

Book Review: *Chronic Medical Disease & Cognitive Aging: Toward a Healthy Body and Brain*, edited by Kristine Yaffe (New York Oxford University Press, 2013)



Kenneth Rockwood, MD, FRCPC, FRCP, FCAHS

Department of Medicine (Geriatric Medicine & Neurology), Dalhousie University and Centre for Health Care of the Elderly, Capital District Health Authority, Halifax, NS, Canada

DOI: <http://dx.doi.org/10.5770/cgj.16.88>

A large number of chronic medical conditions are now associated with late-life cognitive impairment. Much of this work has been brought together under the editorship of Kristine Yaffe at the University of California, San Francisco, in this collection. *Chronic Medical Disease & Cognitive Aging: Toward a Healthy Body and Brain* provides an assembly of data with commentary on the role of cholesterol, statins, hypertension, obesity, insulin resistance and other aspects of metabolic syndrome, kidney disease, sleep disorder, inflammation, and HIV on cognitive aging. The latter focuses chiefly on cognitive decline, although in the context of post-operative delirium, particularly in a setting of coronary artery bypass graft surgery, the idea of recovery also receives some systematic attention.

For people who wonder whether the idea of a medical textbook still has merit, a compendium such as this one makes a good case that it does. Although much more expensive than a journal publishing a supplementary issue, it brings together much evidence in one place. As such, it offers much more than could be achieved by having simply a general idea and a search engine. This book offers insight into how varying perspectives operate. For example, at least six of the 13 chapters deal formally with vascular risk factors in some guise. They all agree on the epidemiological evidence, and each concludes that although there are holes in the clinical trials evidence, it is off to a promising start.

But where to start and what to do? How much must we need to know about mechanisms in order to deal effectively with associations that seem to be causal? For example, in their chapter on “Cardiovascular Disease and Cognitive Aging”, Angela Jefferson and Melissa Thompson, having surveyed the area in some detail, conclude that “whether vascular and blood brain barrier compromise proceed Alzheimer’s disease pathology, coincide with and subsequently exacerbated, or are consequences of AD has not been well established, and it is possible that these three pathways converge in a complex matrix of AD etiopathogenesis” (page 57).

Something of a pragmatic reply to the question of what do we do now comes in the chapter by Alina Solomon and Miia Kivipelto, in their summary of the 2010 National Institutes of Health report on AD prevention (<http://www.ahrq.gov/clinic/tp/alzcogtp.htm>). The NIH report highlighted the need to take a life-course perspective in understanding AD prevention. They also made clear the case that randomized controlled trials be multidimensional. Solomon and Kivipelto show how this can be done, in a Finnish two-year multi-domain intervention study (the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disabilities: FINGER). That intervention will have four main components, each with notable and complex elements, including nutrition, exercise, cognitive and social activity, and monitoring and management of metabolic and vascular risk factors. The treatment arm will get all four; the comparison arm will get lifestyle counseling. In short, it will not be necessary to know every aspect of each mechanism before potentially preventive studies can be done.

Even so, none of the chapters spend any detail on considering how the impact of preventive interventions should be measured. There is no reason to expect that prevented Alzheimer’s disease will look like normal cognition, but if it does not, what will it look like, and will the new state be desirable? Few people live into their eighties without demonstrable deficits, especially if norms that are not age-adjusted are employed. It would be a considerable triumph of preventive interventions if they could lessen the burden of Alzheimer’s disease by allowing a more benign form of disease expression to emerge. This, however, will oblige innovation not just in which interventions are carried out, but in how they are measured. In contrast, we chiefly seek to reduce the dimensionality of dementia treatment to measuring change in biomarkers. The experience has not gone well, and the almost inevitable next step (to combine biomarkers) so far is demonstrating chiefly that improvement in sensitivity is bought only by declining specificity, and vice versa.

Treatment of vascular risk factors is at least possible, but even there not much formal attention has been paid to understanding how improvement might occur and what it looks like. The relentless decline model of dementia still holds sway. While it is true that on average, cognition declines with age and certainly with dementia, a considerable degree of dynamic change is possible, including improvement (or “reversion”, as it is more typically, if pejoratively, described). It would be unwise to attribute improvement to problems of inter-rater and test-retest reliability, as this risks ignoring a better understanding of the circumstance under which some people improve.

This book does an excellent job in outlining the staggering number of possibilities now open to us in understanding how aging affects cognition. For example, more than 100 genes related to cholesterol metabolism have been linked to Alzheimer’s disease. Intriguingly, others, notably the apolipoprotein E4 allele, have been linked with both defects in cholesterol handling and in increasing amounts of brain amyloid. But how to synthesize this information? The recent discovery of a rare mutation in the APP gene that is actually protective for Alzheimer’s disease raises the hope of dealing with this complexity by way of some final common path. Until that time arrives however, the reader of this book would be safe to conclude that what is best done now is to advise people at risk for Alzheimer’s disease to endeavor to have a

good life; to eat well, to get plenty of sleep, to be physically and mentally active, and to be socially engaged. (That way, even if they do get dementia, it will only be after having had a good life.)

Finally, by way of disclosure, I had been invited to contribute a chapter to this book. However, Oxford University Press America would require me to sign a letter of indemnity in case it was sued as a result of statements made in my article. My institution (properly, in my view) takes the view that its faculty members should not indemnify multinational corporations if something written in one of their textbooks results in their being sued. Oxford University Press America disagreed, possibly reflecting a regional litigation hyper-sensitivity syndrome. (Oxford University Press UK has no such policy.) Even so, given that American culture prizes free speech, drawing policies like this to attention should carry little enough risk of inducing the stress that can so undermine progress toward a healthy body and brain.

Correspondence to: Kenneth Rockwood, MD, FRCPC, FRCP, FCAHS, Department of Medicine (Geriatric Medicine & Neurology), Dalhousie University and Centre for Health Care of the Elderly, Capital District Health Authority, 1421 Veterans’ Memorial Building, 5955 Veterans’ Memorial Lane, Halifax, NS, B3H 2E1, Canada

E-mail: Kenneth.Rockwood@dal.ca