



Constructive Development of Aging

William H. Wehrmacher^{1*} and Luke Curtis²

¹Loyola University Chicago Stritch School of Medicine, Maywood, Illinois, USA

²Medical writer and researcher, Forest Hills, NY, USA

Abstract

Geriatric publications have extensively and effectively emphasized combating the diseases, degenerations, and diminishing organ functions during aging, but have done little to exploit concurrent favorable developments. Effective management can be improved by both and are required to produce satisfaction and productivity for the elderly.

Keywords: Aging; Diseases; Favorable developments

Introduction

During the last century, there was delight with improving life expectancy and relatively little concern for how to deal with the elderly. In 1900, the average life expectancy at birth was 48.3 years, and by the end of the century, it had increased to 76.9 years [1]. Improved sanitation, nutrition and medical care initiated this increase, and improvements in both propelled it. Unlike the increased life expectancy demonstrated from birth, life expectancy for people after retirement age did not increase until the last third of the century so there was little need for a substantial change in the management of the aged. Although increased life expectancy was appreciated by individuals, the need for new and revised medical and social planning has been substantially and dangerously delayed.

Cognition

The severe impairments in brain function occurring during aging are the result of disease or injury (stroke and other cerebro-vascular diseases, Alzheimer's, neurosyphilis etc.) not the result of aging developments themselves. Intellectual abilities continue to develop during advancing age, particularly over a wide range of domain knowledge, vocabulary, and verbal comprehension which Kanfer and Ackerman call "crystallized or Gc" to distinguish it from Gf "Fluid" current, abstract, adaptive intellectual abilities which is better measured by general mental ability tests [2]. Aging, in adult development, and Work motivation, they indicate domain knowledge across the life course and suggest that individuals may compensate for declines in Gf by selecting jobs and goals and by using self-regulatory strategies that optimize existing knowledge and skill.

Asthma and Allergies

Some studies suggest that elderly adults are somewhat less likely to experience asthma and rhinitis than children or younger adults. A National Health Interview Study (NHIS) of 54,485 non-institutionalized US adults over age 65 years reported an asthma prevalence of 7.0%, with a decreasing prevalence with increasing age [3]. Asthma prevalence was only 45% as common among those aged 85 or more years (3.6%) as compared to those in the 65 to 69 age group (8.0%) (95% CI of 0.36-0.55) [3]. A Swiss study of 9,651 adults of 18+ years had self reported allergic rhinitis rates which were significantly greater in the younger versus older age cohorts (women 24.5% at ≤ 60 years, 15.4% at 60+ years, $p < 0.001$, and men 21.6% at ≤ 60 years and 13.0% at 60+ years $p < 0.001$) [4].

Although asthma is less common in advancing years, asthma often goes undiagnosed or untreated in elderly adults [5]. The exact mechanism for lower asthma and allergy rates in the elderly is not well

known, but may be related to lower rates of allergic sensitization in older adults. A Swiss study of 9,651 adults reported that Phialatop[®] measured atopy to common inhaled allergens (such as pollen, mold, domestic animals and dust mites) was significantly more common in young subjects versus older subjects (women 30.6% at ≤ 60 years, 18.1% at 60+ years, $p < 0.001$, and men 36.4% at ≤ 60 years and 26.6% at 60+ years $p < 0.001$) [4].

Respiratory Infections

Rates of upper respiratory diseases such as colds and influenza are generally less frequent among older adults as compared to younger adults and children. A Netherlands study analyzed 541 cases of upper respiratory illness presenting to general practitioners [6]. Compared to a cohort of young adults (15-24 years), adults 60+ years had only a 30% less risk of getting an upper respiratory infection such as rhinovirus, coronavirus, or influenza A (95% CI 0.5-0.9), while children aged 1 to 4 years had a 220% greater risk of an acute upper respiratory infection (95% CI of 3.0-3.4) [6]. While upper respiratory infections are generally less common in the elderly, influenza morbidity and mortality rates are generally higher in the elderly [7].

Autoimmune Diseases

Older adults less frequently experience new onset of many autoimmune diseases than younger people do. A review of 40 autoimmune diseases reported that only 6 of the autoimmune diseases (giant cell arteritis, pernicious anemia, bullous pemphigoid, rapidly progressing glomerulonephritis, myasthenia gravis, fibrosing alveolitis) most commonly appear after age 50 years [8]. Many common autoimmune diseases like type 1 diabetes, rheumatoid arthritis, rheumatic fever, multiple sclerosis, lupus, and sarcoidosis most commonly begin during childhood or early adult life [8]. On the other hand, a number of animal and human studies have suggested that aging related immune system changes may reduce self tolerance and increase risk of autoimmunity and inflammatory responses [9]. More research is needed to elucidate the effects of aging on autoimmunity and self tolerance and develop better prevention and treatment strategies.

***Corresponding author:** William H. Wehrmacher, Professor of Medicine & Adjunct Professor of Physiology, Loyola University of Chicago, Stritch School of Medicine, Maywood, Illinois, USA, E-mail: wwehrma@lumc.edu

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Cancer

Rates of cancer seem to level off at about 80 to 85 years and then fall significantly during greater age. A US SEER Cancer Registry study reported that overall cancer incidence and death rates in both women and men were only about 50% as great at the age of 100 years as at 85 years [10]. Incidence rates from most of the 24 types of cancer examined in this study peaked somewhere between 75 and 90 years [10]. Many worldwide studies have reported that cancer rates decline by at least a factor of two to three by age 100 as compared to those at about 85 years of age [11]. Several autopsy studies have also reported that the presence of cancer at death is significantly lower in individuals aged 90 or more years at death [12,13]. Perhaps conditions are less favorable for cancer growth in adults over aged 85 years than in those aged 65 to 85 years.

Growth rates of many forms of cancer are significantly slower in older adults as compared to younger adults. A Netherlands study reported that median volume doubling times for primary female breast cancer was 80 days in women under 50 years of age (95% CI 44-147 days), 157 days in women aged 50 to 70 years (95% CI 121 to 204 days) and 188 days in women over aged 70 years (120 to 295 days) [14]. Autopsy studies have also reported significantly slower cancer primary growth rates and metastatic growth rates in adults who died at 90 years or older versus those who died younger [12]. Studies with laboratory mice have also reported slower growth rates of several types of cancers in older animals versus younger animals [15]. The slower growth rate of cancer in older patients may make these cancers easier to treat.

Circulatory

Natriuretic peptides are generally present in significantly higher levels during aging [16]. Natriuretic peptides have many potentially beneficial properties for heart failure patients, including opposition to vasoconstriction, sodium retention and antidiuretic effects [17,18]. A number of therapeutic approaches to increase atrial natriuretic peptides (ANP) are currently being investigated, including the use of ANP analogues such as carperide and the use of several inhibitors of neutral peptidase inhibitors which block breakdown of ANP [18].

Search for still more favorable developments during aging to share with other gerontologists and to exploit your current practice. Most of the favorable developments will require interdisciplinary studies: biochemistry, cell and molecular biology, pharmacology, etc. Further study of complex metabolic interactions is likely to make management better, improve the quality of the later years of life, and increase productivity.

Summary

Continuing with the last third of the 20th century, gerontology has been responsible for managing an increasing part of the population that now exceeds those of earlier generations surviving beyond the "retirement" age. Infirmities of the aged have received extensive study, but the favorable developments have almost completely escaped scrutiny.

Search, exposition, and utilization of the favorable developments, to supplement attention to damage, can improve the satisfaction and productivity of the elderly who are swiftly mounting among our population. Previous organization has become inadequate for changes in the composition of the community.

Study of such positive factors in aging can help scientists and clinicians better understand disease processes and develop better strategies to prolong health and productivity among the elderly.

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