

What Is This Thing Called SCIP?

The purpose of this article is to provide nurses with the current evidence based practices in preventing surgical infections and complications, through the implementation of SCIP – Surgical Care Improvement Project. The evidence supporting these important patient care measures and the critical role of all healthcare professionals in helping to achieve compliance will be presented.

At the completion of the article and the post test, the reader should be able to:

- Define SCIP and how it can positively impact patient outcomes.
- Discuss the key interventions that are part of enhancing surgical outcomes.
- Identify the challenges that can be overcome to achieve compliance in SCIP.
- Recognize the importance of education regarding SCIP for all healthcare professionals.



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Surgical Care Improvement Project (SCIP) is a set of evidence based measures that when hardwired into clinical practice patterns can reduce Surgical Site Infections, (SSI), surgical complications, morbidity and mortality from surgery and other invasive procedures. The goal of SCIP is to improve outcomes and reduce nationally the incidence of surgical complications by 25% by 2010. This can be accomplished by establishing universal evidence based care practices. Nurses play a critical role by implementing evidence based care practice that will result in optimal patient outcomes.

The Extent of the Problem

There are 42 million operations per year in the United States. Evidence suggests that 40% of surgeries have associated postoperative complications such as infections, thromboembolic events, respiratory complication and/or adverse cardiac events.¹ Surgical Site Infections (SSIs) are a major contributor to patient injury, mortality, and health care costs. Surgical site infections increase length of stay by an average of 7 days. The attributable cost of an SSI in patients undergoing cardiac or orthopedic operations may be greater than \$30,000.²

Evidence

An estimated 40-60% of surgical site infections are preventable with appropriate use of prophylactic antibiotics. Overuse, under use, improper



timing, and misuse of antibiotics occurs in 25-50% of operations. Data from many studies indicate that appropriate timing, selection and discontinuation of prophylactic antibiotics are prime targets for improvement efforts. A 2003 Study in the Journal of American Medical Association found that postoperative complications accounted for 22% of preventable deaths.

Millions of Americans who undergo major noncardiac surgery annually have multiple cardiac risk factors or established coronary artery disease. The neurohormonal stress with surgery causes increased heart rate, increased myocardial contractility and increased myocardial oxygen demand. According to Bratzler, beta blockers will decrease the myocardial oxygen demand, which reduces heart rate, wall tension and contractility. Patients who are currently on a beta blocker prior to hospitalization and continue to receive beta blockers during the perioperative phase will experience decreased myocardial ischemia and adverse cardiac events.⁷

Patients maintained on beta-blockers, without complications that might warrant discontinuation, are good candidates for continuation of beta-blockers through the perioperative period.

Hyperglycemia has been associated with increased in-hospital morbidity and mortality for multiple medical and surgical conditions. In a study by Zerr, et al (1997), the risk of infection was significantly higher for patients undergoing coronary artery bypass graft (CABG) if blood glucose levels were elevated. Hyperglycemia is a risk factor that, once identified, could minimize adverse outcomes for cardiac surgical patients.

Shaving the surgical site with a razor is an example of a practice that was once thought to prevent infection, however evidence today shows it actually contributes to infections. Use of a razor may cause small skin lacerations and disturbs hair follicles which are often colonized with *S. Aureus*, therefore use of a razor can induce infections. In addition, the further out from surgery the hair is removed the greater the risk of infection. It is important to educate the patient not to shave before coming to the hospital. If hair removal is required for the procedure, clippers or depilatory agents should be utilized to remove hair.

According to the ASPAN, Perioperative Hypothermia is associated with impaired wound healing, adverse cardiac events, altered drug metabolism and coagulopathies³. Close monitoring of the temperature during the perioperative phase identifies hypothermia as it relates to infection, neurological and cardiovascular instabilities, or adverse blood transfusion reaction but also facilitates early detection of Malignant Hyperthermia.

Venous Thromboembolism, VTE, is one of the most common post op complications. Recent estimates indicate that more than 900,000 American suffer from VTE each year. Of these, about 400,000 are deep vein thrombosis (DVT) and 500,000 are pulmonary embolism (PE)⁴. 30% of the PE are fatal. About two-thirds of all VTE events are related to hospitalization. VTE is the third most common cause of hospital related deaths and the most common preventable cause of hospital death.^{5,6}

Report Cards

In 2002, the Centers for Medicare and Medicaid Services (CMS), in collaboration with the Centers for Disease Control and Prevention (CDC) implemented the National Surgical Infection Prevention Project. The project promotes a **prophylactic**, collaborative approach to surgical care that has been shown to reduce SSI which reduces mortality and morbidity of surgical patients.

The Joint Commission and the Centers for Medicare/Medicaid Services have aligned themselves to establish a set of standard measures to meet the intent of the SCIP initiative. Report cards of how hospitals meet these measures are published on the CMS website www.hospitalcompare.hhs.gov. AARP among other organizations, have published in their member newsletter how to find this information and how to use it. CMS, "Hospital Compare", initiated the public reporting with 3 measures, SCIP-Inf 1, SCIP-Inf 2, and SCIP-Inf 3. In 2008 they have added SCIP -VTE 1 and SCIP- VTE 2. The intent is to have all measures in place, however reporting will be gradual.

The information found in the measure report cards is being used today by consumers to help them make decisions on where to have their surgical care. CMS is using the accuracy of the SCIP Core measure abstraction in reimbursement decisions. The Joint Commission is using the information in accreditation decisions. Private insurers are using the information in provider contracting decisions. These measures have become the standard of care, and thus deviations from that standard could be difficult to defend.

Population

SCIP measures historically applied to most inpatient surgical patients. In April 2008, SCIP crossed over into the outpatient sector. A surgical patient could qualify for one or more of the measures. It is dependent upon age, procedure and patient status. There are currently 9 inpatient measures, see Table 1 and 2 outpatient measures, see Table 2.

Patients less than 18 years of age are excluded from the population at present. Patients with documented infections or antibiotic history prior to the start of the surgical procedure are excluded from all the antibiotic measures. Patients who were not on Beta Blockers prior to hospitalization are excluded from the Beta Blocker Measure. Patients with more than one surgical procedure in a 3 day period, using general or epidural anesthesia, in the same inpatient stay are excluded from SCIP- Inf 2 & 3. Patients with a post-op infection documented in 48 hrs post op, 72 hrs for Cardiac/CABG procedures are excluded from the Discontinuation of antibiotic measure. Documentation of infections, surgery end times, medications prior to hospitalization and bleeding risks are very important to the accuracy of data outcomes. See Table 1 & 2 for the current SCIP measures.

Table 1: Inpatient Measures

Measure Set ID#	Measure Short Name
SCIP-Inf-1	Prophylactic antibiotic received within 1-hour prior to surgical incision. Documentation must be abstracted from single source and must include: Name of Antibiotic Given, Antibiotic Route, Date and Time Antibiotic Given and Signature or initials of person administering the medication.
SCIP-Inf-2	Appropriate prophylactic antibiotic selection.
SCIP-Inf-3	Prophylactic antibiotics discontinued within 24-hours after surgery end time (48-hours for cardiac).
SCIP-Inf-4	Cardiac surgery pts with controlled 6 a.m. post-op serum glucose (≤ 200 mg/dl) on post-op day #1 and #2.
SCIP-Inf-6	Pts with appropriate hair removal (no razors).
SCIP-Inf-7	Colorectal surgery pts with immediate post-op normothermia (96.8 – 100.4° F; First temperature taken and Within 15 min of leaving OR.
SCIP-Card-2	Pts on beta blockers prior to surgery receive beta blockers during peri-op period. (24-hr prior to surgery through discharge from PACU/ Recovery).
SCIP-VTE-1	Pts with recommended venous thromboembolism (VTE) prophylaxis ordered.
SCIP-VTE-2	Pts received appropriate venous thromboembolism (VTE) prophylaxis within 24-hrs prior to surgery incision through 24-hours after surgery end time.



antibiotics needed to continue. According to Bratzler and Houck, there is no evidence that continuing antimicrobials until all catheters and drains are removed will decrease infection rates. There is evidence that the use of drains has been associated with numerous complications, including infection. In orthopedic total joint arthroplasty the necessity of drains is controversial. Overtime, there is increased bacterial colonization of the drain tip and migration of skin organisms into the wound⁸. Providing physicians with literature from their respective societies and evidence in the form of data and report cards helped to overcome this myth. Statewide the Collaborative hospital data showed a 22.9% increase in the discontinuation of antibiotics.

Challenges exist when trying to change physician practices. It is difficult to motivate physicians who have practiced a certain way without complications to change their practice. Variation in practice presents an entirely different challenge. Organizations that have large physician groups with a wide variety in practice are challenged with trying to reduce the variability and educate medical staff on the SCIP measures.

The SCIP measures are very detailed. As mentioned above, there are many variables that will exclude a patient from the population. This makes education regarding the measures critical. The detail of the measures can be overwhelming to nursing staff and physicians initially. Organizations must be diligent in ensuring that those providing care are educated regarding SCIP. Therefore, education must be ongoing and continual for reinforcement and to capture those who are new to the environment.

Low volume populations create a high swing in scores that can be challenging to overcome. An example of this is normothermia in colon resection patients. In looking at an organization that has 10 patients in the

population compared to an organization with 100 patients in the population, the same number of outliers can generate a significant score swing. Two outliers in the 10 patient group equals a score of 80 percent. Compared to two outliers in the group of 100 which equals 98 percent.

Best Practice Strategies

The concept of a team is huge when it comes to core measure compliance. Developing a SCIP team that will take ownership of the initiative and work to address challenges and celebrate successes will allow organizations to achieve success. Perioperative and Quality leaders must partner to build an effective team. A chair and co-chair should be determined. Often

Journey-Challenges

Medical Center of Arlington (MCA), was one of 50 hospitals to join the Texas SIP Collaborative. The Collaborative started August 2003 and continued through July 2004. Hospitals were required to measure the three prophylactic antibiotic measures, SCIP- Inf 1-3, and optional measures were normothermia, SCIP-Inf 7, Supplemental oxygen, and avoidance of shaving., SCIP-Inf 6. There were successes and continued opportunity for the Collaborative as well as MCA.

One barrier noted at MCA and statewide was physician resistance to discontinuation of antibiotics within 24 hours of surgery. One myth to overcome was physician belief that as long as there were tubes or drains,

Table 2: Out Patient Measures

Measure Set ID#	Measure Short Name
SCIP-Inf-1	Prophylactic antibiotic received within 1-hour prior to surgical incision. Documentation must be abstracted from single source and must include: Name of Antibiotic Given, Antibiotic Route, Date and Time Antibiotic Given and Signature or initials of person administering the medication.
SCIP-Inf-2	Appropriate prophylactic antibiotic selection.

Table 3: SCIP Nursing Interventions

S	Serum Glucose Control
C	Clippers, no razors
I	Initiate conversation with physician for antibiotic discontinuation
P	Prophylactic antibiotics within one hour prior to incision
T	Timing of Beta Blockers
E	Embolism prevention, mechanical &/or pharmacological
A	Antibiotic selection
M	Maintain normothermia

times the Perioperative Director becomes the owner of the team. The team should be multidisciplinary and consist of staff nurses from each unit, pharmacy, infection control, and a physician champion.

Ongoing education regarding indicators is essential. The SCIP measures are fluid. There are changes to current measures as well as new measures being added. The SCIP team can build effective ongoing education for staff. SCIP team members need to take advantage of staff meetings to review changes, present written materials regarding scores and measures, and to help answer questions.

Concurrent review allows organizations to capitalize on opportunities and minimize variances. Allocating resources to follow the surgical patient through the continuum of care enhances scores and outcomes. This process also allows for educational opportunities and just in time quality control. When patients are followed concurrently the organization has an opportunity to work with the medical team to achieve compliance prior to the case becoming an outlier and negatively impacting the patients' outcome and the organizations' score. Another advantage is that outlier data is immediately available. This allows for continuous quality improvement and eliminates the delays associated with non-concurrent abstraction.

Education of physicians is critical to success. Identifying and partnering with a physician champion regarding SCIP assists in measurement compli-

ance and physician education. The physician champion should be selected by the ability to be influential to others, SCIP compliance and willingness to serve. When working to educate physicians it is important to utilize recent data that is relevant to their practice.

Reviewing with nursing staff the components of their critical role in SCIP is important. Sharing the data, identifying specific interventions and assessments, and questions to ask are part of this education. Table 3 offers an easy way to remember the key nursing focus areas with SCIP.

Conclusion

Overall, SCIP is an evolutionary process. The measures are evidenced based and the right thing to do for our patients. Organizations will continue to strive to meet the national benchmarks surrounding SCIP. Health-care professionals should expect additional measures to be added as further evidence is known and accepted by the respective expert panels. Only when nursing and medical practice is hardwired around evidence based standards will we achieve the highest outcome levels for our patients.

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Please circle your response for each question

- 1. Evidence suggests that what percent of all surgeries will have complications.**
- a. 15%
 - b. 20%
 - c. 40%
 - d. 40-60%
- 2. Prophylactic antibiotics would prevent what percentage of surgical site infections?**
- a.15%
 - b.20%
 - c. 40%
 - d. 40-60%
- 3. Monitoring post-op Blood Glucose needs to be done on:**
- a. Post op day 1
 - b. Post op day 2
 - c. Post op day 3
 - d. Post op Day 1 & 2
- 4. Post-op Normothermia is defined as:**
- a. 96- 98.6 F
 - b. 97- 99F
 - c. 96.8- 99.6 F
 - d. 96.8 – 100.4 F.

- 5. Which patient population should receive Beta Blockers during the peri-operative period?**
- a. Elderly
 - b. CAD
 - c. Patients taking Beta Blockers prior to hospitalization.
 - d. All patients should take Beta Blockers prior to surgery

- 6. What type of reviews allow organizations to capitalize on opportunities and minimize variances.**
- a. retrospective
 - b. concurrent
 - c. a & b
 - d. prospective

- 7. Which of the following diagnosis would exclude a patient from the outpatient measures.**
- a. Hysterectomy
 - b. Peg Tube placement
 - c. Mastectomy
 - d. appendicitis

- 8. A patient with a Total Knee Replacement has a drain left in place greater than 48 hours. The antibiotic should be discontinued when:**
- a. When the drain is removed
 - b. 24 hrs after removal of the drain
 - c. Within 24 hours of surgery end time
 - d. None of the above

- 9. Hair removal, if needed, should be done by what method?**
- a. Clippers
 - b. Razors
 - c. Depilatory agent
 - d. a & c
- 10. Hospital SCIP data should be made available to?**
- a. The Joint Commission
 - b. CMS
 - c. General Public
 - d. All of the above

Program Evaluation

	Strongly Disagree				Strongly Agree
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