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Guidelines for Safe Medication Practices in the Perioperative Area

Introduction

The following Guidelines for Best Practices were researched and authored by the AST Education and Professional Standards Committee, and are AST approved.

AST developed the following Guidelines to support healthcare delivery organization's (HDO) reinforce best practices in safe medication as related to the role and duties of the Certified Surgical Technologist (CST®), the credential conferred by the National Board of Surgical Technology and Surgical Assisting. The purpose of the Guidelines is to provide information OR supervisors, risk management, and surgical team members can use in the development and implementation of policies and procedures for safe medication practices in the surgery department. The Guidelines are presented with the understanding that it is the responsibility of the HDO to develop, approve, and establish policies and procedures for the surgery department regarding safe medication practices in the perioperative area according per HDO protocols, and state and federal medical laws.

Rationale

The following are Guidelines for Best Practices regarding safe medication practices in the perioperative area. With the emphasis on patient safety initiatives, AST recognizes the life-threatening potentials of medication errors in the perioperative setting. Several organizations have repeatedly emphasized and published information on safe medication practices including The Joint Commission (THC), Institute for Safe Medication Practices (ISMP), National Patient Safety Foundation (NPSF) and National Coordinating Council for Medication Error Reporting and Prevention. The public and healthcare provider community took notice starting in 1999 when the Institute of Medicine (IOM) published its decisive report *To Err is Human: Building a Safer Health System*". According to the report, between 44,000 – 98,000 deaths may result each year from medical errors in hospitals, and more than 7,000 deaths each year related to medications.[1] An article published in October 2015 reported the results of a study stating that at Massachusetts General Hospital medication errors occurred in over half the surgical procedures performed.[2,3] The researchers observed 277 surgical procedures from start to finish and reported medication errors in 193 of the procedures.[2,3] Lastly, there have been documented instances of surgical patients dying as the result of receiving an incorrect drug due to the drug-containing basins and medication cups not labeled.[4]

In response to the IOM's report and the ongoing issue of medication errors, the U.S. health system, regulatory agencies and non-governmental organizations (NGO), such as AST, have worked together to strengthen the checks and balances system regarding the dispensing, handling and administration of medications to prevent errors.

The numbers and information is provided to place strong emphasis upon the importance of CSTs following the AST guidelines for safe medication practices as well as remaining current with the information that is published by other organizations and agencies. CSTs must continue their duty of care to the surgical patient by providing safe, efficient care that contributes to preventing medication errors which also contributes towards the attempts to control the costs of healthcare.

Evidence-based Research and Key Terms

The research of articles, letters, nonrandomized trials, and randomized prospective studies is conducted using the Cochrane Database of Systematic Reviews and MEDLINE®, the U.S. National Library of Medicine® database of indexed citations and abstracts to medical and healthcare journal articles.

The key terms used for the research of the Guidelines include: administration; dispense; label; principles of asepsis; six rights for medications; sterile technique. Key terms used in the Guidelines are italicized and included in the glossary.

Guideline I

CSTs must follow the *six rights of medications including* handling and dispensing.

1. The CST and surgical team must confirm the right patient.
    A. All surgical patients shall be accurately identified prior to being transported to the OR and during completion of the time out.5
        1) Identification of the patient includes confirming the name of the patient, history of drug allergies, surgical procedure, and operating surgeon.[6]
2. The CST and surgical team must confirm the right drug(s).
    A. All drug(s) to be used during a surgical procedure must be accurately identified.[4]
        1) The surgeon's preference card must be used to obtain the correct drug(s) that are required for the surgical procedure. Abbreviations, symbols, and dose designations listed in the table of error-prone abbreviations, symbols, and dose designations should not be used when creating or updating surgeons' preference cards.[7]
        2) When the circulating person delivers a drug(s) to the sterile back table, the CST and circulating person must confirm the name and strength of the drug, and expiration date.
        3) The CST is required to immediately and accurately *label* the container, e.g., syringe, medicine cup. The medication label must not cover the increments on a syringe. In the *2016 Hospital National Patient Safety Goals,* the Joint Commission reiterates using medications safely in *NPSG.03.04.01 - Before a procedure, label medicines that are not labeled.* For example, medications in syringes, cups and basins must be labeled in the area where medications and supplies are set up.[6] The CST should avoid using abbreviations, symbols, and dose designations that are listed in the table of error-prone abbreviations, symbols, and dose designations.[4,7]

4) All empty medication vials, bottles or other containers must be kept in the OR until the end of the procedure as evidence the proper medication has been delivered to the sterile field and administered to the patient.[8]

3. The CST and surgical team must confirm the right dosage of the medication.
   A. All drug(s) dosages to be used during a surgical procedure must be accurately identified.
      1) The surgeon's preference card must be verified for medication dosages. Abbreviations, symbols, and dose designations listed in the table of error-prone abbreviations, symbols, and dose designations should not be used when creating or updating surgeons' preference cards.[7]
      2) When the circulating person delivers a drug(s) to the sterile back table, the CST and circulating person must confirm the dosage of the drug when also confirming the name of the drug and expiration date.
      3) The CST must take explicit care when there is more than one dosage of the same medication on the sterile field, e.g., two different dosages of epinephrine for a middle ear procedure.
      4) The CST provides the final safety check for the intended dosage by always stating the name and strength of the drug when handing/passing it to the surgeon.[8]
4. The CST and surgical team must confirm the right route of the drug *administration*.
   A. All drug(s) administration routes to be used during a surgical procedure must be accurately identified.
      1) The surgeon's preference card must be verified for medication administration routes.
      2) When the circulating person delivers a drug(s) to the sterile field, the CST and circulating person must confirm the administration route when also confirming the medication name, dosage, and expiration date.
      3) The CST must take explicit care when there is more than one dosage of the same medication on the sterile field. Differing dosages of the same medication often have varying routes of administration.[8]
5. The CST and surgical team must confirm the right time of the drug administration.
   A. All drug(s) time of administration during a surgical procedure must be accurately verified.
      1) The surgeon's preference card shall be verified for a medication's time of administration.
      2) The purpose of the drug, when stated on the surgeon's preference card, often indicates the timing of administration.
         a) A medication listed as a local anesthetic will be administered before the incision is made or during the procedure as needed.

b) A medication listed for postoperative pain control may be administered at the beginning of the procedure or after wound closure.
c) A medication may be requested by surgeon's verbal order during the procedure.

3) The surgeon is responsible for the administration of all medications at the surgical site.[8]

6. The CST and surgical team must confirm the correct documentation of the medication.
   A. It is crucial that medications given from the sterile field are accurately recorded in the intraoperative record.
      1) The circulating person will document all medications delivered to the sterile field. The circulator should avoid using abbreviations that are listed in the table of error-prone abbreviations, symbols, and dose designations.[7]
      2) The CST will verbally provide a final total of the amount of each medication and solution administered at the sterile field for the circulating person to record in the intraoperative record.
      3) During a break or shift change, the initial CST, relief CST, and circulating person will verbally and visually identify all medications and solutions including the amounts used.[8,9]

Guideline II

CSTs and surgical team must follow *sterile technique* when medications are *dispensed* onto the sterile field.

1. The method(s) of transferring medications to the sterile field will be based on the type and route of medication administration. Controlled substances may require a different type of handling per individual facility and state policies.
   A. Medications from a vial may be transferred to the sterile field by one of three methods:
      1) The circulating person cleans the stopper on the top of the vial and using a sterile transfer device, such as a sterile vial decanter, pours the medication into the proper receptacle on the sterile field.
      2) The circulating person cleans the stopper on the top of the vial, draws the medication into a syringe with the use of a sterile hypodermic needle, and ejects the medication into the proper receptacle on the sterile field.
      3) The circulating person cleans the stopper on the top of the vial and holding the vial upside down, the CST withdraws the medication into the syringe with the use of a sterile hypodermic needle.
   B. Medications from an ampule may be transferred to the sterile field by one of two methods:
      1) The circulating person removes the top of the ampule, draws the medication into a syringe with the use of a sterile filter needle, and ejects the medication into the proper receptacle on the sterile field.

2) The circulating person removes the top of the ampule and while holding the ampule, the CST withdraws the medication into a syringe with the use of a sterile filter needle.

C. Medications from a tube are squeezed onto the sterile field by the circulating person using sterile technique. It is recommended the CST has the circulator squeeze the medication onto an uncounted, non-radiopaque detectible sponge. Medications from a used tube should not be used from case to case and disposed of at the end of the procedure.[8]

Guideline III

CSTs are qualified to handle medications in the OR under the direct supervision and orders of the surgeon.

1. The educational standards established by the *Core Curriculum in Surgical Technology* provide CSTs with the knowledge and skills to properly handle medications within the sterile field. These standards include:
    A. Applying medication terminology;
    B. Understanding anesthesia complications and interventions;
    C. Understanding methods, agents, and techniques of anesthesia;
    D. Correlating anesthesia monitoring devices with patient homeostasis;
    E. Preparing and managing medications and solutions on the sterile field;
    F. Calculating medication conversions and dosages including knowledge of percentages, proportions, and ratios;
    G. Analyzing the principles of anesthesia administration and understand the necessity of anesthesia preparation of the surgical patient.

Guideline IV

Surgery departments should develop policies and procedures (P&P) that mandate who should be involved in administering and dispensing medications in the perioperative setting that promotes teamwork and safety.

1. P&Ps should define who or which job classification may participate in administering or dispensing medications.
2. The P&Ps must take into consideration local, state, and federal laws regarding medication administration and dispensing.
    A. Based upon the research of 37 states' pharmacology laws, no laws or regulations were discovered that directly address the role and duties of the CST. However, the research was focused solely on the CST, and did not include the laws and regulations that apply to licensed healthcare personnel.[10]
3. The surgery department should establish an environment that promotes reporting, learning, and interdisciplinary respect and cooperation among the surgery personnel in the perioperative setting that promotes teamwork and safety.[11]

Guideline V

The surgery department should review the P&Ps regarding safe medication practices on an annual basis.

1. The surgery department should include members of the surgical team and administration when reviewing the P&Ps, including CSTs, surgeons, RNs, risk management and infection control officer.
    A. Current literature and reports issued by healthcare care agencies that address new trends, practices, and products related to safe medication handling should be reviewed.
    B. The surgery department should document when the P&Ps were reviewed, revision completed (if necessary), and who participated in the review process.
2. CSTs should be familiar with the P&Ps for safe medication practices. The orientation of new employees should include reviewing the P&Ps.

Guideline VI

CST's should complete continuing education to remain current in their knowledge of safe medication practices.[12]

1. The continuing education should be based upon the concepts of adult learning, referred to as andragogy. Adults learn best when the information is relevant to their work experience; the information is practical, rather than academic; and the learner is actively involved in the learning process.[13]
2. It is recommended surgery departments use various methods of instruction to facilitate the learning process of CSTs.
    A. If the education is primarily lecture, methods to engage learners include presentation of case studies for discussion, and audience discussion providing suggestions for reinforcing safe medication practices.
    B. Other proven educational methods include interactive training videos, and computerized training modules and teleconferences.
    C. The continuing education should be delivered over short periods of time such as in modules, and not in a one-time lengthy educational session.
3. Continuing education programs should be periodically evaluated for effectiveness including receiving feedback from surgery department personnel.
4. The surgery department should maintain education records for a minimum of three years that include dates of education; synopsis of each continuing education session provided; names, credentials, and experience of instructors.

Competency Statements

Competency Statements	Measurable Criteria
1. CSTs are qualified to handle medications and solutions in the OR under the direct supervision and orders of the surgeon. 2. CSTs have the knowledge and skills to contribute to the teamwork in the OR regarding safe medication practices. 3. CSTs have knowledge of medication calculations, including percentages, proportions, and ratios. 4. CSTs are qualified to serve on committees that address the safe use of medications in the OR.	1. Educational standards as established by the *Core Curriculum for Surgical Technology*.[14] 2. The didactic subject of medications, including calculating dosages and conversions, preparation and management of medications and solutions, and anesthesia techniques, is included in a CAAHEP accredited surgical technology program. 3. Students demonstrate knowledge of handling of medications and solutions in the lab/mock OR and during clinical rotation. 4. CST's manage medications and solutions in the OR. 5. CST's complete continuing education to remain current in their knowledge of managing medications and solutions in the OR including updates by NGOs and government organizations.[12]

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Glossary

Administration: direct introduction of, or the application of, a drug into or on the body of a patient by injection, inhalation, ingestion, or any other means, and where required by law, shall only pursuant to a medical order.

Dispense: interpreting, evaluating, and implementing a medical order, including preparing or delivering a drug or device to a patient or caregiver in a suitable container, appropriately labeled for subsequent administration.

Labeling: Word or phrase that describes an item, person, category, classification, etc.

Six rights of medications: The six key factors that surgery personnel should follow to avoid medication errors: right drug, dose, route, time, patient and documentation.

Sterile technique: The methods based upon the principles of asepsis applied by the surgical team to prevent the patient from acquiring a healthcare-associated infection.

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