

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Specific Care Question: In pediatric patients, are milk and molasses enemas versus other treatments, safe and efficacious for treatment of constipation?

Question Originator: Keith Mann, MD, MEd

Clinical Bottom Line: Based on a limited number of very low quality studies, milk and molasses enemas (MME) appear to be safe and as effective as other treatments. A case report of adverse events associated with receiving an MME in 5 patients with complicated medical histories was reported, but no direct cause to the MME was established. Patients with milk protein or molasses allergies should not receive MME's.

Plain Language Summary: Constipation affects up to 30 percent of children and accounts for 3 to 5 percent of all pediatrician visits (Up-To-Date, 2017). Constipation symptoms depend on the person, but generally is associated with infrequent and/or painful defecation, fecal incontinence, and abdominal pain. Constipation causes significant distress to the child and family, and has a significant impact on health care costs (Tabbers et al., 2014).

The North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition developed a guideline for the evaluation and treatment of functional constipation in infants and children (Tabbers et al., 2014). The guidelines reviewed non-pharmacologic and pharmacologic treatments for functional constipation. It is important to note MME was not reviewed.

Based on a limited number of very low quality studies (Hansen et al., 2011; Miller, Dowd, Friesen, & Walsh-Kelly, 2012; Walker, Warner, Brilli, & Jacobs, 2003; Wallaker et al., 2014), milk and molasses enemas (MME) appear to be safe and as effective as other treatments. A case report of adverse events associated with receiving an MME in 5 patients with complicated medical histories was reported, but no direct cause to the MME was established. Patients with milk protein or molasses allergies should not receive MME's.

Literature Summary:

One randomized controlled trial (RCT) and three non-randomized studies were identified regarding the use of MMEs for patients presenting with constipation and fecal impaction in the emergency department (ED) (Hansen et al., 2011; Miller, Dowd, Friesen, & Walsh-Kelly, 2012; Walker, Warner, Brilli, & Jacobs, 2003; Wallaker et al., 2014).

Outcome: Resolution of Symptoms

Miller et al. (2012) conducted a randomized control trial of fecal impaction in children. The study had a high risk of bias due to the small sample size (power analysis was for 140 patients) and the inability to recruit teens into the study. The study compared a single MME (n=40) versus oral polyethylene glycol (PEG) (n=39) treatment for 3 days. At day 1, PEG subjects were less likely to have improved main symptom (OR = 0.3, 95% CI [0.1, 0.8]) without any other difference in outcomes identified.

Main symptoms were defined as the chief complaint identified during the triage process (Miller et al., 2012) and stool consistency. There was only a small difference in improved main symptoms between the two groups at days three and five (Day 3: PEG 89%, MME 91%; Day 5: PEG 92%, MME 93%). Half (54%) of the patients in the enema arm were reported as upset (not defined) by ED therapy, whereas no children in PEG arm were upset ($p<0.05$). At day 3, more

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

patients in enema arm reported ideal stool consistency (74% vs. 38%; $p < 0.05$). Most treatment failures were in PEG arm (83%; $p = 0.08$). No adverse events were reported between the two groups.

Wallaker et al. (2014) conducted a retrospective chart review of 413 patients aged 2-17 years who visited the ED for constipation that were treated with MME. The studies focus was on enema volume. There was an 80% success rate with patients that received at least 3mL/kg (10-15y old). There was an 83% success rate with patients that received less than 3mL/kg (older than 15y). Stool output was achieved in more than 80% of the enema administrations when the enema volume was at least 4mL/kg. There was an 88% success rate with patients that received 6mL/kg (under 10y old) ($n = 106$). There were 24 admissions due to GI complaints, but it was unclear if it was related to the enema administration.

Hansen et al. (2011) conducted a retrospective chart review of pediatric patients who received ether MMEs ($n = 49$) or sodium phosphate ($n = 47$) enemas for constipation in the emergency department. There were no statistically significant differences in treatment effects between the two groups. Treatment success for MMEs was 97.9% vs. 87.2% for sodium phosphate. There was no appreciable difference in the time until defecation between the two groups ($p = 0.23$) or time from treatment to disposition ($p = 0.5994$).

Outcome: Adverse Events

Walker et al. (2003) reported on five cases of children that developed significant hemodynamic deterioration after receiving a MME. One of these children died and the others recovered after aggressive resuscitation. The authors reported each patient had serious underlying medical conditions that put them at risk for cardiopulmonary compromise. The authors proposed different theories for the decompensation but a specific cause for each case was undetermined.

Wallaker et al. (2014) conducted a retrospective chart review of 413 patients aged 2-17 years who visited the ER for constipation and were treated with MME. There were no instances of allergic reactions, perforations, severe bleeding, or shock.

Hansen et al. (2011) conducted a retrospective chart review of patients who received either a MME ($n = 49$) or a sodium phosphate ($n = 47$) enema for constipation. There was a total of 10 (10.4%) adverse events in the sodium phosphate group and seven (7.3%) in the MME group. Adverse events were defined as emesis, diarrhea, abdominal pain/cramping, nausea, fatigue. No allergic reaction, cardiopulmonary compromise, or shock was reported.

Children's Mercy Hospital: Adverse Events

In Fiscal Year 2017 At Children's Mercy Hospital Emergency Rooms and Urgent Care Centers, there were a total of 1322 enemas of which 1188 were MME. There were no adverse events reported in FY 2017 in regards to MME.

EBP Scholar's responsible for analyzing the literature:

Hellen Murphy, BHS RRT AE-C
Hope Scott, RN CPEN
Erin Lindhorst, MS, RD, LD
Kori Hess, PharmD
Jennifer Foley, RT(R)(N), CNMT
Kelly Huntington, RN, BSN, CPN

EBP team member responsible for reviewing, synthesizing, and developing this literature:

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Jarrod Dusin, MS, RD, LD, CNSC

Search Strategy and Results:

(milk AND enema* AND molasses) OR ("Enema"[Mesh] AND "Molasses"[Mesh] AND "Milk"[MeSH]) (enema[Mesh] OR enemas[tw] OR enema[tw]) AND (constipation[tw] OR constipation/therapy[mesh]) Filters: Consensus Development Conference, Consensus Development Conference, NIH, Guideline, Meta-Analysis, Randomized Controlled Trial, Systematic Reviews ("Cathartics"[Mesh] OR "Cathartics"[Pharmacological Action] OR enema[Mesh] OR enemas[tw] OR enema[tw]) AND (constipation[tw] OR constipation/therapy[mesh]) AND (child OR children OR youth OR pediatric* OR paediatric* OR adolescence) AND ((Consensus Development Conference[ptyp] OR Consensus Development Conference, NIH[ptyp] OR Guideline[ptyp] OR Meta-Analysis[ptyp]))

Excluded articles and reason for exclusion:

First Author	Year	Reason for exclusion
(Vilke, DeMers, Patel, & Castillo, 2015)	2015	Adult patients
(Freedman, Thull-Freedman, Rumantir, Eltorki, & Schuh, 2014)	2003	Milk and Molasses not used
(Gordon, Naidoo, Akobeng, & Thomas, 2011)	2011	Milk and Molasses not used

Method Used for Appraisal and Synthesis:

The Cochrane Collaborative computer program, Review Manager, was used to synthesize the 4 included studies. [GRADEpro GDT \(Guideline Development Tool\)](#) is the tool used to create Summary of Findings Tables for this analysis.

Updated: August 2017

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Figures

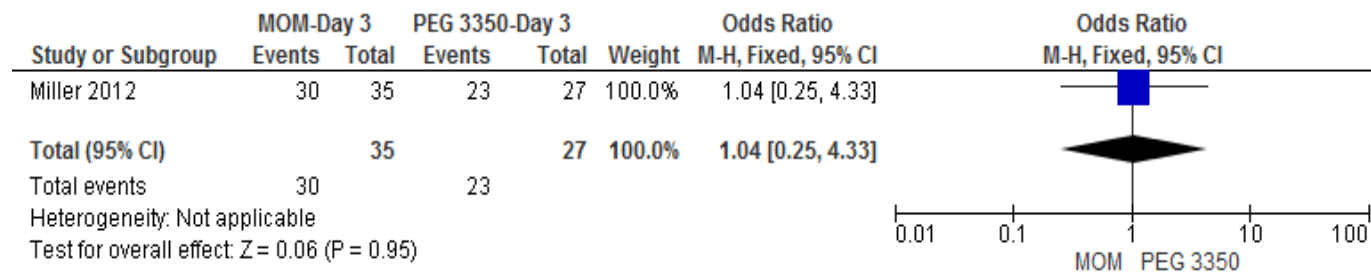


Figure 1. Improvement in main symptoms at day 3

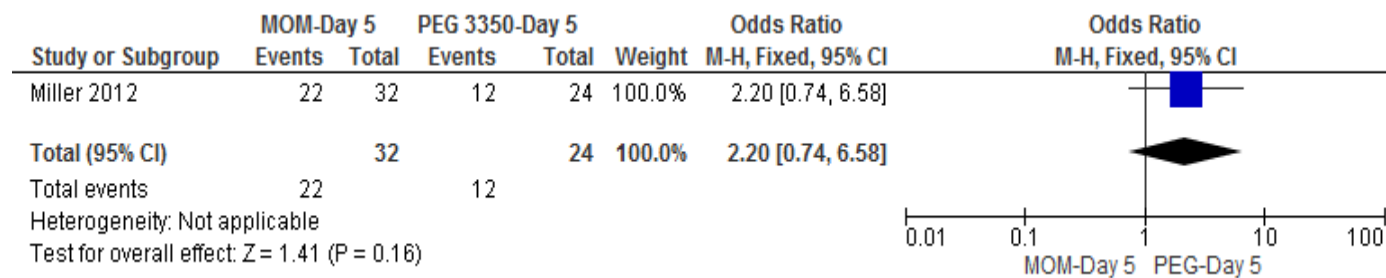


Figure 2. Improvement in main symptoms at day 5

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Table 1

Grade Summary

Question: Milk and molasses compared to other enemas for constipation

Studies included in the review (Hansen et al., 2011; Miller et al., 2012; Walker et al., 2003; Wallaker et al., 2014)

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Milk and molasses	other enemas	Relative (95% CI)	Absolute (95% CI)		
Resolution of Symptoms (follow up: 5 days)												
1	randomized trials	very serious ^a	not serious ^b	not serious	serious ^d	none	22/32 (68.8%)	12/24 (50.0%)	OR 1.04 (0.25 to 4.33)	10 more per 1,000 (from 300 fewer to 312 more)	⊕○○○○ VERY LOW	CRITICAL
Resolution of Symptoms												
2	observational studies	very serious ⁱ	serious ^g	not serious	serious	publication bias strongly suspected ^f	Wallaker (2014) conducted a retrospective chart review of 413 patients aged 2-17 years who visited the ED for constipation and were treated with milk and molasses. Stool output was achieved in more than 80% of the enema administrations when given at least 4mL/kg. There was an 88% success rate with patients that received 6mL/kg (under 10y old) (n=106). There was an 80% success rate with patients that received at least 3mL/kg (10-15y old). There was an 83% success rate with patients that received less than 3mL/kg (older than 15y). There were 24 admissions due to GI complaints, but it was unclear if it was related to the enema administration. Hansen (2008) conducted a retrospective chart review of pediatric patients who received either milk and molasses (n = 49) or sodium phosphate (n = 47) enema for constipation. Treatment success for milk and molasses was 97.9% vs 87.2% for sodium phosphate (p=0.0566). There was no appreciable difference in the time until defecation between the two groups (p=0.23) or time from treatment to disposition (p=0.5994).				⊕○○○○ VERY LOW	CRITICAL
Adverse Events												
3	observational studies	very serious ^e	serious ^g	not serious	serious ^h	publication bias strongly suspected ^f	Walker et al. (2003) reported on five case-reports of children developed significant hemodynamic deterioration after receiving MMEs. The authors reported each patient had serious underlying medical conditions that put them at risk for cardiopulmonary compromise. Wallaker et al. (2014) conducted a retrospective chart review of 413 patients aged 2-17y who visited the ER for constipation and were treated with milk and molasses. There were no instances of allergic reactions, perforations, severe bleeding, or shock. Hansen (2008) conducted a retrospective chart review patients who received either milk and molasses (n = 49) or sodium phosphate (n = 47) enema for constipation. There was a total of 10 (10.4%) adverse events in the sodium phosphate group and 7 (7.3%) in the milk and molasses group. Adverse events were defined as emesis, diarrhea, abdominal pain/cramping, nausea, fatigue. No allergic reaction, cardiopulmonary compromise, or shock was reported.				⊕○○○○ VERY LOW	CRITICAL

CI: Confidence interval; OR: Odds ratio

Explanations

- a. Blinding of participants and study personnel not possible. The study was per protocol. There was selection bias due to half of patients approached declined to participate and teenagers were difficult to enroll
- b. Unable to determine inconsistency due to only one study identified
- d. Only one RCT was identified resulting in relatively few patients
- e. Two of the studies are retrospective chart reviews and one case-report of adverse events
- f. Patient populations had different underlying diseases states
- g. Adverse events not clearly defined in the studies
- h. Small number of patients may not be large enough to show effect size

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

- i. Retrospective chart reviews increase this risk of publication bias
- j. Both studies were retrospective chart reviews

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Walker 2003

Methods	Retrospective review (case reports)
Participants	Setting: Cincinnati Children's hospital Randomized into study: n/a Completed study: 5 case reports Gender, males: 3 Age, years: 7 months - 6 yrs Inclusion criteria: • children who were admitted to ICU between Jan 1994 and Dec 2000 • had constipation as one of their discharge diagnoses • received milk and molasses (MME) immediately prior to or during hospital stay Exclusion criteria: • not discussed
Interventions	milk and molasses enema for constipation
Outcomes	Primary outcome: • adverse events
Notes	Case 1: 3 yr. old male with complex medical history including chromosome 2p duplication, panhypopituitarism, bronchopulmonary dysplasia, tetralogy of fallot, and seizures • admitted for increased seizure activity with new onset apnea and bradycardia, also noted to have abdominal fullness on initial exam • received 2 MME (2 oz. whole milk mixed with 2 oz. molasses) • shortly thereafter developed hypoxemia, abdominal distention, hypotension, and bradycardia eventually progressing to full cardiac arrest with extensive resuscitation • surgery consulted due to anasarca and ascites without free air - diagnosed patient with abdominal compartment syndrome • despite maximum medical care patient remained hypoxic and acidotic and support was withdrawn Case 2: 20 month old female with vesicoureteral reflux, imperforate anus, vesicostomy, small vsd, failure to thrive, and constipation • admitted for IV antibiotics to treat enterococcal UTI • before admission she had developed vomiting, lethargy, and weight loss, also noted to have large quantities of stool palpable on exam and evident on abdominal radiograph • received 1 MME (3 oz. whole milk mixed with 3 oz. molasses) • within 10 min patient became pale, mottled, and tachycardia with abdominal distension, weak peripheral pulses, and change in level of consciousness • supported in PICU with 3 days of mechanical ventilation, inotropic medications (48 hr.), blood products, and broad-spectrum antibiotics and was discharged 10 days after admission • all urine and blood cultures were negative during stay Case 3: 7 month old male with PMH significant for anterior meningocele, rectal stenosis, and chronic constipation managed by anal dilatation and lactulose • family sought care for suspected fecal impaction and primary care physician recommended MOM enema • received 1 MME at home (1 oz. whole milk added to 1 oz. molasses) • immediately developed large volume loose stool output that lasted for 1.5 hrs. along with 3 episodes of emesis • child became "lifeless" and was brought to ER presenting with tachycardia, altered mental status, and unobtainable BP • received fluid resuscitation and ceftriaxone and was discharged home after 3 days Case 4: 4 year old female with history of metatrophic dwarfism, seizures, hydrocephalus, vp shunt, gastroesophageal reflux, gt tube, and constipation • during visit to primary care clinic hard stool was noted in left lower quadrant

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

	- received 1 MME (35 mL whole milk mixed with 35 mL molasses) in clinic - immediately developed pallor and hypotension and was transferred to ED where she received fluid resuscitation and was stabilized - impaction eventually resolved with manual disimpaction, go-lytely, and dulcolax Case 5: 6 year old male with chromosome 22 abnormality, asthma, recurrent pneumonias - was in usual state of health prior to admission but hadn't had bowel movement in 4 days - received 1 MME at home (1 oz. whole milk mixed with 1 oz. molasses) - had a large bowel movement and 3 bouts of emesis followed by decreased responsiveness, periorbital cyanosis, and cool extremities occurring 1 hour after enema administration - treated with fluid resuscitation and ceftriaxone and discharged in usual state of health
--	--

Wallaker 2014

Methods	Online Survey and Retrospective chart review
Participants	Setting: tertiary-care pediatric emergency department Michigan, USA This study had 2 parts, a.) anonymous online nurse survey, and then b.) retrospective chart review. The nursing survey was from September 2010 to May 2012 The chart review was from January 2009 to April 2012 Randomized into study: Not randomized Nurse Survey - 94 responses Pediatric milk and molasses enemas - 500 Completed Study: Nurse responses to survey - 94 Pediatric milk and molasses enemas - 413 Gender, males: Nurse responses to survey - anonymous Pediatric milk and molasses enemas: n=268 (53.6%) Age, years (mean): (chart review) <10 years: n=282 (25.4%) 10-15y: n=141 (28.2%) >15y: n=77 (15.4%) Inclusion Criteria: (survey) - staff members who performed an enema on a patient between 2-17y Exclusion Criteria: (survey) - none disclosed Inclusion Criteria: (Chart review) - patients aged 2-17y who visited the ER between January 2009 and April 2012 - documented with a diagnosis of abdominal pain or constipation Exclusion Criteria: (Chart review) - chronic medical conditions - previous rectal surgery - critically ill or hemodynamically unstable - no stool results charted - no volume for the enema charted - no patient weight charted - enema besides milk and molasses given - patients under the age of 2 Power Analysis: the authors did not disclose a power analysis

Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Interventions	Enemas consisted of a 1:1 solution of whole milk and molasses administered through an enema bag, enema bottle, or flexible tubing with a catheter-tip syringe. The typical volume administered was 6mL/kg with an institutional guideline maximum of 135mL. Part 1 (survey): An anonymous online survey of nurses that perform enemas, questions were asked regarding administration method, patient tolerance, amount administered Part 2 (chart review): Chart review of patients that received enemas: patient age, weight, volume of administration, volume of stool produced, and adverse effects were analyzed
Outcomes	Primary outcome(s): • success rate of enema based on nurse documentation of moderate stool and minimal side effects Secondary outcome(s) • volume given during enema Safety outcome(s):
Notes	Results: Survey: 38.9% of the enemas were performed with a flexible catheter and catheter-tip syringe, 33.3% of enemas were performed with an enema bag, 27.8% were performed with an enema bottle. Chart Review: • Stool output was achieved in more than 80% of the enema administrations when given at least 4mL/kg • Due to the maximum volume of 135mL, patients above 22kg received less than 6mL/kg • There was an 88% success rate with patients that received 6mL/kg (under 10y old) (106 participants) • There was a 80% success rate with patients that received at least 3mL/kg (10-15y old) • There was a 83% success rate with patients that received less than 3mL/kg (older than 15y) • Results showed that a dose of 5-6mL/kg produced greater stool output than smaller doses. • Of the 500 patients, 26 were admitted. • There were no instances of allergic reactions, perforations, severe bleeding, or shock. • 2 patients for reasons not related to their diagnosis of constipation or abdominal pain (port placement and pneumonia) • There were 24 admissions due to GI complaints, but it was unclear if it was related to the enema administration. Authors suggest rectal examinations before enema administration. • There were small amounts of blood in 9 samples, not significant enough to require patient observation. Note: Survey: There were 200 enemas performed during the time of the nursing surveys, but there were 94 survey results. The numbers in table 1 do not add up to 94. Chart Review: stool output was categorized into none, small, moderate, or large, with a outcome of interest of "moderate stool". The results given were for "stool output was achieved" for the success rate without specifying if it was meeting the standard of "moderate". The exact figures were not given, just the percentages.

Miller 2012

Methods	Randomized Control Trial
----------------	--------------------------



Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

Participants	Setting: Emergency Department in a free standing, academic children's hospital located in the Midwestern United States, between December 2006 and May 2009 Randomized into study: N= 80 Polyethylene Glycol 3350 (PEG): n= 39 Milk of Molasses Enema (MME): n= 41 Completed Study: Day 3 N=66, Day 5 N= 56 PEG: Day 3- 27, Day 5- 24 MOM: Day 3- 35, Day 5- 32 Gender, males: 33 (42%) PEG: 19 (49%) MOM: 14 (35%) Age, in years (mean): 6.9 +/- 0.5 PEG: 6.9 +/- 0.7 MOM: 6.8 +/- .07 Inclusion criteria: 1) Children aged 1-17 years 2) Diagnosis of at least one of: - Fecal impaction (lower quadrant mass or dilated rectum with hard stool) - Functional fecal retention (large diameter stools as determined by caregiver for less than twice/week and retentive behaviors), - Excessive stool in the colon on abdominal radiograph as determined by radiologist or treating ED physician. Exclusion criteria: 1) Milk or molasses allergy 2) Ill appearing (determined by treating ED physician) 3) Received analgesia for abdominal pain with the exception of acetaminophen or ibuprofen 4) Diagnostic testing beyond radiographs or urinalysis 5) Prior abdominal or rectal surgery 6) Non-English speaking 7) Pregnant 8) Long term medical conditions that may be associated with constipation (i.e., cystic fibrosis, cerebral palsy, hypothyroidism, spinal or gastric abnormalities) 9) Admitted to an inpatient service Power analysis: Initially calculated at 70 patients in each arm would provide 80% power for detecting change of 25% versus 50% in the 2 groups on day 5. This assumed a two-sided alpha level of 0.05 and approximately 12 per arm loss of follow up. However, they became concerned that patients in the oral cleanout arm were experiencing an inferior outcome so the decision was made to analyze data they had collected to date (before obtaining 140 patients in total).
Interventions	PEG: Oral high-dose polyethylene glycol 3350 (1.5 g/kg/d, max dose 100 g/d) for outpatient use for 3 days. MOM: Single milk and molasses enema in ED mixed 1:1, 10 mL/kg, max 500 mL (standard at institution) - Both groups were discharged with PEG 3350 for maintenance therapy at 0.8 g/kg/d for 3 days; enema subjects were instructed to start maintenance within 24 hours after ED discharge and PEG subjects were advised to start within 24 hours after taking 3rd cleanout dose. - Participants received written instructions on their cleanout and maintenance regimens and received enough complimentary PEG 3350 to complete this study. - Subjects received additional, standard discharge information on constipation from the treating ED physician.



Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

	Follow up: Primary caregivers were contacted by telephone for follow-up on days 1, 3, 5 to evaluate stool patterns, on-going symptoms, and symptom improvements. Structured surveys were conducted by primary investigator (Miller) or a research assistant. Because of difficulty in obtaining follow up they did accept responses up to 7 days after enrollment.
Outcomes	Primary outcome: Changes in participants main symptom Secondary outcomes: Straining with stools, stool consistency, and stool patterns
Notes	Study reports a 1% difference in the improvement of main symptom complaint between the 2 groups at days 3 and 5. Day 3: PEG- 89%, MOM- 91% Day 5: PEG- 92%, MOM- 93% Treatment failure, defined as: • Participant who received an enema at home or • Returned to ED for evaluation or • Admitted to an inpatient service for treatment of fecal impaction Of the 6 patients were reported to have failed treatment, PEG: (13% (5/39)) MME: 2% (1/41)

Risk of bias table

Bias	Authors' Judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	A list assigning participants to at treatment arm was randomly generated by a computer, in blocks of 10.
Allocation concealment (selection bias)	Low risk	The results of the randomization were not revealed until just before treatment was initiated.
Blinding of participants and personnel (performance bias)	High risk	Because of the obvious differences in the treatment arms, oral versus rectal medications, blinding of the participants and study personnel was not possible.
Blinding of outcome assessment (detection bias)	Unclear	Follow up was conducted by primary investigator or research assistant in the days after treatment was completed.
Incomplete outcome data (attrition bias)	High risk	Per protocol was used- One participant withdrew after consent but before treatment in the MME group. Subjects for whom follow-up data were not available or who answered "don't know" were omitted from analysis.
Selective reporting (reporting bias)	Low risk	Study reported on all outcomes
Other bias	High risk	Selection bias due to half of patients approached declined to participate and teenagers were difficult to enroll.

Hansen 2011

Methods	Retrospective comparative chart review
Participants	Participants: • Medical records from patients who presented to Emergency Department (ED) and received either (Milk and molasses) MME or sodium phosphate enema for constipation between November 1, 2007 and November 1, 2008. Setting: • Dallas, Texas, in ED of pediatric hospital



Office of Evidence Based Practice – Specific Care Question: Milk and Molasses Enemas

	Number complete: N=96 - Group 1: MME n=49 - Group 2: sodium phosphate n=47 % male: - Group 1: MME 23% - Group 2: sodium phosphate 24% Inclusion criteria: - Medical records from patients who presented to ED and received either MME or sodium phosphate enema for constipation between November 1, 2007 and November 1, 2008. Exclusion criteria: - medical records that lacked adequate documentation of symptoms Power analysis: - Based on pre-study power analysis a minimum sample size of 58 subjects was necessary to determine efficacy between groups. Covariates: no reported
Interventions	Both groups: Chart review - baseline demographics - chief complaint - medical history - treatment information - treatment success Group 1 MME: - standard dose is 10ml/kg body weight with a max of 240ml per administration - Ingredients: 120 ml of unsulfured molasses 45 g of nonfat dry powder milk 120ml sterile water for irrigation - total of 240ml Group 2 sodium phosphate: - dose - ages 2-11 pediatric enema of 59ml - older than 11 adult enema 118ml
Outcomes	Primary: - Treatment success = having a bowel movement after administration of enema - Time to defecation - Time from treatment to disposition Secondary: - Adverse events = emesis, diarrhea, abdominal pain, nausea, fatigue
Notes	Primary: - Treatment success (p=0.0566)- not significant - Group 1: MME = 48 (97.9%) - Group 2: sodium phosphate n=41 (87.2%) - Treatment failure: (p-value not reported) - Group 1: MME = n=1 (0.02%) - Group 2: sodium phosphate n=6 (12.8%) - Time to defecation (minutes) mean/SD (p=0.23) - Group 1: MME = 18.3 (17.3) - Group 2: sodium phosphate 23.4 (24.3) - Time from treatment to disposition (minutes) mean/SD (p=0.5994) not significant - Group 1: MME = 154.5 (148.3) - Group 2: sodium phosphate 171.7 (171.3) Secondary: - Emesis

- Group 1: MME n=2
- Group 2: sodium phosphate n=5
- diarrhea
 - Group 1: MME n=3
 - Group 2: sodium phosphate n=2
- Abdominal pain
 - Group 1: MME n=1
 - Group 2: sodium phosphate n=5
- Nausea
 - Group 1: MME n=1
 - Group 2: sodium phosphate n=1
- fatigue
 - Group 1: MME n=1
 - Group 2: sodium phosphate n=0
- Total adverse events
 - Group 1: MME n=8 (36%)
 - Group 2: sodium phosphate n=14 (64%)
- NO adverse events (p=0.4297)
 - Group 1: MME n=42 (43.8%)
 - Group 2: sodium phosphate n=37 (38.5%)
- 1-3 adverse events
 - Group 1: MME n=7 (7.3%)
 - Group 2: sodium phosphate n=10 (10.4%)

Limitations:

- The study was retrospective
- Inconsistency in ED documentation (In particularly information on pain score, posttreatment assessment, and improvement in symptoms)
- Primary reviewer was not blinded to treatment methods
- It was not adequately powered to show difference in safety

References

- Freedman, S. B., Thull-Freedman, J., Rumantir, M., Eltorki, M., & Schuh, S. (2014). Pediatric constipation in the emergency department: evaluation, treatment, and outcomes. *Journal of pediatric gastroenterology and nutrition*, 59(3), 327-333.
- Gordon, M., Naidoo, K., Akobeng, A. K., & Thomas, A. (2011). Osmotic and stimulant laxatives for the management of childhood constipation. *Gastroenterology-Orlando*, 140(1), S.
- Hansen, S. E., Whitehill, J. L., Goto, C. S., Quintero, C. A., Darling, B. E., & Davis, J. (2011). Safety and efficacy of milk and molasses enemas compared with sodium phosphate enemas for the treatment of constipation in a pediatric emergency department. *Pediatric emergency care*, 27(12), 1118-1120.
- Miller, M. K., Dowd, M. D., Friesen, C. A., & Walsh-Kelly, C. M. (2012). A randomized trial of enema versus polyethylene glycol 3350 for fecal disimpaction in children presenting to an emergency department. *Pediatric emergency care*, 28(2), 115-119.
- Sood, M., (2017). Chronic functional constipation and fecal incontinence in infants and children. In A.G. Hoppin (Ed.), UpToDate. Retrieved July 1, 2017 from https://www.uptodate.com/contents/chronic-functional-constipation-and-fecal-incontinence-in-infants-and-children-treatment?source=search_result&search=constipation%20in%20children&selectedTitle=4~150
- Tabbers, M., DiLorenzo, C., Berger, M., Faure, C., Langendam, M., Nurko, S., . . . Benninga, M. (2014). European Society for Pediatric Gastroenterology, Hepatology, and Nutrition; North American Society for Pediatric Gastroenterology. Evaluation and treatment of functional constipation in infants and children: evidence-based recommendations from ESPGHAN and NASPGHAN. *J Pediatr Gastroenterol Nutr*, 58(2), 258-274.
- Vilke, G. M., DeMers, G., Patel, N., & Castillo, E. M. (2015). Safety and efficacy of milk and molasses enemas in the emergency department. *The Journal of emergency medicine*, 48(6), 667-670.
- Walker, M., Warner, B. W., Brilli, R. J., & Jacobs, B. R. (2003). Cardiopulmonary compromise associated with milk and molasses enema use in children. *Journal of pediatric gastroenterology and nutrition*, 36(1), 144-148.
- Wallaker, K., Fortuna, E., Bradin, S., Macy, M., Hassan, M., & Stanley, R. (2014). Milk and molasses enemas: clearing things up. *Journal of Emergency Nursing*, 40(6), 546-551.