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EDITORIAL – HEALTH SERVICES RESEARCH AND GLOBAL ONCOLOGY

Hospital Regional Network Formation and 'Brand Sharing': Appearances May Be Deceiving

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Healthcare reform has dramatically increased the consolidation of hospitals into regional networks. Since passage of the Patient Protection and Affordable Care Act (ACA) in 2010, the frequency of hospital mergers and acquisitions has more than doubled. A total of 115 transactions were announced in 2017 alone, which is the highest number ever recorded and a 13% increase from 2016. The finances of these transactions are staggering: 10 transactions involved net revenues of US$1 billion or greater.[1] While more than 30% involved for-profit divestitures, up to 20% involved academic medical centers.[2]

Advocates of hospital networks cite many purported benefits for both small local hospitals and large referral centers. From a financial perspective, network formation may allow for cost sharing and risk distribution. It may also diminish the economic limitations imposed by reimbursement programs through an increase in purchasing power. Furthermore, for small hospitals, network participation may permit the reduction of capital expenditures, infrastructure, and clinical or ancillary services deemed redundant. Clinically, network formation may allow for the integration and coordination of complex care between acute care hospitals and ambulatory services throughout the region, and can facilitate the centralization of highly specialized care at dedicated centers through selective referral. In addition, network participation may enable the dissemination of best practices, which could decrease existing variations in care and outcomes[3,4] and improve the quality of care for all patients in the region. Taken together, advocates of hospital consolidation suggest that regional network formation can improve the value of healthcare by increasing quality and decreasing costs.

However, despite the steady increase in hospital consolidations during the last decade, the real-world impact of regional network formation is unknown. Much of the previous research on hospital networks has focused on healthcare costs and yielded mixed results,[5–7] while studies of healthcare efficiency have failed to reveal improvements in administrative costs or resource utilization.[8] Instead, many questions remain unanswered. As tertiary referral and academic medical centers form regional networks, little is known about the influence of network participation on the quality of care at smaller affiliated hospitals. Furthermore, no studies have evaluated the impact of network participation on patient perceptions or preferences for care. As a result, the impact of regional network formation on clinical outcomes is largely unknown.

In *Annals of Surgical Oncology*, Dr. Chiu et al.[9] take the first step toward answering these questions. In their study, the authors evaluated the influence of 'brand sharing' on patient perceptions of care at smaller hospitals that are affiliated with a larger specialty hospital through a regional network. Using a web-based survey, they asked a nationally representative cohort of adults to hypothetically differentiate elements of surgical quality and safety at a 'top-ranked' cancer hospital, an 'affiliated' local hospital, and an 'unaffiliated' local hospital. In addition, respondents were asked to hypothetically assess their hospital preference for complex cancer care, first in the absence, and then in the presence, of an affiliation with a top-ranked cancer center.

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The results suggest that the general public perceives hospital affiliation to indicate an equality of care between centers. Nearly 70% of adults surveyed believed the rates of complications, readmissions, length of stay, and mortality at a top-ranked cancer center and an affiliated local hospital would be the same. In addition, more than 50% of respondents believed treatment recommendations and use of minimally invasive surgical approaches would be similar, while 65% believed their cancer was equally likely to be cured at both hospitals. As a result, the authors found that more than 30% of respondents initially motivated to travel to a top-ranked cancer center could be 'demotivated' to instead prefer a local hospital, if an affiliation were present.

These findings have important implications for patient outcomes in the current healthcare environment. Recent work by Sheetz et al.[10] indicates that hospital network participation is not associated with improvements in outcomes for patients undergoing four common surgical procedures (colectomy, abdominal aortic aneurysm repair, coronary artery bypass grafting, and total hip replacement), even when the amount of time in-network is considered. While it is important to realize this study did not differentiate large referral (or academic medical) centers and smaller affiliated hospitals, taken together these two studies suggest that 'brand sharing' through hospital network affiliation could have unintended negative consequences on patient outcomes.

Previous work has suggested that hospital networks may improve cancer care through appropriate integration of services, including sharing of expertise for decision making, as well as selective referral of complex cancer patients to the corresponding high-volume tertiary referral centers.[11–13] The results of the study by Chiu et al.[9] suggest that complex cancer patients who choose to seek care at an affiliated local hospital may unknowingly forgo the benefits of specialized care at a regional referral center, particularly if established processes for integrated care are not followed. A patient with locally advanced pancreatic cancer receiving neoadjuvant therapy, for example, may unknowingly forgo a chance at exploration and resection if he/she pursues a surgical recommendation at an affiliated local hospital not experienced in the preoperative evaluation and perioperative care of combined pancreas and vascular resections, even if the hospital is considered 'high volume' for pancreatectomy (> 20 annually).[14] Similarly, recent studies have suggested that some patients with early-stage breast cancer may be subjected to an unnecessary axillary lymph node dissection, despite good evidence against its use, when receiving care from low-volume breast surgeons.[15]

As the rate of regional network formation is expected to increase in the foreseeable future, substantially more research is needed to better understand the influence of network formation on care quality and patient outcomes, particularly for patients with complex cancer needs. What is the clinical and financial impact of network participation on centralized referral centers versus affiliated local hospitals? How does healthcare quality and safety vary between and within networks? Is the standardization of care and dissemination of best practices improved by regional network formation? Finally, if a significant impact on outcomes is identified, is it distributed equally throughout the network, or are subsets of patients (such as complex cancer patients) affected differently? These are critically important questions, and we applaud Dr. Chiu et al.[9] for conducting an innovative study that begins to advance our understanding of the complex influence of regional hospital networks on modern healthcare.

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