

Book Review

Alzheimer's Disease: Life Course Perspectives on Risk Reduction, by Amy R. Bornstein and James A. Mortimer, Academic Press, 2016, 466 p., ISBN: 9780128045381.

Alzheimer's Disease: Life Course Perspectives on Risk Reduction by Amy R. Bornstein, Ph.D. and James A. Mortimer, Ph.D., is a book that belongs on the shelf of everyone in the field of Alzheimer's disease (AD) research and clinical practice. It covers in great academic detail all the latest work on not only epidemiology and neuropathology, but beyond that, also presents the latest information on what is now called the non-pharma or integrative medical approach to the prevention of this horrible and dreaded disease.

Indeed this book is unique because, while there are a plethora of books for the general public on this topic, this is the first academic text that covers it in such great detail, and it appears at the moment that only by tackling the multiple risk factors for dementia with a multi-modal lifestyle approach can headway be made into prevention.

Prologue: A very useful primer on Epidemiologic Methods.

Section I: Defining A Case: The text itself begins with a description of Dr. Alzheimer's original case in 1906. It then goes on to describe various classifications of cognitive impairment, including a comparison between vascular dementia and AD. The discussion of mild cognitive impairment (MCI) is groundbreaking as the authors posit that AD is a life-long process with risk reduction possible at all ages. Although subjective cognitive decline (SCD) or complaint is discussed later in the book, it might have been useful to have it here, as SCD is a recognized precursor to MCI.

Other chapters in this section range from epidemiology to an excellent presentation of neuropathology, including neurofibrillary tangles and neuritic plaques. I found the presentation on the consideration of the association of lesions and the presence or lack of cognitive impairment and dementia quite enlightening. The critical importance of brain reserve and how it

protects against the development of AD is excellent. I especially found the discussion on the questionable utility of amyloid removal drugs prescience.

Section II: Descriptive Epidemiology. This section opens with a discussion on the prevalence of AD by a number of factors such as race, age, and so on and includes a discussion on the escalating costs associated with the increase in the number of cases predicted. This section also discusses the prevalence of MCI as well.

Another chapter shares the incidence of AD. The key point in this chapter is that MCI can revert back to normal cognition, especially opening the way for a more holistic approach. Survival and mortality from AD is also discussed, as is the importance of the recognition that deaths from other chronic disease are decreasing, while deaths from AD are increasing.

Section III: Analytic Epidemiology: This is perhaps the most important one in the book, at least from a clinical standpoint. Risk and the importance of lifestyle measures in increasing cognitive reserve and how that may affect neuropathology are further discussed.

"Clearly then," the authors state, "prevention across the lifespan is an avenue that should be pursued, in addition to finding medications that can reduce the pathology of the disease." After a chapter on family history, genetics, and Down syndrome, a chapter on early life risk factors is presented. This section is very complete in discussing how issues such as birth order, weight, early life socioeconomic conditions, and education are crucial to later brain development. Other chapters in this section include Traumatic Brain Injury, cigarettes and alcohol consumption, including wine, on vascular disease, hypertension, diabetes, cholesterol, and obesity.

This section further advances the importance of diet, supplementation, exercise, and cognitive activity, including the relationship of mental activities throughout life and amyloid deposition. Of great interest is the discussion of utilizing physical exercise and mental exercise together and how that may enhance brain-derived neurotrophic factor (BDNF), and be synergistic in preventing AD.

This all-important section continues with a presentation on social engagement, loneliness, drugs such as nonsteroidal anti-inflammatory drugs, hormones, and antidepressants.

As mentioned, I found this section exemplary. What is missing, however, is an analysis on what is called *Adverse Life Experiences* or *ACE*, and how those who were exposed to trauma and abuse of all types as a child, including divorce, are at greater risk for AD. In fact, their consequent behavior, including poor dietary choices, lack of exercise, alcoholism, smoking, and great stress and depression may lead to multiple risk factors for AD, including heart disease, depression, high cholesterol, diabetes, and more [1].

Section IV: Epidemiologic and Biologic Markers. Prodromal markers of AD, such as depression, olfaction, and subjective memory complaints are revealed. Subjective complaints, although very completely discussed, as mentioned previously, may have fit better in the chapter addressing MCI.

The following section in the text on the relationship between stress, cortisol, and depression is perhaps not as clear as it could be. Beyond that, this would be an excellent place for the authors to describe the recent research on stress management techniques, such as meditation, which suggests in multiple studies over many years to soothe stress, reduce cortisol levels, enhance cerebral blood flow, including to the hippocampus and other significant areas, impact neuroplasticity and perhaps neurogenesis, build reserve, reduce many risk factors for AD, including all those mentioned in this text, and enhance many aspects of cognitive function. Moreover, there is clearly a psychological and spiritual well-being aspect to life, which emerging research suggests lessens multiple risk factors for AD. It would be welcome in future editions. Both of those topics are extensively reviewed here [2].

The remaining chapters in this section present a reasonable discussion of how various biomarkers, such as cerebrospinal fluid, blood, and PET, may provide an indication of underlying disease. For example, detection of neurofibrillary tangles in the limbic system may offer the first opportunity for detection of AD three or more decades before symptoms. A person could then be made aware of the

importance of a multi modal, non-pharma prevention program.

Section V Future Steps: In this section, lifestyle and AD prevention is further discussed. Indeed, the second to the last chapter of the book is groundbreaking. Why? Because, to reiterate, this is the first academic book of which I am aware that suggests that AD may be prevented by lifestyle measures to build reserve and possibly slow the pathologic processes that lead to AD. The research on the multi modal prevention model completes this chapter.

The book concludes with a summary in which the authors suggest that AD can be detected over two decades before symptoms arise and is dependent on a person's entire life experience. Thus prevention at the personal level, again via lifestyle modification, is most relevant.

Alzheimer's Disease: Life Course Perspectives and Risk Reduction by Borenstein and Mortimer is groundbreaking in many ways. It is a must read for every practitioner or researcher involved in AD. The leading edge information it contains may also be critically important to help keep your mind alive forever.

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