A distinguishing characteristic of contemporary medicine is its continued march toward greater specialization. Medical practice has increasingly become identified by its specialized practitioners, and enhanced quality of care is widely perceived to be linked to the technically advanced care they provide. Apart from the increasing number of specialized practitioners, however, there is another trend that has received somewhat less attention: greater specialization of services among hospitals.

But what exactly is hospital specialization, and what implications does it have for quality and efficiency in medicine? Unfortunately, there is no easily applicable definition for what it means for a hospital to be "specialized," although recent evidence suggests that some hospitals have begun to move in this direction. Examples include the recent proliferation of service lines in hospitals that are focused on a few conditions, procedures, or populations—often organized under the structure of heart institutes, cancer centers, orthopedic hospitals, women’s and children’s hospitals, and at its most extreme, free-standing specialty hospitals that are often physician-owned. Although physician-owned specialty hospitals are the most widely contentious and discussed of these examples, the reality is that such facilities represent only a small proportion of hospitals in the United States.

The rise of hospital specialization reflects recent trends by hospitals to develop and promote key services that are frequently of great interest to the public. In general, such strategies may take very different organizational approaches—from physically distinct units or buildings that house independent staff or administration to “virtual” centers that are actually integrated into the general work flow of a hospital but are promoted to the public as a unique service. Of course, proponents argue that quality and efficiency are potentially improved when hospital specialization occurs. However, given that these services—typically, cardiovascular and orthopedic procedures—are usually lucrative in relation to other services, critics question whether profitability is a stronger underlying motivation for hospital specialization and how this may impact other important factors such as utilization.

In this issue of Circulation: Cardiovascular Quality and Outcomes, Girotra et al contribute to this important debate by exploring the outcomes of coronary artery bypass graft surgery (CABG) stratified by hospital specialization in cardiovascular diseases. The authors report, in a retrospective analysis of >700 000 Medicare patients undergoing CABG from >1100 hospitals, that greater hospital specialization was associated with lower mortality or length of stay. Importantly, they used an empirical approach to define hospital specialization, stratifying hospitals into 5 quintiles based on a hierarchy of increasing degrees of their discharges related to major diagnostic category 5: &lt;25.8%, 25.8% to 28.6%, 28.6% to 31.1%, 31.1% to 35.4%, and ≥35.4% in quintiles 1 through 5, respectively.

The authors report on differences in these quintiles using a series of analyses where they sequentially adjusted for differences in patient characteristics and hospital volume. In unadjusted analyses, overall mortality was similar across quintiles 1 to 4 (4.7% to 4.9%), with a modest but significantly lower overall 30-day mortality in quintile 5—that is, facilities with the highest hospital specialization. This difference remained largely the same after accounting for patient characteristics but, interestingly, was no longer significant after adjustment for both patient characteristics and hospital volume. Their findings were similar when they examined other outcomes, such as 1-year mortality and length of stay. In sum, these findings led the authors to conclude that hospital specialization itself does not appear to be associated with improved outcomes in CABG.

Although provocative, the study has some limitations and should be interpreted in light of these concerns. First, the analysis is restricted to the elderly Medicare population, a higher-risk group that often has numerous comorbidities, and required claims data for risk adjustment. Second, the analysis focused on CABG alone. The impact of increasing hospital specialization on other cardiovascular services (eg, percutaneous coronary intervention, acute myocardial infarction, and congestive heart failure) was not assessed but would be interesting to know. Third, although the quintile method of defining hospital cardiac specialization allows for an equal number of hospitals in each category, this model may have...
some disadvantages. For example, there was a striking lack of variability between quintiles 2 through 4, with mean degrees of specialization varying by <6%—a small enough percentage to make hidden differences in outcomes difficult to identify. Interestingly, Hwang et al. performed a similar analysis of CABG patients but categorized hospitals more broadly into those that were least specialized (0% to 40%), moderately specialized (40% to 60%), and most specialized (60% to 100%). Overall, CABG outcomes in all 3 groups were similar in terms of mortality and rehospitalization. However, patients with higher comorbid illness actually fared worse in terms of 30-day mortality in the most-specialized cardiac specialty hospitals compared with general hospitals.

Perhaps the most curious aspect of the study by Girotra et al. is its careful examination of specialization as it relates to volume. Hospital volume is well established as a strong predictor of outcomes for many cardiovascular procedures, including CABG. It is therefore of interest that the results became insignificant after adjustment for hospital volume. It seems entirely reasonable to adjust for volume, especially given that the investigators were interested in elucidating the independent effects of hospital specialization. In this analysis, however, volume was closely linked to higher specialization. That is, there were few low-specialized, high-volume hospitals, as evidenced by Figure 2 in their report. Overall, this raises the question of what hospital specialization means precisely and the extent to which it can be separated from hospital volume.

So how does the study by Girotra et al inform current policy debates? First, its findings that outcomes were no better with hospital specialization—at least for CABG—provide more support for recent provisions in the Affordable Healthcare Act that will continue to diminish the role of high-volume hospitals. But more than that, it questions whether recent trends toward greater hospital specialization may be actually worth the price. Because hospital specialization has been primarily focused on providing high-revenue services (eg, orthopedic and cardiovascular care), there is the concern that it encourages greater utilization of costly but discretionary procedures. Furthermore, concentrating on these lucrative services could jeopardize the financial health of “full-service” hospitals that care for a broader mix of patients but rely on these services to subsidize less-profitable care. Finally, there is the danger of having highly specialized medical centers unequipped to face potentially catastrophic problems that lie outside their area of expertise—for example, the patient with complications after CABG that suffers multisystem organ failure. Yet, we lack conclusive data regarding all these concerns, and these should be areas of focus for future studies.

From an industrial standpoint, there are clear, time-honored advantages of specialization. Scottish economist Adam Smith famously argued for the benefits of specialization and a division of labor when describing a pin factory. Nearly 200 years later, the operations analyst Wickham Skinner described the “focused factory” model, which outlined the competitive advantages of specialization on production and quality. However, it may be that focusing in on one procedure or condition such as CABG may have limited returns for hospitals and patients. Without strong evidence that hospital specialization leads to improvements in quality or efficiency of care, promoting this approach broadly may not lead to any significant advantages over traditional strategies for quality improvement, with the possibility of undesirable consequences remaining.

Disclosures

None.

References


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