Automated electronic communication system engages patients in preventing surgical complications

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In its first test among orthopedic surgery patients as a feasible tool for enhancing care and reducing surgical site infections (SSIs), an automated text and voice messaging system improved communication about the preventive steps patients should take a week prior to their operations and the early signs of infection they need to report in the two weeks afterward. The tool is being further refined to engage patients who are having other types of operations, such as cardiothoracic, colorectal, and trauma-related procedures in the prevention and identification of surgical complications. A poster presentation demonstrating the validity of the concept of using an automated text and voice messaging system with orthopedic surgery patients was presented at the 2016 American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Conference.

SSIs are the third most common infection associated with health care. More than 500,000 patients every year develop an SSI, according to the Centers for Disease Control and Prevention (CDC).[1] Orthopedic procedures have a low SSI rate, ranging from 0.7 to 2.1 infections for every 100 cases.[2] Nevertheless, orthopedic surgery patients with SSIs have a two times higher rate of rehospitalization and a 300 percent increase in treatment costs.[3]

Several organizations have established guidelines for reducing SSIs, including the CDC and The Joint Commission. ACS NSQIP released

Best Practice Guidelines for preventing SSIs in 2009.[4]

One of the NSQIP hallmark surgical practice improvement strategies for decreasing SSIs involves patients in the preoperative use of prophylactic antibiotics. However, estimates indicate that only 43 to 54 percent of patients comply with antibiotic protocols.[5, 6] Other guidelines urge educating patients so they can identify and report signs of infection as soon as they occur rather than wait for the follow-up appointment with their surgeons.

A two-pronged automated communication system has been designed to assist patients with both of these practices. EpxDecolonization is a proactive method for reminding patients to fill their prescription for an antibiotic ointment and body wash and use them as directed. Patients receive a text or voice message every day asking them to confirm that they are following bacterial decolonization protocols. Beginning five days after an operation, the EpxWound system sends daily text or voice messages asking patients to report signs of infection, such as pain, redness, odor, or discharge at the site of surgery, explained Michelle Keyin Lu, an author of the poster presentation and a second year medical student at Saint Louis University School of Medicine, St. Louis, Mo.

These systems were developed by Epharmix, a health care information technology startup company founded by students from Washington University School of Medicine. EpxDecolonization and EpxWound are the first automated phone and text messaging interventions for surgical patients. Other Epharmix interventions are being used by physicians in the St. Louis area who treat chronic conditions such as chronic obstructive pulmonary disease, diabetes, heart failure, and hypertension.

This usability study tested the use of EpxDecolonization and EpxWound with 430 orthopedic surgery patients treated at Washington University Barnes-Jewish Hospital. The percentage of patients responding to the

systems was 96 percent for EpxDecolonization and 90 percent for EpxWound. Most patients believed the systems significantly improved communication with their surgeons (median score of 8 on a scale of 1 to 9) and rated their overall care as excellent (median score of 9).

Individual patients commented that the systems gave them confidence that they were doing the right things, made them feel cared about, and connected to the patient care service. Patients reported that the systems were convenient and easy to use. On a scale of 1 to 9, with 1 being too few, 5 being a perfect score, and 9 being too many, the median score for message frequency was 5.

Now that a high degree of patient acceptance has been established for the use of this communication technology, the researchers next plan to test the effect of automated messaging systems on actual SSI rates. "We want to make some slight modifications and assess the systems with operations that have higher rates of SSI and see if we can have an impact on lowering the incidence of that complication," according to lead author and second year MD-PhD student Christopher Chermside-Scabbo at Washington University School of Medicine in St. Louis, Mo.

"We also are looking at comprehensive packages for getting patients involved in preventing other types of complications by asking them to report any symptoms of pneumonia or deep vein thrombosis and reminding them when and how often to exercise to improve physical therapy outcomes," Ms. Lu said. "We hope to gradually expand the system to encompass a wide range of the most important surgical complications."

Mr. Chermside-Scabbo and Ms. Lu are independent researchers at Epharmix. Neither holds a position in the company.

Other authors of the poster presentation were Craig M. Yugawa, second

year medical student at Washington University, and Tonya An, a first year orthopedic surgery resident at Cedars-Sinai Medical Center in Los Angeles, Calif.

More information: 1 The Joint Commission. New draft guideline to prevent SSI. Bull Am Coll Surg. 2014 Aug; 99(8):59-60.

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