

**The provision of best-practice care:  
Examining modifiable barriers along the care pathway  
for stroke**

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**VOLUME 1**

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## **List of result chapters**

### ***Paper One***

Grady A, Carey M, Oldmeadow C, Bryant J, Mazza D, Sanson-Fisher R. GP detection of health risk factors among general practice patients at risk of primary and secondary stroke. *Family Practice* 2015;32(3):336-342 doi:10.1093/fampra/cmz024

### ***Paper Two***

Grady A, Carey M, Sanson-Fisher R. Assessing awareness of the appropriate responses to symptoms of stroke. *Patient Education and Counselling* 2014;95:400–405

### ***Paper Three***

Grady A, Bryant J, Carey M, Paul C, Sanson-Fisher R, Levi C. Agreement with evidence for tissue Plasminogen Activator use among emergency physicians: A cross-sectional survey. *BMC Research Notes* 2015;8:267 doi:10.1186/s13104-015-1242-5

### ***Paper Four***

Grady A, Bryant J, Carey M, Paul C, Sanson-Fisher R. Enablers to the implementation of tissue Plasminogen Activator in acute stroke care. *PLOS ONE* 2014; doi:10.1371/journal.pone.0114778

### ***Paper Five***

Grady A, Carey M, Bryant J, Sanson-Fisher R, Hobden B. A systematic review of patient-practitioner communication interventions involving treatment decisions. *Patient Education and Counselling* 2016; doi: <http://dx.doi.org/10.1016/j.pec.2016.09.010>

### ***Paper Six***

Grady A, Carey M, Bryant J, Sanson-Fisher R, Oldmeadow C, Levi C. Effect of an expert consensus communication strategy on knowledge of stroke treatment: A randomised controlled trial.

### ***Paper Seven***

Grady A, Carey M, Bryant J, Sanson-Fisher R, Oldmeadow C, Levi C. Effect of expert consensus communication on decision making for acute stroke treatment: A randomised crossover trial.

## **List of publications relevant to, but not included in the thesis**

### ***Letter to the editor***

Grady A, Carey M, Bryant J, Sanson-Fisher R. Recruitment of healthcare providers.

*Emergency Medicine Australasia* 2014; doi:10.1111/1742-6723.12275

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## Abstract

Stroke is the second leading cause of adult death worldwide, and the third leading cause of disability-adjusted life-years. There is strong evidence that patients who have had a stroke, and those at risk of stroke, are not receiving best-practice stroke care according to clinical practice guidelines, with an evidence-practice gap being reported at multiple stages along the care pathway. Given the preventable nature of stroke, and the substantial burden that it imposes, an examination of the barriers to best-practice stroke care is needed.

This thesis examines potential barriers to the provision of best-practice stroke care in Australian health care settings, from prevention in primary care, through to treatment in acute care. It comprises an introduction, six data-based papers, a systematic review, and a final discussion of the thesis findings. The seven papers that comprise this thesis examine:

In primary care settings:

Rates of general practitioner (GP) detection of patient health risk factors for stroke (*Paper One*).

Patient awareness of stroke symptoms, and the appropriate action to take in the event of a stroke (*Paper Two*).

In acute care settings:

Emergency physicians' perspectives of acute stroke treatment, and the enablers to the provision of treatment (*Papers Three and Four*).

The effectiveness of interventions to improve patient-practitioner communication interventions involving treatment decision making (*Paper Five*).

Patient preferences, knowledge and acceptability surrounding the communication of acute stroke treatment, and hypothetical treatment decisions (*Papers Six and Seven*).

## Synopsis

This thesis by publication reports on the potential barriers to the provision of best-practice stroke care in Australia, and includes an introduction, six data-based papers, a systematic review, and a discussion of the thesis findings. At the time of submission, four papers have been published in peer-reviewed journals, with the remaining three under current editorial review. The data reported in *Papers One to Four*, and *Papers Six and Seven*, were obtained from descriptive and experimental studies. The descriptive studies were conducted within general practice clinics and via the specialist governing body, the Australasian College for Emergency Medicine (ACEM), while the experimental study was conducted within a tertiary hospital within Australia. These studies provide up-to-date findings regarding the provision of stroke care in the Australian context.

The ***Introduction*** outlines both the global and Australian-specific burden of stroke, and summarises current best-practice stroke care, as outlined in clinical practice guidelines. It provides an overview of the potential barriers to the provision of care along the stroke care pathway via comparison of best-practice stroke care to the current care received by patients with, or at risk of, stroke. From this comparison, the gaps in best-evidence care for stroke are identified. The limitations of existing research are presented, along with a rationale for the need to further examine the modifiable barriers to the provision of best-practice stroke care.

Identification and intervention on key health risk factors is the first step in the provision of best-practice preventative stroke care. Given that individuals with a history of stroke

or heart disease are at an increased risk of stroke, detection of health risk factors amongst this group is critical. In the primary care setting, **Paper One** compares self-reported rates of lifestyle risk factors amongst general practice patients with and without a history of stroke or heart disease. The accuracy of GP detection of patient-reported lifestyle risk factors, and the average proportion of patient-reported lifestyle risk factors detected by GPs, is also reported. By surveying both patients and their GPs, the study found that, compared to patients with a history of stroke or heart disease, patients at risk of primary stroke reported higher rates of risky alcohol consumption (55%) and smoking (12%). Patients at risk of primary stroke also had a significantly lower mean proportion of lifestyle risk factors detected by their GP. Poor sensitivity of GP identification of risk factors was found for all lifestyle risk factors for all patients. Based on these findings, it is apparent that in order to facilitate the primary and secondary prevention of stroke via the management of health risk factors, alternate methods to facilitate accurate GP detection of lifestyle risk factors are required. This paper is published in *Family Practice*.

As acute stroke is a medical emergency, the recommended course of action is to call an ambulance immediately if stroke is suspected. Remaining in the primary care setting, **Paper Two** explores general practice patients' level of awareness of the appropriate action to take in response to stroke symptoms, as well as the sociodemographic and disease factors associated with greater awareness. Despite recommendations about the appropriate action to take in response to suspected stroke, only 52-76% of participants indicated they would call an ambulance within 10 minutes of symptom onset, depending on the symptoms experienced. Individuals with a first-degree relative with a history of stroke were significantly more likely to have greater awareness of the appropriate action

to take in response to these symptoms. Among patients who had experienced a potential symptom of stroke in the past, up to 83% of patients did not call an ambulance at the time they experienced their symptom(s). The findings of this study demonstrate the need for improvement in patient awareness of appropriate responses to stroke symptoms. These improvements are imperative if patients are to receive timely stroke care. This paper is published in *Patient Education and Counseling*.

Within the acute care setting, use of a clot-busting drug called tissue Plasminogen Activator (tPA) with patients experiencing acute ischaemic stroke is the recommended clinical practice. However, tPA is only administered to 7% of ischaemic stroke patients in Australia. Given that emergency physicians are often responsible for the care and treatment of patients with ischaemic stroke, they are likely to provide valuable information surrounding the barriers to widespread use of tPA. **Paper Three** reports results from a cross-sectional survey of Australian trainees and fellows registered with the ACEM. The study aimed to identify emergency physician rates of agreement, and the factors associated with high agreement, with the evidence supporting tPA use. Findings from this study show that there is low agreement with the evidence behind tPA use for acute stroke among Australian emergency physicians, with almost half (47.2%) of the responders not agreeing with any statements supporting the use of tPA. Routine administration of tPA by the head of physicians' emergency department (ED) was shown to be associated with greater agreement with the evidence for tPA. The paper demonstrates that while individual beliefs and attitudes towards treatment may be a barrier to best-practice stroke care, modelling of behaviour and social influence might be an enabler. This paper is published in *BMC Research Notes*.

Individual and system-level factors have been shown to influence the adoption of evidence-based practice. Individual-level factors include knowledge (the understanding of who, what, when and how a behaviour should be performed), skills (the ability to perform the behaviour), and modelling (seeing others perform the behaviour). System-level factors include performance monitoring (observation and recording of behaviours), feedback (information on the actual versus ideal performance of a behaviour), and maintenance (the availability of equipment, staffing, and support tools). Further findings from the cross-sectional survey of ACEM trainees and fellows are reported in ***Paper Four***, in which emergency physicians' perceptions of individual (knowledge, skills, and modelling) and system (monitoring, feedback, and maintenance) enablers to the use of tPA in acute stroke are examined. Particular domains of deficit identified by responding emergency physicians include insufficient skills-training and performance feedback. Compared to those responders who do not decide which patients receive tPA treatment, a significantly higher proportion of responders who do decide which patients receive tPA treatment reported the presence of modelling and maintenance-related enablers. None of the respondents had all enablers in place across all individual and system behaviour change domains. The paper concludes there is currently a lack of both individual and system enablers in place to support best-practice stroke care within Australia hospitals. This paper is published in *PLOS ONE*.

Effective communication is crucial when making treatment decisions, particularly for acute emergency conditions where treatment is required immediately, treatment options are potentially life-threatening, or a proxy, such as a family member, makes the decisions. High-level evidence is needed to guide patient-practitioner communication in such situations. ***Paper Five*** reports the findings from a systematic review that aimed to

examine the methodological quality of studies, and effectiveness of interventions implementing strategies to improve patient-practitioner communication when making treatment decisions. The review shows that few high-quality interventions to improve face-to-face patient-practitioner communication involving treatment decisions have been published, none of which involve communication in emergency situations. This is indicative of the inherent challenges to conducting research in this field. Included studies were heterogeneous in terms of study populations, communication strategies used, disease type and associated treatment decisions, and outcome measures. Effectiveness of the included interventions were mixed, with two-thirds of the interventions aimed at changing patient behaviour; two-fifths of the interventions practitioner-directed; and one-third of the patient-practitioner-directed interventions reporting positive findings for decision-related outcomes. Further methodologically rigorous trials are needed to inform practice. This paper is under editorial review.

Following findings of the systematic review, *Paper Six* details the development of an expert consensus communication strategy for the provision of tPA treatment information to stroke patients' family members. It also reports the results of a randomised controlled trial among hospital out-patients, which aimed to determine the effect of expert communication, compared to usual care communication, on knowledge of stroke treatment. Via a crossover in the study design, hospital out-patients participating in the trial viewed both the expert consensus communication strategy and usual care communication. The acceptability of both communication strategies was assessed after each viewing. Participants' preferred method of communication was also assessed. The study found no intervention effect for knowledge between the expert and usual care groups, however a number of limitations of the study were identified. Both

communication strategies were deemed highly acceptable by patients, with a slight preference for expert communication (52%) over usual care (48%) reported. The findings that expert communication is both highly acceptable and preferred suggests that an expert consensus communication strategy has some potential in overcoming challenges to providing treatment information in emergency situations. This paper is under editorial review.

Further findings from the above trial are outlined in *Paper Seven*, the final paper of the thesis. Via the crossover in the study design, respondents were asked about their hypothetical treatment decision for tPA - for themselves and for a family member - after viewing each communication video. Not only did significantly more participants choose tPA for themselves after viewing expert communication (96%) compared to usual care (90%), more participants also chose tPA for a family member after viewing expert communication (96%) compared to usual care (92%). The study demonstrates that the method of communication does influence individuals' treatment decisions - a finding with substantial implications for clinical practice. This paper is under editorial review.

The thesis *Discussion* summarises the key findings from each paper, provides an overview of the methodological limitations and potential implications of each study, and outlines potential future research in this field. This body of work provides the foundation on which to address modifiable barriers to best-practice stroke care at certain points along the stroke care pathway; from prevention in primary care through to treatment in acute care settings. It has identified that in order to improve outcomes for stroke patients, the challenges at each level of care need to be addressed. A multi-faceted, community-based approach comprised of strategies such as: community

education for knowledge of stroke, and discussion of family members' treatment preferences; workplace systems to support best-practice stroke care within hospitals; and continuing medical education for health care providers involved in the primary, secondary and tertiary care of stroke patients, is suggested as the way forward.