

Real-World Evidence and the Behavioral Economics of Physician Prescribing

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The projections for the rising cost of healthcare have spurred robust dialogue from every sector of the healthcare economy.^{1,2} Among the many targets for cost control are specialty drugs, distinguished clinically by their route of administration, synthesis or bioengineering, mechanism of action, and cost itself.² This terminology likely originated from payers who designated these drugs for special attention, not only because of price, but also the need for distinctive handling or particular patient monitoring.³ Although there are examples of competition emerging to tamp down prices to more acceptable levels (eg, pharmacy benefit manager negotiations for hepatitis C drugs), stakeholders (eg, policy makers, insurance carriers) and nongovernmental groups (eg, the American Society of Clinical Oncology) are seeking other market-based solutions.²

The fee-for-service (FFS) payment system has been identified as one of the main drivers of rising healthcare costs; the more that is done for patients, the larger the reimbursement to the healthcare provider.¹ In the FFS model, providers may directly purchase the drugs they administer to patients in their in-office infusion suites from manufacturers and/or wholesalers, then bill the payer for cost plus margin.^{4,5} Many argue that this “buy-and-bill” model encourages physicians to overprescribe, creates incentives for price inflation, and thereby drives up the costs of patient care.⁶ A few studies have even suggested that providers’ choices of drug treatment can be affected by reimbursement, resulting in their overutilization of more costly brands rather than less expensive brands or generic alternatives.⁷ Such suggestions draw the ire of providers who believe the portrayal of patient care as being driven solely by financial incentives and behavioral economics is insulting, demeans their professional integrity, and is inconsistent with real-world evidence that demonstrates highly variable regional resource utilization, as well as few differences in prescribing patterns among community, staff model, and academic physicians when controlling for these geographic variances.⁸

Atul Gawande wrote in his *New Yorker* article, “The Cost Conundrum,” that “[h]ealth-care costs ultimately arise from the

ABSTRACT

The projections for the rising cost of healthcare have spurred robust dialogue, and among the many targets for cost control are specialty drugs. An important question thus becomes: Are behavioral economic factors driving physician prescribing? This article presents a review of leading behavioral economic theories and their application to the results of an Oncology Medical Home pilot that reversed incentives from drug administration to patient care. A host of these theories may explain the irrational economic actors in regard to physician prescribing, including heuristics, framing, and defaults. Ultimately, the complex interplay of behavioral economics may result in reimbursement methodology alternatives to the prevailing fee-for-service payment system having less impact on prescribing behavior than has been conjectured.

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accumulation of individual decisions doctors make about which services and treatments to write an order for. The most expensive piece of medical equipment, as the saying goes, is a doctor's pen.⁹ Are there influences beyond clinical evidence that impact the physician's pen? In their editorial in the *New England Journal of Medicine*, Khullar et al outline the basic tenets of behavioral economics established by Kahneman et al: behavioral economics views incentives as fundamental determinants of behavior; individuals often make decisions that deviate from those expected of "rational" economic actors.¹⁰

By their assessment, most behavioral economics work in healthcare has focused on those factors influencing patients' behavior, with less attention paid to applying behavioral economics to understand physicians' performance and decision making.¹⁰ Behavioral economists have identified certain patterns, or biases, in their observations of economically "irrational" behaviors, a few of which merit attention as they are germane to healthcare provider decision making:

- **Heuristics:** individuals often make decisions based on approximate rules of thumb and not strict logic.¹⁰
- **Framing:** the collection of anecdotes and stereotypes that make up the mental and emotional filters individuals rely on to understand and respond to events.¹⁰
- **Default:** a preference for continuing the current state of affairs or status quo.¹⁰
- **Loss aversion:** losses have about twice the psychological impact of commensurate gains.¹⁰

These theories—experimentally tested and validated—not only explain financial decision making, but likely much of decision making in general. Physicians, being human, are subject to irrational behaviors in their professional decision making just as they are in any other aspect of their life. Pursuant to this logic, the practice of evidence-based medicine is likely to be significantly impacted by these realities of human thought and behavior. This helps explain the need for both heavily regulated clinical trial research and for real-world evidence to understand how such trial results are adopted into everyday practice. My research the past 5 years has focused on exactly this topic: the variances between clinical trial research and real-world evidence and the behavioral economics that underscore them.

Much of this research emerged from my work with collaborative clinical pathways programs between insurers and their specialty physician-provider networks. In partnership with a single large nonprofit healthcare insurer in the Mid-Atlantic region of the United States, the first network-wide collaborative cancer clinical pathway was launched in August 2008.^{11,12} Due to high levels

TAKEAWAY POINTS

The complex interplay of behavioral economics may result in reimbursement methodology alternatives to the prevailing fee-for-service (FFS) having less impact on prescribing behavior than has been conjectured.

- ▶ Physicians, being human, are subject to irrational economic behaviors in their professional decision making and prescribing.
- ▶ It may be prudent to defer radical reimbursement reform until research into effectiveness of FFS alternative reimbursement methodologies is conducted and the results subjected to peer review.

of physician participation, compliance, and behavior change, the adoption of the pathway resulted in a 15% cost-of-care reduction and led to improved patient outcomes, including a 7% reduction in emergency department visits and hospitalizations.¹² In Krey and Koeller's analysis of this same program, they reported a \$10 million annual savings, with a \$30 million potential should it be expanded across all providers.¹³ To test the further impact of reimbursement reform, a second-generation pathways program—the Oncology Medical Home (OMH)—was piloted in 2011.¹⁴ This program modified the traditional physician reimbursement model used in the pathway program, shifting the source of revenue from drug reimbursement margin to enhanced professional charges for cognitive services (evaluation and management [E&M] codes).¹⁴ The OMH removed financial incentive from drug delivery while dramatically increasing it for patient care.

A select group of practices that participated in the first-generation pathways program were invited to voluntarily participate in the OMH. The intent was to compare physician behavior parameters pre- and post implementation and between the OMH practices and the first-generation pathways control group.¹⁴ The methodology of conducting research in such circumstances is difficult; by definition, selection bias exists when programs are voluntary and financially incentivized.¹⁴ However, any selection bias incurred impacted both control and experimental cohorts, which was controlled for in analysis by propensity score matching using the following variables: disease focus, diagnosis mix, number of heavily treated versus newly treated patients, early-stage versus later-stage treatment, total chemotherapy lines ("extent of treatment"), and patient comorbidities.^{14,15} Taken together, we believe these measures yielded propensity scores indicative of case mix.

Although I take pains to explain the quality of the research, this is a separate issue from the main question of whether physicians behave to maximize their financial gain. The behavioral economic incentives designed within the model predicted that the OMH physician participants would increase the frequency of patient visits and likely decrease the percent of patients undergoing chemotherapy treatment, as well as increase the use of generic drugs in those who did. Surprisingly, physician behavior was not significantly modified by the cognitive weighted reimburse-

ment model.¹⁴ This research, which we published in *The American Journal of Managed Care*[®], revealed no significant change in the frequency of office visits for established patients, no change in the pattern or choice of chemotherapy prescribing, and the observed increases in generic regimen use were no different than that of the matched control.¹⁴

How do we reconcile these findings and the prevailing dogma that resulted in a 2014 editorial in *The New York Times*, co-signed by 20 leading academics citing FFS reimbursement as the primary driver for the spiraling cost of cancer care in this country?⁶ What are the behavioral economic explanations for the economically irrational pattern of care we observed? To what extent did the prior pathway experience influence behavior (default bias)? Were the observed behaviors driven by a mix of other factors, including guidelines from the National Comprehensive Cancer Network and others (default bias), brand name prescription drug detailing (attribute priming bias), cognitive dissonance (heuristics bias), or our culture of medicine (framing bias)? Without more detailed research, any conclusions can only be speculative.¹⁴

Additionally, the results from this study contradict one of the more powerful behavioral economic incentives: loss aversion. The participating physicians experienced an annualized 2% reimbursement reduction on average, and despite a nearly 3-fold increase in some E&M code reimbursement, no significant change in established patient visits was observed to mitigate said loss. This was contrary to expectation and could be related to external influences on physician practice behavior (framing bias), including the historically lower contribution of E&M reimbursement to revenue (heuristics bias), standardized and established practice patterns (default bias), and maximized throughput within office flow (heuristics bias).¹⁴

Conclusions

We believe our research was methodologically sound, adequately powered, and the results unequivocal; given the opportunity to maximize revenue by increasing select cognitive services, physicians remained unchanged in their behavior.¹⁴ Furthermore, removing economic incentives from drug prescribing did not alter the pattern of prescribing. Our research should make economic Darwinists take heed as the bedrock on which much of reimbursement reform is founded assumes a more rational economic behavior. The myriad factors that weigh on physician prescribing behavior for complex, disabling, and potentially life-threatening diseases like cancer, multiple sclerosis, Crohn's disease, and a host of inflammatory and infectious diseases, as well as those factors

impacting the patients receiving the treatment, eclipse the most sophisticated of behavioral economic modeling. In this context, the speculated impact of reimbursement reforms, like the Medicare Incentive Payment System and alternative payment models (eg, the oncology care model), may be overestimated. Observations from this OMH pilot program suggest that reimbursement methodology alternatives to the prevailing FFS model may have less impact on prescribing behavior than has been conjectured.¹⁴ Future research is needed to validate these observations and assess additional influences on prescribing behavior. It may be prudent to defer radical reimbursement reform until such research is conducted and results subjected to peer review. ■

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