

The Behavioral Consequences of Stroke

Tom A. Schweizer • R. Loch Macdonald
Editors

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 Springer

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*To my wife and children, Melanie, Evan,
and Averie for their unwavering love and
support and for bringing absolute joy
to my life in ways that no professional
pursuit can approach.*

TAS

*To my parents, Neil (a psychologist)
and Lea who gave me the drive to
understand the brain; to my wife and
children, Sheilah, Iain, Robyn, and Erin,
who support me unerringly; and to my
patients, who I try my best to help,
even if not always successfully.*

RLM

Foreword

Behavioral Consequences of Stroke is the first major textbook that has appeared on this topic. This volume comes very timely at a stage when the stroke field is undergoing major changes in recognizing the true burden of cerebrovascular disease, in consolidating and putting into clinical practice what has been learned in the recent past, and in directing focus to several areas that have been neglected previously. The topic of behavioral consequences after stroke belongs to the latter category.

Until about a decade ago, the picture of the global burden of stroke was very incomplete with data mainly limited to high-income parts of the world. Since then, the true face of the scope of cerebrovascular disease has been disclosed, showing a situation that is much more grave than previously recognized. The core epidemiological data are commonly cited in almost any publication dealing with stroke and have been iterated so many times that it may have a blunting effect. Nevertheless, the data are massive, and the challenge has not declined during the last decade.

As I write this foreword, I have the *Lancet* December 15, 2012 issue in front of me, devoted to the new round of global burden of disease data, which will serve as the new landmark references for several years to come. The world demographics are rapidly changing: life expectancy has increased throughout the world from an average of 56.4 years in 1970 to 67.5 years in 2010 for males and from 61.2 to 73.3 years for females. Worldwide, stroke remains the second commonest cause of death after ischemic heart disease and ahead of chronic obstructive pulmonary disease and the third commonest cause of years of life lost, behind both of these. Since the world population has both grown and become older, the total years lived with disability has increased by one third, and stroke remains in third place in the rank order of all diseases as per Disability Adjusted Life Years (DALYs) lost.

The need for global actions to prevent stroke as well as other non-communicable diseases (NCDs) have been recognized by the WHO and the UN, and prompted the important UN high-level meeting on prevention of NCDs in September 2011, the second time that a medical topic was addressed at the UN General Assembly. The New York declaration has now been followed by the first-ever global monitoring

framework that comprises nine voluntary global targets and 25 indicators to prevent and control NCDs including stroke. The combat of stroke is not only a task for medical professionals; stroke has now clearly entered the global political agenda.

Despite progress in prevention, stroke will not be eradicated but will remain with us as long as we can foresee. When I started practicing, in the early 1970s we were convinced that there would never be any effective acute therapy for stroke; analogous to cardiac arrest, the brain would suffer major irreversible damage within few minutes, and when the patients would arrive at hospital, treatment possibilities would have passed. Fortunately, this nihilistic approach of stroke (and cardiac arrest) was proven wrong. Within only a few decades, the treatment opportunities of stroke have changed dramatically, with stroke unit therapy and thrombolytic therapy as the diamonds in the crown, representing some of the most effective therapies in the acute medical field overall and some of the most shining glories of evidence-based medicine. Establishment of well-functioning acute stroke services is now a prioritized task in all regions.

Even with improvements in acute treatments, a majority of patients with stroke will not be completely cured but will have residual symptoms and disabilities. Globally more than 30 million persons live with effects after a stroke; almost half of these have moderate to severe disability, and almost one half are within the age of working life. Rehabilitation services and efficient long-term follow-up after stroke has emerged as fields in need of much strengthening, following an era when much attention has been paid to the acute phase. Just as the concept of organized stroke care has emerged for acute services, we now need to establish organized post-acute stroke services—a task of considerable challenge.

In the measurement of outcomes after stroke, clinical trials and observational studies have usually focused on death, recurrent stroke, and disability measured as dependence/need of support from others. However, the focus has gradually moved to other areas—the behavioral consequences of stroke. Had we listened more carefully to the voice of patients and caregivers in the past, these areas might have been better explored today. Patients and caregivers have repeatedly highlighted the less obvious non-motor consequences after stroke: difficulties in communication, executive functions, fatigue, depression, personality changes, and much more subtle neuropsychological changes. It has also come as some surprise that such effects may be profound even after apparently mild strokes. It took some time before we listened, and it has taken some time for this field to develop scientifically.

The present book on *Behavioral Consequences of Stroke* therefore appears most timely. Tom Schweizer and Loch Macdonald, both well-recognized leaders in this field, have gathered a strong international team of researchers to summarize the current state-of-the art and provide guidance how to incorporate current knowledge into clinical practice. The book broadly covers neurocognitive aspects of ischemic and hemorrhagic stroke, including the clinical manifestations, basic

science background, diagnostic and testing issues, imaging aspects, and implications for practice.

I warmly recommend this book to scientists as well as clinicians in this important field of stroke. Let it be closely read, with pages and binding worn out by use, and let the wisdom written be transformed into reality to the benefit of patient and caregivers.

Lund University, Lund, Sweden

Bo Norrving

Preface

Stroke remains the fourth most common cause of death in North America and an increasingly common cause in low- and middle-income countries. As death from some types declines due to improved care, the burden of disability increases. Much attention is paid to paralysis and the more obvious physical disabilities these patients incur, but we are becoming increasingly aware that the cognitive and neurobehavioral complications are important contributors to stroke morbidity and even to functional neurological recovery. Physicians and health care providers have been more focused on saving lives as well, but as mortality declines, the details and quality of life of the survivor are becoming more important. Furthermore, these deficits actually overshadow focal neurological impairment in some types of stroke such as subarachnoid hemorrhage.

I am a neurosurgeon and my coeditor is a cognitive neuroscientist. This book was conceived when we began working together and finding that we were teaching each other about our respective understandings of disability after stroke. We noted that there was no book that covered the broad general topic of neurobehavioral and cognitive function after stroke that would be appropriate for the wide range of health care professionals that need to know something about this field. To that end, we have assembled an up-to-date overview of the cognitive and neurobehavioral consequences of stroke.

Who needs to know about these deficits? Everyone who cares for patients with stroke should be aware of and have some understanding of these effects of stroke, and for good reason. As we learn from this book, early treatment of depression and recognition of posttraumatic stress disorder are key to understanding disability and recovery after stroke. There are many other reasons that await the reader of this book.

Given its increasing importance, and the broad audience including neurologists, neurosurgeons, psychiatrists, and other medical doctors, as well as physical, speech and occupational therapists, nurses, and psychologists to name a few, a broad summary of the key issues was needed. The goal of this book is to provide a current understanding of each of the major cognitive/neurobehavioral effects of stroke. It is not meant to delve into excessive detail but to give the reader a broad and up-to-date understanding

of the field. Because we hope our readers will be from varied disciplines, we include chapters on the epidemiology, general treatment, imaging, and an update on some stroke clinical trials. We solicited authors who were leaders in their respective fields and who can provide the current state of the particular topic of their chapter.

We both learned a lot by reading this book. We hope you will also, and will find it useful.

Toronto, ON, Canada

Tom A. Schweizer, Ph.D.
R. Loch Macdonald, M.D., Ph.D.

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