Sunita Desai
Research Proposal
2013 Ackoff Student Fellowship

Russel Ackoff Doctoral Student Fellowship for Research on Human Decision Processes and Risk Management: 2012 Application
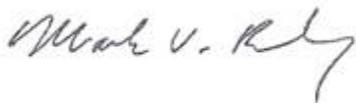
Patient Learning of Preferences for Health Provider:
The Role of Health Information Technology

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Requested Support: $4,000

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<u>Descriptive Summary of Project</u>

Prior to receiving medical care from a health provider, patients are often faced with uncertainty about their own preferences due to incomplete information about how well they will match with providers (e.g. personal comfort with the doctor). Furthermore, once a patient has received care from a provider, the cost of switching to another provider can be significant, particularly in a paper-based system in which tests and diagnoses may have to be redone due to incomplete health record transfer. To alleviate the inefficiencies associated with switching providers, the federal government has undertaken numerous initiatives to incentivize provider participation in electronic health information exchange (HIE) with the aim of more seamless transfer of patient records across providers. The objective of this study is to develop an empirical and theoretical framework to understand the effect that adoption of HIE technology can have on patient switching and vice versa – the effect that the potential for patient switching can have on provider adoption of HIE technology.

Given the complexity and uncertainty involved in choosing a health provider, understanding patient learning and switching is important. Understanding the extent to which HIE can ease the burdens associated with switching providers is critical given the significant sums of money health care providers and governments are spending on health information technology. Under the HITECH Act passed as part of the 2009 American Recovery and Reinvestment Act, the federal government is spending over $30 billion dollars to incentivize adoption of health information technology. No previous studies to my knowledge have explored the relationship between patient learning, switching, and health information technology.

I propose a theoretical framework complemented by an empirical test to explore the dynamics of patient decision-making under uncertainty, switching cost, and providers' decisions to participate in HIE. I develop a three period model of a duopoly market and a fixed number of patients in which providers first decide whether or not to adopt HIE technology. If they adopt, they will have financial benefit from the efficiencies delivered by the technology, but they will also be more susceptible to losing market share due to lower switching cost of their patients. Patients receive a noisy signal about their preference of providers and then learn their preferences with respect to both providers perfectly. In the following period, patients can decide

whether or not to switch providers. If they move to the other provider, they incur a switching cost which is reduced if their first provider has adopted HIE technology.

The model yields a number of implications that I would like to test empirically. First, an implication of the model is that providers who face more competition are less likely to adopt HIE technology due to the greater threat of losing market share. I would like to use hospital-level data from the 2010 and 2011 American Hospital Association Electronic Health Record Adoption database to test this hypothesis. Using a probit model, I will regress hospitals' HIE usage on a measure of competition, the Hirschmann-Herfindahl Index defining markets at the Hospital Referral Region as delineated by the Dartmouth Atlas. Additionally, I will control for hospital and market characteristics that are likely to be influential in a hospital's decision to adopt HIE technology.

A second implication I plan to test empirically is that HIE technology enables patients to move more easily across providers. I plan to again use hospital-level adoption data from the American Hospital Association coupled with patient-level inpatient data from the Medicare Current Beneficiary Survey (a database of all inpatient Medicare visits) to analyze how adoption of HIE technology affects the flow of patients between providers. I plan to use a difference-in-difference style analysis with a non-simultaneous treatment effect. The treatment will be the point at which hospital providers report having adopted HIE technology. The outcome of interest will be the flow of patients coming to the hospital from other providers as well as the flow of patients leaving the hospital for care from other providers.

A final implication of the model is that in markets where patients have lower transparency in terms of their preferences, HIE technology will provide greater gains by enabling patients to switch providers. Medical specialists are likely to compose lower transparency markets compared to primary care providers, due to the niche care often provided as well as less word-of-mouth information patients are likely to receive about specialists. Therefore, again using American Hospital Association and Medicare Current Beneficiary Survey, I would like to test if adoption of HIE technology leads to more switching for specialty care compared to primary care. A positive result would support my model's hypothesis.

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I envision that this project will be of interest to scholars in the fields of economics, health policy, and health services research due to its exploration of patient decision-making under uncertainty, switching behavior, and health information technology.

I am requesting funds in the sum of $4,000 from the Ackoff Doctoral Student Fellowship for the purposes of this study. I will use the funds to purchase the aforementioned American Hospital Association Electronic Health Records database for the years 2010 and 2011. The database for each year costs $2,000. As described above, this database is essential to the progress and success of the study, so I will appreciate the support of the Russel Ackoff Doctoral Student Fellowship in this endeavor. I will be happy to report the progress and results of the study to faculty and fellow students.