Colonoscopy Preparation

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Disclosure

• NO relevant financial conflicts of interest
• I will be mentioning off-label uses of medications
• For clarity I will use brand names of agents
History of Colon Preps circa 1970’s

• Evolved from radiologic preps for LGI series
  – Dietary restrictions x 2-3 d
  – Enemas
  – Laxatives
    • Mannitol – fermentable, potential explosion hazard
  – Large volume (7-12 liters)
History of Colon Preps circa 1980’s

- Polyethylene glycol w/ electrolytes (PEG-ELS)
  - Osmotically balanced (Isoosmotic)
  - Non absorbable
  - No significant fluid shifts
  - Minimal electrolyte disturbance
  - Effectiveness is primarily due to mechanical effect of large volume
What is a Good Bowel Prep?

- Tolerable
- Safe
- Quality colonic cleansing
  - Detect polyps > 5 mm

- Approx 20% of all colonoscopies in US are inadequately prepped

Lebwohl, B. et al. Gastointest Endosc 2011
Characteristics of an Ideal Prep

- Rapid
- Simple
- Palatable
- Reliably effective
- No discomfort
- No effect on macro/microscopic appearance
- No fluid/electrolyte shifts
- Inexpensive

At this time such a prep does NOT exist
Why Effective Preparation is Important

- Better polyp detection
- Improved cancer protection
- Cost Effective
  - Reduced need for repeat procedures
  - 1/3 of pts with inadequate bowel prep have adenomas on repeat colon – most in right colon

Chokshi, RV. et al. Gastrointest Endosc 2012
## How do we Judge a Good Prep?

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aronchick</td>
<td>&gt;95%</td>
<td>&gt;90%</td>
<td>&gt;90%</td>
<td>&lt;90%</td>
</tr>
<tr>
<td>% mucosal surface seen, amt liquid, solid stool present</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ottawa</td>
<td>0</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Right, Transverse, and Rectosigmoid scored 0-4, and 0-2 for fluid, then totaled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boston (BBPS)</td>
<td>7-9</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Right, Transverse, Left scored 0-3, then totaled</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Three Categories of Cleansing Agents

• Isoosmotic
  – Polyethylene glycol (PEG or PEG-ELS or PEG-3350) based

• Hyperosmotic – draw H₂O into bowel
  – Sodium Phosphate (NaP)
  – Magnesium Citrate

• Stimulant
  – Bisacodyl
  – Sodium Picosulfate
# Isoosmotic Preps

<table>
<thead>
<tr>
<th>Product</th>
<th>Active Agent</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GoLYTELY</td>
<td>PEG</td>
<td>4000</td>
</tr>
<tr>
<td>Colyte</td>
<td>PEG</td>
<td>4000</td>
</tr>
<tr>
<td>NuLYTELY</td>
<td>PEG (sulfate free)</td>
<td>4000</td>
</tr>
<tr>
<td>TriLyte</td>
<td>PEG (sulfate free)</td>
<td>4000</td>
</tr>
<tr>
<td>Halflytely</td>
<td>PEG &amp; Bisacodyl</td>
<td>2000</td>
</tr>
<tr>
<td>MoviPrep</td>
<td>PEG &amp; ascorbic acid</td>
<td>2000 + 1000</td>
</tr>
<tr>
<td>Miralax/Gatorade</td>
<td>PEG (no electrolytes)</td>
<td>1900</td>
</tr>
</tbody>
</table>
# Hyperosmotic Preps

<table>
<thead>
<tr>
<th>Product</th>
<th>Active Agents</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fleet Phospho-soda</td>
<td>NaP</td>
<td>75 ml</td>
</tr>
<tr>
<td>Visicol</td>
<td>NaP</td>
<td>40 tabs (60 gms)</td>
</tr>
<tr>
<td>Osmoprep</td>
<td>NaP (MCC free)</td>
<td>32 tabs (48 gms)</td>
</tr>
<tr>
<td>LoSoPrep</td>
<td>MgCitrate &amp; Bisacodyl</td>
<td>240 ml, 20 mg po in PM, 10 mg suppository in AM</td>
</tr>
<tr>
<td>SuPrep</td>
<td>NaSO₄, KSO₄, MgSO₄</td>
<td>355 ml + 2500 ml H₂O</td>
</tr>
<tr>
<td>Prepopik</td>
<td>NaPicosulfate, MgOxide, citric acid (forms MgCitrate)</td>
<td></td>
</tr>
</tbody>
</table>
How to Achieve Effective Prep

• High quality instructions
  – Pt participation is key

• Educational aids
  – Brochures, online, videos,

• Split Dose
  – >90% of studies show split dose improved quality of prep compared to 1 day prep

Cohen LB. Gastrointest Endosc 2010
Timing the Second Dose

Optimal window is \( \leq 8 \) hr

Mean Prep Quality

Excellent

Fair

Hours Between Last Prep Dose and Colonoscopy

Preprocedure Fasting
ASA recommendations

• 2 hours – Clear liquid
  – Water, fruit juice, soda pop, clear tea/coffee (NO MILK). Broth is not considered a clear liquid.

• 6 hours – Light meal
  – Toast and clear liquid

• 8 hours – Solid food
Gastric Volume after Fasting

• EGD controls 14.5 ml
• Evening before colon prep – 20.2 ml
• Split dose – 19.7

Safety

• All may cause adverse events
• Most common – abd pain, bloating, nausea, vomiting
• Avoid Magnesium containing and Phosphate containing preps in renal failure patients
• Use isoosmotic preps in CHF, cirrhosis, renal disease
Complications of Bowel Preps

• Dehydration
• Electrolyte abnormalities
• Aspiration
• Allergic reaction
• Vomiting
  – Mallory Weiss tear
• Syncope
• Arrhythmia
• Ischemic colitis
Acute Phosphate Nephropathy

• Associated with NaP containing preps
• FDA alert in 2006
• 2008 FDA recommended not to use OTC NaP for colon preps
  – Fleet Phosphosoda voluntary recalled
  – Black Box warning for oral NaP
• Risk factors – Dehydration, ACEI, ARB, Age
• Prevention
  – Adequate pre, intra, and post procedure hydration
  – Lowest effective dose, >10-12 hours between doses
What to do After Poor Prep

• No consistent guideline

• Options
  – No change from usual practice
  – Repeat 1 year
    • US Multi Society Task Force recommendation (Sept 2012)
  – Continue prep and repeat same or next day
  – Repeat sooner with different prep
Switching Preps

• Not always due to poor compliance
  – Make sure instructions are understood
• Be aware of risk factors for poor preps
• 2 day prep
  – Extra day of clear liquids
• Add another laxative
  – Magnesium Citrate, bisacodyl
• Split dose prep
  – Recommended by ACG, Multi-Society Task Force
• Same day prep
Can we predict poor preps?

• Male
• Obesity
• Neurologic disease
• Diabetes
• Cirrhosis
• Anticholinergic drugs & narcotics
• Hospitalized patients
What is the Best Prep?

• Difficult to compare studies due to heterogeneity

• Recent review - % adequate preps
  – PEG-71% NaP–75%

• Split dose
  – Dose in PM and in AM
  – Improved quality of prep

Belsey et al. Aliment Pharmacol Ther 2007
Colonoscopy Preps 2012

- Still primarily PEG based
- SPLIT DOSE!
- Many options available
  - Can customize to pt preferences
Thank You
Sources
