Information Statement

Consistency for Safety in Orthopaedic Surgery

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Patients, physicians, surgical team members, providers, and healthcare regulators increasingly recognize that patient safety is an essential element of the evolving U.S. health care system. Six "Cs of Surgical Safety" have been identified as critical,[1] including Consistency in surgical processes and practice. Consistency in surgery is enabled through the regular use of standardized, validated evidence- or consensus-based processes, often summarized as surgical checklists. Consistency and use of well-designed checklists can enhance the ability of surgical teams to provide and document safe, efficient, high quality patient care.

Checklists have long been utilized in other industries, such as aviation and building construction, to enhance safety and streamline processes. They have also been widely applied outside of the operating room - for example, in the form of standardized order sets, clinical care pathways, and discharge planning tools. Over time, health care providers and administrators have increasingly recognized that evidence-based, standardized, systematic care plans - in contrast to physician-unique care plans - can help reduce error rates and costs, thereby improving patient outcomes.

The rationale for routine use of checklists in surgery was widely introduced in the United States in 2008-2009.[2] With the contributions of practicing U.S. surgeons, the World Health Organization (WHO) developed the 'Safe Surgery Checklist' consisting of nineteen 'checks' to be performed by the surgical team-including the surgeon, anesthesiologist, circulating nurse, and other OR team members. These 'checks' were developed as a series of linked surgical steps, used regularly, to support timely communication and summarize important surgical information. Improvements in care have been validated through the use of this checklist and through peri-operative safety and quality data collection and analysis.

The WHO checklist[3] is divided into three sections:

1. " **Brief** " - Performed by surgical team members to confirm important safety information prior to anesthesia: confirming proper patient identification, surgical site marking, surgical consent, a functioning pulse oximeter connected to the patient, patient's medication allergies, potential airway problems, and availability of blood products, if needed.

2. " **Time-Out** " - Performed by the surgical team immediately prior to the surgical incision: confirming correct patient, procedure/s, surgical site/s or level/s, appropriate antibiotic administration, availability of appropriate radiographic images and planned surgical implants, anticipated length of surgery and blood loss, and any critical or special surgical concerns during the surgery.

3. " **De-Brief** " - Completed at the end of the case, but prior to leaving the OR: confirming and recording the accurate name of the procedure, labeling of pathology tissue specimens, correct needle, sponge and instrument counts, and identifying surgical equipment problems during the case to be resolved prior to the next case and any special post-operative care required.

Since 2008, use of surgical checklists - either unmodified WHO checklists or, more commonly, site-modified WHO checklists - has been widely adopted by hospitals and surgi-centers as a central component to their surgical patient safety programs in the U.S. and worldwide. Following implementation of operating room checklists several institutions have documented significant reductions in 30-day surgical complications, including wound infection, blood loss, and death in a range of hospitals in both developed and developing countries.[4-7] The performance of the surgical "Brief", "Time-Out" and "De-Brief" checklists enhances operative team cohesion, reduces communication failures,[8-10] and promotes a perception of improved safety among hospital staff[11] and patients alike.[12] It has also been suggested that the use of checklists may reduce the potential for medical liability claims from surgical patients.[13]

In spite of widespread documentation regarding effectiveness in improving patient safety and reducing surgical complications, regular use of checklists has not yet been universally implemented. A few studies cast doubt on the association between use of mandated checklists and improved surgical outcomes.[14-15] Even among institutions that have adopted operating room checklists, there is wide variation in compliance and implementation, both within and among hospitals.[16-19] Several challenges and potential pitfalls have been identified including: inadequate physician leadership, inadequate surgical team support, and irregular or incomplete utilization.

Effective implementation of standardized safety processes in surgery involves more than the introduction of simple item lists to be 'ticked' by the surgeon and operating room personnel. Traditional surgical hierarchical power structures need to be leveled, so that all team members can communicate in standardized formats without distractions, and data evaluating performance needs to be collected and analyzed regularly. It is important that all members, including nursing and other surgical team members, feel that they can openly share any safety concerns. Throughout this process, surgeon leadership and endorsement are critical to both developing and maintaining successful surgical safety programs.

The AAOS recognizes that mandated use of 'one-size-fits all' surgical checklists often do not achieve the intended result of improved patient safety and outcomes. Checklists are most effective when they are modified locally and developed to best suit specific surgical settings and/or location needs. Such checklists are more likely to be endorsed by local surgeons and surgical team members, leading to regular use and improved protection for the patient populations they are designed to serve.

Initiation of effective surgical safety checklists requires the endorsement of surgical providers with surgeon leadership of a multi-disciplinary checklist team-often including anesthesia, nursing, pharmacy, operating room, and administration representatives. This team should review available evidence and/or expert consensus regarding "best" safety practices and tailor the checklist to the needs of the patient population it intends to serve. The team should regularly monitor checklist compliance and effectiveness, making adaptations when appropriate.

Not every element of standardized surgical checklist will apply to every orthopedic procedure or patient, but consistent use of the entire peri-operative routine supports best care. Surgical checklists do not substitute for sound clinical judgment and technical skill; nor do they guide surgical teams through the steps of a complex operation. Rather, they serve as evidence-based tools to help avoid preventable harm to patients, promote a culture of safety, and maximize communication and teamwork in the operating room. Surgeon leadership is enhanced-not diminished-when all members of the OR team are engaged in the surgical timeout process. Regularly performed checklists enable all surgical team members- typically within one or two minutes - to ensure that important safety

concerns are addressed, so the surgical team can be confident that the team has identified important patient care concerns to reduce complications and provide the best quality care possible.

The AAOS is dedicated to providing safe care in all orthopedic surgical settings and supports the consistent use of evidence-based processes, including checklists by surgeons and their surgical teams, as a tool to help improve the safety and outcomes of orthopaedic patients.

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