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# Process Improvement For Simethicone Use During Endoscopic Procedures

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## Background

- Covenant Medical Center Endoscopy Unit has been using Simethicone via irrigation channel of an endoscope to remove air bubbles in the GI tract allowing good visualization during endoscopic procedures.
- Most endoscopy centers all over the country and other countries has already stopped this process.
- Evidence Based Practice (EBP) demonstrate that the use of Simethicone on the irrigation channel results in the retention of the drug and fosters biofilm development and microbial growth.
- Biofilm is a collection of microorganism that adhere to surfaces of an object in a moist environment. This is very important in device related infection.
- An endoscope has 2 channels (Figure 2), irrigation and working/instrument channel. Compared to the irrigation channel, the working/instrument channel can be cleaned manually using a brush before automated scope reprocessing.
- Simethicone is a medication that is fully methylated silicone-based polymer commonly used to decrease surface tension of gas or air bubbles. It contains sugars, thickeners and binding agents that can cause biofilm development (Figure 1) and microbial growth inside the endoscope.

Figure 1. Biofilm Formation

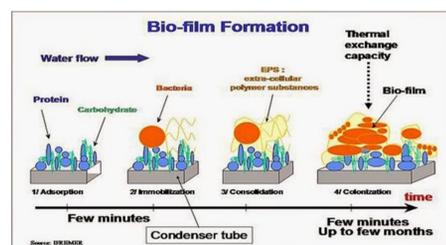
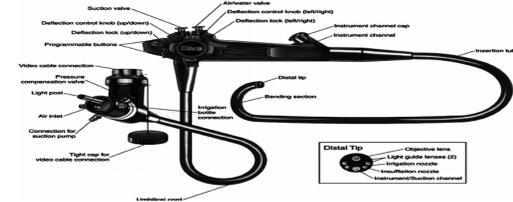


Figure 2. The parts of a gastrovideo endoscope. (Courtesy of Karl Storz Co, Tuttlingen, Germany.)



## Purpose

- To provide the best possible patient care, it is important to incorporate EBP standards into our everyday practice.
- To be compliant with EBP standards, it is our goal to implement a new process of Simethicone administration.
- To stop Simethicone use on the irrigation channel and use Simethicone only as needed via working/instrument channel.

## Methods

- The process improvement was presented to our manager, GI physicians and endoscopy staff.
- Communication letters detailing the process change and EBP recommendations were provided.
- The previous practice was stopped, and Simethicone was used as needed via working/instrument channel.
- An evaluation tool was created to evaluate the effectiveness of the change.
- This was provided and utilized by all circulating nurses during GI procedures for a certain time period.
- Data was collated and results were determined.

Figure 3. Communication letter

March 5, 2019

Dear

Covenant Health Endoscopy Center is initiating a Process Improvement regarding Simethicone usage. Evidence-based research demonstrates that the use of Simethicone via the irrigation channel creates retention of the drug in the endoscope. This retention can foster microbial growth even after meticulous reprocessing and drying. Therefore, the efficacy of the reprocessing procedure is reduced. This will also affect the longevity of our endoscopes. Olympus, the manufacturer of our flexible endoscopes does not recommend the use of Simethicone because of this evidence-based research. Most of the endoscopy centers in the US and other countries have already ceased using Simethicone in the irrigation channel of the endoscope.

Effective, March 15, 2019 we will stop adding Simethicone in the water used for irrigation. In the event that visualization during endoscopy is difficult, evidence-based research recommends the use of 0.6 cc of Simethicone added to 120 ml of sterile water. The amount to be infused will be 20 – 60 ml per flush, using as few flushes as needed to achieve the desired visibility. The biopsy port-working channel will be used for these flushes. The scope that was used with Simethicone will be tagged to alert the scope processor to reprocess the scope twice to ensure the removal of the Simethicone in the scope channel.

Thank you very much for your understanding and for your commitment to improve patient care. If you would like to review evidenced-based research for this topic, please ask any of the nurses below.

Sincerely,  
 Airene Albutra BSN, RN IV, CCRN, CGRN  
 Mary Estelle de Vera BSN, RN IV, MEd, CCRN  
 Sarah Wyrick BSN, RN III

Figure 4. Evaluation Form

**Process Improvement for Simethicone Use in the Irrigation Channel for Endoscopy Procedures**

**Commitment to Improve Patient Care**

Endoscopy Team: \_\_\_\_\_ Patient's label: \_\_\_\_\_

Thank you for your continued participation for our unit's process improvement regarding Simethicone use. From April 1-15, 2019 we will be utilizing this evaluation tool. Please complete this form after every procedure for all GI patients. Forms will be filed in Endoscopy recovery room.

Sincerely,  
 Airene Estelle & Sarah

Physician: \_\_\_\_\_  
 Nurse: \_\_\_\_\_  
 Endoscopy Technician: \_\_\_\_\_  
 Procedure: \_\_\_\_\_

Image Clarity: Excellent Poor  
 If Poor, explain \_\_\_\_\_

Simethicone Used? Yes No

Comments: \_\_\_\_\_

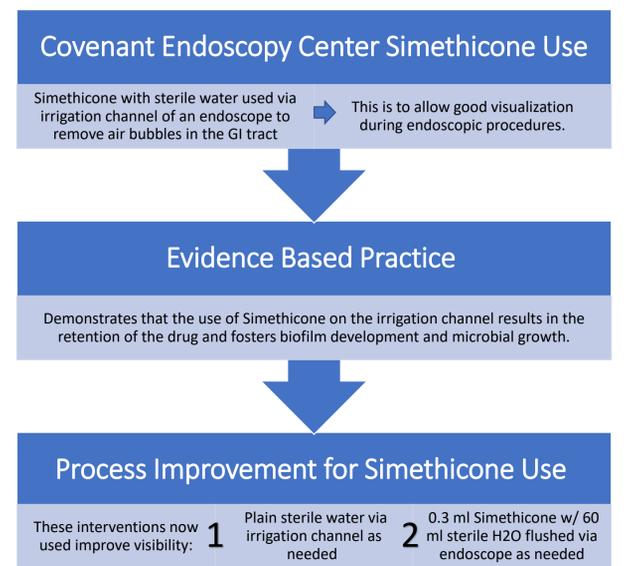
**Recommended Simethicone dose when requested by the physician**

Simethicone: 0.6ml Simethicone in 120ml of Sterile Water thru the biopsy port/ working channel

Use 20-60ml per flush, using as few flushes as needed for desired visibility.

When Simethicone is used, please tag the scope with an orange tape to alert the scope washer to reprocess the scope twice.

Figure 5. Process Change



## Results

- Out of the 229 endoscopy procedures that were evaluated, 10 procedures, 5 upper endoscopy and 5 lower endoscopy presented with issues regarding image clarity.
- 219 evaluated GI procedures reported to have excellent image clarity.
- Two interventions to decrease bubbles and improve visibility were used by the physicians. 1) Use of plain sterile H2O irrigation as needed 2) Use of 0.3 ml Simethicone mixed with 60 ml sterile H2O flushed via the working/instrument channel as needed.

## Discussion/ Implications

- In conclusion, endoscopy procedures can be performed effectively following EBP standards regarding use of Simethicone.
- By following the new standard for Simethicone usage, infection prevention will be achieved.
- Best practice and excellent patient care is accomplished when Evidence Based research guides our practice.
- The process change is still being practiced up to this time and a policy was formulated.

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