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<b>Title</b>	The power of networks
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# The power of networks

*Being part of a network allows the clinician to think beyond the boundaries of their hospital*

Big changes in medicine are unusual. In stroke medicine, decades of high quality trials had led to modest gains. However, as described in the article by Campbell in this issue of the Journal,<sup>1</sup> 2015 was a landmark year in stroke medicine. After many years of practice, I witnessed a stunning advance: endovascular thrombectomy. Patients with the worst ischaemic strokes, who previously would have taken months to recover, often to require high level care, are now walking out of hospital after the procedure. Australian researchers played a major role generating the evidence for thrombectomy.

This is all very well if you live close to a major tertiary hospital that provides this highly specialised procedure, but how do we ensure outer metropolitan, regional and rural patients with stroke also receive the best care? Translating the evidence for endovascular thrombectomy into routine clinical practice requires a whole-of-system re-organisation.

In Victoria, the Stroke Clinical Network led a coordinated response to the emerging evidence — a clinical network is a group of clinicians dedicated to a particular disease, such as stroke, which provides the clinical expertise to inform the state's Department of Health and Human Services and, in partnership, improve clinical care. Clinicians in the stroke network span the spectrum of health providers, including neurologists, geriatricians, rehabilitation physicians, nurses, allied health professionals, ambulance officers and medical administrators. There is a diversity of locations where clinicians work, and, importantly, there is strong consumer involvement, ensuring that the patient voice is at the forefront of our activities. Victoria has 11 clinical networks, and there are stroke clinical networks in other states, including Queensland and Western Australia. Being part of a network allows the clinician to think beyond the boundaries of their hospital and to consider what is best for patients throughout the state.

Within months of the release of the endovascular thrombectomy trials in 2015,<sup>2-6</sup> we formed an expert advisory group of stroke physicians, interventional radiologists and hospital administrators. We felt the best results would be obtained by designating two state centres for thrombectomy, as higher volume leads to better care<sup>7</sup> and facilitates training. We developed a statewide protocol for the processing and flow of patients eligible for thrombectomy.<sup>8</sup> Metropolitan hospitals transfer patients to one of the two centres. To ensure that regional and rural patients are treated, we partnered with the Victorian Stroke Telemedicine program, helping it transition from a research project to a funded clinical branch of Ambulance Victoria. In this way, emergency departments around Victoria have access to expert advice from stroke physicians who can review the patient and the brain imaging and arrange the transfer to a state centre. We worked with Ambulance Victoria to determine the fastest and safest transfer of patients, which for regional areas is increasingly by helicopter. In this data-driven age, all centres contribute their thrombectomy outcome data to the Australian Stroke Clinical Registry, and we have developed a Victorian Diagnosis Related Group for thrombectomy (aligned to higher funding).

Has the Stroke Clinical Network achieved its aim of ensuring thrombectomy access to all Victorians? Preliminary data suggest so. In 2016, the first year of the statewide protocol, 307 patients were treated, increasing to 423 in 2017. With the release of trials showing benefits in certain patients treated up to 24 hours after onset,<sup>9-10</sup> Victoria treated 533 patients in 2018. In the first year, 154 patients receiving thrombectomy were transferred from another hospital to a state centre, 45 from regional Victoria. By 2018, 285 patients were transferred from another hospital, 106 from regional areas.

A state reperfusion committee was formed to review results, discuss difficult cases and brainstorm improvements,

such as methods for faster processing of patients at peripheral centres.<sup>11</sup> Only limited outcome data are currently available, but those discussed at the committee meetings — vessel patency, procedural complications and early recovery — mirror the results of the clinical trials (P H, unpublished observations). The statewide number of patients with potential for thrombectomy is difficult to determine, and further modelling will be done to forecast future numbers and assist in planning.

There is still much to be done. We have recently released an updated protocol reflecting the extended time window for treatment,<sup>8</sup> and patient information sheets.<sup>12</sup> Ensuring that all regional hospitals can perform perfusion imaging and that images can be accessed promptly in the state centres is challenging. Beyond endovascular thrombectomy, we need to improve intravenous thrombolysis rates, the number of patients admitted to a stroke unit, management of post-stroke mood disorder and better integration of subacute and community care. There is no shortage of evidence to guide us;<sup>1</sup> the real challenge is using the evidence consistently, across the country, so everyone can have access to best care. Clinical networks have the power to implement change.

**Competing interests:** Peter Hand is Clinical Lead of the Victorian Stroke Clinical Network.

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