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When data is the best medicine

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One of the biggest challenges in health care is balancing cost with patient needs. Compounding the problem is a lack of good data and analysis.

But Wally Hopp and Jun Li, professors at the University of Michigan Ross School of Business, are trying to change that.

They applied cost-benefit analyses common in operations management to surgery outcomes. One of their first findings, which studied mitral valve surgery, can help patients and health insurers find better options and save money.

"One of the big questions for patients and insurers right now is which procedures should be done in specialized places and which procedures should be done in community hospitals," said Hopp, professor of technology and operations. "The decision tree is often a mess, and the resulting decisions often don't make sense from a health standpoint or cost standpoint. The key to unlocking the puzzle is good information."

Hopp and Li mined a trove of data available from the state of New York on cardiac patients and their outcomes. They analyzed mitral valve surgery to see if patients benefit from going to a center of excellence hospital—one that specializes in the procedure and has high patient volumes—as opposed to a community hospital.

They found that going to a center of excellence is the better option for both patients and insurers, even if it's further away from the patient and costs more upfront. Patients treated at a center of excellence had longer

life expectancy and fewer complications. Their insurers saved $471 to $7,978 over the long term, depending on the age and health of the person.

More surgeries at centers of excellence resulted in a mitral valve repair—which is trickier to perform but has fewer complications—as opposed to a replacement, which leads to more complications and often requires ongoing medication.

Hopp and Li detail their findings in the working paper "Cost-Effectiveness of Referring Patients to Centers of Excellence for Mitral Valve Surgery." The research team included Ross doctoral candidate Guihua Wang and two U-M Medical School cardiac surgeons, Dr. Frank Fazzalari, assistant professor of cardiac surgery, and Dr. Steve Bolling, professor of cardiac surgery.

The problem is that only about 40 percent of patients chose a center of excellence, despite clear evidence of better outcomes and available capacity. That goes down to 30 percent when patients have to travel only an additional five miles. It's a case where the patient's best option is also the most cost-effective, but the message hasn't gotten through.

"People's choices seem to be influenced by how close people are to a center of excellence, if they've been there before, or if the hospital advertises," said Li, assistant professor of technology and operations. "One of our goals is to get better information to people and look for better options.

"We looked into why patients make suboptimal choices, and we find that it's mostly a lack of information and inertia. This kind of study allows us to uncover key factors that drive behavior and medical outcomes so we can identify areas where policy intervention could make a difference."