

Tips on How to Start a CT Enterography (CTE) Program

with input from Dr. Mark E. Baker, Cleveland Clinic

Step 1: Define the CTE champion/advocate in your group.

Step 2: Define your patient population/clinician referral source.

Indications: suspected or known Crohn disease; assessment in occult GI bleeding; probably a good agent for all general abdominal-pelvic business — abdominal pain, etc.

Step 3: Decide which oral contrast agent to use.

VoLumen®, water, water-methylcellulose and PEG are all options. Water tends to lead to more inconsistent mid- and distal small bowel collapse. Side effects are associated with the use of PEG.

VoLumen (0.1% barium sulfate suspension) distributed by E-Z-EM, Inc., Lake Success, NY is the preferred oral contrast. VoLumen is a low Hounsfield value (LHV) oral contrast media with a water-like consistency (~15-30 HU). When used in conjunction with intravenous contrast enhancement, this oral agent allows the radiologist to “see through” the bowel and assess both the wall and mucosa. A recent study showed that VoLumen distends the small bowel better than both water and water-methylcellulose and produces fewer side effects than PEG.¹

Step 4: Gain initial experience in technique.

Lectures, talks, trip to Center of Excellence.

Step 5: Define CT protocol.

At the Cleveland Clinic, the CT protocol is applied to 16- and 64-row scanners and requires thin collimation (0.8 mm) with thin section (1 mm every 0.8 mm) and thick section (3 mm contiguous) reconstruction. The 3 mm axial slices are interpreted in the standard fashion. The thin sections are reconstructed into 2 mm thin MIP coronal slices. This allows for two views of the abdomen and pelvis. Clinicians very much appreciate the coronal views as they mimic the overhead views of a SB series. Narrow windows (almost liver window) facilitate mucosal enhancement detection.

Step 6: Create and implement oral contrast administration process.

In many institutions, rigid oral contrast administration protocols for abdominal CT have, in general, deteriorated. For CTE, it is imperative that the contrast be given in a controlled, supervised manner. This requires a much more vigilant approach primarily by the CT techs and assistants.

Give LHV oral contrast agent to SBFT patients or patients due for video capsule endoscopy to evaluate strictures and gain experience in method of administration.

Step 7: Market product to clinicians.

Your primary market will be gastroenterologists and surgeons, especially bowel or colorectal surgeons. The technique is known to their community, having been presented at the DDW as well as in literature. Some of them may have already started asking for this study. It is important to talk to them about the technique and, after gaining some experience, give lectures to show them the findings and their potential management changes. They like to stay current.

E-Z-EM developed a practical guide titled *CT Enterography with VoLumen—Implementing a Program at Your Facility* to assist you. A direct mail campaign to your referring clinicians, PowerPoint® presentations, multimedia files and other support materials are included. Contact your local E-Z-EM Contrast Specialist or call Customer Solutions at 1-800-544-4624 for details.

Step 8: Start CTE program in earnest.

This requires an order entry process that specifically defines CTE as an order (much like CT urography or a 3D kidney protocol). For coding purposes, this is still an abdomen and pelvis CT w/ intravenous contrast. But for the patient, it should be labeled as a "CT Enterography/Small Bowel Study with VoLumen."

Step 9: Monitor CTE program.

How well are you doing? Is there a consistency in reading? If everyone is reading the CTE, you may find that each radiologist has their own concept of what should be dictated. Early monitoring of the program at the Cleveland Clinic led to the development of a dictation template.

Cleveland Clinic Dictation Template Example:

CT Enterography/Small Bowel Study with VoLumen (CT of the Abdomen and Pelvis with Intravenous Contrast)

History: Diarrhea, pain, fever, colitis, etc.

Technique: Standard CT enterography protocol

Contrast: Type & volume of intravenous contrast administered; volume & type of LHV oral contrast agent ingested

Findings:

Bowel: (include presence or absence of mucosal enhancement in SB and colon, strictures, obstructions, sinus tracts or fistulae, abscess)

Abdomen:

Pelvis:

Impression:

The findings of CTE should be retrospectively correlated with any endoscopic, surgical or barium findings. Additionally, and as important, is to monitor the consistency of bowel distension as a means of determining whether the oral administration is being monitored in a strict manner. There is a drift in vigilance as there was/is with positive oral contrast administration.

Step 10: Modify and improve CTE program.

Inpatients and nauseated patients often need assistance in ingesting the contrast. A process of placing gastric tubes will be necessary in order to examine these patients. If the administration of oral contrast is inconsistent, new methods of supervision must be created. Patients cannot just be put in the waiting room and allowed to drink on their own. They must be monitored almost continuously.

References:

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E-Z-EM, Inc.

Global Headquarters

1111 Marcus Avenue, Suite LL26

Lake Success, NY 11042 USA

Phone: 516-333-8230

Toll Free: 1-800-544-4624 (US only)

Fax: 516-302-2919

www.ezem.com

Manufactured by: E-Z-EM, INC., Lake Success, NY 11042 USA

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