Complete Summary

GUIDELINE TITLE

Preparation of patients for GI endoscopy.

BIBLIOGRAPHIC SOURCE(S)

Faigel DO, Eisen GM, Baron TH, Dominitz JA, Goldstein JL, Hirota WK, Jacobson BC, Johanson JF, Leighton JA, Mallery JS, Raddawi HM, Vargo JJ 2nd, Waring JP, Fanelli RD, Wheeler-Harbough J. Preparation of patients for GI endoscopy. Gastrointest Endosc 2003 Apr;57(4):446-50. [40 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

**** REGULATORY ALERT ****

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- On May 5, 2006 the U.S. Food and Drug Administrations (FDA) notified healthcare professionals and consumers of reports of acute phosphate nephropathy, a type of acute renal failure, that is a rare, but serious adverse event associated with the use of oral sodium phosphates (OSP) for bowel cleansing. Documented cases of acute phosphate nephropathy include 21 patients who used an OSP solution (such as Fleet Phospho-soda or Fleet ACCU-PREP) and one patient who used OSP tablets (Visicol). Individuals at increased risk of acute phosphate nephropathy include: those of advanced age, those with kidney disease or decreased intravascular volume, and those using medicines that affect renal perfusion or function [diuretics, angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), and possibly nonsteroidal anti-inflammatory drugs (NSAIDs)]. Recommendations were offered for providers and patients when choosing and using a bowel cleanser. See the FDA Web site for more information.
- On Monday, February 13, 2006, the U.S. Food and Drug Administration (FDA) issued a Public Health Advisory to notify healthcare professionals and patients about adverse events, including methemoglobinemia, associated with the use of benzocaine sprays used in the mouth and throat. Benzocaine sprays are used in medical practice for locally numbing mucous membranes of the mouth and throat for minor surgical procedures or when a tube must be inserted into the stomach or airways. On February 8, 2006, the Veterans Health Administration (VA) announced the decision to stop using benzocaine sprays

for these purposes. The FDA is aware of the reported adverse events and is reviewing all available safety data, but at this time is not planning action to remove the drugs from the market. The FDA is highlighting safety information previously addressed by the Agency, has provided other information for the consideration of clinicians in the PHA and will make further announcements or take action as warranted by the ongoing review. See the FDA Web site for more information.

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SCOPE

DISEASE/CONDITION(S)

Diseases or conditions requiring gastrointestinal endoscopy

GUIDELINE CATEGORY

Evaluation
Management

CLINICAL SPECIALTY

Gastroenterology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To summarize current methods of preparing patients for gastrointestinal (GI) endoscopy
- To make possible a safe, comfortable, accurate, and complete examination

TARGET POPULATION

Patients with conditions requiring gastrointestinal (GI) endoscopy

INTERVENTIONS AND PRACTICES CONSIDERED

General

1. Perform preprocedure assessment of patient and review of medical records, including history of medical illnesses, medications, past surgery, previous endoscopies, and history of drug allergies or bleeding tendencies
2. Obtain and record informed consent.
3. Provide discussion of what will be done, expected discomfort, potential risks and benefits of the procedure including those of sedation, alternative methods of investigation or management.
4. Provide instructions to restrict activities requiring alertness (e.g., driving, operating heavy or potentially harmful machinery, making legally binding decisions) until the effects of the medications are completely gone.
5. Review instructions before procedure, and provide written instructions, including steps to follow in the event of a complication, upon discharge.

Medication for Endoscopy

1. Intravenous sedatives including benzodiazepines
2. Intravenous analgesics including opiates
3. Propofol

Upper Gastrointestinal (GI) Endoscopy

1. Preprocedure fasting (no solids for 6 hours, no liquids for 4 hours before procedure)
2. Topical pharyngeal anesthesia including 20% benzocaine spray
3. Anticholinergic agents including atropine (not for routine use)
4. Parenteral glucagon

Colonoscopy

1. Bowel preparation
    - Patient instructed to discontinue use of iron-containing medications
    - Polyethylene glycol-based electrolyte lavage solution (oral or nasogastric infusion)
    - Prokinetic agent to prevent abdominal distention
    - Buffered oral sodium phosphate-based laxative (solution or tablet)
2. Clear liquids or other residue-free liquid diets for 24 to 48 hours followed by cathartics and enemas for patients who require prolonged preparation (e.g., those with chronic constipation or recent barium radiographic examination)
3. Analgesics or sedatives for discomfort
4. Anticholinergic agents to decrease cardiovascular reactions and reduce colonic spasm (not recommended)

Flexible Sigmoidoscopy

1. Enema

2. Topical anal analgesics
3. Parenteral or oral analgesics and/or sedatives (for selected patients)

Endoscopic Retrograde Cholangiopancreatography (ERCP)

1. Preparation as for upper GI endoscopy
2. Continuous intravenous (IV) sedation and/or analgesia
3. IV glucagon
4. Iodinated contrast agents
5. Corticosteroid prophylaxis (in patients with a history of anaphylactic reactions to contrast)
6. Antibiotics (in patients with suspected obstructed bile duct)

Endoscopic Ultrasound (EUS)

1. Preparation as for upper GI endoscopy
2. Sedatives
3. Prophylactic antibiotics (for patients requiring fine needle aspiration [FNA] of cystic lesions)

Special Considerations

1. Electronic monitoring of pulse, blood pressure, oxygen saturation, capnography and continuous electrocardiographic (ECG) rhythm
2. Prophylactic antibiotics in patients undergoing certain procedures (e.g., esophageal dilation) in high-risk patients (e.g., prosthetic valve)
3. Measurement of coagulation parameters and adjustments to anticoagulation therapy (e.g., aspirin or other nonsteroidal anti-inflammatory drugs), if necessary
4. Cardiac monitoring during use of electrosurgical equipment in patients with cardiodefibrillators
5. Administration of insulin/hypoglycemic agents in diabetic patients

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search was performed to identify relevant studies on the topic. Each study was then reviewed for both methodology and results.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Guidelines for the appropriate practice of endoscopy are based on critical review of the available data and expert consensus.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

When appropriate, the guidelines are submitted to other professional organizations for review and endorsement.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

A reassuring, confident attitude on the part of the examiner and technical assistant(s) and a calm, educated, and motivated patient contribute to an optimal examination.

The urgency of the clinical situation as well as concurrent medical illnesses may influence the timing of the procedure and the choice of dietary or pharmacologic preparation. Thus, the preprocedure assessment of the patient and review of medical records should include history of medical illnesses, medications, past surgery, previous endoscopies, and history of drug allergies or bleeding tendencies.

To protect the patient's right of self-determination, informed consent should be obtained and documented before the patient is medicated. This must include a discussion of what will be done, expected discomfort, potential risks and benefits of the procedure including those of sedation, alternative methods of investigation or management, and the opportunity to ask questions. Appropriate efforts are needed to address specific circumstances resulting in any patient's inability to provide informed consent.

Medication for Endoscopy

Medication before and during endoscopic procedures may be used to diminish gastrointestinal (GI) secretions or motility, decrease the patient's anxiety or discomfort, and to provide amnesia. The guiding principle must be patient comfort and safety. General anesthesia or the presence of an anesthesiologist is indicated in special circumstances.

The amount of sedation or analgesia required for any procedure varies depending on the patient's age, prior medications, associated illnesses, anxiety level, and type and duration of the procedure. One should use the minimal dose to achieve the desired effect. Intravenous sedatives and/or analgesics are most commonly used for endoscopy. An intravenous catheter allows for titration of dosage and permits administration of intravenous fluids and specific antagonists of opiates and benzodiazepines.

There has been recent interest in the use of propofol, a rapidly acting anesthetic that provides excellent sedation and amnesia with a significantly shorter recovery time when compared with sedatives and/or analgesics. However, important questions remain with respect to its narrow therapeutic range and the methods by which it should be administered.

The examiner and assistant must remain vigilant for untoward reactions to administered medications. The endoscopy team should be trained in cardiopulmonary resuscitation. Appropriate equipment for resuscitation must be readily available. Trained personnel must assure adequate recovery from sedation before the patient is discharged from the endoscopic suite or recovery area. Instructions should be given to the patient to restrict activities requiring alertness

until the effects of the medications are completely gone, what to expect after the examination, and follow-up instructions, if any. Patients should be instructed to make plans not to drive, operate heavy or potentially harmful machinery, or make legally binding decisions. Patients should also be instructed regarding the use of other medications and alcohol. Because the patient may have difficulty remembering instructions after the procedure because of sedation, it is helpful to review these instructions before the procedure. Written instructions upon discharge are necessary because the amnestic period after moderate sedation is variable. Postprocedure instructions are also provided on the signs and symptoms of potential adverse outcomes and complications. Patients should be given written instructions on steps to follow in the event of a complication, including a phone number where 24-hour-a-day coverage is available in the event of an emergency. When sedatives are administered, patients must be accompanied by a competent adult for discharge from the recovery area.

Upper GI Endoscopy

Patients should ingest no solids for at least 6 hours and no liquids (other than a sip of water for necessary medications) for at least 4 hours before the procedure. If a gastric emptying problem is suspected, a longer period of fasting may be needed. For some procedures, topical pharyngeal anesthesia alone is sufficient, especially when the endoscopy is performed with a small-diameter endoscope. Pharyngeal anesthesia is often administered in the form of 20% benzocaine spray or other topical agents. Although this practice is generally quite safe, there have been sporadic reports of life-threatening reactions, such as methemoglobinemia, associated with topical application of benzocaine.

For prolonged examinations, for those with children, or for patients with a high degree of anxiety, rapid-onset sedatives and/or analgesics are often necessary. Anticholinergics (e.g., atropine) have been given to decrease saliva, gastric secretions, and motility, and perhaps reduce the likelihood of vasovagal reactions; however, controlled studies of their value as endoscopic premedication do not support their routine use. For procedures in which paresis of gastroduodenal motility is necessary, parenteral glucagon may be useful.

Colonoscopy

The colon should be cleansed of fecal material before the examination. Patients with a history of chronic constipation or recent barium radiographic examination may require more prolonged preparation. Patients should be instructed to discontinue iron-containing medications in advance of preparation for colonoscopy. There are 3 widely accepted bowel preparations for colonoscopy.

An oral purge with 2 to 4 liters of a specially balanced electrolyte lavage solution (polyethylene glycol based), given at the rate of 1 to 2 liters an hour, results in adequately prepared colons after a short period of dietary restriction. Preparation solutions (oral lavage or enemas) should not contain mannitol or other fermentable carbohydrates that could be converted to explosive gases because electrocautery may be performed during colonoscopy. If a patient cannot ingest a large quantity of liquid, nasogastric infusion is a safe, effective alternative method of administration. To prevent excessive sodium absorption, no carbohydrate-containing food or fluid should be ingested for several hours before or during the

preparation. A prokinetic agent given about 30 minutes before ingestion of the solution may prevent abdominal distention, sensation of fullness, and nausea and vomiting. Because these solutions have minimal effects on the circulating blood volume, they are felt to be safe for those with serious systemic illnesses.

An alternative regimen is the use of a small-volume, buffered oral sodium phosphate-based laxative. This regimen has been shown to be superior in tolerance and equivalent or superior in efficacy when compared with the polyethylene glycol lavage solutions. This regimen is usually given in split 1.5-oz doses the evening before and the morning of the colonoscopy. However, one study showed that both doses can be given the day before the colonoscopy with acceptable results if the doses are separated by several hours.

Although sodium phosphate solutions are better tolerated, nonspecific aphthoid-like mucosal lesions have been observed in association with these solutions. These lesions are similar in endoscopic appearance to Crohn's disease. The potential for confusion has led some to recommend avoiding sodium phosphate based laxatives in patients undergoing colonoscopy for evaluation of chronic diarrhea or in whom a diagnosis of inflammatory bowel disease is being considered.

The third regimen also uses a sodium phosphate-based laxative but in pill form. Sodium phosphate tablets have been developed providing the same dose of salts as found in the solution without the unpleasant taste. The prep is administered in 7 divided doses of 3 tablets every 15 minutes with 8 ounces of clear liquids the night before the procedure and an additional 20 tablets taken the next morning in a similar fashion beginning 3 to 5 hours before the procedure. When compared with the polyethylene glycol-based preparation, sodium phosphate tablets demonstrated similar efficacy in cleansing of the colon, better patient tolerance, and fewer GI side effects.

Several studies have also shown that fluid and electrolyte shifts may occur, leading to dehydration and serum electrolyte abnormalities. It is recommended that the sodium phosphate-based laxative be avoided in patients sensitive to sudden volume shifts, such as those with congestive heart failure and renal impairment and in patients who might be subject to enhanced absorption of phosphate or sodium (e.g., small intestinal dysmotility).

In some patients, it may be necessary to use a prolonged colon preparation. Clear liquids or other residue-free liquid diets for 24 to 48 hours, followed by cathartics and enemas given until returns are clear, produce an adequately clean colon in most patients. This method demands considerable time and can cause dehydration and hypovolemia when not balanced by adequate oral or intravenous fluid intake. Attention to fluid balance is needed in elderly patients or those with cardiopulmonary or renal disease during this type of bowel preparation. Rigorous chemical purges or cleansing enemas may be impractical or dangerous in debilitated patients, those with partially obstructing colonic lesions, massive lower GI bleeding, or inflammatory bowel disease.

Discomfort often occurs during colonoscopy, and analgesics and sedatives are usually used. Although anticholinergics have been tried to decrease cardiovascular reactions and reduce colonic spasm, controlled studies have failed to show

benefit, and use of anticholinergics may result in abdominal distention and prolonged colonic retention of air.

Flexible Sigmoidoscopy

Effective bowel preparation of the rectum and sigmoid colon can usually be achieved by one or two enemas. A more extensive bowel preparation may occasionally be required in severely constipated patients. Bowel preparation may not be necessary in patients with active colitis or diarrhea and may be inappropriate.

Sedation for flexible sigmoidoscopy is rarely necessary. Topical anal analgesics may be useful for some patients. Small amounts of parenteral or oral analgesics and/or sedatives may be required for patients with extreme apprehension, severe perianal disease, or for children.

Although endoscopic pinch biopsy can be safely performed during flexible sigmoidoscopy, electrocautery should only be performed after a complete bowel preparation as for colonoscopy.

Endoscopic Retrograde Cholangiopancreatography (ERCP)

The patient is prepared as for upper GI endoscopy. Because of the longer duration and potential discomfort of the procedure, continuous intravenous access for sedation and/or analgesia is necessary. Careful monitoring of vital signs and level of consciousness is essential throughout and immediately after the examination. Glucagon, administered intravenously, will reduce duodenal motility. Use of iodinated contrast agents for ERCP appears to be safe in individuals with a history of systemic reactions to intravascular contrast agents. However, prophylaxis with corticosteroids may be considered in patients with a history of anaphylactic reactions to contrast. If the patient has undergone a recent contrast study, an abdominal radiograph should be obtained (preferably the day before the ERCP) to determine whether the contrast has been eliminated. If contrast is present, administration of appropriate laxatives the evening before the procedure ensures an unobscured radiologic field.

When an obstructed bile duct is suspected, appropriate antibiotics are recommended before the ERCP. The benefits of adding antibiotics to contrast solution have not been proven.

Endoscopic Ultrasound (EUS)

There are no additional preparations necessary for the performance of EUS other than that outlined for upper GI endoscopy or flexible sigmoidoscopy. A greater amount of sedation may be necessary, however, because these procedures typically last longer than upper GI endoscopies.

Fine-needle aspiration (FNA) as part of endosonography likewise does not require any additional preparation. Coagulation parameters should be assessed only among patients in whom a coagulopathy is suspected. Diagnostic yield may be enhanced by having a cytopathologist at the bedside to ensure adequate tissue

has been obtained. Fine-needle aspiration of cystic lesions carries a higher risk of complications, infection in particular, and the use of prophylactic antibiotics should be considered. However, no controlled trial data are available at this time.

Special Considerations

Most endoscopists are currently using electronic monitoring equipment. Devices are available that can monitor and display pulse, blood pressure, oxygen saturation, capnography, and continuous electrocardiographic (ECG) rhythm. The level of monitoring should be commensurate with the clinical condition of the patient. Oxygen is frequently administered during endoscopic procedures requiring sedation. For those with heart disease and/or other relevant medical conditions, and those in whom droperidol may be used, an electrocardiogram before the examination should be considered.

For most endoscopic procedures, prophylactic antibiotics are not necessary even in patients with vascular or cardiac defects. However, prophylactic antibiotics are recommended for certain procedures (e.g., esophageal dilation) in high-risk patients (e.g., prosthetic valve). A more thorough discussion of this topic is found in the ASGE guideline entitled "Antibiotic Prophylaxis for GI Endoscopy."

Measurement of coagulation parameters is not routinely necessary before most endoscopic procedures. It should be performed if there is a history of bleeding diathesis, chronic hepatic, or hematologic disorders that might interfere with blood clotting. This is reviewed in the ASGE "Position statement on laboratory testing before ambulatory elective endoscopic procedures." Diagnostic endoscopy is safe in patients on anticoagulants, and in most instances, no adjustment in anticoagulation needs to be made. However, the potential for bleeding from high-risk procedures (e.g., polypectomy) should prompt temporary discontinuation before elective procedures. A thorough discussion of the management of patients undergoing endoscopic procedures who are on anticoagulation therapy, aspirin, or other nonsteroidal anti-inflammatory drugs is found in the ASGE "Guideline on the management of anticoagulation and antiplatelet therapy for endoscopic procedures." The use of electrosurgical equipment for endoscopic therapy is not contraindicated in patients with pacemakers. Patients with implantable cardiodefibrillators should have their unit deactivated when using electrocautery. Careful cardiac monitoring is mandatory and resuscitation equipment should be readily available. A thorough discussion of this topic can be found in an ASGE technology assessment status evaluation entitled "Electrocautery Use in Patient with Implanted Cardiac Devices."

Patients on necessary cardiac or antihypertensive medicines should continue these agents ingesting them with a small sip of water. Regarding diabetic medications, there are no controlled trials to guide care and the approach should be individualized. However one acceptable regimen is to administer half the morning dose of insulin at the usual time, perform the procedure early the same morning, and then administer the second half of the insulin dose with a postprocedure meal. Oral hypoglycemic agents are usually withheld until the patient resumes his or her normal diet.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for the recommendations.

Controlled clinical trials are emphasized, but information is also obtained from other study designs and clinical reports. In the absence of data, expert opinion is considered.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate preparation of endoscopic procedures that result in a safe, comfortable, accurate, and complete examination.

POTENTIAL HARMS

- Pharyngeal anesthesia is often administered in the form of 20% benzocaine spray or other topical agents. Although this practice is generally quite safe, there have been sporadic reports of life-threatening reactions, such as methemoglobinemia, associated with topical application of benzocaine.
- Although sodium phosphate solutions are better tolerated, nonspecific aphthoid-like mucosal lesions have been observed in associated with these solutions. These lesions are similar in endoscopic appearance to Crohn´s disease. The potential for confusion has led some to recommend avoiding sodium phosphate based laxatives in patients undergoing colonoscopy for evaluation of chronic diarrhea or in whom a diagnosis of inflammatory bowel disease is being considered.
- Clear liquids or other residue-free liquid diets for 24 to 48 hours, followed by cathartics and enemas given until returns are clear, produce an adequately clean colon in most patients. This method demands considerable time and can cause dehydration and hypovolemia when not balanced by adequate oral or intravenous fluid intake.
- Rigorous chemical purges or cleansing enemas may be impractical or dangerous in debilitated patients, those with partially obstructing colonic lesions, massive lower gastrointestinal (GI) bleeding, or inflammatory bowel disease.
- Although anticholinergics have been tried to decrease cardiovascular reactions and reduce colonic spasm, controlled studies have failed to show benefit, and use of anticholinergics may result in abdominal distention and prolonged colonic retention of air.

CONTRAINDICATIONS

CONTRAINDICATIONS

It is recommended that the sodium phosphate-based laxative be avoided in patients sensitive to sudden volume shifts, such as those with congestive heart failure and renal impairment and in patients who might be subject to enhanced absorption of phosphate or sodium (e.g., small intestinal dysmotility).

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are intended to apply equally to all who perform gastrointestinal (GI) endoscopic procedures, regardless of specialty or location of service. Practice guidelines are meant to address general issues of endoscopic practice. By their nature, they cannot encompass all clinical situations. Clinical situations may justify a course of action at variance to these recommendations.
- The information in this guideline is intended only to provide general information and not as a definitive basis for diagnosis or treatment in any particular case. It is very important that individuals consult their doctors about specific conditions.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Faigel DO, Eisen GM, Baron TH, Dominitz JA, Goldstein JL, Hirota WK, Jacobson BC, Johanson JF, Leighton JA, Mallery JS, Raddawi HM, Vargo JJ 2nd, Waring JP, Fanelli RD, Wheeler-Harbough J. Preparation of patients for GI endoscopy. Gastrointest Endosc 2003 Apr;57(4):446-50. [40 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Apr

GUIDELINE DEVELOPER(S)

American Society for Gastrointestinal Endoscopy - Medical Specialty Society

SOURCE(S) OF FUNDING

American Society for Gastrointestinal Endoscopy

GUIDELINE COMMITTEE

Standards of Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American Society for Gastrointestinal Endoscopy (ASGE) Web site.

Print copies: Available from the American Society for Gastrointestinal Endoscopy, 1520 Kensington Road, Suite 202, Oak Brook, IL 60523

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on October 14, 2004. The information was verified by the guideline developer on November 5, 2004. This summary was updated by ECRI on February 21, 2006 following the U.S. Food and Drug Administration (FDA) advisory on benzocaine sprays. This summary was updated by ECRI on May 9, 2006 following the FDA advisory on oral sodium phosphate (OSP) products.

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