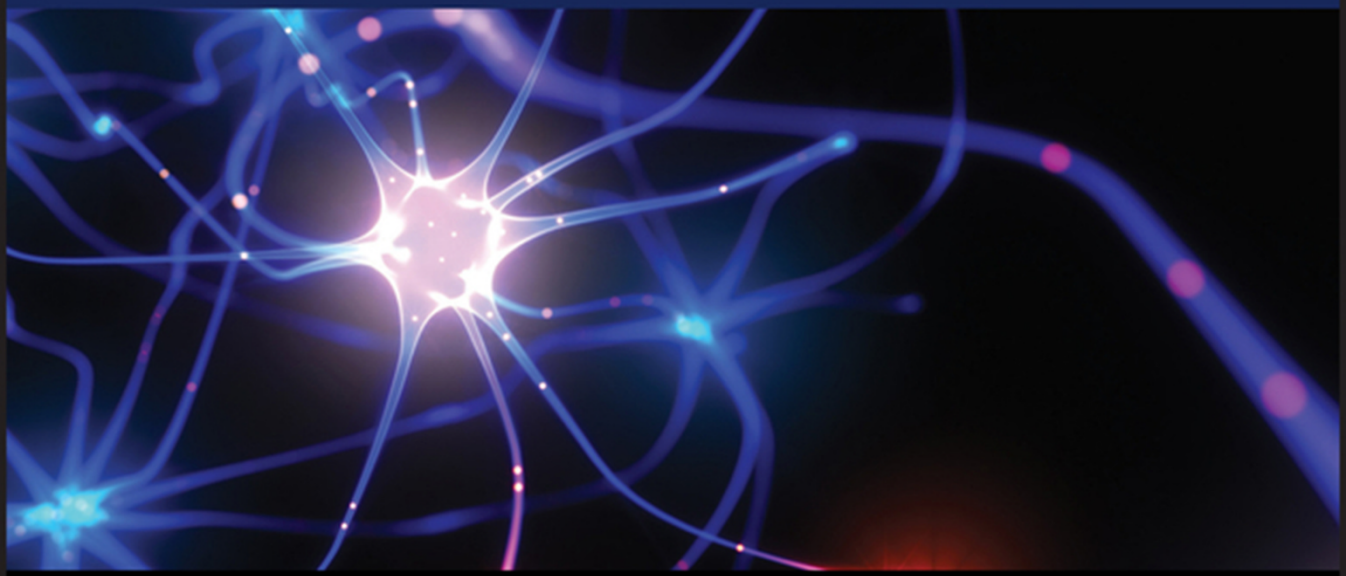
STROKE NURSING



SECOND EDITION

EDITED BY
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WILEY Blackwell

Stroke Nursing

Second Edition

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This edition first published 2020

Edition History [1e, 2010]

Registered Office(s)
John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA
John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK

Editorial Office
9600 Garsington Road, Oxford, OX4 2DQ, UK

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Library of Congress Cataloging-in-Publication Data

Names: Williams, Jane (Jane E.), editor. | Perry, Lin, editor. | Watkins, Caroline, editor.
Title: Stroke nursing / edited by Jane Williams, Lin Perry, Caroline Watkins.
Other titles: Acute stroke nursing
Description: Second edition. | Hoboken, NJ : Wiley-Blackwell, 2019. | Preceded by: Acute stroke nursing / edited by Jane Williams, Lin Perry, Caroline Watkins. 2010. | Includes bibliographical references and index. | Identifiers: LCCN 2018054706 (print) | LCCN 2018057605 (ebook) | ISBN 9781119111467 (AdobePDF) | ISBN 9781119111474 (ePub) | ISBN 9781119111450 (pbk.)
Subjects: | MESH: Stroke–nursing | Evidence-Based Nursing
Classification: LCC RC388.5 (ebook) | LCC RC388.5 (print) | NLM WY 152.5 | DDC 616.8/10231–dc23
LC record available at https://lccn.loc.gov/2018054706

Cover Design: Wiley
Cover Image: © KTSDESIGN/SCIENCE PHOTO LIBRARY/Getty Images

Set in 10/12pt Stix by SPi Global, Pondicherry, India

10 9 8 7 6 5 4 3 2 1

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Foreword: Stroke Nursing

Stroke has become a recognised nursing specialty worldwide, supported by practice standards that blend nursing knowledge and clinical skills in both neurovascular and cardiovascular physiology [1]. The challenge and responsibility that we accept when caring for stroke patients requires acknowledgment of their highly vulnerable physiological and psychological states, for we provide care at a most fearful time in patients' lives. The disruption to family dynamics and their social, economic and spiritual needs are substantial.

There is much we can offer patients for primary prevention, rapid diagnosis, treatment, complication avoidance, rehabilitation, and secondary prevention. However, many factors limit provision of 'state of the science' stroke care. System and economic factors limit availability of stroke resources in some centres, including: lack of access to sophisticated imaging techniques to diagnose stroke and determine pathogenic mechanism, or inability to provide timely reperfusion treatment. Workforce factors may mean nursing, physician, and therapy specialists best equipped to diagnose, treat and prevent stroke are not available. Political and geospatial factors may result in stroke patients being taken to the nearest, rather than best, comprehensive facility. Finally, human factors may limit patients' and families' understanding and acceptance of risk factors, preventative medicine, and early notification of emergency personnel.

As nurses, we try to understand how these factors affect our ability to offer patients high-quality evidence-based care. Discomfort with our programs' limitations motivates us to generate powerful advocacy strategies to increase awareness and build consensus in support of program improvement. As exciting advancements in nursing and healthcare emerge, we must use our dissatisfaction when particular evidence-supported methods are unavailable in our workplaces, cities, or countries, and ask, 'Why not?'

This text will prepare nurses new to stroke practice and further the knowledge and skills of current stroke nurses. Readers will learn evidence-based nursing and medical care supported by research generated across the world. As you read, I encourage you to perform a self-inventory of content that you have yet to master, and consider the gaps in the stroke systems of care (diagnosis, treatment, prevention, and rehabilitation) at your facility. Consider what you can do to improve your own care and that of your interdisciplinary peers, and actively work towards achievement of best practice.

To accept the role of 'stroke nurse' is an honour and a privilege. We are the most trusted health professions by patients and families [2, 3], the most numerous of all healthcare providers, and well-positioned as key drivers of healthcare quality. I hope that you will accept this responsibility and use this text to support your stroke nursing journey.

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Foreword: Stroke Services in Australia

In Australia, as elsewhere globally, stroke is a leading cause of death and disability [1] and optimal management is imperative. Provision of care for stroke patients in dedicated units by a coordinated multidisciplinary team is a pivotal strategy for improving patient outcomes [2]. This evidence has underpinned health reforms for hospitalised stroke patients worldwide. Data from the 2017 Stroke Foundation national audit showed 89% of Australian hospitals (with ≥75 people with acute stroke admitted annually) have a stroke unit (Kevin Hill, pers. comm., 18 April 2018) [3]. However, access to stroke unit care is not guaranteed; only 69% of stroke patients admitted to audited hospitals with a stroke unit received treatment on that unit [3]. The national thrombolysis rate is low (13%), but some hospitals achieve thrombolysis rates of up to 23% [3]. This demonstrates a major challenge for Australia – provision of equitable access to care. Australian stroke units are primarily (92%) in urban locations rather than rural settings, potentially disadvantaging non-metropolitan inhabitants [4]. However, 'hub and spoke' models, where larger stroke services provide coordinated care across a defined geographic region [5], are promising as support strategies for smaller rural hospitals.

Nationally, initiatives are informing and supporting improvements in the quality and planning of Australia's acute stroke services. The Stroke Foundation has developed a National Acute Stroke Services Framework [5], providing recommendations and definitions for general hospital and stroke specialist services. This is informed and supported by Australian Clinical Guidelines for Stroke Management [6]. In 2015, the Australian Commission on Safety and Quality in Health Care launched the Acute Stroke Clinical Care Standard [7]. Developed in consultation with consumers, clinicians, researchers, and health organisations, and consisting of seven quality statements and measurable indicators, the standard aims to improve early assessment and management of stroke, including initiation of an individualised rehabilitation plan. Collection of data for the stroke standard is not currently mandatory, but data for these key stroke processes of care could drive practice change.

Collection of reliable, nationally comparable data is imperative to drive clinical practice change. The Stroke Foundation organises alternate-year clinical audits which enable benchmarking across states for key stroke processes of care. In 2015, the Australian Stroke Coalition launched the Australian Stroke Data Tool (AuSDAT), underpinned by a national stroke data dictionary. AuSDaT is an online data collection tool for stroke clinical performance monitoring and improvement and is the method of data collection for the Australian Stroke Clinical Registry (AuSCR). Established in 2009, AuSCR is a collaborative national stroke registry collecting prospective stroke data, using a minimum data set of four key stroke indicators (eight in Queensland), to monitor, promote, and improve the quality of acute stroke care nationally. Importantly, AuSCR collects follow-up data at 90–180 days post-stroke and is linked with the National Death Index, providing

mortality data and patient outcomes [8]. Data from the Stroke Foundation audit and AuSCR have been used to improve the quality of Australian stroke care [9].

Australian nurses play a pivotal role in the delivery of high-quality acute stroke care [10]. Education and research are two important factors in the delivery of evidence-based care. The Acute Stroke Nursing Education Network (established in 2013) facilitates the delivery of evidence-based acute stroke care by providing educational networking opportunities for stroke clinicians. This network runs regular webinars on clinically relevant topics for acute stroke nurses [11]. Australia has a thriving multidisciplinary stroke research community. Many stroke units throughout the country are involved in multi-centre, national and international clinical trials and research projects aimed at improving stroke services. Importantly for nurses, since publication of the first edition of this book, results from the Quality in Acute Stroke Care (QASC) Trial have been published. This landmark trial demonstrated the key role of nurse-led management of fever, hyperglycaemia, and swallowing difficulties and the consequent significant reduction of death and dependency when nurses do these 'simple' things well [12–14].

Excitingly for stroke nursing, in recent years several stroke nurse practitioners have graduated in Australia. 'Nurse practitioner' is a protected title in Australia and only available to those with an approved nurse practitioner qualification at Masters degree level who demonstrate advanced nursing practice in a clinical leadership role in a particular area of practice. These senior clinical nurses will have a pivotal role in shaping future stroke services, including new models of nurse-led care.

Australia has well-developed support for stroke survivors in the form of local state-based organisations and networks and the Stroke Foundation, working together to improve stroke care. This book sets out in detail what excellence in stroke nursing looks like. It makes a unique and essential contribution to dissemination of evidence-based practice and promotes improvements to stroke nursing care internationally.

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Foreword: Stroke Care in Hong Kong

In Hong Kong, stroke is the fourth commonest cause of death [1], with at least 20,000 people becoming paralysed or losing their functional abilities as a result each year [2]. Death and disability from stroke will increase as the population rapidly ages in the coming decades.

Over 90% of Hong Kong stroke patients are managed in public hospitals. As elsewhere, acute stroke management depends largely on effective intervention within hospitals where organised care is provided by stroke units, using standardised stroke orders and integrated stroke pathways managed by multidisciplinary professionals. Stroke units are effective in reducing stroke mortality, increasing the proportion of patients returning home at six weeks, and reducing the need for institutional care [3]. Since 2016, 15 acute stroke units (260 beds) have been set up in acute public hospitals, which enhance acute stroke management so that patients benefit from early intervention [4]. However, access to these units is not always assured, as these 260 beds are serving over 90% of Hong Kong's 7.3 million population. Three acute stroke units have been provided with upgraded facilities to become referral centres for acute stroke patients from across Hong Kong.

The use of thrombolytic treatment in managing acute ischaemic stroke was conservative until the early 2010s [5]. This was due to a reported higher rate of intracranial haemorrhage from thrombolysis because of racial differences [6] and a lack of resources in our public health system. To facilitate neurologists' remote thrombolysis assessment during non-working hours, a Security-Enhanced Mobile Imaging Distribution System (SEMIDS) was introduced in 2012. Based on this telestroke system, 24-hour thrombolytic services have been implemented in most hospitals, resulting in a threefold increase in stroke patients receiving thrombolysis. SEMIDS thrombolytic service relieves the local shortage of neurologists and has greatly improved healthcare for acute stroke patients [7]. Prompt recognition of stroke and rapid access to appropriate treatment are critical in improving stroke outcomes. Fast-track Transient Ischaemic Attack (TIA) Priority Clinics have also been set up to provide timely treatment for mild stroke patients and reduce the risk of neurological events through multidisciplinary collaboration.

Reliable, comparable, and up-to-date data are imperative to improving practice and the quality of stroke care. While a Hong Kong city-wide stroke data bank is not yet available, the Hospital Authority (HA), which manages all of Hong Kong's public hospitals, has maintained a computerised 'Clinical Management System' (CMS) for clinical management since 1999. As over 90% of all hospital stroke admissions are to hospitals run by the HA, the clinical data for these patients are captured in the CMS database. A territory-wide 'Electronic Health Record' (eHR) has also been developed (2009) by the HA to enhance access to and sharing of participating patients' health data by authorised healthcare providers in the public and private sectors. This has enhanced our endeavours to continuously improve service quality and safety for stroke care.

Nurses in Hong Kong play a critical role in all phases of stroke care. Nurse-led TIA clinics, stroke clinics, and transition care programmes for discharged stroke survivors provide stroke care and management from initial evaluation and diagnostic workup through to rehabilitation. When nurse consultants were established in the HA (2009), stroke nurse consultants were also appointed. Whilst these consultants have a clinical leadership role to promote nurse-led stroke care, the development is in its infancy, as only a few have been appointed since 2009.

In Hong Kong, and other Asian regions (e.g. China, Korea, and Japan), improvement in stroke care has paradoxically increased the number of stroke survivors. Most stroke survivors need long-term preventive medicine, intense rehabilitation, and caregiver support. In Hong Kong, there is active participation of public institutions, charity funds, non-government organisations, and professional organisations in promoting public awareness and improving local stroke services and rehabilitation. The Hong Kong Neurological Society and the Hong Kong Stroke Society, for example, have developed guidelines and protocols on many aspects of the general management of stroke patients from admission to rehabilitation. These guidelines are used by professionals in both public and private hospitals. A wide range of innovative rehabilitation services (i.e. use of video games, music therapy, and robots) have been piloted by different professional stroke organisations and non-government organisations.

One salient feature of Hong Kong's stroke care is the integration of Chinese and Western medicine in stroke treatment and rehabilitation. Local research has found that the use of integrative medicine, which includes the basic treatment of Western medicine and routine rehabilitation in conjunction with acupuncture and Chinese medicine, improves stroke patient outcomes [8]. Since 2014, the HA has developed the Integrated Chinese-Western Medicine (ICWM) programme for three disease areas, including stroke rehabilitation. With this programme, Chinese medicinal treatment options, including acupuncture, cupping therapy, tui na, and herbal medicine, have been introduced at an earlier stage for stroke patients in public hospitals.

As in other developed cities, one-third of the stroke sufferers in Hong Kong are less than 65 years old, and numbers are increasing in younger people [1]. Primary prevention by promoting healthy lifestyle changes and screening individuals for known risk factors will continue to be a key mechanism for reducing the burden of stroke in the wider Hong Kong community. However, Hong Kong is yet to develop a well-established policy or territory-wide primary care network or programme capable of effectively achieving these aims.

This book, a unique stroke nursing text, provides a stimulus for nurses to anchor stroke care in the reality of life in the acute stroke wards and in the community of the stroke survivors and caregivers. This work is significant, not only because it recognises the complexity and delicacy of stroke care, but also because it makes explicit the depth of knowledge and understanding necessary for such care provision. The precepts of this excellent book could both illuminate and ultimately change stroke care practice. It is essential reading for all nurses, not just for stroke care nurse specialists.

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Acknowledgements

We would like to acknowledge the chapter authors of the previous edition, Michael Leathley, Chris Burton, Wendy Brooks, Aeron Ginnelly, Sheila Payne, Peter Humphrey, Louise Brereton, Jill Manthorpe, and Graham Williamson, who were no longer involved in this edition.

The editors would also like to acknowledge the editorial support team: Kerry Hanna, Alison Doherty, Naoimh McMahon, and Kateryna McDonald.

CHAPTER 1

Setting the Scene

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KEY POINTS

- Transforming stroke services is of paramount importance in the quest to save lives and reduce dependency.
- Translating research evidence into clinical practice is challenging but many examples show that this is both achievable and worthwhile.
- Continued development of stroke nursing through expansion of the stroke nursing knowledge base and demonstration of competence and skill is pivotal to the future of the specialism.
- Continued development of stroke nursing is essential for development of stroke services, locally, nationally, and internationally.

1.1 Introduction

Internationally, stroke – and its impact on people's lives – is finally gaining the recognition it deserves, not only as an acute event and a chronic disease, but also as a preventable condition. The profile of stroke has more recently increased because a greater number of effective treatments, including those for prevention, have become available, and mechanisms for implementation have been established. However, in order to make these treatments available for everyone who might benefit, it is imperative that the public knows about, and has a heightened awareness of, stroke risk factors and stroke symptoms.

Public awareness campaigns are planned to raise the profile of modifiable stroke risk factors: smoking, hypertension, and atrial fibrillation, amongst others. Public campaigns for recognising the signs of stroke have been graphically driving

Stroke Nursing, Second Edition. Edited by Jane Williams, Lin Perry, and Caroline Watkins.

home the message that if a stroke is suspected, the emergency medical services should be contacted. Emergency services must respond rapidly and get patients to centres providing specialist acute-stage treatments, ongoing rehabilitation, and long-term support. Throughout this care pathway, best-available treatment can only be provided if staff have stroke-specific knowledge and skills commensurate with their roles, and if all agencies involved work collaboratively, providing a seamless journey for the person affected by stroke. Nurses are the largest section of the workforce, and are involved throughout the entire stroke care pathway. Consequently, nurses have the greatest opportunity to play a primary role in providing leadership and ensuring the delivery of evidence-based stroke care.

The focus of this chapter is to describe the importance of stroke nursing in the context of wider systems. The extent of the problem of stroke is illustrated, and the reason stroke has become a burning issue for healthcare and research is explored. Policy imperatives are discussed, as well as the present and future of stroke-specific infrastructure. Importantly, the need to support stroke service developments and put in place mechanisms to produce evidence for practice is outlined, and how evidence can be implemented into practice is clarified. Fundamental to delivery of this huge agenda is the development of a stroke-specialist workforce. Staff delivering care along the stroke pathway need the right knowledge, skills, and experience in stroke, and should achieve recognition for it. Suitable recognition for specialising in stroke care should ensure that the most able staff pursue rewarding careers in stroke care. This then should establish a virtuous circle, whereby able staff stay in the speciality and contribute further to advancing the field, including delivery of sustainable quality improvements into the future. Staff can then also participate in ongoing audits of care, reflection on performance, and instigation of further improvements, and thus constantly drive up the quality of care.

1.2 Stroke Epidemiology

Stroke is a major cause of mortality and morbidity in adults. Globally, it is the second leading cause of disease burden after ischaemic heart disease given the combined effects of premature death and long-term disability [1]. In addition, over 90% of this stroke burden is attributed to modifiable risk factors, with about 74% being associated with behavioural factors such as smoking, poor diet, and physical inactivity [2]. Therefore, much could be done to reduce the incidence and prevalence of stroke. Crude incidence varies greatly amongst countries, according to both the different risk factor profiles and the timing of different studies. The reported age-adjusted incidence rates range from 54 per 100 000 population per year in Lagos, Nigeria (2007–2008) to 146 per 100 000 per year in Iwate, Japan (based on World Health Organization World standard population) [3]. Stroke incidence rates are generally greater in men that in women, and women will generally experience their stroke event at an older age. Greater mortality in women is mostly explained by age, but also by stroke severity, atrial fibrillation, and pre-stroke functional limitations [4]. Case-fatality rates within 28–30 days also range widely amongst countries, from about 10% in Dijon, France to 37% in rural Trivandrum, India [3].

Many countries are experiencing increases in life expectancy. Since age is the strongest factor contributing to stroke incidence, there are concerns that the

numbers will rise and this will impact on the ability of the health systems to manage stroke effectively. Currently, trends are unclear, and further research is needed to understand what the future holds. Whilst stroke incidence may not increase, and may even decrease [5], it is clear that more people are surviving stroke and living with the sequelae [6]. Surviving with moderate to severe disability can have profound effects in all domains of life [7], and poor quality of life has been associated with greater unmet needs over the longer term. Whilst we want acute stroke interventions to improve survival rates, we also want them to ensure independent survival.

Importantly, we also need prevention interventions to be a priority, given that the overall global burden of stroke is substantial. Summary measures of population health capture both morbidity and mortality and are used to describe the burden of disease. These summary measures include Health Adjusted Life Expectancy (HALE), Disability Adjusted Life Years (DALYs), and Quality Adjusted Life Years (QALYs). The HALE value represents the number of expected years of life equivalent to years lived in full health adjusted for time spent in poor health, based on current rates of ill health (e.g. chronic disease) and mortality in a community. The DALY is a health gap measure and captures the years of life lost (YLL) due to premature mortality and the years of life lived with disability (YLD), for example as a consequence of experiencing stroke. QALYs are based on a similar conceptual framework (life expectancy plus quality of life), but assumptions and methods differ. In recent work to determine the health gap experienced by stroke survivors compared to the normal population, it was determined that the QALYs lost per first-ever stroke were about 5.09 for ischaemic stroke and 6.17 for intracerebral haemorrhage [8]. In other words, if a stroke was prevented, this represents the health gain that could be achieved on average per person.

1.3 Cost Burden

The costs of stroke are substantial, due to the complexity and chronic nature of this condition. The greatest costs incurred in the first year are associated with hospital care and rehabilitation [9]. Comparing results of cost-of-illness studies between countries is complicated due to the different methodological approaches, such as the types of costs included and the time horizon [10]. Since the costs of stroke peak within the first year and decline over time, it is important to quantify long-term resource use in order to gain a greater understanding of the potential lifetime impact on society. Furthermore, the direct costs of informal care and indirect costs of productivity losses (inability to work or perform important home duties) after stroke are often omitted, despite these costs being substantial. Using 10 years of follow-up data, the authors of the North East Melbourne Stroke Incidence study (Australia) estimated the average lifetime costs at US$68,769 for ischaemic stroke and US$54,956 for intracerebral haemorrhage in 2010 [11]. In other recent work undertaken in a more remote geographic Australian location, the lifetime costs of stroke were substantially larger (US$207,218), and the greatest costs were associated with patients who had an Indigenous background, renal disease, heart disease, or hypertension [12].

In contrast, 5-year costs per stroke in the United Kingdom have been reported as £29,405 in 2001–2002, if informal care was included [13]. In the United States,

the average costs within 1 year of hospitalisation per stroke averaged US$47,790 in 2008 [14], and the lifetime health costs were estimated to be US$140,000 per patient with ischaemic stroke in 2010 [15, 16]. To contain the growing total costs of stroke and associated health expenditure, it is essential that cost-effective prevention and treatment policies are put in place. That is, the investment of healthcare funding is strategically used to maximise the potential health benefits that can be achieved at an acceptable cost to society. These costs are based on those of high-income countries (HICs), and as yet there is a dearth of evidence, not only of the costs of stroke care in low- and middle-income countries (LMICs), but also of the incidence and prevalence of stroke. Costs are also difficult to determine because of the lack of stroke specialist services; there are fewer than 50 stroke units in India, for example, where approximately 3,500 are required to serve this large population.

1.4 Stroke Policy

1.4.1 Developing Stroke as a Healthcare Priority

Over the last 20 years, much has been achieved – at least in HICs – in providing guidance on best-practice care and establishing methods of monitoring adherence to clinical guideline recommendations. Unfortunately, this work has shown repeatedly that eligible patients may not always receive recommended therapies even in well-resourced settings [17]. Information about underperformance against expected standards of care can be used to guide policy and practice decisions and to make improvements to health services [18]. In a recent Australian simulation study whereby average performance was modelled to meet achievable benchmarks established from the top-performing hospitals, it was found that considerable gains in health could be achieved at relatively low additional costs to the health system [17].

The World Stroke Organization has recently released guidelines and a quality action plan framework to inform stroke policy and set strategic directions to elevate standards of stroke care [19]. However, even in HICs, delivering equitable access to stroke services remains a challenge. Some of the issues include the lack of specialist staff, the cost of experienced staff, and the lack of basic infrastructure to support diagnostic investigations and rehabilitation in hospital [19]. To address this problem, in the United Kingdom, the National Stroke Strategy (NSS) [20] encouraged the introduction of acute stroke units in all hospitals (2007), and centralised Hyperacute Stroke Units have also been developed in at least eight hospitals. Further centralisation of services will follow the forthcoming National Stroke Plan (NSP) (due for publication in 2019), which will be driven by the need for thrombectomy services. In Australia, the Stroke Foundation developed an Acute Stroke Services Framework as part of a strategy to improve the quality of acute stroke services [21]. This framework describes the main features and minimum criteria for acute stroke units and recommends that all hospitals admitting more than 100 acute strokes per year have a stroke unit. There is evidence that adverse outcomes are more frequent where patients are treated in hospitals