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# Brushes and Brushing Technique

## LEARNING OBJECTIVES

1. Discuss the anatomy of cleaning brushes
2. Review the criteria for selecting the appropriate cleaning brush
3. Discuss the industry guidelines for brush selection
4. Review the basic techniques for proper brushing

**T**HE NEED TO EVALUATE AND STANDARDIZE THE TOOLS USED FOR instrument cleaning is very important to the success of Central Service (CS) technicians, yet it is sometimes overlooked. Recently, the proper use and selection of cleaning brushes has become a frequent topic for discussion, and it has also become an area of focus for surveyors.

Given the number of instrument cleaning brushes used annually by facilities, the cost of these tools often becomes scrutinized; however, it is essential that cost does not take priority over the need for CS professionals to deliver clean, safe and sterile items for patient use in the Operating Room (OR) and beyond. Providing instruments that are safe for patient use begins with proper cleaning and that simply cannot occur in the absence of proper cleaning tools.

## OBJECTIVE 1: DISCUSS THE ANATOMY OF CLEANING BRUSHES

There are many types of instruments (e.g., Hinged, coated, cannulated, etc.), and technicians must be knowledgeable of each instrument's requirements and use critical thinking skills to ensure the correct brush is being used on each type of instrument. Although brushes may appear similar, they have some significant differences. Each brush is developed for different cleaning needs, so following the brush and instrument manufacturers'

Instructions for Use (IFU) is important.

Different brush types include:

**Molded plastic blocks or toothbrush style** – These are typically used for general cleaning, serrations and box locks, and external surfaces (per the manufacturers' IFU). Although this brush style appears similar to a standard toothbrush, they are quite different. Brushes made to clean teeth are not made for instrument cleaning and should never be used.

This series of self-study lessons on CS topics was developed by the International Association of Healthcare Central Service Materiel Management (IAHCSMM). Purdue University's Extended Campus and IAHCSMM both offer grading opportunities.

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**Twisted stainless steel style** - Depending on the handle length, these brushes are used for general cleaning and to clean lumens and small, hard-to-reach areas. Many of these brushes have a loop-type end.

**Spring coil stainless steel** - These brushes are usually long, allowing for cleaning of flexible instruments with channels, such as flexible endoscopes.

**Looped or non-looped end** - A brush with a looped-end handle allows for easy hanging, which helps the brush dry faster after cleaning. A non-looped end brush will allow the user to pull the entire brush through the lumen. Understanding the anatomy of a brush will help in selecting the correct brush to use for each instrument and cleaning task. This anatomy includes:

- **Handle** – This is the part of the brush that the technician holds during use. It also holds the bristles in place. Handles come in different styles, allowing the technician to properly hold or store the brush. Handles also come in various lengths and diameters, which offers flexibility in technique and allows for the cleaning of instrument serrations or long lumens. Wooden brush handles should never be used due to their ability to absorb water and, possibly, blood.
- **Bristles** – The bristle of the brush is the part that does the cleaning. Bristles come in different materials: natural fiber, like hair and vegetable fibers; synthetic, like nylon and polypropylene; and metal, like brass and stainless steel. Antibacterial bristles are also available on some brushes. CS technicians must be sure to choose the proper bristle type for the instrument being cleaned.
  - » *Natural fiber* – These brushes are usually not recommended for cleaning in the decontamination area

because they lose their stiffness and the bristles break down quickly.

- » *Synthetic* – According to the Association for the Advancement of Medical Instrumentation, nylon bristles are the preferred type for instrument cleaning. This type of bristle is very flexible and less abrasive, so it does not scratch the instruments.
- » *Stainless steel* – These brushes are frequently used when a technician is faced with challenging soils that remain on instruments. These bristles are corrosion resistant and frequently used for cleaning serrations, jaws, box locks and other difficult-to-clean areas of instruments. Unless specifically recommended in the IFU, stainless steel brushes should never be used on coated or insulated instruments because instrument damage may occur.
- » *Antibacterial* – Some brushes are sold with antibacterial bristles, which are resistant to the growth of bacteria, yeasts and molds on the brush bristles; however, they do not inhibit the growth of bacteria, yeasts and molds on the instruments being cleaned. Antibacterial bristled brushes do not clean any better than any other brushes.

## **OBJECTIVE 2: REVIEW THE CRITERIA FOR SELECTING THE APPROPRIATE CLEANING BRUSH**

A cleaning brush is chosen based on many factors, including the type of instrument being cleaned, the type and amount of soil on the instrument and, more importantly, the type recommended in the IFU. As stated, it is important to first determine the type of instrument to be cleaned (e.g., hinged, insulated or cannulated). Hinged instruments are typically basic metal instruments with box locks, ratchets, serrations and

jaws. These instruments are typically cleaned with the toothbrush-style brush. Insulated instruments require a different brush because the insulation can be damaged during the cleaning process. Some lumened insulated instruments may require two different types of brushes when cleaning. The metal portion of the instrument should be cleaned with one style of brush, while the inner cannulation should be cleaned with a channel (long) brush of the appropriate lumen length and bristle area width. The manufacturers' IFU must be diligently followed.

The type of soil on the instruments is a factor in the proper cleaning of all instruments. Instruments not properly prepared at the point of use will be more difficult to clean; the soil may have dried on the instrument and biofilm may have started to form. Understanding the different brush qualities will help with selecting the best brush to use.

Cost can play a role in brush selection as well; however, it must not become the primary reason behind a purchasing decision. Brushes are sold as single use (disposable), reusable or reusable. Single-use brushes are designed to be used once and discarded (not cleaned and reused on other instruments). Reusable brushes can and should be cleaned and disinfected per IFU, at least daily. Reusable brushes have a reusable handle, but the bristles are disposable and meant to be changed after every use. Each type of brush should be inspected frequently for breakdown during its use and discarded as soon as bristle breakdown occurs. Whether or not a technician should use a disposable or reusable brush may be determined by the instrument manufacturers' IFU. Single-use disposable brushes are ideal to reduce the risk of cross contamination, but widespread use can be costly for a facility.



Reusable brushes, on the other hand, can be reused after proper disinfection and careful inspection.

### OBJECTIVE 3: DISCUSS THE INDUSTRY GUIDELINES FOR BRUSH SELECTION

Industry guidelines stress the importance of selecting the correct brush for the task at hand. Selecting the wrong brush can result in improper cleaning or damage to the device being cleaned. Also, using the wrong brush could damage the brush (e.g., causing bristle breakage). Broken bristles can go unnoticed and fall inside a tray and, possibly, into a patient. Cleaning brushes have been designed, tested and validated for the purpose of cleaning medical devices. When selecting the proper brush to use, the device manufacturer's written IFU should always be followed. Some IFU specify the exact length and dimensions of the appropriate brush for their instruments.

Knowing the differences in brushes is important to ensure proper instrument cleaning. Beyond the aforementioned factors, there are other factors that must be considered when selecting the correct brush for use. Such factors include brush length and bristle area length, shape and diameter.

- **Brush length** – When cleaning instruments, the length of the brush should be long enough to reach all surfaces of the area to be cleaned, but not so long that it is difficult or uncomfortable to control. Lumens require a brush that fits through the complete length of the lumen and will allow all bristles to exit out the distal end. When using a brush with a looped end, it is important to remember that the loop could prevent the brush from reaching the end of the lumen or become stuck inside the lumen; therefore, the loop length must be taken into consideration when selecting a brush.

- **Bristle area length** – Bristle length is important because if the length of the bristle cleaning area is too short, effective cleaning of the entire area cannot occur.
- **Bristle diameter** – bristle diameter is important because using a brush with a short bristle in a larger lumen will result in lack of contact with the inside walls of the lumen, resulting in improper cleaning. When the bristle area is too wide, the lumen will cause the bristles to fold over and not produce the friction required to clean. A too-wide brush may also become stuck in the lumen and potentially damage the instrument. Figure 1 shows how different diameter brushes look inside a lumen.

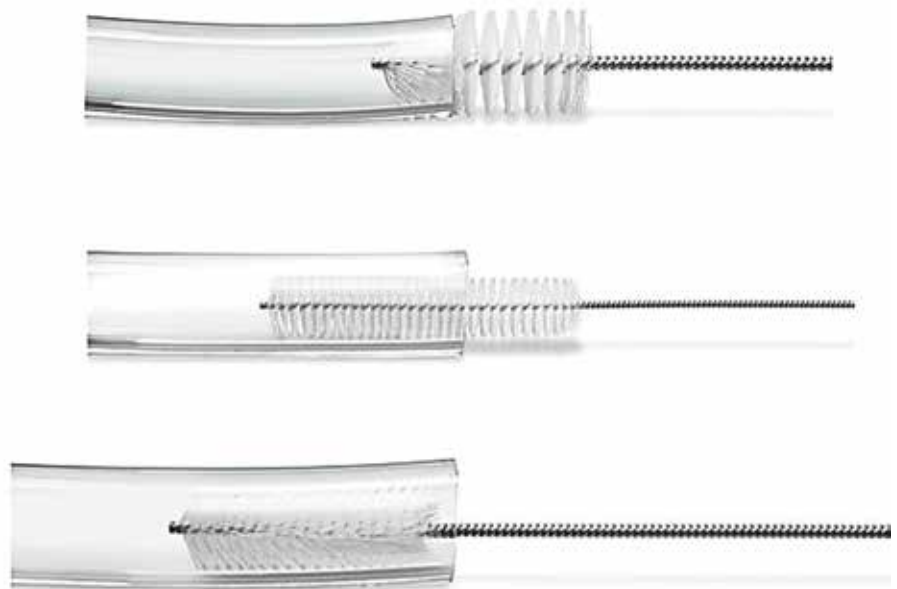
The bristle tip is another factor to consider when selecting the appropriate cleaning brush. To properly clean any instrument, the brush must have maximum contact. Bristle tips come in several designs. Some brushes have

a twisted metal tip at the end of the brush. This type of brush is appropriate for cleaning many flat surfaces and instrument exteriors, however, they may or may not be appropriate for cleaning flexible endoscopes and other soft lumens (IFU must be carefully followed to ensure the correct brush type is used). Some brushes have a protective cover on the tip of the brush; these brushes may be more appropriate to clean soft lumens. Appropriate-sized fan-tipped brushes are effective at cleaning the closed end of a closed-ended lumen because the tip will contact the surfaces of the very end of the lumen.

### OBJECTIVE 4: DISCUSS THE BASIC TECHNIQUES FOR PROPER BRUSHING

After selecting the appropriate brush, the brush should be carefully inspected before use, even if the brush is new. Technicians should look for missing, worn or frayed bristles, and kinks in the handles. As previously stated, worn

Figure 1: Brushes in lumens





or frayed bristles could inadvertently fall inside a tray and, potentially, into a patient. A kinked brush could prevent the bristles from reaching all surfaces or it could damage the inside of a lumen.

Brushes should also be inspected for cleanliness before each use. They should be promptly discarded or recleaned whenever the brush is soiled.

When cleaning the instrument's outside surfaces, the instrument should be kept below the surface of the water and brushed in a to and fro motion. Technicians should be sure to keep the instrument under water when cleaning difficult-to-reach or difficult-to-clean areas, such as box locks and serrations. If the instrument cannot be immersed, the brush should be dampened with the appropriate cleaning solution and used to carefully clean the instrument. The brush should be moved slowly across the surface to prevent aerosolization.

When cleaning lumens, the brush should be gently pushed through the lumen using a twisting motion; this will help the brush reach all surfaces of the lumen interior. The brush should be pushed through the entire lumen, so the complete bristle area exits the opposite end of the lumen (See Figure 2). The bristles should be rinsed before pulling the brush back through the lumen. This process should be repeated until the lumen is clean.

Reusable brushes should be inspected frequently and worn brushes should be discarded, as needed. Brushes should be cleaned and disinfected at least daily and after cleaning each flexible endoscope.

## CONCLUSION

The use of brushes is an important tool in the cleaning process of medical devices and these tools and their proper use have recently become a focus of surveyors. Because brushes come in many shapes and sizes – and because no single brush



Figure 2

fits all uses – training on brush selection and use is essential for all CS technicians. Knowing which brush to use and how to use it is very important to the effective cleaning of medical devices. ©

## RESOURCES

Association for the Advancement of Medical Instrumentation. ANSI/AAMI ST79:2013, Sections 7.5.3.2 and 7.5.6, Comprehensive guide to steam sterilization and sterility assurance in health care facilities.

Key Surgical. Manual Cleaning Brushes. Why How What If. 2014.

Williamson, JE. Brushing up on Brushing Basics. Healthcare Purchasing News. 2009.

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# CRCST Self-Study Lesson Plan Quiz - Brushes and Brushing Technique

Lesson No. CRCST 154 (Technical Continuing Education - TCE) • Lesson expires May 2020

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1. The cleaning brush handle:
  - a. Comes in different styles
  - b. May be molded plastic
  - c. Can have a looped end
  - d. All the above
2. When a brush designed for cleaning medical instruments is not available, it is acceptable to use toothbrushes (brushes made for cleaning teeth), as long as they are only used once.
  - a. True
  - b. False
3. The handle type typically used for cleaning flexible endoscope lumens is:
  - a. Plastic molded
  - b. Twisted stainless steel
  - c. Spring coil
  - d. All the above
4. Natural fiber brushes are the bristle type most recommended for cleaning.
  - a. True
  - b. False
5. Metal bristle brushes should never be used on surgical instruments.
  - a. True
  - b. False
6. Instrument insulation should be cleaned:
  - a. Using a soft brass-bristled brush
  - b. Using a stainless steel-bristled brush
  - c. Using a gentle twisting motion
  - d. According to the manufacturers' Instructions for Use
7. The most important factor in selecting a brush is:
  - a. Staying within the department's budget
  - b. Using the correct handle diameter
  - c. Following the manufacturers' Instructions for Use
  - d. Using the proper brush shape
8. Using the wrong cleaning brush may damage an instrument.
  - a. True
  - b. False
9. Some instrument Instructions for Use may:
  - a. State the brush length and dimensions to be used
  - b. Instruct on how to validate the brush before use
  - c. Recommend the proper brush cleaning method
  - d. All the above
10. When selecting a brush to clean lumens:
  - a. The length of the brush should be considered
  - b. The bristle area diameter should be considered
  - c. Technicians should consider whether or not the brush has a looped end
  - d. All the above
11. When the bristle area of the brush is too long, the bristles may not be completely contained in the lumen.
  - a. True
  - b. False
12. When the bristle diameter is too wide, the:
  - a. Brush won't exit the distal end of a lumen
  - b. Bristles won't touch the inside edges of the lumen
  - c. Bristles may fold over and not provide enough friction to clean the lumen
  - d. All the above
13. When cleaning a closed-ended lumen, which type of tipped brush is usually effective?
  - a. Twisted metal
  - b. Fan
  - c. Protective covered
  - d. All the above
14. Reusable brushes should be cleaned and disinfected at least daily and after cleaning each flexible endoscope.
  - a. True
  - b. False
15. When brushing lumens, the bristle area should fit completely through the lumen and exit out the opposite end of the lumen.
  - a. True
  - b. False

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