The Surgical Care Improvement Project (SCIP) is a national quality partnership of organizations committed to improving the safety of surgical care through the reduction of postoperative complications. The ultimate goal of the partnership is to reduce nationally the incidence of surgical complications by 25 percent by the year 2010. Partners in the SCIP believe that a meaningful reduction in complications requires that surgeons, anesthesiologists, perioperative nurses, pharmacists, infection control professionals and hospital executives work together to intensify their commitment to making surgical care improvement a priority.

Initiated in 2003 by the Centers for Medicare & Medicaid Services (CMS) and the Centers for Disease Control and Prevention (CDC), the SCIP partnership seeks to substantially reduce surgical mortality and morbidity through collaborative efforts. In 2005, the partnership will launch a multiyear national campaign focusing on the prevention of surgical site infections, perioperative myocardial infarction, post-operative pneumonia and venous thromboembolism (pulmonary embolism and deep vein thrombosis).

SCIP partners coordinate their efforts through a steering committee that includes representatives of the American Hospital Association, the American College of Surgeons, the American Society of Anesthesiologists, the Association of periOperative Registered Nurses, the Joint Commission on Accreditation of Healthcare Organizations, the Institute for Healthcare Improvement, the Department of Veterans Affairs (VA), the Agency for Healthcare Research and Quality (AHRQ), CMS and CDC. A technical expert panel from more than 20 additional organizations supplements the expertise of this partnership.

What Is at Stake for the Public’s Health

Research shows that a significant percentage of the nearly 30 million operations performed in the United States each year result in preventable, often life-threatening complications. The Institute of Medicine, in its groundbreaking report To Err Is Human, highlighted a study of more than 44,000 operations at a large medical center from 1977 to 1990. It revealed that 5.4 percent (more than 2,400 patients) suffered complications, nearly half of them attributable to error.¹

A 2003 study published in the Journal of the American Medical Association found that postoperative complications accounted for up to 22 percent of preventable deaths among patients, depending on the complication. The same study looked at 18 types of medical injuries during hospitalization and found those events accounted for 2.4 million additional hospital days and $9.3 billion in additional charges each year.²

continued on page 2
The SCIP partnership is targeting areas where the incidence and cost of complications are high:

- **Surgical site infections (SSIs)** account for 14 percent to 16 percent of all hospital-acquired infections and are among the most common complications of care, occurring in 2 percent to 5 percent of patients after clean extra-abdominal operations and up to 20 percent of patients undergoing intra-abdominal procedures. Among surgical patients, SSIs account for 40 percent of all such hospital-acquired infections. By reducing SSIs, hospitals on average could recognize a savings of $3,152 and reduction in extended length of stay by seven days on each patient developing an infection.

- **Adverse cardiac events** are complications of surgery occurring in 2 percent to 5 percent of patients undergoing noncardiac surgery and as many as 34 percent of patients undergoing vascular surgery. Certain perioperative cardiac events, such as myocardial infarction, are associated with a mortality rate of 40 percent to 70 percent per event, prolonged hospitalization and higher costs. Current studies suggest that appropriately administered beta-blockers reduce perioperative ischemia, especially in patients considered to be at risk. It has been found that nearly half of the fatal cardiac events could be preventable with beta-blocker therapy.

- **Deep vein thrombosis (DVT)** occurs after approximately 25 percent of all major surgical procedures performed without prophylaxis, and pulmonary embolism (PE) occurs in 7 percent of surgeries conducted without prophylaxis. More than 50 percent of major orthopedic procedures are complicated by DVT, and up to 30 percent by PE, if prophylactic treatment is not instituted. Despite the well-established efficacy and safety of preventive measures, studies show that prophylaxis is often underused or used inappropriately. Both low-dose unfractionated heparin (LDUH) and low-molecular-weight heparin (LMWH) have similar efficacy in DVT and PE prevention, but LDUH is approximately half the cost of LMWH. A 50 percent reduction of fatal PEs was noted with recommended prophylaxis using LDUH.

- **Postoperative pneumonia** occurs in 9 percent to 40 percent of patients and has an associated mortality rate of 30 percent to 46 percent. Many of the risk factors for this event respond to medical intervention and are thus preventable. A conservative estimate of the potential savings from the reduced hospitalization due to postoperative pneumonia is $22,000 to $28,000 per patient admission.

---

### Preventing Surgical Complications

Although some surgical complications are unavoidable, surgical care can be improved through better adherence to evidence-based practice recommendations and by giving more attention to designing systems of care with redundant safeguards. Research shows, for example, that delivering antibiotics to a patient within one hour prior to beginning surgery can dramatically cut SSI rates, yet this practice is far from universal.

In other examples, application of the National Surgical Quality Improvement Program (NSQIP) within the VA resulted in a 27 percent reduction in mortality related to surgery. Hospitals participating in the National Nosocomial Infections Surveillance (NNIS) system of the CDC have shown reductions of up to 44 percent in device-associated complications and SSI rates. The national network of Medicare quality improvement organizations (QIOs), working under contract to CMS, recently conducted a surgical infection prevention collaborative that effectively reduced SSIs by 27 percent at 56 centers across the country.

### The SCIP Agenda

- The ultimate goal of the SCIP partnership is to reduce nationally the incidence of surgical complications by 25 percent by the year 2010.

- SCIP will promote universal use of evidence-based care processes known to reduce surgical complications.

SCIP partners will educate providers and encourage institutional leaders to increase the use of evidence-based care processes. SCIP partners also will develop and disseminate tools and information on how to reduce complications and will help create or support incentives that reward improvements in surgical care. The ACS, for example, will inform surgeons across the nation about SCIP recommendations; the ASA will highlight the importance of SCIP guidelines to its membership; and federal agencies (CMS, AHRQ, VA, CDC) will provide technical assistance on the development and use of performance measures.

---

**SCIP partners will educate providers and encourage institutional leaders to increase the use of evidence-based care processes.**

*continued on page 3*
• SCIP will report on progress by participating hospitals.

For the national SCIP partnership, CMS will collect institutional and national performance data on implementing evidence-based practices. To facilitate this, CMS will offer participating hospitals an electronic tool to simplify and standardize data collection, analysis and reporting.

The SCIP Demonstration Pilot

In preparation for the national project, the SCIP partnership launched a Medicare demonstration pilot project in 2003 to assess how to engage hospitals in efforts to reduce post operative morbidity and mortality. The primary objective of the pilot is to identify the most effective methods for QIOs to help hospitals improve their performance in surgical care. Beginning in August 2005, QIOs will work intensively on reducing surgical complications with hospitals in every state.

The demonstration pilot also will test the feasibility of collecting, reporting and analyzing surgical process and outcome measures in a community setting. Two QIOs, Health Care Excel in Kentucky and Ohio KePRO, are conducting the pilot in their respective states with support from the Oklahoma QIO, the Oklahoma Foundation for Medical Quality. Lessons learned in the three-state pilot will be applied to surgical care improvement as the SCIP effort is incorporated into the larger national QIO program in 2005.

The results of the pilot program will help further define the specific goals and process measures of the national project as it prepares to evaluate and report on overall performance at the institutional and national level.

The three-state SCIP demonstration pilot is collecting data on outcome measures including:
• Mortality within 30 days of surgery.
• Thirty-day admission/readmission rates.
• The proportion of:
  • Postoperative wound infection diagnosed during hospitalization.
  • Intra- or postoperative acute myocardial infarction (AMI) diagnosed during hospitalization.

• Intra- or postoperative cardiac arrest diagnosed during hospitalization.
• Intra- or postoperative PE diagnosed during hospitalization.
• Intra- or postoperative DVT diagnosed during hospitalization.
• Postoperative pneumonia diagnosed during hospitalization.

To evaluate and report on performance in specific clinical areas, the SCIP pilot is collecting data on the following process measures associated with reduced complications:

Surgical Site Infections
• Percentage of surgical patients with on-time prophylactic antibiotic administration.
• Percentage of surgical patients with appropriate selection of prophylactic antibiotic.
• Percentage of surgical patients who received prophylactic antibiotics whose antibiotics were discontinued within 24 hours after surgery end time.
• Percentage of major cardiac surgical patients with controlled perioperative serum glucose (≤ 200 mg/dL). Perioperative is defined as 24 hours prior to and 48 hours post surgery.

Cardiovascular Events
• Percentage of major noncardiac vascular surgery patients, without contraindications to receiving beta-blockers, who received beta-blockers during the perioperative period.
• Percentage of patients with known CAD (coronary artery disease) or other ASCVD (atherosclerotic cardiovascular disease) diagnoses, without contraindications to beta-blockers, who received beta-blockers during the perioperative period.
• Percentage of major surgery patients maintained on a beta-blocker prior to surgery who received a beta-blocker during the perioperative period.

Venous Thromboembolism (VTE)
• Percentage of major surgical patients who received any perioperative prophylaxis for VTE.
• Percentage of major surgical patients who received appropriate perioperative prophylaxis based on the surgical level of risk for VTE.

Respiratory Complications
• Percentage of major surgical patients on a ventilator whose post operative orders included elevating the head of the bed (HOB) greater than or equal to 30 degrees.
References


Additional References


Bratzler DW, Houck PM; Surgical Infection Prevention Guidelines Writers Workgroup; American Academy of Orthopaedic Surgeons; American Association of Critical Care Nurses; American Association of Nurse Anesthetists; American College of Surgeons; American College of Osteopathic Surgeons; American Geriatrics Society; American Society of Anesthesiologists; American Society of Colon and Rectal Surgeons; American Society of Health-System Pharmacists; American Society of PeriAnesthesia Nurses; Ascension Health, Association of periOperative Registered Nurses; Association for Professionals in Infection Control and Epidemiology; Infectious Diseases Society of America; The Medical Letter; Premier; Society for Healthcare Epidemiology of America; Society of Thoracic Surgeons; Surgical Infection Society. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clin Inf Dis 2004;38(12):1706-15.

For More Information:

SCIP Partnership
c/o Oklahoma Foundation for Medical Quality
14000 Quail Springs Parkway, Suite 400
Oklahoma City, OK 73134
405-840-2891 ext. 278
Email: SCIPpartnership@okqio.sdps.org
Website: www.MedQIC.org/SCIP

Surgical Care Improvement Project
A National Quality Partnership