep pace with the rapid increase of the very old and the needs of this segment of the population. In 1977, 38% of those 65 and over were in the category of over 75. By the year 2000, this figure will reach 43% and projections indicate that by the year 2030 this group will comprise over 50% of the older population. The more precise the demographic information relating to aging, the more useful it will be to epidemiologists in the study of age related factors in health and illness.

2. Technological Issues

a. Research Facilitation

(1) University Involvement

There are several levels of university involvement which currently demand increased attention: development of auxiliary services to older persons; development of a broader gerontology curriculum; and expanding research and research facilities for gerontology.

The first leads to the adaptation of educational programs for older students. Research about the interests in, and desire for, education and other activities that can be provided by a university are basic to program design and implementation. Included are participatory activities as well as course offerings on a credit and non-credit basis.

Development of a broader gerontology curriculum would enlarge the scope of knowledge and result in learning opportunities not presently available. The expansion of gerontology research facilities would increase the potential for research, create visibility for the needs of research in biomedical and behavioral research, and lead to the ultimate goal of research - a knowledge base for policy, planning and service.

(2) Training/Manpower

While no one is certain of the manpower needs in geriatics and gerontology, there is a strong consensus that research in this field requires competent scientists and professionals. Thus, it is necessary

to train persons in the social, behavioral and biological aspects on aging who will then be competent to carry out gerontological research. Policy-related training for research should also be included.

University curricula and faculties should be enlarged to provide greater educational opportunities for researchers in aging. Training should be provided for practitioners who represent a competent research resource.

Special attention should be given to minorities and others interested in the problems of the minority aged. At present there are few training programs for black professional gerontologists; for Native Americans and Hispanics, even less. The prospects are slim, since there are not an appreciable number of doctoral dissertations completed by Blacks, Hispanics, Asians and Native Americans. Active recruitment of interested gerontologists and in creased courses and content about minority elderly are suggested steps toward additional involvement of minority professionals.

(3) Specialized Research Centers

As the public expresses its desires for a higher quality of life for the older person and for a reduction in health and social problems that can accompany old age, research on aging will be increasingly pressed toward productivity and efficiency. To meet such pressure, specialized centers on selected aspects of aging should be established in universities and other institutions that have the advantages and potential for both productive and efficient research programs. Conceptually, such centers should be broad enough to meet the inherent multidisciplinary nature of research on aging and yet narrow enough in operation to make efficient technological advance possible.

Certain local environments for example, may provide opportunities for examining the processes of aging in marine life. Still others may provide unusual access to human populations that can be studied longitudinally. The point is to take advantage of existing facilities, materials, and talented research personnel.

Expensive laboratory equipment is a significant factor in the thrust for increased efficiency. The sharing of such equipment by investgators with complementary goals should be encouraged.

Numerous topics that can provide the foci of specialized research centers, such as those supported by the National Institute of Aging, the Administration on Aging, and the National Institute of Mental Health are:

(a) Senile Dementias, Dental Health and Age Changes in Oral Tissues;

(b) Health Promotion of Middle Aged and Older Adults;

(c) Causes of Depression in Older Adults and Development of Effective Treatment Methods

(d) Cellular and Molecular Changes of Aging in Small Short Lived Organisms;

(e) Factors Influencing Work and Retirement;

(f) Social and Physical Environmental Influences of health; and

(g) The Need for Health and Social Services.

While not all research needs to be done in specialized research centers the grouping of compatible investigators with common research goals offers not only a more efficient manner for the pursuit of research, but also effective training of needed manpower. At advanced levels of graduate and post doctoral training, only highly specialized centers can offer the necessary breadth and depth of training required by modern research. Thus, research and training will become inextricably tied. In selected instances, a specialized research center on aging may be added to an existing university or other institution, by remodelling or new construction to provide laboratory space, animal facilities, specialized equipment and information systems. As mentioned earlier, agencies should be sensitive to the efficiencies of particular locations, taking advantage of already existing resources.

Through the Interagency Committee on Aging, shared costs might be arranged among agencies to avoid duplicating efforts and expenditures. Communication between specialized research centers can be made efficient by using a computer network that interlocks libraries and cooperating scientists and permits the exchange of data. The problem of obsolete information can thereby be lessened by shortening the time between discovery and utilization of information.

(4) International Coordination

There are from time to time unusual research opportunities in other countries. In certain regions for example, there are environmental circumstances which affect the health and well being of the residents. Some countries have useful, well-documented health and occupational population histories. Happenstance of diet, climate, heredity and other factors offer "natural experiments" in many places in the world. The joint pursuit of such natural experiments is to be encouraged when it is in our national interests. The monitoring of opportunities for international research collaboration should be undertaken on a continuing basis, and the responsibility delegated to one agency. The agency with the broadest mandate for research on aging is the National Institute of Aging. To this agency should be assigned the responsibility for keeping abreast of research on aging throughout the world. It should be sensitive to unusual opportunities for collaborative research and seek to foster attitudes of cooperation among investgators. The issues of aging transcend most competitive aspects of international life; there are few areas which can be shared with such impunity and enthusiasm.

(5) National Information System and Comprehensive Data Base

In order to design and plan the delivery of services to older persons, society as well as Congress and the Executive Branch need better information. Currently, bits and pieces of data are spread throughout public and private agencies with the result that there is no way to obtain national estimates of conditions and problems that apply to older people.

A national information system is needed to coordinate and disseminate statistics on health, transportation, income, employment, medical and social services, housing, crime, consumption etc., as they relate to the elderly. These data are necessary in order to evaluate the benefits of expanded medical and dental coverage, and alternatives to nursing home care such as the extended family and in-home care for older persons. Statistics must be disaggregated for cohorts within the elderly population in order to enable policy making and planning. Social Security is a timely example of a program needing detailed demographic and health data. Long term projections utilizing current and expected trends in population growth must realistically

reflect declines in the mortality rates of the elderly so that health and income maintenance programs can be planned with greater accuracy.

b. Research Utilization

A demand for gerontological studies on aging always exists, as there are many unexplored areas and untested fields for basic and applied research. At the same time, however, there appears to be widening interest and increased support for broader utilization of principles already discerned. Moreover, studies conducted with respect to a particular area of application may warrant replication in the same or other areas of interest relating to aging.

Federal support for research on research utilization is desperately needed and should be useful in establishing priorities for evaluation of research and for plowing back what is learned.

(1) Dissemination

The lack of linkage or coordination of information is not a new issue. It has been a concern of agencies, institutions of higher learning, and the private sector, all of whom have sought solutions with incremental efforts and incremental results. At the present time there is no clearinghouse or repository that would make the large number of research on aging resources available to educators, practitioners and others interested in knowledge transfer.

There are many reasons postulated to explain the lack of coordination. Some deal with poor communication skills among scientists, lack of time, and system stresses. What seems to be a simplified assessment for not being able to identify what is being done, where it is being done, by whom, and for what purpose, is the absence of a coordinating agency that would be the gatekeeper and custodian of gerontological research. University faculty and students tend to read and study research that is reported in the gerontological journals and, where appropriate, in recent textbooks. All of the computer search systems and bibliographic lists provide lengthy citations that are selective and frequently voluminous.

There does not seem to be any formal investigation that explicates the frustration of academicians, researchers, or practitioners in their efforts to

obtain data on specific topics. Sporadic efforts, be they cross-sectional or longitudinal studies, surveys or controlled experiments, are available but difficult to locate. Computer search services will produce lists of print-out sources, with many of the citations in foreign journals that are not available even for those who can read the language. And the possible classification span produces the entire gamut of codes from social, work, family, to behavior cognition, etc.

A comprehensive clearinghouse should be mandated and funded for the purpose of providing a central resource for gerontologic bibliographies and materials. The location of research materials would be the primary service, but the comprehensive coverage would lso provide for a review of research efforts that m.ght result in less duplication and, in the long run, a higher quality of gerontological research.

Such a national clearinghouse on aging research, demonstration projects, and project evaluations could perform numerous roles: (a) disseminate the results of projects in the field of aging to the academic and professional communities; (b) encourage these audiences to utilize research findings wherever appropriate; (c) perform the appropriate translation of research findings to be made available for consumer use; and (d) devise studies concerned with the effectiveness of research dissemination and utlilization.

The implementation of such a recommendation must rely on numerous strategies. The clearinghouse would ultimately be responsible for insuring that the following measures are carried out.

(a) The clearinghouse must encourage the linkage of researchers and practitioners, so that research findings are utilized to a greater extent by the professional community and the general public

(b) The clearinghouse must increase awareness of national sources of research findings.

(c) Governmental agencies that carry out research in the field of aging must be required to collaborate with the clearinghouse for dissemination of their findings.

(d) Those organizations sponsoring privately funded research should be encouraged to disseminate their their findings through the clearinghouse.

(e) Mechanisms should be developed by the clearinghouse to present and interpret research findings in such a way that they are interesting and relevant to the practitioners in the field of aging.

(f) The agencies responsible for funding research on aging must bear in mind their responsiblity for the dissemination of research results.

(2) Technology Transfer

An important aspect of research still in the developmental stage is designated technology transfer. Historically, the transfer of technological advances from one source area to another has not been cultivated. Cooperation and interplay among the many research disciplines have have been avoided and/or neglected, resulting in numerous failures to share the utility of a technological advancement. A major example of an agency whose programs have resulted in valuable technological advances is NASA. Developments in creating microsupportive environments for space travel could surely be adapted to the needs of the disabled or handicapped. The limited resources of the times are forcing the public to realize the need to encourage and endorse innovative measures that are minimally dependent upon monetary support. The creation of an agency to coordinate technology transfer tasks would contribute to an improved quality of life for our elderly.

Technology transfer has enormous implications for health promotion. For example, there are electronic and mechanical devices that assist people with impaired hearing, visual defects and physical disabilities. Using existing technical advances, many of these devices could be more economically produced or altered, in order to improve their quality and make them more generally available.

c. Levels of Funding for Research:

(1) Public

(See Appendix A for a detailed breakdown of support received by various agencies.)

At the federal level, the major agencies supporting research specifically on aging are the Administration on Aging, The National Institute on Aging and the National Institute of Mental Health. However, research funds are inadequate to meet the needs of evaluation and service-directed research, and there is a decreasing amount of money for investigator-initiated research. This limitation stifles the continuity of long-term investigations, such as epidemiological studies to identify at-risk populations (i.e. those suffering from senile dementia), and

longitudinal studies that include women and additional age cohorts in applied and basic medical and social research. In 1980, the Federal government spent $139,666,000 on programs impacting on the elderly, of which approximately 1% was appropriated to research, demonstration and evaluation. Among some 20 federal agencies administering programs for the aged, the National Institute on Aging has the largest research budget, in the amount of 67 million dollars, followed by the Health Care Financing Administration (22 million), Administration on Aging (33.5 million), Social Security Administration (8 million), National Institute of Mental Health Center for the Studies of the Mental Health of Aging (7.5 million), and Veterans Administration (1.8 million). The sum of appropriations to these six agencies amounts to 145.1 million dollars, which is approximately one-tenth of one percent of the total federal outlay for programs serving older people.

The declining government commitment to gerontological research must be understood against the background of the enormous growth in Federally sponsored provisions for the elderly, such as Social Security and Medicare. During the 70's, the total outlay for federal benefits for older people tripled from 44 to nearly 140 billion dollars.

Thus, aging research has historically and is currently underfunded. To the extent that federal expenditures on services to the aging are large and increasing, there is a need for a substantial increase in the funding of research demonstration and evaluation projects to provide a knowledge base for the rational development of more effective and more efficient services. For example, the proportion of research funding to service funding in the Administration on Aging has decreased so that in 1980, research itself constituted only 1.3% of the total budget. Thus, the amount of aging research being funded is at a dangerously low level in relation to the amount of services being funded by the Administration on Aging. An urgent need exists to balance the ratio of research funding to service funding in order to evaluate the effectiveness of present services to the aged as well as to develop new and more effective service programs for the older population of America.

(2) Private

While private funding is divided into foundation and corporate support, insufficient attention has been given by either constituency to the needs for research about the elderly. Dollars designated for this research have been negligible.

Foundation money for aging has been primarily directed toward services, demonstration projects and programs. In a period of reduced contributions, foundations should continue to fund practical aspects of aging-related needs and also to become involved in problem-solving research. Corporations also allocate money for research, but these funds are earmarked for technical investigation and marketing research and are not intended for the study of the elderly and their needs. Industry should be encouraged to increase funding for research on older Americans.

C. Scientific and Professional Societies

Commitment to gerontological research has been demonstrated by numerous scientific and professional societies representing a vast array of fields. Not only have these organizations funded aging research, but they have, in addition, attempted to analyze research deficiences and educate others as to the direction and nature of aging research. The leadership and guidance of these societies has, needless to say, been of extreme help to researchers, practitioners, policymakers and educators alike.

At the date of this writing, numerous organizations have already expressed their views concerning the possibilities for future growth of aging research. For example, the American Nurses' Association, the American Psychiatric Association, the American Psychological Association and the National Association of Social Workers, at a joint mini-conference, enumerated areas in need of research in the field of mental health and aging.

Since then, they have communicated numerous topics deserving research attention. Additionally, the American Gerontological Society has prepared a paper for the WHCOA in which it devoted attention to the research needs in biomedical, behavioral and social science research; research on human service and delivery systems; and the personnel and resources required for aging research.

The National Council on Aging has prepared a series of papers that include research implications. The American Geriatric Society has also provided input to the 1981 WHCOA Technical Committees. Lastly, many state conferences and mini conferences have incorporated research recommendations in their proceedings. These have been documented and made available for the use of the delegates to the Conference and are also part of the archival material.

This discussion represents the Research Committee's attempt to demonstrate its awareness and appreciation of the contributions from these organizations, which present valuable and useful information regarding their concerns about aging research. It is the Committee's hope that scientific and professional

societies will continue to respond to the need for aging research, so that all may more adequately contribute to the growth and development of gerontological research.

D. Federal Agency Missions

Today more than 30 federal departments and agencies have demonstrated their commitment to promoting the well-being of the aged population by undertaking research. Some of these departments are directly mandated, while others undertake such research out of an interest on the part of their agencies.

1. National Institutes of Mental Health (NIMH)

The NIMH has supported research on aging since 1960 and in 1976 developed the Center for Studies of the Mental Health of the Aging. Basically, the role of the Center is to support those studies which focus primarily on the implications of mental health and illness for the aging process. It thus supports a wide range, multidisciplinary set of stu es which have both theoretical and policy implications. The research program of the Center is divided into three broad areas: understanding and treating mental disorders in later life; social problems and psychological issues; and services and service delivery. There is a double focus to this research: first, research is done to improve mental health and alleviate mental illness in later life; and second, research is done about the elderly in order to understand development and disorder and their interplay across the life cycle.

A major accomplishment of the Center has been the establishment of collaborative joint-funding relationships with other programs, institutes, or government agencies. Approximately one-third of the Center's research budget is used collaboratively in areas such as senile dementia, rehabilitation, sleep, and service coordination.

Within the NIMH, the Center collaborates with all other programs particularly psychopharmacology and epidemiology in project support and the development of initiatives in aging. The Center will continue to carry ou a wide range of research studies on aging in the future, including: 1) research in the treatment of mental disorders; 2) research in mental health service delivery; 3) research in service delivery to special populations, i.e., the socially isolated, minorities, and the poor; and 4) research on social problems, social policy, and the prevention of mental illness. In order that this research may be effectively performed, the Center has identified key problems which must be addressed:

(a) Funds for aging research, which must continue to increase over the next decade, should be targeted to the Center, with special attention paid to collaborative joint-funding efforts.

(b) The Center should be encouraged to develop mechanisms such as program projects and research centers, in addition to its present mechanism of project grants.

(c) The professional staff of the Center should be expanded to include specialists in epidemiology, public policy, the basic neurosciences, and research dissemination, with appropriate support staff.

2. National Institute On Aging (NIA)

The National Institute on Aging, a branch of the National Institues of Health, has supported aging research since its inception in 1975. Intramural research is performed at the Gerontology Research Center, Baltimore City Hospital, while extramural activities take place at universities, medical schools, hospitals and various other locations.

The NIA research strategy is based upon the premise that aging is a fundamental human process and not a particular illness or even set of illnesses; and the fields of gerontology and geriatrics are intrinsically related to, and dependent upon, the contributions of various disciplines and collaboration with other NIH Institutes and federal agencies. The major program objectives which follow from this strategy include: assembling and developing investigations to acquire new knowledge across the entire range of the Institute's biomedical, geriatric medicine, biometric and social-behavioral research responsibilities; and developing the manpower and critical research resources essential to mounting an effective national research program.

In order to meet these objectives, the NIA, has the following needs:

(a) The research mission of NIA vis-a-vis those of other federal agencies, must be reevaluated, and areas of specific responsibilities better delineated;

(b) The NIA should be allowed to expand and bring its personnel levels up to a par with other Institutes at NIH, so that it can manage in a responsible manner its broad spectrum of programs and administrative duties;

(c) The NIA should be given the resources to implement the mandate already provided by the Research on Aging Act to train a broad spectrum of health professionals needed in the areas of geriatic medicine and the social and behavioral aspects of research on aging.

3. Administration on Aging (AOA)

The Administration on Aging is a major source of policy and application research. Specifically, the AOA impacts on national policy through knowledge gained from the examination of basic social issues and the effects of social, political, or economic intervention through social policy research and social policy demonstrations. This agency considers it vital to identify and analyze the impacts on existing public and private structures to allow planned development, and to redesign policies and services for the elderly of the future. AOA also aggregates knowledge through support for special emphasis policy study centers. Another research concern of AOA has been the effort to improve services to minorities; in addition, AOA has awarded research grants to improve methods of obtaining information and knowledge about minority needs and services.

These are the federal agencies with mandates to work in aging. In addition, other agencies are involved in research on aging as part of their overall programs. Among the better known are:

Veterans Administration

Department of Agriculture

Department of Commerce

Department of Labor

National Science Foundation

Department of Transportation

Department of Housing and Urban Development

This very abbreviated list represents agencies which supplied material and comments that the Committee was able to review and incorporate into the writing of this report.

IV. RECOMMENDATIONS

Research on aging is still a relatively new area in the scientific quest for knowledge. It is, however, a moving, growing, progressive area that requires nurture. Its administration and sources of support need strengthening. The areas of biomedical and beha-

vioral research, basic and applied, that are in need of research investigation should be expanded in depth and breadth. The content of this paper as presented forms the basis for the following recommendations.

The Technical Committee on Research on Aging recommends:

A. 1981 White House Conference on Aging Follow-Up

That follow-up activities for the implementation of recommendations of the 1981 White House Conference on Aging be authorized and funded by Congress.

Implementation: An appropriate government agency should be given the statutory authority and funding to create and coordinate ad hoc commissions to analyze and make recommendations on selected aspects of aging and aging research.

B. Research Manpower Training and Investigation

That a manpower study be mandated to determine the manpower needs for research on aging, in order to insure that the manpower supply will be available to meet anticipated needs.

Implementation: An appropriate government agency should create an ad hoc commission to conduct this manpower study. Also adequate resources ought to be provided to implement the Research on Aging Act of 1974, to train a broad spectrum of research investgators needed in gerontology and geriatrics. This includes research training in the social, behavioral, biological and clinical aspects of aging. The numbers of such trained persons need to be determined on the basis of the results of the recommended manpower study.

Implementation: Adequate monies should be appropriated to the National Institute on Aging to implement the Congressional mandate of 1974.

Sufficient funds should be appropriated to the Administration on Aging to support training and research on policy related issues. This should include such policy related research as the evaluation of services, availability and appropriateness of services to the minority elderly, trends in the needs of the elderly by region and other background factors, and trends in attitudes of the elderly about their perceived needs and aspirations. Sufficient funds should be appropriated to the National Institute of Mental Health, Center on Mental Health Studies of the Aging, for research, training, and demonstration projects to reduce the large and increasing numbers of middle aged and older persons with mental health problems.

C. Multidisciplinary Centers of Research and Training

That multidisciplinary centers be established for research and training in the basic and applied disciplines, with pertinence to major problems of aging.

These problem areas include such aspects as physical and mental health, epidemiology of aging, work, retirement and retirement income, the minority elderly, long term care, housing, and the development of teaching nursing homes.

Implementation: Centers of special emphasis should be located at universities and other appropriate institutions throughout the nation and support of their operation should be the responsibility of the National Institute on Aging, the Administration on Aging, the National Institue of Mental Health, and other agencies with responbilities for the well-being of older adults.

D. International Coordination of Research

That special attention be given to the coordination of research on aging in the United States with that of other cooperative nations.

Implementation: The responsibility for the coordination and collaboration should be given to the National Institue on Aging.

E. Research Dissemination, Utilization, and Collaboration

That a clearinghouse be established to coordinate and disseminate the findings of research on aging, supported by adequate funding and staff to make research findings readily available.

Implementation: The Interagency Committee on Aging, developed by the NIA as an informal, working group of thirty agencies, should be legitimized by Congress as a formal committee with responsibilities and resources for establishing a clearinghouse for research storage and dissemination. It is suggested that the Committee explore the assignment of the operation of the clearinghouse function to the Library of Congress, with the collaboration of the National Library of Medicine.

That collaborative research efforts on aging should be encouraged among government agencies.

Implementation: The Interagency Committee on Aging should take as one of its tasks the initiation of collaborative research and joint-funding of projects.

F. Technology Transfer

That opportunities be provided for the exchange of information on life support systems, communication, environmental regulations, mobility, and health services that could be adapted for the benefit of older persons.

Implementation: The Interagency Committee should assume this responsibility, since it already coordinates the efforts of thirty agencies interested in research on aging.

G. Levels of Federal Support of Research on Aging

That a major increase in federal funds for research, research training and demonstration be appropriated immediately, to relieve the critical shortages in those areas, with planning for increases to a level commensurate with industry's investment in research and development, i.e., five percent of total outlay.

Implementation: The task of monitoring the level of federal federal support for research should be the responsibility of the Federal Council on Aging, and a report on funding should be submitted annually to the President of the United States.

H. Advocacy for Private Sector and Corporate Support of Research on Aging

Private foundations and corporations should be encouraged to invest similarly in research on aging.

Implementation: Appropriate government agencies should convene conferences of foundation representatives to stimulate interest in, and support for, research by the private sector.

Appropriate government agencies should convene conferences and establish a committee to study corporate contributions to research on aging. The purpose is to exchange information, stimulate activity, and monitor private contributions to research on aging.

V. SUMMARY AND CONCLUSIONS

The Research Committee sifted through volumes of printed material and received written and oral presentations by representatives of agencies and orgnaizations. One conclusion reached is that the issues and problems of aging and the aged are prohibitively complex to deal with in appropriate depth within the allotted time. The professionally active committee members were pressed into an almost impossible task of bringing the information and issues to a focus and coming up with recommendations that will hopefully meet the test of time.

A common motivating factor of the committee members was an aspiration, shared with the rest of society, for the health and well-being of older persons. There appears to be a national aspiration to achieve the goal of a healthy and contented old age for every American. Having an implicit national commitment to cultivate as high a proportion as possible of older adults of sound mind and body who are able to function independently, the research committee, guided by this goal, attempted to address the complexities of research and its relevance to our society's aspirations.

Some of the complexities of research on aging are revealed by the fact that there are at least 30 different federal agencies carrying out or supporting research on aging. This fact may invite the impression that there is inefficiency in a wide distribution of responsibilities for research. However, the efficiency of each agency may in fact depend upon the results of only a very thin level of research which is closely related to its mission. The greatest inefficiency for the present would appear to lie in the low investment in research relative to federal expenditures for programs for older persons.

Research on aging is supported at about 140 million dollars per year relative to expenditures of over 140 billion. Thus only one tenth of one per cent is devoted to research, a precariously low level if one wishes to increase efficiency and improve the quality of effort.

One may properly conclude that the issues of aging are long ranged ones for our society. Some of the issues are not lock-and-key problems with simple solutions but are ones that will recur though set in a context of advances in knowledge and changed attitudes of society.

Since the issues of aging are long ranged, and the scientific questions among the most fundamental facing research, it is necessary that there be both continuity and depth in research efforts. Scholars and scientists of the highest caliber should continually be encouraged to devote their attention to the kinds of questions raised in this report. It is encouraging that two major agencies, the National Institue of Aging, and the Administration on Aging are functioning. However, they are relatively

young institutions and their growth must be monitored and nourished during their phase of establishing rapport with the nations' professional and scientific societies, and organizations concerned directly with the well-being of older persons. Some constructive monitoring and advocacy for research can be carried out by the Federal Council on Aging in coordination with the White House and Congressional Committees.

One of the issues confronting the committee was the difficulty in defining research. Perhaps this is a result of the complex nature of the processes of aging. For some, research is only bench investigations of a biomedical character; whereas, for others, fact finding by surveys is research. The committee's deliberations led us to distinguish different types of research. Hypothesis oriented research is carried out by the scientist who is interested in finding out the mechanisms through which changes of age are brought about. Such fundamental research is pursued with the thought that if one understands the mechanisms of aging e.g., the genetic and cellular basis, the amelioration of deleterious conditions associated with advancing age may be achieved. Of a different purpose are surveys, carried out, for example, to determine the attitudes of the public toward a social policy governing Social Security or Medicare. Such surveys need not be concerned with how the attitudes are formed. Agencies and legislators need to know what the public's attitudes are in order to plan socially acceptable programs for older Americans. Many agencies may need the opportunity or authority to pursue policy research related to its programs or to evaluate the outcomes of its programs. Support of fundamental or hypothesis-related research may require different mechanisms of project evaluation, such as review by scientific peers, than do policy related studies. Judgments directed toward the scientific importance of research and the likelihood that it will contribute to lasting knowledge are different than judgments about policy related research which must by necessity meet a criterion of answering practical and relevant questions of immediate significance.

These and other matters have received the attention of the committee for the short period of its existence. However, it seems more effective to extend such deliberations over a matter of several years rather than several months. If there is to be a White House Conference on Aging of 1991, then a longer period might be allocated for the work of a committee on research so that the wide range of information from various groups can be digested and feedback given to the sources. However, if the recommendations of this report are followed, information about research on aging, training for research, expenditures and other matters could be more rapidly collated, distributed and debated.

The Technical Committee on Research on Aging met four times for the preparation of this report. The first meeting was July 29, 1980 in Washington, D.C. The agenda for the meeting was an assessment of the task, a decision about the areas to be covered and plans for future meetings.

On September 29, 1980 the Committee scheduled a one day meeting in Washington, D.C. At this time the decision was made to broaden the scope of the Committee's inquiry and the intent of the report. A two day meeting in Washington, D.C. on December 1-2, 1980, was divided into separate sessions. On the first day, WHCOA staff, representing other technical committees, presented suggestions of research needs generated by committee discussions. Consultants in nutrition, epidemiology, mental and physical health and well-being, interagency cooperation, and a national information system discussed research status and needs.

The purpose of the second day was a discussion of the presentations and the input from various committee members with particular interests and expertise.

The Committee held its last meeting in San Francisco on January 12-13, 1981.

The goal for the first day was the draft of the Executive Summary to be submitted February 1, 1981. Having completed this task, the Committee then worked on the content for the draft of this, the final report. The coordination, assembling and writing of the various content was the responsibility of Phyllis R. Miller, Ph.D., of the Policy Development and Research staff of the WHCOA.

Without the willing cooperation of numerous agencies and individuals the work of this committee would have been impossible. Detailed reports, and letters were submitted for our attention, and information was transmitted by telephone. The Committee extends its appreciation to the hundreds of persons who were helpful. It is regretted that because of the numbers, their individual efforts cannot be given separate acknowledgement. Their efforts and cooperation illustrate the seriousness with which the issues are addressed and the commitment to research that will ultimately provide the basis for achieving the goal of healthy and meaningful later years for every American.

APPENDIX I

1. This report is based on the responses of 28 agencies and departments of the Federal government who responded to our letters of inquiry. The universe of the survey consists of 30 member agencies of the NIA Ad Hoc Interagency Committee on Research on Aging, Department of Transportation and the National Science Foundation. Out of these 32 organizations, four have not yet replied to the inquiry; 18 could not calculate the elderly's pro-rata share of their programs which are serving the general population; and 10 indicated the levels of their budgets appropriated to research on aging.

2. This level is an estimate and was obtained by multiplying the budget of SSA Office of Research and Statistics budget by 50%, following the explanation in the SSA communication: "...39% of the (ORS) budget is devoted to divisions whose primary research is in the area of aging; 26% of the resources are devoted primarily to "young" research areas; and 35% of the budget is mixed."

FEDERAL EXPENDITURE FOR RESEARCH AND
TRAINING ON AGING BY AGENCY OR DEPARTMENT
(In Millions of Dollars)

Year: 1980

Agency or Department	Total Agency Appropriation (1)	Total (2)	Services (3)	Research, Demonstration & Evaluation (4)	Training (5)	Others (6)	Res. Dev. & Eval."/Total for Aging= (4)/(2)
National Institute of Aging (NIA)	70.0	70.0	0	67.2 *1	2.8	0	96.0%
Adminstration of Aging (AOA)	652.2	652.2	600.2	33.5 *2	14.0	5.5	5.1%
Center for Study of Mental Health of Aging (NIMH)	27.4	27.4	16.9	7.5 *4	3.0	0	27.4%
Health Care Financing (HCFA)	46,782.0	34,799.0	N.A	38.0 *5	N.A	N.A	0.1%
Social Security Administration (SSA)	N.A	117,900.0	N.A	8.0 *7	N.A	N.A	0.007%
Veterans Administration (VA) Dept. of Medicine & Surgery	6,045.7	1,588.2	N.A	1.8 *8	N.A	N.A	0.1%
Dept. of Agriculture (DOA)	852,890.0	N.A	N.A	2.0 *9	N.A	N.A	N.A
Health Resource Administration (HRA)	125.9	6.7	0	.3	6.4	0	4.5%
National Center for Health Serv. Research (NCHSR)	19.4	2.8	N.A	2.8 *10	0	N.A	100%
Federal Council on Aging	0.5	0.5	0	.2 *11	0	0.3	40%

No. 527. Federal Benefits for the Aged, by Type of Benefit: 1971 to 1979*
(For years ending June 30 except, beginning 1977, ending Sept. 30)

TYPE OF BENEFIT	Benefits (bll. dol.)								
	1971	1972	1973	1974	1975	1976	1977	1978	1979
Total									
Other outlays	44.0	48.6	56.9	65.7	81.3	92.0	95.7	102.9	116.4
Cash benefits	34.2	38.1	46.0	53.2	64.7	73.0	72.8	76.9	85.2
Social security	27.1	30.2	37.1	42.8	51.8	58.6	56.6	62.9	69.0
Railroad employees	1.7	1.9	2.1	2.3	2.8	3.2	3.5	3.0	3.2
Fed. civilian empl	2.3	2.7	3.3	4.3	5.5	6.4	7.1	5.0	6.2
Military retire.	.7	1.0	.7	.8	1.1	1.2	1.8	2.0	.8
Coal miners - 1	.1	.1	.2	.2	.2	.2	.3	.3	1.1
Sup. sec. income-2	1.4	2.2	1.1	1.4	1.8	1.8	1.7	1.9	1.7
Veterans pens.-3	.9	(3)	1.4	1.4	1.5	1.6	1.8	1.8	3.2
In-kind benefits	9.8	10.5	11.0	12.5	16.6	19.0	22.9	27.0	31.2
Medicare	7.5	8.4	9.0	9.9	12.8	15.0	18.3	21.5	24.6
Medicaid	1.9	1.7	1.5	2.2	2.6	3.0	3.3	3.8	4.3
Food Stamps	.2	.2	.1	.1	1.0	.6	.6	.5	.5
Sub. pub. housing	.2	.2	.3	.2	.4	.4	.8	1.1	1.6
OtherIn-kind bene.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	.1

1. Prior to 1979 includes benefits for coal miners widows only.
2. Prior to 1974, represents Federal grants to States for all to the aged, blind, and disabled.
3. Veterans pensions included in supplemental security income in 1972. In 1979, includes compensation and pensions.

Source: U.S. Office of Management and Budget, The Budget of the United States Government, annual. Compiled by Ms. Kathy Yarbrough, Office of Management and Budget.

Subject: Federal Programs Impacting on the Elderly

Below is a minimum estimate of Federal spending on the elderly. The estimate excludes outlays for some benefit and service programs which serve broad populations because elderly participation data are unavailable. Also excluded is the elderly's pro-rata share of programs serving the general good, such as national defense, highway construction, and environmental protection.

	(Outlays in Millions) 1980	1981
Minimum Total Outlays for Elderly	139,665	161,593
	598	676
° Administration on Aging Programs	85	93
° ACTION Older American Volunteer Programs	58	69
° National Institute on Aging		
° Senior Community Service Employment	239	268
Program and CETA Older Worker Research	1	3
° White House Conference on Aging	29,967	33,688
° Medicare	4,832	5,466
° Medcaid		
° Other Federal Health Programs (DHHS	1,974	2,074
Programs, VA, Defense, IHS)	79,879	94,470
° Social Security (OASDI)		
° Other Retired, Disabled and Survivors		
Benefits	13,513	15,229
° Supplemental Security Income	1,820	1,970
° Veterans Compensation and Pensions	3,133	3,362
° Subsidized Public Housing	2,123	2,636
° Section 202 Elderly Housing Loans	700	700
° Foods Stamps	648	773
° Other	95	116

Budget Decisions

° Outlays for the elderly represent a minimum of 26 percent of the total budget in 1981.

*Compiled by Kathy Yarbrough, Office of Management and Budget

FOOTNOTES TO THE TABLE

1. NIA supports no demonstration and evaluation projects.

2. Out of this expenditure of $33.5 million, AOA appropriated $8.5 for research.

3. AOA's appropriation in this category includes $2.0 million for the Clearing House, $2.45 for the Federal Council on Aging, and $3.0 for gerontology centers.

4. NIMH Center for Aging is not involved with demonstration projects.

5. The HCFA figures is an approximation supplied by the agency.

6. This is the amount the SSA calculates as "retirement outlay"

7. From the information supplied by the offical correspondence, it is assumed in this table that 50% of the SSA Office of Research and Statistics is spent on research on aging. The agency does not support demonstration projects.

8. This is the minimum estimate of the VA's expenditure on aging research in 1979, according to the agency communication.

9. All of the DOA's expenditure on aging-related investigation is spent on nutrition projects.

10. The NCHSR supports applied research on health care services, nursing home care, long-term care, and other related issues.

11. The FCA is funded through the AOA.

12. This figure underestimates the level of research actually conducted at the agency, for Council members and staff on non-research payrolls also assist research-related activities.

SUPPLEMENTARY VIEW OF DR. SEYMOUR S. KETY

This report on research on aging properly emphasizes the magnitude of the national, social and personal problems involved, and in a compelling manner points out the inadequacy of our national commitment to the acquisition of new knowledge which is the only means by which these problems will be reduced and ultimately alleviated.

It goes too far however in attempting inadequately to spell out a comprehensive list of specific needs and a satisfactory and rational program of research to address them. The allocation of research effort is a task which requires careful and comprehensive study on the part of experts who are both competent and detached, who can devote to the task the time and thought that is required, and can draw upon the best information and advice from all of the pertinent disciplines. A credible plan must take into account the feasibility of various approaches on the basis of existing knowledge and tools and the availability of appropriately trained and motivated personnel, lest the limited funds and resources be uneffectively utilized in the premature application of insufficient knowledge to important problems. It must be farsighted in recognizing the need for additional fundamental knowledge and supporting its acquisition in general and specific areas. It should foster the development of improved techniques and research designs, and where the cohort of trained investigators requires augmentation, recommend appropriate mechanisms and evaluate the needs in particular disciplines.

An example of the lack of comprehensiveness of the present report is the section on senile dementia, undoubtedly a major national health problem in terms of the loss of human potential and its individual and public costs. The National Institute on Aging in conjunction with two of its sister institutes has held several significant expert conferences on this important problem, has developed and is supporting effective, multi-disciplinary research programs designed to elucidate its causes, make possible its prevention and improve its diagnosis and treatment. The present report in the one paragraph it devotes to it limits its recommendations for research to the development of effective questionaires and other means of detecting cases.

The task force on research could not have been expected, in the few meetings which it held, to develop so comprehensive and thoughtful a program of research on aging. Some members of the committee, recognizing that, in concert with other institutes of the NIH and the National Institute of Mental Health, the National Institute on Aging had been established to carry out those functions, that its director and staff, consultants and advisors and the expert technical committees it had recruited in the biomedical, the social and the psychological disciplines were eminently qualified to address these issues and were effectively engaged in doing so, recommended that the present ad hoc committee lend its support to their efforts rather than attempting to duplicate them.

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Creating an Age Integrated Society: Implications for the Educational Systems
Creating an Age Integrated Society: Implications for Spiritual Well-Being
Creating an Age Integrated Society: Implications for the Family
Creating an Age Integrated Society: Implications for the Media
Creating an Age Integrated Society: Implications for Governmental Structures
Research in Aging

Experts from various fields were appointed by the Secretary of Health and Human Services to serve on 16 Technical Committees, each charged with developing issues and recommendations in a particular area for consideration as background material for the delegates to the 1981 White House Conference on Aging.

the 1981 White House Conference on Aging

Executive Summary of Technical Committee on RESEARCH IN AGING

TCES-4

NOTE: The recommendations of this document are not recommendations of the 1981 White House Conference on Aging, or the Department of Health and Human Services This document was prepared for the consideration of the Conference delegates The delegates will develop their recommendations through the processes of their national meeting in late 1981

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I. INTRODUCTION

The Technical Committee on Research on Aging recommends that the White House Conference on Aging support the development of new knowledge to meet the challenges of society's fastest growing segment, the aging population. Information about aging has not kept pace with the population growth of older persons and their needs. Clearly, it is through expanding knowledge about the fundamental processes of aging, family support, health care delivery systems, and other issues, that we will improve the well being of older Americans and reduce the severe fiscal drain on the national economy.

In relation to need, there has been too little research effort, and our relative ignorance of the problems of aging jeopardizes the well being of older people and the economic survival of our society. If the major causes of mental and physical disability could be understood and prevented, we would save this nation billions of dollars and untold suffering, and lengthen the period of healthy and active life for older people.

Relative to the federal expenditure for older persons, research on aging is markedly limited. During the 1970's, the federal expenditures on health care, income maintenance, and service delivery for the aged tripled from forty-four billion dollars to over one hundred and forty billion dollars. Considering the growing number of older people, expenditures will certainly escalate, potentially to the point of a national financial crisis.

In terms of federal expenditures, federal support for research is at a negligible level of only one tenth of one percent. This is dramatically lower than the proportion of funds invested in research and development by industry, which tends to support research and development at a level of two to five percent of expenditures.

The delegates to the White House Conference on Aging should recognize the wide scope of research needs, embracing as it does, fundamental research in the biological, psychological and social sciences, as well as applied research designed to increase the immediate prospects for an improved quality of life for older

adults. Research on aging touches upon the most fundamental issues of human existence, not only in terms of the biological factors which make life possible, but also the conditions that render life meaningful. More people live to old age, but there is insufficient knowledge of the ways to maintain older persons with maximum independence, whether or not disabilities occur. The delay and prevention of infirmities and disabilities often accompanying advancing age require knowledge that can be gained only through long range, painstakingly pursued and dedicated research. Society should support fundamental inquiry into the processes of human aging and the development of a knowledge base for the provision of services. One of the most crucial issues is the lack of understanding of research on aging and enthusiasm for funding research on aging by the public and professional communities.

II. TRENDS

Diseases and disabilities of human aging are not inevitable, and many of the problems can be alleviated or eliminated by understanding the biological mechanisms and social processes of aging. The objective of research on aging is to preserve the health and productivity of the older person. New knowledge is needed. For example, we are still ignorant about the basic biologic causes of aging. Understanding the basic causes of aging will lead to a greater realization of the span of human potential and the reasons for the increased susceptibility to the diseases of aging.

Disorders such as cancer, arteriosclerosis, arthritis and dementia account for most of the incapacity of the elderly. We do not know why they arise increasingly with age and how best to treat them. The prevention of these diseases, associated with aging, will yield a tremendous savings in financial and human resources. In the interim, new knowledge is needed to treat the disorders of aging and to improve health care, thereby enhancing the quality of life. Information is needed on the levels of dysfunction, disability, disease and discomfort as older persons move from one circumstance to another.

Social factors in aging are powerful. The ways in which older people live, and the social supports and institutions they have access to will determine the nature of their lives and the quality of their survival, yet these factors are poorly understood. We need new knowledge on the variations in social, economic, ethnic and environmental contexts of aging. For example, information is needed on necessary improvements in the physical environment to insure older people's safety, mobility and independence. Comparisons show that in some cultures the elderly have greater capacity for active roles than is usually available to most older people in our country. We also need new knowledge that will lead to increased opportunities for older people in their exercise of personal responsibility.

Old age has been a gift for many persons in our modern society, and we need to expand the opportunities for productivity of older persons as growing national resource. The population 65 and over has been growing more rapidly than any other age group and this trend is expected to continue. At the present time, the older population increases at the rate of over 1400 persons per day and an even greater increase is shown by the population over 75. It is anticipated that by the year 2000 the population over 65 will be about 32,000,000 and by the year 2040 the number over 65 will be about 55,000,000. The most dramatic growth will be in the number of persons 85 and over. The population in this group is expected to more than double in the next fifty years. There are profound implications for our society resulting from the greater number of older persons and their increased life expectancy.

III. KEY ISSUES

Knowledge is essential if we are to improve the lives of older people and facilitate needed changes in our society. We have made substantial progress in expanding the basis of knowledge about aging. However, a good many questions remain unanswered.

For example:

1. How can we lengthen the period of healthy and active life for older people? What is the nature of the changes that can restrict the productivity and independence of an aging population? More people are living to old age and we need to understand the causes of mental and physical disability in order to prevent human suffering and financial costs.

2. Why is it that all living cells age but some age more rapidly than others? In living organisms, what are the cell systems which are most likely to change with advancing age?

3. Why do women outlive men? By the year 2000 it is estimated that there will be three women to two men in the age group 65 and over. What are the consequences of this gender differential on the quality of life and economic security of women?

4. How does the emergence of four and five generation households affect the family support system? What happens to the welfare of retired persons and their relations with their children when their own parents are still alive and in need of their support?

5. What are the special needs of ethnic elderly? Are the minority elderly fully sharing the health and economic benefits offered by our nation?

6. How can we improve the health care and service delivery system rather than merely escalating the cost by billions of dollars every year?

These issues vitally affect the lives of older Americans as well as the nation itself. The answers to such questions require research that will lead to information and potential solutions.

IV. RECOMMENDATIONS

The Technical Committee on Research on Aging recommends:

1. 1981 White House Conference on Aging Follow-Up

That follow-up activities for the implementation of recommendations of the 1981 White House Conference on Aging be authorized and funded by Congress.

Implementation: An appropriate government agency should be given the statutory authority and funding to create and coordinate ad hoc commissions to analyze and make recommendations on selected aspects of aging and aging research.

2. Research Manpower, Training and Investigation

That a manpower study be mandated to determine the manpower needs for research on aging, in order to insure that the manpower supply will be available to meet the anticipated needs.

Implementation: An appropriate government agency should create an ad hoc commission to conduct this study.

That adequate resources be provided to implement the Research on Aging Act of 1974, to train a broad spectrum of research investigators needed in gerontology and geriatrics. This includes research training in the social, behavioral, biological and clinical aspects of aging. The numbers of such trained persons to be determined on the basis of the results of the recommended manpower study.

Implementation: Adequate monies should be appropriated to the National Institute on Aging to implement the Congressional mandate of 1974.

Sufficient funds should be appropriated to the Administration on Aging to support training and research on policy related issues. This should include such policy related research as the evaluation of services, availability and appropriateness of services to the minority elderly, trends

in the needs of the elderly by region and other background factors, and trends in attitudes of the elderly about their perceived needs and aspirations.

Sufficient funds should be appropriated to the National Institute of Mental Health, Center on Mental Health Studies of the Aging, for research, training, and demonstration projects to reduce the large and increasing numbers of middle aged and older persons with mental health problems.

3. Multidisciplinary Centers of Research and Training

That multidisciplinary centers be established for research and training in the basic and applied disciplines, with pertinence to major problems of aging. These problem areas include such aspects as physical and mental health, epidemiology of aging, work, retirement and retirement income, the minority elderly, long term care, housing, and the development of teaching nursing homes.

Implementation: Centers of special emphasis should be located at universities and other appropriate institutions throughout the nation and support of their operation should be the responsibility of the National Institute on Aging, the Administration on Aging, the National Institute of Mental Health, and other agencies with responsibilities for the well being of older adults.

4. International Coordination of Research

That special attention be given to the coordination of research on aging in the United States with that of other cooperative nations.

Implementation: The responsibility for the coordination and collaboration should be given to the National Institute on Aging.

5. Research Dissemination, Utilization and Collaboration

That a clearinghouse be established to coordinate and disseminate the findings of research on aging supported by adequate funding and staff to make research findings readily available.

Implementation: That the Interagency Committee on Aging, developed by the NIA as an informal, working group of thirty agencies, be legitimized by Congress as a formal Committee with responsibilities and resources for establishing a clearinghouse for research storage and dissemination. It is suggested that the Committee explore the assignment of the operation of the clearinghouse function to the Library of Congress, with the collaboration of the

National Library of Medicine. That collaborative research efforts on aging should be encouraged among government agencies.

Implementation: The Interagency Committee on Aging should take as one of its tasks the initiation of collaborative research and joint funding of projects.

6. Technology Transfer

That opportunities be provided for the exchange of information on life support systems, communication, environmental regulations, mobility, and health services that could be adapted for the benefit of older persons.

Implementation: The Interagency Committee, should assume this responsibility since it coordinates the efforts of thirty agencies interested in research on aging.

7. Levels of Federal Support of Research on Aging

That a major increase in federal funds for research, research training and demonstration, be appropriated immediately, to relieve the critical shortages in those areas, with planning for increases to a level commensurate with industry's investment in research and development, five percent of total outlay.

Implementation: The task of monitoring the level of federal support for research should be the responsibility of the Federal Council on Aging, and a report on funding should be submitted annually to the President of the United States.

8. Advocacy for Private Sector and Corporate Support of Research on Aging

Private foundations and corporations should be encouraged to invest in research on aging.

Implementation: Appropriate government agencies should convene conferences of foundation representatives to stimulate interest in, and support for, research by the private sector.

Appropriate government agencies should convene conferences and establish a committee to study corporate contributions to research on aging. The purpose is to exchange information, stimulate activity, and monitor private contributions to research on aging.

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