



# Urology Instruments: Identification and Proper Care and Handling

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Certified Instrument Specialist (CIS) 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.

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## LEARNING OBJECTIVES

1. Identify instruments commonly used in urological procedures
2. Learn key differences between certain urology devices
3. Understand unique care and handling requirements of urology instruments

**T**housands of urological procedures are performed in the U.S. each year. Such procedures include prostatectomies, genitourinary procedures and kidney transplants. The certified instrument specialist (CIS) plays a critical role in providing clean, sterile, well-functioning surgical instruments to the urologist and surgical team. Every instrument must be free of debris. Scissors must be sharp and cut cleanly. Clamps and forceps must grasp and hold tissue without damaging it, and multi-part instruments and sets must be complete. Surgical trays must contain the required items, be well organized and available when needed. This responsibility makes the CIS an important and vital member of every healthcare team.

## Objective 1: Identify instruments commonly used in urological procedures

Urologists utilize many different types of instruments for their procedures,

including tissue forceps, hemostatic clamps, scissors, needle holders, endoscopes and more. The use of such devices depends on the specific surgical procedure, patient anatomy, planned operative approach and location of the surgical site. For example, a prostatectomy can be performed through a suprapubic incision, retropubic incision or by transurethral resection. Renal (kidney) procedures can be performed using an open incision or laparoscopically or robotically. Each operative approach to a procedure requires different instruments.

The kidneys and prostate are located deep inside the body. The transabdominal approach to access these structures may require extra-long, specialized instruments. Standard “major” surgical trays used at many healthcare facilities may not include instruments that are long enough to be useful for urological procedures. For this reason, many healthcare facilities will use secondary trays that



contain devices specifically designed for urological procedures. These are frequently identified as major kidney, kidney ureter bladder (KUB), prostate or long abdominal trays. The specialized instruments are used in conjunction with the major tray to perform the procedure. Every instrument specialist is responsible for learning their facility's labeling system, surgical instrument sets and the type of procedures where each set is used.

### Objective 2: Learn key differences between certain urology devices

Inside specialized urology trays are tissue forceps, hemostatic clamps, scissors and needle holders, which are eight inches or longer in length. Different types of hemostatic clamps, such as extra-long Mixter, Lahey or tonsil clamps, can also be found in these trays. Hemostatic clamps are locking forceps designed to hold tissue and stop bleeding but can also be used for other purposes during a procedure. Mixter clamps, for example, can be used to dissect tissue, separate tissue layers, or isolate tissue to be incised with scissors or cauterization. Right-angled clamps are also ideal for use deep inside the surgical site to access different structures such as blood vessels or ureters. Additionally, these clamps are essential for passing surgical ties, which can be used to identify critical anatomy or ligate blood vessels. Tonsil clamps can be used in conjunction with sponges or peanuts to absorb blood or bodily fluids to improve visualization of the operative site, identify uncontrolled bleeding from vessels or function as blunt dissection tools. The instrument specialist should always verify that these instruments are properly paired

and matched in terms of length, shape (contour) and size.

Vascular clamps found in kidney or prostate trays are extra-long devices used to manipulate and occlude vessels to prevent blood loss. Vascular clamps have very small, interlocking ridges on the inside that run lengthwise to the jaw (similar in design to DeBakey forceps). The design provides a sure hold, without damaging delicate tissues. Types of vascular clamps frequently placed in urology trays include DeBakey, renal artery, Glover, spoon, Wylie "J" and Satinsky. The variety of available angles, curves, overall length and tip length is necessary to accommodate differences in procedures, surgeon preference and anatomical structures.

Vascular clamps are essential for partial nephrectomy procedures, which involves removing a portion of the kidney, usually indicated for tumor removal, while leaving the remaining viable organ intact. Renal artery clamps are used on the renal artery and vein to temporarily stop blood flow to and from the kidney, without causing damage to blood vessels. Once the tumor is extracted, the clamps are removed, allowing blood to circulate back to the kidney.

Tissue forceps commonly used in kidney and prostate trays are also extra-long and can include DeBakey, smooth "thumb" forceps, Singley and Russian forceps. Like vascular clamps, the DeBakey-style forceps have very small, interlocking ridges inside the tips that grasp and hold tissue. DeBakey forceps are ideal for grasping fascial tissue—the connective tissue that surrounds and holds blood vessels, nerves and organs, such as the kidneys, in place. Fascial tissue can be very thin, like the skin surrounding a grape. DeBakey forceps

can hold this delicate connective tissue without tearing or causing damage. The tips of Russian forceps are cupped with ridges that allow surgeons to securely grasp and hold onto kidney or bladder stones. Similarly, the Singley forceps has a looped distal tip that is open in the center that looks much like the end of a delicate sponge stick.

Randall stone forceps are another type used to grasp stones lodged inside the kidney. These forceps come as a set of five, each with a cupped tip designed to grasp and secure stones for removal. The forceps are about seven inches in length. One is straight, and the others have curved shanks, each with a slightly different degree of angulation. The downward curve of each forceps is progressively more acute, allowing the surgeon to access different areas inside the kidney. A distinguishing feature of Randall stone forceps is the absence of a locking ratchet mechanism.

In addition to clamps and forceps, trays for urological procedures contain extra-long scissors and needle holders. Scissors are designed for cutting and dissecting tissue. Many scissors, like the Metzenbaum, are designed specifically to cut certain types of tissue. These scissors should be used to cut tissue only; they must never be used to cut paper or other items because the blades may become dull or damaged.

The most common types of needle holders in urology trays are the Mayo-Hegar, Ryder and Crile-Wood. Each type, as a pair, should be identical in style (design) and length. The Mayo-Hegar needle holder has broad, rounded, robust distal tips with a serrated jaw pattern. These are used to hold larger needles, usually associated with a thicker suture (e.g., 2-0 or 3-0 suture). Both the Crile-Wood and Ryder



needle holders, on the other hand, have finer distal jaws used to hold small- to intermediate-size needles. The Ryder needle holder can be easily identified by its distinctive tapered distal tip.

### Objective 3: Understand unique care and handling requirements of urology instruments

Instrument specialists must understand and employ best practices when cleaning, inspecting, assembling and sterilizing instruments used in urological procedures. The devices' extra length and delicate design means they are more susceptible to damage than their regular-length counterparts.

Because of device length, it can be difficult to organize urological instruments on regular instrument stringers. Damage occurs when they are forcibly placed in and removed from trays. Using a shorter stringer permits easier placement in the tray, with instrument shanks running parallel along the length of the tray. The weight of other instruments must also be considered. Retractors lying on top of a urological set and over the extended shanks, for example, can cause the instruments underneath to bend and become misaligned.

The variety of angles and curvatures also makes it more difficult to maintain the instruments' integrity. Tips can easily become entangled because the

instrument does not lay flat in the tray. Placing urological instruments in a single layer provides some protection. Additionally, taller rigid containers allow a combination of tray depths to permit segregation of delicate instruments.

Inspection of urology instruments for cleanliness, functionality and integrity should follow the same protocol as general surgical instruments. The lubrication of urological (and general surgical) instruments should be performed regularly and as recommended by the manufacturer.

### Conclusion

It is imperative that instrument specialists understand the differences between different urology devices. They must also know how to clean, inspect, assemble, sterilize and organize the instruments properly and stay dedicated to best practices and continuing education. Doing so will help ensure that urology devices are free of debris, function as intended and are safe for patient use. 📌

### RESOURCES

1. Healthcare Sterile Processing Association. *Sterile Processing Technical Manual*, ninth ed., 2023.
2. Healthcare Sterile Processing Association (formerly IAHCSSM). *Instrument Resource Manual*, first ed., 2018.
3. Schultz, R. *The World of Surgical Instruments: The Definitive Inspection Textbook*. 2018.





# CIS Self-Study Lesson Plan Quiz

## Urology Instruments: Identification and Proper Care and Handling

Lesson No. CIS 302 (Instrument Continuing Education – ICE) • Lesson expires April 2027

1. The kidneys and prostate are located:
  - a. Near the skin's surface
  - b. Underneath the abdominal muscles
  - c. Near the liver
  - d. Deep inside the body
2. Prostate trays frequently have instruments that are:
  - a. Shorter than standard instruments
  - b. Longer than standard instruments
  - c. Heavier than standard instruments
  - d. No different than standard instruments
3. Vascular clamps:
  - a. Grasp and hold vessels securely
  - b. Are the same as other types of clamps
  - c. Can be used on any type of tissue
  - d. None of the above
4. Which of the following describes Ryder needle holders?
  - a. They have large distal jaws
  - b. They have finer distal jaws
  - c. They hold intermediate- to large-size needles
  - d. They must be serviced after every few uses
5. This tissue forceps has a looped distal tip and an open center:
  - a. Russian
  - b. Potts
  - c. Singley
  - d. Cushing
6. A set of Randall stone forceps consists of:
  - a. Five instruments of different lengths
  - b. Ten instruments of the same length
  - c. Five instruments of different angles
  - d. Ten instruments of different angles
7. A type of needle holder that is sometimes added to a urology tray is the:
  - a. Heaney
  - b. Webster
  - c. Crile-Wood
  - d. Taylor
8. When pairing clamps, the instrument specialist should verify:
  - a. The manufacturer's lot number
  - b. That the clamps are identical
  - c. That the instruments are balanced
  - d. That the instruments are lightweight
9. On the tips of DeBakey vascular forceps, the interlocking ridges are:
  - a. Very small
  - b. Extra large
  - c. Smooth
  - d. Sharp
10. Hemostatic forceps are designed to stop bleeding and hold tissue without damaging it.
  - a. True
  - b. False
11. The purpose of a partial nephrectomy procedure is to:
  - a. Remove the prostate
  - b. Remove the entire kidney
  - c. Partially remove the prostate
  - d. Partially remove the kidney
12. Which needle holder would be appropriate to use with a larger needle and 2-0 suture?
  - a. Mayo-Heger
  - b. Ryder
  - c. Webster
  - d. Crile-Wood
13. Which instrument is not a vascular clamp addressed in this lesson?
  - a. Glover
  - b. Taylor
  - c. DeBakey
  - d. Satinsky
14. Aside from holding tissue and controlling bleeding, hemostatic clamps can also:
  - a. Cut tissue
  - b. Hold needles and suture tissue
  - c. Dissect or isolate tissue
  - d. Clamp suction tube to drapes
15. Lubrication is never needed for urological instruments.
  - a. True
  - b. False

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