Evaluating patients with TIA
To hospitalize or not to hospitalize?

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Evaluating patients with TIA is increasingly recognized to require urgent medical attention. Although TIAs can be hard to characterize epidemiologically (since they are often under-reported by both patients and providers), they are common, with a quoted incidence of 200,000–500,000 cases annually in the United States. Most importantly, TIA is a risk factor for stroke, with risk estimates as high as 40% in some cohorts.\(^1\)

After a TIA has been identified, a decision then needs to be made about how best to perform appropriate diagnostic testing and institute secondary prevention strategies. Historically, this has not always been completed in a timely fashion; however, data suggest that the risk of stroke after TIA is front-loaded, with approximately 25%–50% of strokes occurring within the first week after a TIA.\(^1\) This has prompted the American Stroke Association (ASA) to recommend hospitalization for patients who cannot complete an appropriate diagnostic evaluation within 48 hours after TIA.\(^1\) Alternatively, observational studies from the United Kingdom (EXPRESS)\(^2\) and France (SOS-TIA)\(^3\) have investigated the role of urgent (same-day) clinics for rapid evaluation and treatment of TIA. Compared to a nonexpedited outpatient evaluation, urgent TIA clinics are associated with lower risks of recurrent vascular events and subsequent cost savings,\(^4\) because of lower stroke rates and stroke-related hospitalizations, resulting in less disability. While an urgent clinic evaluation appears to be superior to routine outpatient care, a comparison of urgent clinic vs hospital evaluation after TIA has not previously been reported.

In this issue of Neurology\(^\text{®}\), Joshi et al.\(^5\) use decision modeling techniques to address whether to hospitalize patients routinely after a suspected TIA. They conclude that compared with urgent same-day TIA clinic evaluation, hospital-based evaluation and treatment is associated with a trivial gain in quality-adjusted life-years (QALYs), which comes at significantly higher costs. The incremental cost-effective ratio was typically above a conservative threshold of $100,000 per QALY across a wide range of patient-level (e.g., risk of recurrent TIA/stroke), hospital-level (e.g., ability to administer thrombolytics in a timely fashion), and system-level (e.g., costs associated with clinic and hospital-based evaluation) variables. Only under some extreme circumstances, such as the risk of stroke within 48 hours being above 20%, did hospitalization become a cost-effective strategy.

The nature of decision modeling requires the researcher and consumer to make a series of assumptions, since even complex models cannot account for all clinical and societal variables. While the authors do a reasonable job of addressing some of these limitations, there are several that warrant further discussion. First, the estimates used to determine the costs of urgent outpatient evaluation were derived from a Danish study published in 1998. While these costs were adjusted to the value of US dollars in 2009, it is unclear whether these costs are truly reflective of outpatient care in today’s society (and in other countries). A similar case can be made about the cost estimates used for the hospitalization pathway of the decision model, which were adjusted from a 1999 US study. Finally, the feasibility of developing same-day TIA clinics, including the associated costs of start-up and maintenance, is not incorporated into this analysis.

How closely the actual “care” provided in an urgent outpatient setting would approach that provided in the current gold standard of hospitalization is unclear. While some testing could be expected to be comparable (carotid ultrasound, brain imaging), some diagnostic or prognostic information might only be gained in real time during a hospitalization (continuous electrocardiographic monitoring for atrial fibrillation, repeated measurements of blood pressure). Furthermore, an urgent clinic may have access to various types of health care providers, but it is unlikely to have the same degree of multidisciplinary care provided in a hospital setting, with spe-
cialists, nurses, therapists, and dietitians all readily available. Whether this translates into different adherence rates to secondary prevention measures or other long-term differences in care is uncertain.

The crux of the matter may be this: most patients will likely not require inpatient care following TIA, but some proportion of patients will benefit from hospitalization. Indeed, a few patients were admitted to hospital directly from the clinics in the SOS-TIA and EXPRESS studies.2,3 How can we best distinguish these 2 groups? Currently available risk stratification methods are a step in the right direction, but still cannot provide complete distinction between high-risk and low-risk groups. Recent iterations such as the ABCD3-I score,6 which incorporates imaging results from carotid ultrasound and brain MRIs, cannot provide prognostic certainty. Even after assuming the limitations of this tool, decisions to hospitalize using ABCD3-I scores may not be feasible in some settings, where MRI and other tests may not be available, or are only available after admission. This is an area where further research is needed.

For now, policy will probably continue to vary from country to country. In the United States, given the relative lack of urgent TIA clinics in most communities, decisions regarding hospitalization after TIA should follow the recommendations of the ASA.1 In the United Kingdom, urgent outpatient management is already the norm and is supported in various UK guidelines. If or when same-day TIA clinics become more widespread in the United States, then a more direct comparison of the costs and benefits of each strategy can be undertaken, perhaps through use of group randomized trials. Even then, a “one size fits all” approach to TIA care on a national or regional scale may not be appropriate. In individual communities, whichever strategy minimizes recurrent stroke at the lowest possible costs should be the preferred option.

AUTHOR CONTRIBUTIONS
Dr. Kelly: drafting/revising the manuscript. Prof. Rothwell: drafting/revising the manuscript.

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REFERENCES