




Comparison of Current Methods for Pre-Cleaning and Flushing of Lumened Devices

Flexible endoscopes, rigid endoscopes, lumened robotic devices and other reusable diagnostic tools with channels are inherently challenging to clean. And yet, all the science points to the importance of effective pre-cleaning as a requirement for successful disinfection and/or sterilization, and this science informs the guidelines of thought-leading infection-prevention organizations. For example, ANSI/AAMI ST79:2010 guidance states:

7.5.1: "For all reusable medical devices, the first and most important step in decontamination is thorough cleaning and rinsing... The purpose of cleaning and rinsing is to remove all visible debris... and to reduce the number of particulates, microorganisms and potential pyrogens.

7.5.3.2: Unless otherwise specified... lumened devices should be cleaned ... followed by flushing with the appropriate cleaning solution, and then flushed, preferable with treated water, to remove chemicals and/or debris remaining in the lumen."

Endoscopic device manufacturers are more specific in their instructions for use (IFU), which call for copious flushing, often of at least 250cc of fluid. There are currently three methods of channel/lumen flushing available, but they offer vastly different benefits and challenges:

FLUSHING METHOD	INSTRUCTIONS	BENEFITS	CHALLENGES
<p>Syringe method</p> 	<p>No Recognized Documented Instructions Available</p>	<ul style="list-style-type: none"> • Low-tech method; requires only human power and a supply of syringes • Can flush cleaning solution, alcohol or water 	<ul style="list-style-type: none"> • Time-consuming, labor-intensive process – requires multiple flushes with a 60cc or smaller syringe • Allows only one cannula/channel/lumen to be flushed at a time and requires both hands • Risk of inconsistency • Risk of non-copious flushing • Risk of repetitive motion injuries of the wrist and/or hand • Requires continuous supply of disposable syringes, hose
<p>Spray hose/flush pistol method</p> 	<p>No Recognized Documented Instructions Available</p>	<ul style="list-style-type: none"> • Requires one tool plus reliable water pressure 	<ul style="list-style-type: none"> • Permits water rinsing only • Flushes one channel/cannula/lumen at a time – requires both hands • Risk of inconsistent process • Risk of incomplete cleaning of internal lumens • Potential for repetitive motion injuries of the wrist and/or hand • Risk of aerosolization of contaminated droplets, spray on floor and other surfaces
<p>Pump flushing method</p> 	<ul style="list-style-type: none"> • Follow all IFU from cleaning chemistry and medical device manufacturers • Fill reservoir with fluid (sterile water, cleaning solution or alcohol) to appropriate marked lines (250cc or other amount) • Attach cannula/lumens to pump hose connector and place second hose into the reservoir • Push power button. Pump will automatically flush with no hands-on assistance until reservoir is empty (approximately 30 seconds) 	<ul style="list-style-type: none"> • Consistently meets ANSI/AAMI ST79:2010 recommendations for cleaning, flushing and rinsing • Offers components (measurements on reservoirs and in sink; sink thermometers) that facilitate compliance to cleaning solution and medical device manufacturers' IFU • Can flush water, alcohol, or cleaning solutions • Greatly reduces risk of repetitive motion injuries • Automatically flushes 500cc of fluid in 30 seconds • Frees up technician to perform other tasks • Assures flushing consistency • Enables up to three pumps in use at one time for optimized capacity and productivity 	<ul style="list-style-type: none"> • Requires regular disinfection of tubing • Requires servicing and periodic tubing replacement