CIS SELF-STUDY LESSON PLAN

LESSON NO. CIS 229
(Instrument Continuing Education-ICE)

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Instrument Continuing Education (ICE) lessons provide members with ongoing education in the complex and ever-changing area of surgical instrument care and handling. These lessons are designed for CIS technicians, but can be of value to any CRCST technician who works with surgical instrumentation.

You can use these lessons as an in-service with your staff, or visit www.iahcsmm.org for online grading at a nominal fee.

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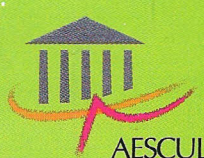

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LEARNING OBJECTIVES:

1. Review the benefits of instrument marking
2. Provide examples of marking information
3. Describe three common instrument marking methods:
   a. Taping systems
   b. Dipping systems
   c. Etching systems

A typical healthcare facility has thousands of different surgical instruments, and many of them look very similar. Others are identical, but they are designated for use in specific procedures. In spite of these challenges, Certified Instrument Specialist (CIS) technicians must always ensure that the correct instruments are placed in the proper trays.

Basic knowledge about instrument identification is a must for all processing personnel in Central Sterile Supply Departments (CSSDs). Initial training programs for new employees and ongoing inservice sessions for all staff members are among the methods used to provide this information.

In addition, three basic types of surgical instrument marking systems are in common use. Each can help provide a fast, easy and accurate way for busy CIS technicians to make consistently accurate instrument identification decisions. The careful selection and use of one or more of these marking systems should be an important priority for today's CSSD personnel.

Information to assist with these responsibilities is the topic of this lesson.

Benefits of Instrument Marking

There are several important reasons why instruments should be marked for identification, and they include:

- A marking system can identify instruments from different departments within a facility or from different locations in a regional organization. In some hospitals, each department is responsible for purchasing its own instruments, and then the need for an instrument marking system to identify instruments on a per-department basis becomes even more important.
- CSSD personnel will better know which instruments should be included in specialty trays when identification information is included within the coded markings on the instruments.
- Marking systems make it easier for new employees to recognize surgical instruments.
- Marking makes it easy to determine facility and surgeon ownership of specific instruments. This is much more difficult to do when instruments are not marked.
- Marked loaner instruments are very easy to spot, track and manage while they are at the facility.
- Misplaced instruments are easier to find when they have been marked.

Marking Information

The information to be included in an instrument marking system should be agreed upon by personnel from each of the departments who will handle the instruments. For example, if a taping system will be used, staff members from each department should select the single color of tape that should be used for all instruments from their department. Tape is available in many colors, and some manufacturers offer designs, such as stars, to provide an even greater variety of marking options.

Personnel from each facility must determine the information to be identified in an etching system. Typically, the owning department's initials and the set or instrument number should be included. For example, "OB DEL" on a Kelly clamp means that instrument is part of a delivery set that belongs to the obstetrics department. More specific information about an instrument's purchase or repair dates may also be added to the etching system in use.

Taping Systems

There are several basic types of instrument marking systems available, and CIS technicians should understand the basics of each type. One common method uses tape.

Several simple but important procedures should be used to tape instruments. The CIS technician should clean his or her hands and fingers with rubbing alcohol to remove oils, grease and any possible dirt. Then, the instrument should be cleaned per the manufacturer's instructions for use. The site of the instrument where the tape will be placed should be cleaned with alcohol to remove any lubricant or moisture that might be on it. Allow the instrument to dry thoroughly.

Cut the marking tape on an angle to allow its edge to lay flat (see Figure 1). Then wrap the tape around the instrument one to one-and-one-half times. Figure 2 shows an instrument that has been wrapped with an excessive amount of tape.

Marking tape should be applied on the shank of the instrument. Forceps should be taped on the proximal end. Retractors should be taped on the handle. Apply the tape with a firm, pulling tension and do not apply excessive tape. After the tape is applied, autoclave the instrument to help the tape bond to the instrument. Note: It is typically best to use only one piece of tape on each instrument because less time will then be needed to replace the tape when necessary.

Taping is a quick and simple way to mark an instrument. The variety of colors available allow CSSD technicians to easily tell where an instrument goes. For example, instruments taped in red belong in the cardiology sets. In contrast, instruments taped in blue might be for the obstetrics department.

Instrument taping is not a permanent marking solution. Over time, the heat from the sterilizer will make the tape brittle, and then the instrument will require re-taping. The marking tape should be carefully inspected each time the instrument is processed to confirm that it is lying flat against the instrument's surface. If the tape is cracking, peeling or chipping, it should be replaced. The reason: these areas can trap soil and microorganisms and, by doing so, hinder the cleaning and sterilization processes required for instrument reuse.

Also, chips of tape can break off during a procedure and remain at the surgical site.

When the tape starts curling, it will need to be completely removed. A product that is available commercially may be purchased to help remove the tape being replaced. The residue on the instrument will then need to be wiped off with rubbing alcohol. The instrument can then be cleaned and re-taped following the procedures described above.

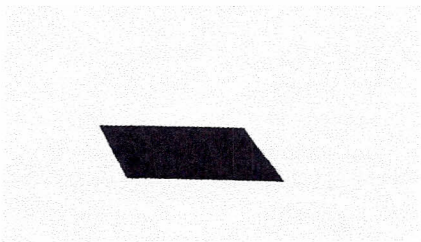

Figure 1

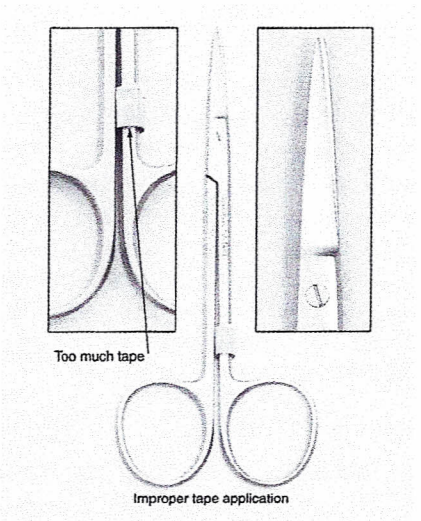

Figure 2

Questions about the sterility on the instrument's surface beneath the tape have been raised in IAHCSMM discussion forums and elsewhere. A study conducted several years ago and reported in the *Journal of Healthcare Material Management*[1] (indicated that, if the tape is applied correctly, the instrument is sterile under the tape. The summary reads, in part: "Spores of B. stearothermophilus were placed between the marking tape and a metal instrument that was exposed to heat (275°F; 135°C) for three minutes in a gravity displacement sterilizer. Spore kill was achieved, so it appears that sterility is possible on instrument surfaces exposed to the conditions of the study."

Dipping Systems

An instrument handle may be marked with a heat-fused nylon in a process usually referred to as "dipping." This is typically done in a repair facility and involves the use of a powder coating that is fused to the instrument with heat, thereby leaving a layer of nylon remaining on the instrument.

The ability to match colors on the instruments makes set assembly easy; however, the coating is thick, and this can make the instrument difficult for the surgeon to grasp. Small, delicate instruments and double-ended instruments are very challenging to coat. Nylon coating can last for years, but once the coating begins to chip, the nylon must be removed, and re-coating is necessary. Failure to do so may lead to coating particles that can be left at the surgical site.

Careful instrument management is needed to ensure that the entire set can remain out of service for the time required for the dipping service to be performed at the repair facility; therefore, it is best to do the marking before the set is put into circulation.

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Etching Systems

Etching systems use different processes to put information onto the instrument. There are three types of etching systems: dot peen, electrolytic chemical, and laser.

Dot peen marking systems use a pneumatic (air under compression) marking needle to engrave text, bar codes or logos onto instruments. This method damages the surface of the instrument and creates a place for microorganisms to grow. Therefore, this type of etching system should not be used to mark surgical instruments.

Electrolytic chemical marking systems transfer an image from a stencil onto an instrument using electrolytes (electrically-charged ions) and electricity. They cannot be used to mark plastic or other non-metal instruments, but small and delicate metal instruments may be marked with this system.

A stencil is required when the electrolytic chemical marking system is used. Those required for short-term use can be made at the facility by CSSD personnel; however, stencils that will be used over longer time periods will need to be created by the system's manufacturer. As with other systems, the information to be used in the marking system and that will need to be entered into the stencil should be agreed-upon by all instrument users.

Electrolytic chemical marking systems are lightweight and easy-to-use. Except for the creation of long-term use stencils, the system allows for the instrument marking to be done within the facility rather than at an external repair service. One possible challenge: additional labor hours may be needed for the initial roll-out of this system.

The markings are semi-permanent, and they can be buffed off during the time of instrument repair. Also, the image itself may rub off over time, and then it will need to be re-applied.

Laser etching systems make use of a two dimensional matrix "dot" that is permanently applied to the instrument. This dot is read by a computer much like a Universal Product Code (UPC) is read at a retail store when a product being purchased is skimmed across a scanner by the sales clerk or purchaser during the self-service check-out. Note: Many instrument manufacturers now do laser etching as part of the manufacturing process at their plants.

Laser etching systems are typically integrated with fully automated tracking systems. This enables marked instruments to be easily tracked through all distribution, processing and storage steps.

The laser etching process is permanent, and it can also be costly when off-site set-up charges must be incurred. With some systems, CSSD technicians can be taught how to apply markings within the facility by the vendor.

Metal instruments are laser etched on the handle or the box lock. Some small and delicate instruments can be marked; however, instruments with plastic handles cannot be marked this way. Manufacturers of software for automated tracking systems typically provide an alternative method for instruments that can't be etched, so they can be included in the tracking system.

The initial rollout of a laser etching tracking system can take several weeks. The process will involve many labor hours because, for example, all individual instruments and sets will need to be opened for etching; therefore, proper planning and coordination with operating room personnel becomes very important.

In Conclusion

Instrument marking makes the work of CIS technicians much easier. Careful planning is required to help make the marking process simple and hassle-free; however, these systems are cost-effective because they help to ensure that surgeons have the correct instruments at the correct times. They are also very useful in managing the healthcare facility's very expensive and very extensive instrument inventory.

Acknowledgements

The author wishes to thank Ms. Allison Wilson from Spectrum Surgical; Mr. Sascha Ostanek from Ostling; and Mr. Jim Creason from Censis Technologies, Inc.

End Note:

(1) Flash sterilization and instrument tape: an experimental study. Journal of Healthcare Materiel Management, October, 1993

References:

(1) International Association of Healthcare Central Service Materiel Management. Instrumentation Resource Course: Identification, Handling and Processing of Surgical Instruments. Chicago, IL. 2005. Chapter 9.

(2) International Association of Healthcare Central Service Materiel Management. Central Service Technical Manual. Chicago, IL. 2007. Chapter 11.

CIS SELF-STUDY LESSON PLANS

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IAHCSMM is looking for volunteers to write or contribute information for our CIS Self-Study Lessons. Doing so is a great way to contribute to your own professional development, to your Association, and to your Central Sterile Supply Department peers.

Our team will provide guidelines and help you with the lesson to assure it will be an enjoyable process. For more information, please contact , Elizabeth Berrios (elizabeth@iahcsmm.org).

CIS Self-Study Lesson Plan Quiz

(Instrument Continuing Education-ICE)

Lesson No. CIS 229: Instrument Marking Systems

Questions (circle correct answer):

1. One advantage to marking instruments is that it allows a CIS technician to determine the department to which an instrument belongs.
   a. True
   b. False

2. Specialty trays and loaner instruments are more difficult to sort when a marking system is used than when no instrument marking system is in place.
   a. True
   b. False

3. Only CSSD personnel should determine what marking information should be placed on an instrument.
   a. True
   b. False

4. Rubbing alcohol should be used to clean a CIS technician's fingertips before he or she tapes an instrument.
   a. True
   b. False

5. Forceps should be taped on the:
   a. Shank
   b. Proximal end
   c. Handle
   d. Lock box

6. Instrument taping _____ generally a permanent marking solution.
   a. Is
   b. Is not

7. Tape on an instrument should be inspected:
   a. Once a week
   b. Once a month
   c. After every use
   d. After every other use

8. An instrument can be marked with a dipping system by CSSD personnel within their department.
   a. True
   b. False

9. Which etching system should not be used on surgical instruments?
   a. Dot peen
   b. Electrolytic chemical
   c. Laser
   d. All of the above systems can be used

10. Which etching system requires a stencil?
    a. Dot peen
    b. Laser
    c. Electrolytic chemical
    d. All of the above

11. Electrolytic chemical markings are semi-permanent.
    a. True
    b. False

12. Which etching system is typically integrated with a fully automated tracking system?
    a. Dot peen
    b. Electrolytic chemical
    c. Laser
    d. All of the above

13. Instruments made of any material can be laser etched.
    a. True
    b. False

14. Instruments that are laser etched can be tracked through which of the following steps.
    a. Distribution
    b. Processing
    c. Storage
    d. A and B above
    e. All the above

15. The initial rollout of a laser etching tracking system can take several weeks.
    a. True
    b. False

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