

Study Suggests Ways to Ease Effects of Primary Care Doctor Shortage

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(PhysOrg.com) -- A national shortage of primary care doctors plus a growing population of older adults, many with chronic diseases, is leading in some areas such as western Massachusetts to longer wait times to see a doctor and is reducing patients' chances of seeing their own physician, experts say. These problems can lead to "fragmented" care, worsen health outcomes and overtax emergency rooms.

The shortage is due in part to Massachusetts' new requirement that everyone must have health insurance, which can spread health care resources thin. Under President Obama's new [health care plan](#), this situation could be duplicated in many places across the country.

Now, a new study led by systems engineer Hari Balasubramanian of the University of Massachusetts Amherst suggests that a mix of scheduling and other management strategies could improve continuity of care, that is, being able to see one's own [primary care](#) doctor, by 40 percent. This is a cornerstone of primary care; most [patients](#) insist on seeing their own physician except in an emergency. Further, the new methods could decrease the number of days people must wait for an appointment by up to 44 percent over baseline, from an average of four days to two.

With colleagues at Massachusetts General Hospital, the Mayo Clinic and North Carolina State University, Balasubramanian cautions that no one policy or intervention by itself will solve these problems. But their study found that balancing the number of patients assigned to each doctor based on a couple of patient variables, age and gender, can lead to

notable improvement.

In a computer simulation, the researchers modeled a medical practice's appointment and patient assignment systems using three different management strategies over one year. They compared wait times and continuity of care in a primary care group practice of 39 physicians with over 20,000 patients based on the Mayo Clinic in Minnesota for the years 2004-2006. Their own "optimal" approach yielded better results than either the clinic's current practice, or a so-called "capacity-based" approach. Findings appear in the current early online issue of the Journal of General Internal Medicine.

As Balasubramanian and colleagues explain, because age and gender (case mix) are fairly good predictors of disease burden, these two variables can help to identify what type of patient is likely to pose the highest demand for access to physicians. Young patients, under age 35, of either gender tend to request appointments less frequently than older patients. The researchers tested whether using systems engineering methods that account for case mix to redesign physician caseload, might improve the situation. Specifically, they wanted to reduce total patient waiting time and increase the frequency with which patients see their own provider.

The study grouped patients by gender and in 14 age groups, then used a computerized algorithm to redistribute some of the high-demand and high-variability patients to physicians whose capacity profiles allow them to handle additional patients. The system was programmed not to assign too many high-demand patients to a single physician.

In each week of the simulation, patients requested and got appointments on a first-come-first-served basis. When a physician's calendar was full, patients could choose to wait longer to see their own provider or to see another physician in the same week. If no doctors were available, extra

slots were added, which represent added hours physicians sometimes work to cover high demand.

Balasubramanian summarizes that overall, “regardless of how large the physician’s caseload, we were able to improve continuity and shorten wait times.” In the real world, any changes would have to be introduced gradually and no clinic could suddenly decide to change its appointment system or reassign patients from their primary care doctor. But experience suggests that opportunities for change often present themselves and a clinic might be able to reallocate a small percent of its patients per year.

Because they are based on [computer simulations](#), such new analytical tools can be used to study changes before putting them into practice. “With appropriate modifications, our approach can be adapted to different scales,” from a small group practice to an entire HMO, the authors add. Their study was partially funded by Mayo Clinic and the Agency of Healthcare Research and Quality in the U.S. Department of Health and Human Services.

Although Balasubramanian acknowledges that physicians have not welcomed tinkering with the doctor-patient relationship, growing pressure on too few doctors to care for more and more high-demand patients means new approaches are needed. The UMass Amherst systems engineer expects that increasing numbers of health clinics, hospitals and emergency departments will turn to systems engineers for help in the coming years.

Provided by University of Massachusetts Amherst

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