EDITORIAL

When Access-to-Care Indicators Meet

Designated Shortage Areas and Avoidable Hospitalizations

PARCHMAN AND Culler,[1] in this issue of the ARCHIVES, explore the difficult terrain of primary health care system assessment. Their work integrates 2 important measures of the primary care delivery system: the health professional shortage area (HPSA) classification of primary care access and the ambulatory care–sensitive (ACS) admission count, an emerging outcome measure of the adequacy and effectiveness of primary care services. In controlled analyses, they found that among elderly patients in fair or poor health, those who lived in HPSAs had a greater likelihood of experiencing an ACS admission than similar individuals in nonshortage counties.

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While an association between HPSAs and ACS admissions is easy to understand, its implications are less obvious. Does the demonstrated relation tell us something about HPSAs or ACS admissions? Specifically, do these findings show that populations in designated HPSAs really have poorer health outcomes, thus supporting the predictive validity of the HPSA classification of underservice? Alternatively, does this study demonstrate the usefulness of ACS admissions as sentinel events for potential problems in the access or quality of a community's primary care system? Let us consider these 2 interpretations.

THE HPSA DESIGNATION

The health manpower shortage area designation was created in the late 1970s (later renamed gender-neutral health professional shortage areas) to help target the allocation of federal resources.[2,3] Health professional shortage area designations make underserved communities eligible for health professionals from the National Health Services Corps, enhanced payments under the Medicare program, cost-based reimbursement for rural health clinics, and several other types of federal supports.

From the time HPSAs were created, there have been questions about whether HPSA-designated communities truly have greater need for health resources. Many studies[4] have suggested not, culminating in a 1995 US General Accounting Office report that concluded that HPSAs "do not effectively identify areas with primary care shortages or help target federal resources." Congress recently mandated changes in the HPSA classification, which are being worked out.[5] It is hoped that future designations will better reflect the health care resource needs of populations.

Despite the potential importance and timeliness of any new data on the validity of the HPSA designation, we do not believe that the findings of Parchman and Culler[1] lend support for the current HPSA classification, for several reasons. Counties or smaller geographic areas that have fewer than 1 physician per 3500 population automatically qualify as HPSAs. For areas with physician-to-population ratios greater than 1:3500, HPSA status can still be earned when "unusually high needs" are demonstrated, and an infant mortality rate greater than 20 deaths per 1000 live births is 1 of 3 high-need qualifying conditions.[3] Given that infant mortality rates are part of an HPSA designation and, in part, an outcome of the primary health care system, it may be that what Parchman and Culler's study tells us simply that one outcome of the primary health care system is related to another outcome, ie, the elderly experience more preventable hospitalizations where there are higher infant mortality rates, regardless of whether these outcomes are caused by physician access problems.

Parchman and Culler[1] point out a second aspect of HPSAs that may affect the interpretation of this study, that a community's success in the application process to become a designated HPSA relies in part on the bureaucratic know-how and diligence of that community and its state. This adds administrative and sometimes political elements to HPSA designations that are unrelated to access as experienced by patients but cannot be accounted for in analyses.

A third issue limiting the HPSA implications found by Parchman and Culler[1] is that when health professionals are brought into an underserved community under a targeted federal program they are not counted in the formula for determining HPSA status.[3] An HPSA designation is retained even if the number of federally bolstered professionals in a community rises above the HPSA threshold, to prevent the "yo-yo effect" of designation-dedesignation. Therefore, some HPSAs actually have greater health care provider access than non-HPSAs because of uncounted resources. This creates "noise" in the use of HPSAs as indicators of access in a study such as the one by Parchman and Culler. If we dropped the counties "contaminated" with federal physicians, the associations between access and ACS hospitalizations might actually have been greater.

Given these features of HPSAs, we do not believe that the association between HPSA status and ACS admission rates of this study tells us much about the validity of an HPSA designation. To use ACS hospitalization rates to validate the health care needs of HPSA communities, one could test whether ACS admission rates vary more by HPSA status than by older, more straightforward geographic access measures, such as a simple threshold ratio of physicians to population. Even this test, however, would not adjust for the problem of confounding by infant mortality rate outcomes embedded in the HPSA classification.

When the HPSA system was being implemented, policy makers had reached some agreement that access to basic primary care was an appropriate goal for the nation, but the evidence was not strong that access as reflected by the distribution of primary care professionals affected the health of populations. In part, negative outcomes from access barriers were difficult to demonstrate because the concept of access proved hard to measure directly.[6]

Ambulatory care–sensitive hospitalization rates have been proposed as indirect indicators of a population's access to primary health care.[7,8] The rationale underlying this indicator is that some medical conditions that can lead to hospitalization, such as asthma, hypertension, and cellulitis, often can be managed in the outpatient setting with timely and effective primary care services. While all hospitalizations for these diagnoses are not avoidable, when a population's summed hospitalization rate for these conditions is higher than expected, it is evidence for either access or quality problems in available outpatient primary care services. The relation between ACS admission rates and primary care physician distribution has been verified in urban populations[8] but remains unproved in rural areas.[9] Less research attention has been given to the relation between the quality of primary care services and ACS admissions, but it is not uncommon for insurers and practices to monitor hospitalizations for individual "avoidable" conditions as indicators of the quality of care provided by individuals and groups of physicians.[10]

There are still many important issues to be worked out in the use of ACS admissions as indicators of access. Perhaps the most interesting from a clinical perspective is the spectrum of medical conditions that are appropriate in ACS rate calculations. The most rigorously constructed list of ACS conditions was developed by the Institute of Medicine but includes several seemingly inappropriate diagnoses.[6] For example, hospitalizations for unstable angina (*International Classification of Diseases, Ninth Revision, Clinical Modification*[11] code 411.1) are included on this list, but primary care physicians are often the portal for the appropriate hospitalization and stabilization of patients with unstable angina; thus, communities with greater primary care access might have higher admission rates for unstable angina but, hopefully, lower admission rates for acute myocardial infarctions. Also on the Institute of Medicine list are dental conditions, such caries (code 521.0) and periodontal disease (code 523), but these seem to be more appropriate for inclusion in assessments of access to dentists than to primary medical care providers.

In attempts to select ACS conditions that reflect more reliably problems in access to primary care services, some studies have included only hospitalizations for selected chronic medical conditions, such as congestive heart failure and chronic obstructive pulmonary disease.[8] This approach, despite some strengths, is still not ideal because its analyses will not reflect access to and quality of acute primary care services, an equally important dimension of primary care. Parchman and Culler[1] took a measured approach and only selected conditions if they had been used in all 3 of among the best prior studies in this field; however, unstable angina remains on their list. Ultimately, it will be important to identify admission conditions that not only clearly increase with inadequate primary health care services but for which the access component is relatively large compared with the variation in hospitalization rates due to other factors, such as cultural issues and underlying health differences across populations.

Among the other important issues to be worked out for ACS admission rate calculations is the appropriate denominator of patients to be used. In other words, because these are rate calculations, we must know to what population the admission counts should be attributed. Should this be all adults in a given geographic area, or only those who carry certain diagnoses placing them at risk for the monitored conditions? How important are age and sex adjustments? Should we also adjust ACS rates for regional variations in physician practice styles and patient compliance, cultural propensity to seek care, population educational levels, insurance coverage, and the acceptability and accommodation of local providers to local population groups?[8] And how do we adjust for the appropriate practice of physicians who, when caring for poorer patients with fewer social supports at home, more readily opt for hospitalization for patient safety?

The use of ACS admissions to gauge access remains a crude but increasingly promising technology. In 1993, the Institute of Medicine called for further studies to "establish solid causal links between the access barriers . . . and measures of outcome, such as premature death, sickness, disability, and avoidable hospitalizations."[6] Parchman and Culler[1] have taken us one step further in answering this call.

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REFERENCES

1. Parchman ML, Culler SD. Preventable hospitalizations in primary care shortage areas: an analysis of vulnerable Medicare beneficiaries. *Arch Fam Med.* 1999;8:487-491.
2. Criteria for designation of health manpower shortage areas, 45 *Federal Register* 75996-76010 (1980).
3. Lee RC. Current approaches to shortage area designation. *J Rural Health.* 1991;7:437-450.
4. US General Accounting Office. *Health Care Shortage Areas: Designations Not a Useful Tool for Directing Resources to the Underserved.* Washington, DC: US General Accounting Office; 1995. Publication HEHS 95-200.
5. Designation of medically underserved populations and health professional shortage areas, 63 *Federal Register* 46537-46555 (1998).
6. Millman M, ed. *Access to Health Care in America.* Washington, DC: National Academy Press; 1993.
7. Billings J, Anderson GM, Newman LS. Recent findings on preventable hospitalizations. *Health Aff (Millwood).* 1996;15:239-249.
8. Bindman AB, Grumbach K, Osmond D, et al. Preventable hospitalizations and access to health care. *JAMA.* 1995;274:305-311.
9. Schreiber S, Zielinski T. The meaning of ambulatory care sensitive admissions: urban and rural perspectives. *J Rural Health.* 1997;13:276-284.
10. Health Resources and Services Administration. *Using Health Outcome Measures to Evaluate the Primary Care System.* Rockville, Md: US Dept of Health and Human Services; 1989. HRSA project No. 86-170.
11. *International Classification of Diseases, Ninth Revision, Clinical Modification.* Washington, DC: Public Health Service, US Dept of Health and Human Services; 1988.