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The hospital – still the doctors' workplace(s): A cautionary note for approaches to safety and value improvement

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Medicare has long stood at the center of efforts to embrace value payment, enhance quality, and improve the health of the population. Implementation efforts within Medicare have often focused on the hospital. Hospitals may seem at first glance to be appropriate places on which to focus. They are iconic elements of the health care system. They are prominent – frequently the largest employer in any community, often a source of community pride. They are familiar – whether people come as patients or visitors, frequenting the hospital is a common experience. People who work there include doctors, nurses, pharmacists, and other health care workers, many of whom are notable members of the community. Hospitals are often taken to symbolize (and indeed, to operationalize) the powers of modern medicine. Most people are born in hospitals, and many die there. Finally, for those hoping to change the health care system, whether by implementing new payment policies, enhancing quality/safety, or creating new public policy models, hospitals represent a manageable number of "targets."

The study by Shahian et al., explores an important concept, that is; What is the relationship between global hospital safety indicators and specific hospital-level clinical outcomes? The authors made use of the AHRQ Hospital Survey on Patient Safety Culture and a condition with measurable and important clinical outcomes – risk-adjusted acute myocardial infarction (AMI) mortality in Medicare patients. Their methods were solid, their results disappointing – they were unable to demonstrate an association between a hospital's safety

culture and its associated AMI mortality. A fundamental methodologic concern is the organizing unit of analysis, the hospital.

Are hospitals really the best place to focus our efforts? Perhaps not. While modern hospitals may on first glance appear to be effective and unifying conduits through which to implement fundamental healthcare change, they are in some important ways ill-suited for that role. What it means to be a U.S. "hospital" has been constantly changing and has always reflected a specific set of social, political, and economic circumstances. Throughout the nineteenth century most hospitals were small houses for the sick and dependent. They were managed by one person, the hospital superintendent, who was responsible for both the operation and the culture of the entire institution. Thus, the levers of institutional change were in the hands of a single person and were easy to identify. On the other hand, hospitals were irrelevant to medical care for most people. Physicians could spend their entire career without ever having seen a hospital, much less set foot in one (Rosenberg 1995).

Around the turn of the twentieth century the fundamental nature of the hospital started to change. Hospitals grew larger, incorporated more technology, and became a more integral part of the medical system for both providers and middle-class patients. Much as the factories they often were designed to emulate, they started to incorporate an explicit organizational structure. Different departments were created (dietetics, accounting, nursing), each with its own leadership, enhancing management of the increasingly complex institution but making the idea of a single hospital culture problematic. On the other hand, the physician work force remained relatively undifferentiated. Most care, from birth to death, was provided by general practitioners; specialty training and board certification were distinctly uncommon before the Second World War (Stevens 1998). It might have made sense to think about each hospital's physicians as having a specific culture.

But after the Second World War, the reality of a single "hospital" became harder and harder to maintain. No longer unified in their generalist practice, physicians became increasingly defined by specialty. Not only physicians but also the very hospital started to differentiate, to create increasingly separate physical spaces in which to deliver care (Adams 2008; Sloane and Sloane 2003). Space was set aside for complex diagnostic equipment, for

intensive care units (once one, now a multitude), emergency rooms, pediatrics wards, and much else. In our modern hospital, pediatricians almost never enter the ophthalmology suite, internists do not operate the CT machines (despite the impression given on the House, MD television show), emergency physicians do not often wander up to the intensive care units, and psychiatrists are rarely found in the operating rooms. The early-21st century institution comprises a multitude of "hospitals" within the physical monolith. But the singular name of the larger institution still echoes its origins. Even when administratively split into different operating units, or spread over several buildings built in widely separate decades – those building are sometime contiguous, sometimes not – we still refer to a singular "hospital." We do this despite being aware that hospitals are amalgams of a multitude of different "workshops" more than they are a unified corporate entity of the type that many policy mavens imagine them to be.

Hospitals in fact look much more like a multiproduct firm – the multitude of products just happened to be produced under one (metaphorical) roof (Barcena-Ruiz and Espinosa 1999). Consider the General Electric Company (GE). GE creates products in diverse industries: aviation, power, transportation, lighting, oil and gas, as well as reaching into healthcare with medical devices and pharmaceuticals (to provide only a partial list of what this company does). In providing a wide range of services, GE is not dissimilar to hospitals and their providers who treat vastly different types of patients in neurosurgery, psychiatry, pediatrics, and physical medicine and rehabilitation. Just as in industry, each of these products have their own culture, organizing principles, quality metrics, physicians, and explicit and implicit social norms. No one would imagine that an outcome metric in the transportation product line of GE should affect how it is paid for its gas and oil business. Or that the culture and safety record of its lightning business would affect how well its aviation business functions. But because the components of the hospital multiproduct firm share the same location and the same name, it is easy to assume that there is a level of homogeneity in management and outcomes that one would not expect in other multiproduct firms.

What problems can result from believing that the hospital is a single, homogeneous entity that can serve as the "locus of control" for healthcare transformation? Several recent

efforts whose questionable results – more "noise than signal" – reflect this misunderstanding. Consider Medicare's Hospital Readmissions Reduction Program (HRRP,) in which roughly half of all hospitals are penalized if their risk-adjusted readmission rate is higher than average for a group of selected medical and surgical conditions (Centers for Medicare & Medicaid Services 2016). Each condition is reviewed separately and then a penalty of up to 3% is applied to a hospital's total Medicare payment – not only for the specific condition for which the problem was identified, but across all types of patients. So, if the hospital is the locus of control and has a quality stamp or management stamp that transcends the multiproduct firm construct, the number of hospitals penalized should approximate 50%. In fact, with just five conditions assessed, fully 78% of our nation's hospitals were penalized in fiscal year 2015 (Boccuti and Casillas 2017).

A policy that applies penalties across the entire Medicare line of business in a hospital based on the outcomes of selected tracer conditions is problematic. The hospital providers caring for patients with an acute myocardial infarction are different from those caring for patients with pneumonia: the doctors are different, the nurses are different, the social workers are different, the physical locations in the hospital are different. Penalizing the entire hospital for deficiencies in a specific type of disease neither makes sense nor is it likely to be an effective way of changing behavior.

The same problem arises in assuming that a hospital has a unified safety culture, and then trying to characterize it by a single outcome in one of the product lines – for example, mortality after acute myocardial infarction (2017). An attempt to demonstrate an association between an overall cultural survey and a specific clinical outcome is unlikely to succeed – and it didn't. The notion that a global patient safety profile could logically extend equally to the multiple products produced in a hospital by different groups of physicians and other health providers runs counter to the current division of the hospital into functional units. This same lack of association with a global safety culture measure was also seen when examining hospital catheter-associated infections (Meddings et al. 2017).

This is not to say that one couldn't find an association if one assessed just the safety culture of the cardiovascular product line and related its culture to mortality from acute

myocardial infarction – it is just that the culture in pediatrics, psychiatry, or radiology is unlikely to affect myocardial mortality. We need to move away from global hospital assessments or penalties based on isolated clinical outcomes.

So, what steps can we take to better understand and align quality/safety and outcomes with hospital payment? The first step is to assess underlying hospital cultures and to ask how these cultures vary by hospitals with different overarching missions. A major urban teaching hospital with many specialists and subspecialists may have dozens of important product lines and cultures, while a rural hospital in which care is largely provided by family medicine physicians will likely have far fewer, approximating the early hospital culture. Effective payment/policy interventions must recognize and address these important organizational and cultural differences.

Another key step in moving payment policy more from volume towards value is better alignment between hospital-based and physician-based payment and quality incentives. Some physicians base the bulk of their practice and payment on hospital-centric services (for example, cardiac surgery); while others, like psychiatry, are less linked between inpatient processes and subsequent patient outcomes. For these hospital-centric product lines, the hospital-based penalties and quality metrics must necessarily be aligned with the physician-based penalties and quality metrics. This alignment must be appropriately granular at the hospital level to mirror the operational units that deliver that care. An encouraging development in the focus on physician-hospital alignment is the new Bundled Payments for Care Improvement (BPCI) initiative from Medicare where the payment for the professional and institutional sides are bundled (Centers for Medicare & Medicaid Services 2017). This approach will likely lead to more focused outcome measures and clinical innovation than the current global hospital quality and value initiatives.

One other transformative element needs to be noted, and that is the use of technology to manipulate information. Measurement of quality depends upon the ability to aggregate and analyze data. Early in the twentieth century the Boston surgeon Ernest A. Codman attempted to measure surgeons' quality (Howell and Ayanian 2016). His concepts were not dissimilar to those we have today, but his technology was limited to pen and paper. There were limits on

how small one could write and how large one make the piece of paper, and Codman soon found himself running up against those physical limits. Later in that century (when the authors of this commentary started their careers) any attempt to study outcomes meant spending hours and hours paging through paper charts. Obviously, our powers to gather and to analyze data are far different today. Those powers could be used to measure quality in ways that more accurately reflect the practice of medicine by specific groups of people than by simply lumping together everything that happens within the walls of a hospital.

The U.S. hospital was once a small undifferentiated workshop; it has now become a corporate integrated delivery system with multiple overarching management systems. The nature of the hospital has changed and will doubtless continue to change. We must deal with the hospital as it exists today. If we are to manage based on a true quality signal rather than on random noise, we must better align institutional and physician incentives at the level of the unit of care delivery. Lastly, we must insist that studies assessing hospital quality, safety, and outcomes also address the multiproduct nature of hospital outcomes, operations, safety, and quality. We should not be surprised that analyses or payment strategies that ignore the inherent clinical organizational structures of today's hospital, a legacy of its history, fail to yield their desired effects. Most organizational change requires years of effort. But the first and most important step towards effecting change is to understand the nature and culture(s) of the organization you are seeking to change.

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