Alberta Health Services

AHS Safe Surgery Checklist

User Manual

Version 4.0

February, 2012

Introduction

According to a study by the World Health Organization (WHO) of 6,775 operations, the implementation of a simple checklist completed during surgical procedures reduced the overall incidents of complications and death significantly[1].

The Surgery Clinical Network (SCN) identified access, quality and safety, and sustainability and innovation as their areas of focus. One of the key projects identified under quality and safety is the Safe Surgery Checklist (SSC). The SCN provides the overarching leadership in advancing the spread of the SSC across all OR/surgical sites in Alberta, including collaborating with Covenant Health. The Surgery Quality Improvement and Safety Committee (SQISC) was established in January 2011 and they were mandated complete the SSC initiative. The Safe Surgery Checklist Working Group (SSCWG) was formed to lead this project work in January 2011 under the umbrella of the SQISC.

Building from the previous work of the SSC Implementation Committee & Implementation Working Group (IWG), the SSC Working Group's overall goal is to advance the implementation and spread of the SSC to all surgical sites across the province, and to establish a standardized measurement infrastructure for ongoing reporting at the site and executive levels. To help with this provincial dissemination of information and communication the Senior Vice Presidents and Zone Medical Directors for each zone where asked to identify a SSC Zone Lead, these individuals would have the authority and accountability to manage this change and provide the leadership and support for their respective zones. The SSCWG task is to support the SSC Zone Leads in their change management process.

The primary provincial objective is to attain 100% SSC utilization and compliance on all surgical procedures in both AHS and AHS contracted facilities by December 2012. The AHS Safe Surgery Checklist, while not limited to use in an operating room setting, is encouraged to be used with every patient undergoing a surgical intervention. While procedures outside of the surgical setting are not being included within this initiative, it will be examined in a subsequent phase of this roll-out.

Within the AHS SSC policy, it states that all three members (Surgeon, Anesthesiologist and O.R./ Scrub Nurse) of the surgical team must be present and participate at each of the three sections of the SSC. If a patient is undergoing **multiple procedures** and there are separate surgical teams for each procedure, the associated surgical team (attending or alternative surgeon, attending or alternative anesthesiologist and circulating or scrub nurse) must be present for the Briefing and Time Out sections for the procedure they perform. The three (3) sections (Briefing, Time Out and Debriefing) are to be completed in the order they appear and prior to proceeding to the next step in the surgical procedure.

In a **critical emergency situation** (i.e., a situation which requires health care that is necessary to preserve life, prevent serious physical or mental harm, or to alleviate severe pain), the most responsible health practitioner will use discretion in determining which sections of the checklist will be completed; this determination will be subject to whether there is greater risk in taking the time required to complete the checklist than benefit to the patient.

The SSC will be considered completed for each patient when the surgical team determines that all three sections have been completed AND documented (all three sections) on the patient's Health Record (e.g., perioperative record).

[1] *Haynes AB, et al. A Surgical Safety Checklist to Reduce Morbidity & Mortality in a Global Population. NEJM, 2009; 360; 491-9.*

For the purpose of this manual the following definitions apply:

1. **Administrative Lead for Surgery** means the most senior administrator (e.g., executive director) of the operating room, or designate.
2. **Most Responsible Health Practitioner** means the single designated Health Professional who carries primary responsibility for the care of a Patient within an Alberta Health Services facility or contracted non-hospital site.
3. **Health Record** means the Alberta Health Services legal record for the Patients diagnostic treatment and care information.
4. **Surgical Intervention** means interventions that require at least one of the following:
    a. Require a major anesthetic, regardless of where they are provided (major anesthetics include general, spinal and epidural but not local); or
    b. Require an incision below the skin or eye into the underlying body structure or cavity; or
    c. Due to the condition or age of the patient, require a major anesthetic and fully equipped and staffed operating room.
5. **Surgical Team(s)** means Alberta Health Services employees, and other persons working on behalf of or in conjunction with Alberta Health Services, including surgeons, anaesthesiologists, nurses, technicians, and other support staff involved in Surgical Interventions.

Alberta Health Services

AHS Safe Surgery Checklist - SSC

Before Induction of Anesthesia	Before Skin Incision	Before Patient Leaves Operating Room
Briefing	***Time Out***	***Debriefing***
Patient (family member) and surgical team members have verbally confirmed: • **Patient identity** • **Procedure** • **Site, side or level** • **Consent(s)** • **Known allergies and reactions** • **NPO status**	**All team members have introduced themselves by name and role**	**Surgical team have verbally confirmed:** • **Name of the procedure** • **Applicable sponge, needle and instrument counts** • **Specimen labeling and handling** • **Equipment problems addressed**
Special precautions • Malignant hyperthermia • Latex • Isolation • Other	**Surgeon, Anesthesiologist, and Nurse have verbally confirmed:** • **Patient** • **Procedure** • **Site**	**Surgical team have reviewed recovery plan:** • Patient disposition • Analgesia • O_2 needs for transfer • Specific concerns
Weight (Kg) recorded on chart	**Anticipated critical events:** • **Surgeon review:** • Critical or unexpected steps • Procedure duration • **Risk of >500mL (7mL/Kg in Children) blood loss** • **Anesthesiologist review:** • Patient-specific concerns • Adequate intravenous access and fluid planned • **Nursing review:** • Sterility issues • Equipment issues	
Anesthesia safety and equipment check completed	**Applicable medication concerns:** • **Antibiotic prophylaxis given within last 60 minutes** • Thromboprophylaxis (VTE) ordered: • Anticoagulant • Mechanical • Other specific medication concerns	
Difficult airway/aspiration risk • Applicable equipment / assistance available	**Essential imaging displayed**	
Patient positioning and support confirmed	**Any other questions or concerns before proceeding?**	
Relevant and special equipment confirmed and in room: • Prosthesis • Warming devices • Loaner instrument		
Relevant tests completed and checked: • Laboratory • Pregnancy • Crossmatch (Type and Screen) • Radiology		

This checklist was adapted from the World Health Organization (WHO) Surgical Safety Checklist (URL: http://www.who.int/patientsafety/safesurgery/en; © World Health Organization 2008, All Rights Reserved). Version 9 (February 27, 2012)

Safe Surgery Checklist Manual Guidelines

This manual provides assistance on how to utilize the SSC. It will provide suggestions on how to advance the spread of the SSC and increase compliance. It also looks at the development and implementation of a standardized measurement infrastructure for ongoing reporting. The ultimate goal of the AHS SSC is to help ensure that teams consistently follow a few critical safety steps that are known to minimize common and avoidable risks that endanger the wellbeing of surgery patients. The SSC guides a verbal team-based interaction as a means of confirming that appropriate standards of care are ensured for every patient.

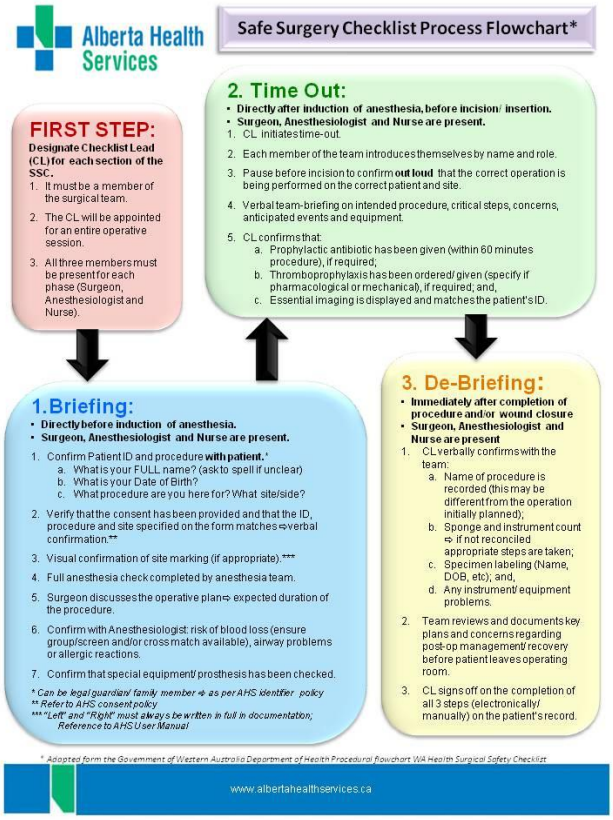
The SSC process flowchart was designed to best enable the user to quickly reference the required elements for each of the three sections of the checklist. It was aligned with the SSC policy, process and observational audits. The color scheme of the process is also matched to ensure consistency and ease of reference through visual cues. While there are sites and teams that operate differently there are elements within the SSC that are required and common to all surgical procedures; therefore, a standardized process can be created overall and for various surgical specialties. This manual will help outline those said elements and provide subsequent reasoning to assist with the change management process.

At the initial onset, the implementation of the SSC may be faced with resistance. Merely having the AHS SSC Policy in place does not to guarantee sites and zones will be fully compliant, especially if the SSC does not work within their particular setting. For this reason, AHS has identified a procedure for developing alternative versions of the SSC (reference http://insite.albertahealthservices.ca/Files/clp-safe-surgery-checklist-procedure.pdf). To be approved by the Surgery Clinical Network (SCN), and thus implemented at their site, each site surgical team must assess and pilot a version of the SSC that they feel best suites their normal surgery workflow or pathway. This version is signed off by the site Administrative Lead and brought forward to the SCN for approval and documentation in the alternative version inventory.

The SSC highlights activities, in many cases, already being practiced in the operating room. What the AHS SSC process does is bring patient safety and quality factors to the forefront, by ensuring that key steps are taken on all surgical procedures. Expounding the fact that the SSC was designed to be an integrative tool that can be streamlined into current practices is a message that needs to be constantly communicated and supported. Each site, through the SSC Zone Leads and site Operational and Medical Leadership should identify a site based Champion help proliferate this message.

If sites have issues or challenges integrating the SSC process there are avenues available to them to help the surgical team assimilate the SSC (e.g., AHS Human Factors, E-simulation) into their everyday practice. Many of the items highlighted in the SSC are already accepted as routine practice, in engaging experts with the skills to assess and observe the situation, can ultimately help the surgical team adapt the SSC process to what best suits their needs, while meeting the requirements of the AHS SSC Policy and mandate. In formalizing the SSC AHS is better able to standardize this approach and to ensure a higher quality of patient safety within the operating rooms across the province.

FIRST STEP



Before the procedure even begins the surgical team must designate a Checklist Lead (CL) for each of the three sections of the SSC. This ensures that team members are aware of their role for the procedure or length of time in the theatre. It is meant to be flexible enough so the team can best determine who is better suited to lead that section of the SSC. For example, sites have had great success with implementing the SSC when they have identified the Surgeon as the CL for the "Time Out" section of the SSC.

Identifying a single person to lead the Checklist process has been successful. In the dynamic environment and nuisances associated with an operating room setting any of the safety steps identified in the SSC can be overlooked or missed. Designating a single Checklist Lead to verify the completion of each step of the SSC can ensure continuity and ensure items are not omitted in haste due to the hectic and busy nature of the surgical setting. This may be something to consider in the initial stages of integration the SSC within the surgical patient care flow.

The CL must be allowed to verify the completion of all identified tasks before proceeding forward. As the surgical teams become familiar with each step of the SSC, they will begin to integrate these steps into their surgical pathway. It is important for the surgical team to be able to verbalize the completion of each step without the explicit involvement of the Checklist Lead – when this is done; the site/team knows it has become ingrained within their surgical pathway.

One possible disadvantage of having a single person lead the SSC is the dynamic it may play between the surgical team members. Since the Checklist Lead can prevent the movement forward, this can distance other surgical team members. If there is potential for this, then the site Administrative Lead or surgical team must carefully consider which staff member is most suitable for this role, or for there to be a common understanding as to their purpose.

The CL must make clear to the surgical team prior to starting the procedure that all three members of the surgical team must be present, and participate, at each section of the SSC. This aligns with AHS SSC Policy and Process. This will help ensure surgical teams are successful in any level of reporting (e.g., observational audits, patient outcome data). During the SSCWG consultation sessions it was found that surgical teams take pride in knowing that they are providing high quality and safety care for their surgery patients by using the SSC, so there is an inherent ownership knowing that goes beyond simple reporting.

BRIEFING SECTION

Before Induction of Anesthesia
Briefing
Patient (family member) and surgical team members have verbally confirmed: • **Patient identity** • **Procedure** • **Site, side or level** • **Consent(s)** • **Known allergies and reactions** • **NPO status**
Special precautions • Malignant hyperthermia • Latex • Isolation • Other
Weight (Kg) recorded on chart
Anesthesia safety and equipment check completed
Difficult airway/aspiration risk • Applicable equipment / assistance available
Patient positioning and support confirmed
Relevant and special equipment confirmed and in room: • Prosthesis • Warming devices • Loaner instrument
Relevant tests completed and checked: • Laboratory • Pregnancy • Crossmatch (Type and Screen) • Radiology

This part of the safety check is to be completed ***before induction of anesthesia*** in order to confirm that key safety procedures have been completed and reviewed before proceeding.

Patient (family member) and Surgical Team Members are verbally confirmed by the checklist lead

The individual leading the checklist for this section verbally confirms:

- Patient's identity,
- Procedure,
- Site, side or level,
- Consent for surgery has been given.

While it may seem repetitive, this step is essential for ensuring that the team does not operate on the wrong patient, wrong site or perform the wrong procedure. When confirmation by the patient is impossible, such as in the case of children or incapacitated patients, a guardian or family member can assume this role. If a guardian or family member is not available, the surgical team can confirm that they are all in agreement to the items covered prior to proceeding. It is important in these cases to refer to the Alberta Health Services identifier policy.

It is also important at this time to verbally confirm if the patient has any known allergies and what the typical reaction to the allergen is for the patient.

The NPO status is also confirmed (i.e., "*nothing through the mouth*"), as required.

Special Precautions

The Checklist Lead also completes this next step in the presence of the patient or family member by asking if the patient has any special cautions that may impact the outcome of the procedure. For example, does the patient know of issues with malignant hyperthermia, latex allergies, requires isolation precautions, etc.

Weight (Kg) Recorded on Chart

Many dosages are based on weight for pediatric and adult procedures and it is essential that confirmation of the weight has been recorded on the chart.

Anesthesia Safety and Equipment Check Completed

The Checklist Lead completes this next step by asking the anesthesiologist to verify completion of the anesthesia safety check which may involve formal inspection of all anesthetic equipment, breathing circuit, medications and review of the patient's anesthetic risk. The anesthesia team should complete the ABCDEs (Airway equipment, Breathing system - including oxygen and inhalational agents, suction, Drugs and Devices and Emergency medications, equipment).

Difficult Airway/Aspiration Risk

The Checklist Lead should verbally confirm that the anesthesia team has objectively assessed whether the patient has a difficult airway. Death from airway loss during anesthesia is still a common disaster globally but is preventable with appropriate planning. If the airway evaluation indicates a high risk for a difficult airway, the anesthesia team must prepare against an airway disaster. This will include, at a minimum, adjusting the approach to anesthesia (for example, using a regional anesthetic, if possible) and having emergency equipment accessible. A capable assistant—whether a second anesthesiologist, the surgeon, or a nursing team member—should be physically present to help with induction of anesthesia. The risk of aspiration should also be evaluated as part of the airway assessment. If the patient has symptomatic active reflux or a full stomach, the anesthesiologist must prepare for the possibility of aspiration. The risk can be reduced by modifying the anesthesia plan, for example using rapid induction techniques and enlisting the help of an assistant to provide pressure during induction. For a patient recognized as having a difficult airway or being at risk for aspiration, induction of anesthesia should begin only when the anesthesiologist confirms that he or she has adequate equipment and assistance present at the bedside.

Patient Positioning and Support Confirmed

To prevent delays, the surgeon must review their plan for patient positioning and support requirements for the team. If the surgeon is unable to attend the Briefing portion of the checklist, they must ensure that a review occurs with the attending anesthesiologist prior to the team briefing.

Relevant Special Equipment Confirmed and In Room

The individual leading the checklist should verbally review the need for any relevant and special equipment not normally found in the theatre. This may include but is not limited to confirmation that prosthesis, warming devices or loaner instruments are checked and confirmed. This box is optional and may be removed during the "*SSC Procedure: developing and alternate version*" modification if not applicable to local practice.

Relevant Tests completed and checked

The Checklist Lead should verbally confirm that someone has reviewed and confirmed the completion and availability of all relevant laboratory and radiology procedures. This may include confirmation of pregnancy test for female patients, completion of a type and screen and / or cross-match to ensure that blood products can be made available, if required. Confirmation of requested radiology should also ensure availability of all essential imaging during the procedure. This box is optional and may be removed during the "*SSC Procedure: developing and alternate version*" modification if not applicable to local practice.

A decision was made to move the discussion of blood loss to the Time Out section to avoid increasing the stress to the patient and/or family members present. It was decided however, that it was important to have the confirmation of the cross-match in the briefing section to save time if it had indeed been missed.

TIME OUT

Before Skin Incision
Time Out
All team members have introduced themselves by name and role
Surgeon, Anesthesiologist, and Nurse have verbally confirmed: • **Patient** • **Procedure** • **Site**
Anticipated critical events: • **Surgeon review:** • Critical or unexpected steps • Procedure duration • **Risk of >500mL (7mL/Kg in Children) blood loss** • **Anesthesiologist review:** • Patient-specific concerns • Adequate intravenous access and fluid planned • **Nursing review:** • Sterility issues • Equipment issues
Applicable medication concerns: • **Antibiotic prophylaxis given within last 60 minutes** • Thromboprophylaxis (VTE) ordered: • Anticoagulant • Mechanical • Other specific medication concerns
Essential imaging displayed
Any other questions or concerns before proceeding?

Before making the first surgical incision, a momentary pause should be taken by the team in order to confirm that several essential safety checks are undertaken. These checks must involve **all** surgical team members.

All Team Members Have Introduced Themselves by Name and Role

Operating team members may change frequently. Effective management of high risk situations requires that all team members understand who each member is and their roles and capabilities. A simple introduction can achieve this. The Checklist Lead for this section should ask each person in the room to introduce him or herself by name and role.

Teams already familiar with each other can confirm that everyone has been introduced. If additional staff have rotated into the operating room since the last operation, they should re-introduce themselves. This introduction should include students or other personnel.

Surgeon, Anesthesiologist, and Nurse Have Verbally Confirmed: Patient, Procedure, Site

The individual leading the checklist will request all team members to stop and verbally reconfirm:

- name of the patient,
- procedure to be performed,
- site of surgery

For example, the circulating nurse might announce, "*Before we make the skin incision does everyone agree that this is patient X, undergoing a right inguinal hernia repair?*" The anesthesiologist, surgeon and circulating nurse should explicitly and individually confirm agreement.

Anticipated Critical Events

To ensure communication of critical patient issues, the Checklist Lead will lead a swift discussion among the surgeon, anesthesia and nursing staff of critical dangers and operative plans.

The order of discussion does not matter, but each clinical discipline should provide information and communicate concerns.

a. Surgeon Review

The surgeon's review should involve the following:

- A **review of the critical steps** associated with the procedure that may result in injury or risk of morbidity. This is also a chance to review steps that might require special equipment, implants or preparations.

- **Duration of procedure** is to ensure that all team members understand the expected length of the procedure which may be longer (or shorter) than expected due to issues unique to the procedure or patient.
- A review of the **Risk of >500 mL blood loss (7 mL/Kg in children)** is one of the WHO 10 essential objectives for safe surgery and is a requirement for all surgical checklist.

  Large volume blood loss is among the most common and important dangers for surgical patients, with risk of hypovolemic shock escalating when blood loss exceeds 500 mL (7 mL/Kg in children). Adequate preparation and resuscitation may mitigate consequences considerably. Surgeons may not consistently communicate the risk of blood loss to anesthesia and nursing staff. Therefore, if the specific risk of major blood loss associated with the patient or the procedure is unknown or unclear, the surgeon can discuss the situation with the team prior to commencement.

b. Anesthesiologist Review

The anesthesiologist's review should involve the following:

- Are there any patient-specific concerns?
- Is there adequate intravenous access and fluid planned?

  If there is a significant risk of a greater than 500 mL blood loss, it is highly recommended that at least two large bore intravenous lines or a central venous catheter be placed prior to skin incision. In addition, the team should confirm the availability of fluids or blood for resuscitation.

c. Nursing Review

The nurse's review should involve the following:

- Are there any issues relating to sterility
- Are there any issues relating to equipment

  The scrub nurse or technologist who sets out the equipment for the case should verbally confirm that sterilization was performed and that, for reprocessed instruments, a sterility indicator has verified successful sterilization. Any discrepancy between the expected and the actual sterility indicator results should be reported to all team members and addressed before incision. This is also an opportunity to discuss any problems with equipment and other preparations for surgery.

During routine procedures or those with which the entire team is familiar, the surgeon can simply state, "*This is a routine case of X duration*" and then ask the anesthesiologist and nurse if they have any special concerns. For many procedures that do not generally entail particularly critical risks or concerns anesthesiologist and nurse can also simply say, "*I have no special concern regarding this case.*"

Applicable Medication Concerns

a. Antibiotic Prophylaxis Given Within Last 60 Minutes

This is another of the 10 WHO essential objectives for safe surgery. Despite strong evidence and wide consensus that antibiotic prophylaxis against wound infections is most effective if serum and/or tissue levels of antibiotic are achieved, surgical teams are inconsistent about administering antibiotics within one hour (60 minutes) prior to incision.

To reduce surgical infection risk, the Checklist Lead will ask out loud whether prophylactic antibiotics were given during the previous 60 minutes. The surgical team member responsible for administering antibiotics (typically the anesthesiologist) should verbally confirm if prophylactic antibiotics have been administered and if not it should be administered prior to incision. If prophylactic antibiotics have been administered longer than 60 minutes prior, the team should consider re-dosing the patient.

A simple verbal "*not applicable*" announcement will suffice if prophylactic antibiotics are not considered appropriate.

b. Thromboprophylaxis (VTE) Ordered

VTE is one of the most common and preventable complications of hospitalization. If VTE Thromboprophylaxis is not instituted, then 10 to 40% of general surgery patients and 40 to 60% of hip surgery patients will develop VTE. Reference the How-to Guide: Prevention of Venous Thromboembolism. *Safer Healthcare Now!* Campaign May 2008.
http://www.saferhealthcarenow.ca/EN/Interventions/vte/Documents/VTE%20Getting%20Started%20Kit.pdf

c. Other Specific Medication Concerns

This allows the surgical team the opportunity to highlight any additional medication related concerns.

Essential Imaging Displayed

Imaging is critical to ensure proper planning and conduct of many operations and is one reason for delays. Before skin incision, the individual leading the checklist should ask the surgeon if imaging is needed for the case and confirmation that essential imaging is available and prominently displayed. If imaging is needed but not available, it should be obtained and the surgeon can decide whether to proceed without the imaging.

Any Other Questions or Concerns before Proceeding

This provides all members of the team the opportunity to voice any concerns prior to commencement.

DEBRIEFING

Before Patient Leaves Operating Room
Debriefing
Surgical team have verbally confirmed: • **Name of the procedure** • **Applicable sponge, needle and instrument counts** • **Specimen labeling and handling** • **Equipment problems addressed**
Surgical team have reviewed recovery plan: • Patient disposition • Analgesia • O_2 needs for transfer • Specific concerns

These safety checks should be completed before removing the patient from the operating room. The aim is to facilitate the transfer of important information to the care teams responsible for the patient after surgery. The checks can be initiated by the circulating nurse, surgeon or anesthesiologist and should be accomplished before the surgeon has left the room. It can coincide with wound closure.

Surgical Team Have Verbally Confirmed

a. The Name of the Procedure

Since the procedure may have changed or expanded during the course of an operation, the individual leading the checklist should confirm with the surgeon and the team exactly what procedure was done. This can be done as a question, "*What procedure was performed?*" or as a confirmation, "*We performed X procedure, correct?*"

b. Applicable Sponge, Needle and Instrument Counts

Retained instruments, sponges and needles are uncommon but persistent and potential errors that may result in serious harm to the patient. The scrub or circulating nurse should therefore verbally confirm the completeness of final sponge and needle counts.

In cases with an open cavity, instrument counts should also be confirmed to be complete. If counts are not appropriately reconciled, the team should be alerted so that appropriate steps can be taken (such as examining the drapes, garbage and wound or, if need be, obtaining radiographic images).

a. Specimen Labeling and Handling

Incorrect labeling of pathological specimens is potentially disastrous for a patient and has been shown to be a frequent source of errors. The scrub or circulating nurse should confirm the correct labeling of any pathological specimen obtained during the procedure by reading out loud the patient's name, the specimen description and any orienting marks.

b. Whether There Are Any Equipment Problems to be Addressed

Equipment problems are universal in operating rooms. Identifying the sources of instruments or equipment failure is important in preventing devices from being recycled back into the room. The individual leading the checklist should ensure that equipment problems arising during a case are identified by the team.

Surgical Team Has Reviewed the Recovery Plan

The surgeon, anesthesiologist and nurse should review the post-operative recovery and management plan, focusing in particular on intraoperative or anesthetic issues that might affect the patient. Events that present a specific risk to the patient during recovery may not always be evident to all members of the surgical and recovery team. The aim of this step is the efficient and appropriate transfer of critical information to the entire team so the following issues should be reviewed:

a. **Patient Disposition**
b. **Analgesia**
c. **O2 Needs for Transfer**
d. **Specific Concerns**

The Checklist Lead signs off on the completion of all three steps on the Patients Health Record.

This is completed electronically and/or manually. This information is utilized in the data collection and reporting systems.

With this final step, the AHS Checklist is completed