Organised stroke care to improve survival and independence: New Zealand perspectives

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The New Zealand Medical Journal carries two reports related to organised stroke care. Firstly is a report on the effect of establishing and then withdrawal of technological support for administration of thrombolysis for early ischaemic stroke. Secondly is a report describing realistic projections of the number of people likely to require stroke treatment in New Zealand.

Individual interventions for any health condition can be evaluated by rigorous assessment through high-quality randomised controlled trials or other forms of scientific exploration which examine causality with a low risk of bias and high precision. Stroke is an important and common condition with an annual incidence of between 0.5 and 1% of those aged over 65 and about 3% of those aged over 85. As highlighted in the subsequent discussion, stroke is associated, even with best possible care, with a very high rate of death or dependence in activities of daily living. In stroke, interventions that preserve life and improve independence have had rigorous evaluation and the findings support thrombolysis for acute ischaemic stroke and organised inpatient care once a stroke has occurred.

The evidence supporting administration of thrombolysis in the early phases of ischaemic stroke is available as a systematic review and meta-analysis through the Cochrane Library. The analysis identified a reduced risk of death or dependence; odds ratio for the probability of poor health outcome: 0.85 (95% CI 0.78–0.93); for treatment administered within six hours of onset of symptoms. Treatment had a greater effect if administered within three hours of onset of symptoms: 0.66 (0.56–0.79). For the six-hour figure this was based on 54.8% of participants in the combined thrombolysis arms and 58.9% of participants in the control arms having an event. The equivalent proportions for those in the three-hour window were 57.4% and 67%. A crude estimate of the number needed to treat (NNT) to prevent one bad health outcome defined as death or dependence for the three-hour window is about 10; based on an absolute risk difference of about 10%.

The first paper in the Journal describes a ‘natural experiment’ in which a regional hospital in New Zealand had access to a method of improving clinician confidence and patient receipt of thrombolysis for acute ischaemic stroke. In that paper is described the proportion of patients with acute ischaemic stroke who received thrombolysis before, during and after availability of support for senior clinicians called on to decide about administration of thrombolysis. This clinical decision is potentially not straightforward as there is a wide differential diagnosis for early ischaemic stroke including diagnoses directly related to intracerebral haemorrhage. Also the treatment itself carries a small but important risk of directly causing intracerebral haemorrhage. This decision making can be facilitated by access to clinicians more experienced in the administration of this treatment and advice can be given in a prompt way to support this treatment. The authors highlight that in the pre- and post-telestroke environment about 11/134 (8%) of people presenting with stroke received this treatment compared to 14/61 (23%) during availability of telestroke; an absolute difference of 15%. If the crude estimate of NNT applies to this situation this suggests at least one person may have had died or had important dependence.
in that regional hospital in relation to the absence of this adjunct to thrombolysis therapy. In this sense there is evidence that an organised approach across the whole health system to allow for administration of an individual treatment in a more coherent way may, in the real world of clinical management in New Zealand, save lives and improve independence.

Organised inpatient care for stroke also reduces mortality and improves independence. Another systematic review and meta-analysis from the Cochrane Library synthesises the high-quality evidence supporting this intervention. One year after randomisation to organised inpatient care the odds ratio for death was 0.81 (95% CI 0.69–0.94) and for death or dependency at the end of scheduled follow-up (as in the stroke thrombolysis synthesis) it was 0.79 (0.68–0.90). For this latter comparison, based on organised stroke unit compared to general medical wards, the bad outcome occurred in 1,027/1,829 (56.2%) of those randomised to stroke unit care compared to 1,034/1,681 (61.5%) of those randomised to general medical ward care. The absolute risk difference here is 5.3%; with a NNT of about 19 over the time course of scheduled follow-up.

The second paper in the Journal describes use of administrative datasets to project the absolute number of New Zealanders who are likely to experience a stroke, taking into account issues such as the absolute growth in the population and the ageing of the New Zealand population. The New Zealand population still has a relatively young population structure, particularly in comparison to Europe and developed Asian nations. In the 2013 Census there were a little over 600,000 New Zealanders aged 65 and over, about 14.3% of the total New Zealand population; and of this 600,000 about 73,000 (12.1%) were aged over 85. The 20-year projections to 2033 are that there will be nearly 1.2 million New Zealanders aged over 65, about 21% of the total population; and that there will be over 170,000 over age 85, around 15% of the older cohort. Although widespread use of anti-hypertensives (about 70% of older New Zealanders) and other interventions such as anti-coagulants for atrial fibrillation are likely to reduce stroke risk now compared to previous cohorts of older adults, the increased prevalence of diabetes, and perhaps different susceptibility to stroke for the evolving ethnic structure of New Zealand (fewer older adults of European ethnicity and more older adults of Māori, Pacific and Asian ethnicity), will also play a role in determining the number of New Zealanders who experience a stroke in the future. The current number of people recorded as having been discharged after a stroke in New Zealand (2015) was nearly 8,500. In relation to anticipated numbers of patients in 2038 based on the analysis of the paper this is likely to be 14,200. The simple thesis of the projections is that health service planning needs to provide for the optimal care of the additional patients and because of the lead-time in developing and sustaining services that this needs to happen now.

Organised stroke care improves survival and independence and these two papers provide support for a systematic approach across the health system in New Zealand.

Competing interests: Nil.

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