Hospital and Demographic Characteristics Associated With Advanced Primary Stroke Center Designation

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Background and Purpose—Despite evidence that primary stroke center (PSC) certification is associated with improvements in care and outcome, only a minority of hospitals have achieved this certification. We sought to determine hospital-based factors associated with achievement of PSC certification.

Methods—We used the 2011 American Hospital Association survey and the 2010 national census for population and household data to identify potential hospital and demographic factors influencing certification as a PSC by the Joint Commission, Healthcare Facilities Accreditation Program, and DNV Healthcare.

Results—Of the 3696 hospitals to complete the survey, 3069 fulfilling study criteria included 908 PSC (31%) and 2161 non-PSC. Independent hospital characteristics associated with PSC certification were Joint Commission accreditation (odds ratio [OR], 3.5; 95% confidence interval [CI], 2.4–5.0), increasing size (per quartile in number of beds; OR, 2.5; 95% CI, 2.1–3.1) and inpatient neurological services (OR, 3.2; 95% CI, 2.4–4.6), number of households per zip code (per 1000 households; OR, 1.1; 95% CI, 1.0–1.2), increasing Hispanic population (by 10% increase; OR, 1.1; 95% CI, 1.0–1.2), and income per household (per $10000; OR, 1.2; 95% CI, 1.1–1.3). Designation as a sole community provider (OR, 0.22; 0.10–0.47) or governmental hospital control (0.61; 0.44–0.84) was associated with noncertification.

Conclusions—Less than 1 in 3 hospitals has achieved certification as an PSC. Potential areas of improvement include increasing certification of governmental-controlled hospitals.

Key Words: certification ■ hospitals ■ quality improvement

See related article, p 3499.

In 2000, the Brain Attack Coalition published recommendations for the establishment of primary stroke centers (PSCs) to improve and advance acute stroke care. Based on these requirements, hospitals began applying for PSC certification starting in 2003. PSC certification has been associated with higher compliance with national guideline proven care, higher starting in 2003. PSC certification has been associated with higher compliance with national guideline proven care, higher starting in 2003. PSC certification has been associated with higher compliance with national guideline proven care, higher starting in 2003. PSC certification has been associated with higher compliance with national guideline proven care, higher 3717

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Graduate Medical Education (ACGME) residency programs (43% versus 14%), AMA medical schools (51% versus 21%), JCA圣地 (95% versus 65%), had inpatient neurological services (94% versus 46%) and trauma centers (55% versus 38%). PSCs were less likely to be governmental (federal/state/county 10% versus 26%) and designated as the sole community provider (1% versus 9%).

Independent hospital characteristics associated with PSC certification were JC accreditation (odds ratio [OR], 3.5; 95% confidence interval [CI], 2.4–5.0), sole community provider (OR, 0.22; 95% CI, 0.10–0.47), hospital type (governmental versus nongovernmental, 0.61; 95% CI, 0.44–0.84), increasing size (per quartile in number of beds; OR, 2.5; 95% CI, 2.1–3.1), and inpatient neurological services (OR, 3.2; 95% CI, 2.4–4.6; Table 2).

Although controlling for hospital-based factors, the demographic and regional factors independently associated with hospital PSC designation were number of households per zip code (per 1000 households; OR, 1.1; 95% CI, 1.0–1.2), increasing Hispanic population (every 10% increase; OR, 1.1; 95% CI, 1.0–1.2), and increasing income per household (per $10000; OR, 1.2; 95% CI, 1.1–1.3; Table 2).

Governmental hospitals were the less likely to achieve PSC certification, and rates varied depending on controlling body (Table 3). Hospitals administered by states and hospital districts were more often PSC, whereas county-administered hospitals had extremely low rates of certification. The low rates of certification in the 294 county facilities drove the association of governmental control with low rates of advanced stroke certification.

### Discussion

We found that larger hospitals with JC certification who offered neurological services were most likely to be accredited, whereas sole community provider hospitals and governmental hospitals, particularly county facilities, were much less likely to be certified. Demographic characteristics of hospitals achieving PSC certification included increased number of households, increasing Hispanic population, and wealthier neighborhoods. Hospital size is a recognized barrier, but smaller hospitals can successfully achieve stroke center certification, often using telemedicine to link to larger hospitals or regional stroke networks for the resources needed for acute stroke care.

Many factors drive hospitals to become stroke centers, including the desire to improve care. Factors working against certification include lack of coordination, financial constraints, inadequate available medical expertise, and increasing administrative complexity because of hospital regulations. We recently described the positive effect of regional emergency center certification.
medical services diversion to certified stroke centers in driving hospital certification. The most striking result in our analysis is that hospitals controlled by governmental entities were significantly less likely to be certified as stroke centers. This was most evident in the group of county facilities, in which 1 in 20 achieved certification. County hospitals have an important role as safety net for uninsured and underinsured, often providing care to the indigent and underserved. This population is at particularly high risk for stroke and in great need of stroke education and acute stroke care.

There are limitations to this study, including incomplete participation (65%) of hospitals nationwide in the survey. The hospitals that did not participate are more likely to be smaller and resource-poor, and it is possible that we may have overestimated the rate of stroke centers nationwide. Survey results may not reflect actual practices in the hospitals. We were unable to take into account state-based acute stroke certification systems, which several states use. For example, in 2004, the Massachusetts Department of Public Health began designating primary stroke service hospitals, independently of the JC certification program, using criteria based on the Brain Attack Coalition recommendations. The American Hospital Association survey data used in this study reflected only PSCs that had been certified by the JC, DNV, and the Healthcare Facilities Accreditation Program. Another limitation is the data’s inability to reflect which hospitals tried and failed to achieve PSC certification. These survey data give us a snapshot of certification at only 1 point in time. A longitudinal analysis could provide a different perspective because hospital certification is not a static process; the number of hospitals seeking certification change all the time.

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Disclosures
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