Lawrence B.Cohen, M.D , Christina Tennyson, M.D- Bowel Preparation for colonoscopy: Maximizing efficacy, minimizing risk; Gastroenterology & Endoscopy News Oct 2011, Volume Pages 61-69

The choice of the agent for bowel preparation takes into account several parameters including the patient's age, underlying medical problems, compliance, etc. The ideal prep not only produces clean emptying for the endoscopist to detect all lesions, but is also safe for patient use and does not produce any side effects. However, this type of preparation does not exist. It is thus left to the physician to provide the appropriate agent with the basic understanding of the modes of action of the agents, their advantages and disadvantages, cost and patient differences.

Over a quarter of bowel preparations yield inadequate cleansing and complications that ensue as a result of this affect both the patient and the physician. These include, but are not limited to, increased cost to the patient, increased procedure time and greater chances of procedural complications.

Colon preparations are mainly divided into 3 categories namely:

(i)Osmotic agent

(ii)PEG-Polyethylene glycol based solutions

(iii)Stimulants

The PEG based solutions usually involve the patient drinking large volumes of fluid, ranging from 2 to 4 liters. The volume can be divided in half to ensure tolerance. The PEG based preparation which includes the use of the hypotonic mixture of Mira lax and Gatorade is used in our practice (Rochester Gastroenterology Associates). The disadvantages of PEG based preps include electrolyte imbalances such as hyponatremia , hypothermia.

The Oral Sodium Phosphate (OSP): There has been some debate regarding the safety of OSP use for colon preparation. Although the FDA has approved it, there is still concern regarding its use at high doses necessary to provide adequate cleaning. The main disadvantage lies in the accumulation of phosphate which can occur especially in patients with underlying kidney injury, the elderly, and hypovolemic patients. Also, the concomitant use of medications implicated in kidney injury such as NSAIDS, ACE-I, etc also preclude the use of this agent. While the complication of acute phosphate nephropathy is rare, it is serious enough to warrant caution. It can also cause artifacts in the colon in patients that have IBD. In patients who cannot tolerate large volumes of fluid in the case of PEG based solutions, OSPs may be used.

Other types of bowel preparations include Magnesium Citrate and Oral Sodium Sulfate. Like the OSP, the Magnesium citrate can cause renal impairments because it is excreted through the kidneys. However, sulfate salts don't produce renal injury (based on animal studies)

While it may be convenient to choose the same type of bowel preparation for all individuals, it is important to realize the differences in tolerance and underlying medical conditions. Thus, prescreening of individuals scheduled to undergo a colonoscopy may be beneficial to determine medical problems,

electrolyte abnormalities, constipation, prior inadequate cleansing, etc. The physician's knowledge of the above may help him/her individualize therapy, thus, choosing the best preparation for each patient.

Special instructions that may need to be relayed to the patient include the need to keep well hydrated. This is especially important in high risk individuals such as those on diuretics, the elderly as well as the pediatric population.

The dose/volume of the preparations may also be adjusted based on the age and knowledge of prior preparation. e.g. in children, the dose is age and weight dependent. Also, patients with a history of prior poor preparations or chronic constipation may require higher volumes.

The timing of the preparation is crucial to the success of the procedure as; the longer the duration from preparation to procedure, the higher the chances of poor cleansing. This is due to the fact that secretions from the ileum coat the mucosa of the colon with time. Despite several debates over the need for diet modification prior to colonoscopy, the evidence to support this remains inconclusive.

Given the complexity, side effects, different patient profiles, varying preferences and the lack of an ideal preparation, it suffices to say that the decision to use a particular preparation will depend on the clinical acumen, experience and understanding of the physician.