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Seeing the forest for the trees: Institutional environment impacts on reimbursement processes and healthcare operations

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ABSTRACT

Healthcare reimbursement processes perform an annual multi-trillion dollar task to remunerate healthcare organizations, physicians, and patients. Healthcare reimbursement entails coding, billing, and payment processes based on care provided to patients. As this research note highlights, though often implicitly assumed to be independent of care delivery processes, reimbursement processes are distinctly connected to the efficacy of care delivery. Prior research tends to examine neither antecedents nor consequences of healthcare reimbursement processes and their operational implications, even though these issues can lead to unproductive externalities affecting healthcare systems and patients. Most extant literature tends to focus on medical task environments, with far less attention given to how institutional environment structures reimbursement and thus drives stakeholder incentives and behaviors. Because of a wide diversity of institutional environments, reimbursement processes differ on a nation-by-nation basis, and within nations on a state, province, city, or even within-city basis. The varied and complex reimbursement processes drive divergent stakeholder incentives, varying use of healthcare protocols and processes, and differing patient outcomes. Even within a single reimbursement regime, a multitude of reimbursement policies, required processes, and payer institutions creates operational complexity for physicians and their professional staff, which ultimately affects patient care delivery processes and outcomes. The task environment focus of extant healthcare OM research suggests a need to understand institutional environment antecedents, natures, and impacts of reimbursement processes. This research note illustrates the seemingly simple structural nature of reimbursement processes, yet also reminds researchers how diverse institutional environments, built to accomplish different healthcare aims, can lead to similar levels of enormous process complexity. The research note further motivates how such phenomena may affect research findings and the quest for operational solutions to healthcare dilemmas. By focusing on healthcare reimbursement and its operational implications, the note provides useful insights for continued studies of healthcare operations.

> "We really do believe much harder times are coming from a reimbursement standpoint." -Daniel Morissette, Stanford Health Care CFO (Ellison, 2015)

1. Introduction

Healthcare reimbursement processes include coding, billing, and payment processes related to care provided to patients. Though these processes are known to have massive economic impacts on national economies and businesses (Baker and Rosnick, 2005; Brill, 2015), the processes also generate many operations management challenges. Healthcare providers, involved in $3 trillion of annual financial flows in the U.S. alone, face salient operating challenges arising from regulatory and market pressures (World Bank, 2014; Brill, 2015). As the scope and costs of regulated healthcare tasks

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grow, reimbursement processes must evolve and adapt to facilitate a necessary triple aim: enable efficient care provider processes, deliver effective care for patients, and ensure the financial health and institutional missions of healthcare institutions (Porter and Lee, 2013).

While scholars and practitioners hold a consensus that healthcare reimbursement systems often have complex structures (ISM, 2002; Rouse and Serban, 2014), empirical studies seem to omit their implications—that is, how institutional environments drive reimbursement policy, reimbursable care processes, and care outcomes. The institutional environments that drive complex reimbursement processes lead to financial, operational, and care delivery issues (Kaplan and Porter, 2011). For example, in 2013, 10.1% or $36 billion worth of U.S. Medicare payments to care providers were incorrect (Adamy, 2014). Complex reimbursement processes failed to prevent over $90 billion of annual fraud, abuse, and related financial issues (Goldman, 2012; Murphy, 2015; O'Keeffe, 2016). Reimbursement process problems also delay diagnostic tests and treatments, causing care delivery consequences (AP, 2016; Sachdev, 2016). Avoiding such issues is important for all parties involved in healthcare consumption, provision, and financial flows.

1.1. Complex regulatory institutional environments

As in any multi-trillion dollar industry, healthcare providers must conform their processes to the regulations and policies of institutions having power over the providers in both care provision and reimbursement (Hillman and Dalziel, 2003; Hussey et al., 2009). Operationally, healthcare providers face ever-expanding sets of medical procedures and required information processes, which increase reimbursement processing tasks and variability, potentially harming care quality and increasing costs (Tucker et al., 2007). Frequently changing reimbursement policies also introduce new and constantly evolving stakeholder incentives and operating conditions that can cause failures of healthcare operations (Peck, 2015).

To ensure regulatory compliance and provider profitability, revenue managers increasingly must intervene in physician processes. The interventions include revenue managers suggesting adjustments to physician treatment decisions—treatments impacting care provision—as a means to reduce risk, lessen audit likelihood, and increase overall reimbursements (Porter and Kaplan, 2015). In cases where payers do not reimburse care providers promptly, care delivery can be delayed significantly or completely interrupted while waiting for approvals (Lawrence, 2016). In extreme cases, if payers and providers cannot agree on appropriate care, patient coverage may be terminated mid-treatment, even after a patient already has paid for coverage (Sachdev, 2016). Despite the impacts of institutional environment upon reimbursement and care processes of healthcare organizations, operations, and stakeholders, the extant literature often assumes that reimbursement processes exhibit little consequential effect.

1.2. Overview of reimbursement process and impacts

While financial flows are fundamental supply chain processes (Chopra and Meindl, 2007), an extensive review of extant literature reveals healthcare OM studies rarely examine reimbursement (Lee, 2016). In this review of healthcare operations management and information systems papers in leading journals, only ten papers out of 48 even mention reimbursement, and only a few studies focus on reimbursement as a salient driver of operational outcomes. Many diverse healthcare reimbursement systems exist across the globe, yet most papers refer only to one U.S. system for inpatients (O'Neill and Hartz, 2012; Powell et al., 2012). In general, extant literature refers to reimbursement as an empirical control rather than a focal operational construct.

In contrast to academic priors and research practices, healthcare administrators and policy makers tout reimbursement processes as salient causes of wasteful expenditures and poor operational performance (O'Malley et al., 2005). As an illustration, consider the similar impacts yet divergent research between clinical factors and reimbursement factors. Clinical task environment factors, such as diagnostic and prescription errors, cost billions of dollars annually (Kohn et al., 1999) and cause injuries and deaths (Landro, 2013), prompting much task-oriented OM research on care delivery and technology. In comparison, institutional environment drives process quirks related to coding, billing, and payment documentation; these reimbursement factors drive significant operational problems that directly and indirectly affect patient care (Kaplan and Porter, 2011). Among their effects, 30% of medical billing claims contain errors (Silver-Greenberg, 2011), and the reimbursement policies can prompt doctors to withhold treatments, which can lead to deaths (Allen and Levy, 2009). Further, such policies enable many billions of dollars of unwarranted claims (O'Keeffe, 2016). Relatedly, medical researchers suggest reimbursement factors are salient drivers of medical errors (McMains, 2016). Even though overall impacts are similar, the literature's focus on clinical task environment brings to mind the idiom that, to date, the research "cannot see the forest for the trees"—a focus on details has led research to ignore bigger-picture aspects of regulatory and reimbursement impacts on healthcare operations.

In light of these issues, advancing research on institutional antecedents and operational consequences of healthcare reimbursement is of societal importance (Porter and Lee, 2013). Both for-profit and not-for-profit healthcare providers live by the adage of "no money, no mission"—sustainable care provision (i.e., mission) occurs only when both operational processes *and* financial flows (i.e., money) are in place (Chase, 2016). To achieve these triple aims, researchers can address the scope and complexity of reimbursement processes, identify key antecedents of reimbursement process impacts on care delivery, and determine how the OM community can approach reimbursement topics. This research note contributes academically by explicating reimbursement processes and associated impacts on operations via conceptual frameworks that detail flows of services and financial transactions within healthcare systems—a necessary step before developing detailed empirical research (Rouse and Serban, 2014). This note also serves to remind researchers that operations are always embedded in institutional environments. In the case of healthcare OM, institutional environment, acting through reimbursement processes, may help or hinder the task environments and interventions upon which researchers focus.

The coming sections use illustrative examples to show how even a simple medical procedure can yield complex reimbursement processes and unexpected care outcomes. The discussions then illustrate how the complexities in reimbursements arise and consider how such phenomena may affect operational solutions to healthcare dilemmas.

2. Why are reimbursement processes interesting, impactful, and important?

Many OM readers may be unfamiliar with reimbursement processes, even for relatively simple medical procedures. Hence, this section uses a simple framework to describe how care provision interfaces to reimbursement processes. The framework shows how the seeming structural simplicity, when implemented in

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