Improving Patient Access and Patient-Clinician Continuity Through Panel Redesign

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Organization: University of Massachusetts Amherst
Mechanism: PAR: HS08-268: Small Research Grant to Improve Health Care Quality Through Health Information Technology (IT) (R03)
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Project Period: February 2010 – February 2012
AHRQ Funding Amount: $100,000
Summary Status as of: December 2010

Target Population: Not Applicable

Summary: Primary care practices in the United States must balance the timeliness of care delivery with its continuity, i.e., balance the lead time for appointments with the goal of having patients see their own primary physician whenever possible. Timeliness and continuity are intrinsically tied to the makeup of the patient population—the "physician-patient panel"—that a physician oversees.

Using patient appointment data, physician-patient panel sizes, and physician case mix, Dr. Balasubramanian and his team will investigate how group practices can dynamically manage physician-patient panels to improve timeliness of access and continuity. They will develop a quantitative decision support system to help clinicians, practice managers, and health systems answer the following questions:

1. How should patient-patient panel composition be altered over time to best match patient demand with physician supply?
2. How should practices best match patient and physician preferences, while simultaneously considering the influence of panel size and case mix on patient access?
3. How many additional new patients can be empanelled without adversely affecting the goals of timely access and continuity?

In developing the system, Dr. Balasubramanian will construct a general modeling framework for managing physician-patient panels in a group practice and will utilize systems engineering methods (optimization and discrete event simulation) to model the system over time. By incorporating specific features, such as patient and physician preferences, changes in scheduling regimens, group visits, and changes in the supply and demand dynamics of a practice, the project team will extend the framework's applicability to various primary care settings. The models will be disseminated through a Web-based decision tool.

Specific Aims:

- Develop a modeling framework that can translate generally to various primary care settings. **(Ongoing)**
- Extend the model's ability to dynamically generate optimal panels and incorporate changes in physician availability and patient demand over time. **(Ongoing)**
- Develop and disseminate the first two aims in a Web-based decision support tool for clinicians, practice managers, and health care systems. **(Upcoming)**

2010 Activities: Retrospective data from two clinics have been used to develop computer simulation models to optimize physician-patient panels. Visit rate, patient co-morbidities, case mix, physician preferences, and physician capacity were assessed as model inputs. Particular focus was paid to the use of physician teams to manage urgent care appointments and maximize continuity of care. Another modeling approach considered reallocation of patients with the least co-morbidities from physicians with high patient burden to those with lower patient burden, under the assumption that this is less disruptive to patient care and patient-provider relationships. In the context of medical resident education, where a heterogeneous physician-patient panel offers greater learning opportunities, Dr. Balasubramanian is developing measures of physician-patient-panel diversity. These measures, including the mean number of co-morbidities by panel and proportion of disease classes represented in the panel, will serve as additional model inputs. Ultimately this modeling framework will be used to guide the design of the Web-based decision support tool.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): The project is meeting most of its milestones on time. Due to delays initiating the project at the start of the grant period, the budget is somewhat underspent.

Preliminary Impact and Findings: The team compared not yet optimized panels with optimized panels at current physician demand and with a 10 percent increase in physician demand. The models indicate optimized physician-patient panels increase physician capacity and may create an opportunity to mitigate physician shortages. The optimally designed panels with the 10 percent increase in demand offered more capacity than the not yet optimized panels without the increased demand.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation