Childhood constipation treatment, long-term prognosis and quality of life

Bongers, M.E.J.

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Appendix chapter 4
<table>
<thead>
<tr>
<th>Study, Quality score (QS)</th>
<th>Study population</th>
<th>Treatment</th>
<th>Follow-up</th>
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</thead>
<tbody>
<tr>
<td><strong>Banasz-kiewicz et al., 2006</strong> 16</td>
<td>Inclusion: between 2-16 years of age with constipation (&lt;3 BMs per week for at least 12 weeks) Exclusion: Enteric neuromuscular, anatomic, or metabolic diseases N=84 Gender: M/F 36/48 Age (mean ±SD): 96.0 ± 41.5 mo; Duration: 71.9 ± 41.7 mo; Severity: 2.2± 0.6 BMs/week Setting: Paediatric gastroenterology department</td>
<td>lactulose+LGG versus lactulose+ placebo</td>
<td>24 months Loss to FU: 6%,</td>
</tr>
<tr>
<td><strong>De Lorijn et al., 2004</strong> 17</td>
<td>Inclusion: &gt;5 years of age with constipation (at least 2 of the following: &lt;3BM/week; &gt;1 episode of encopresis/week; passing of very large stool every 7-30 days; palpable abdominal or rectal mass). Exclusion: Hirschsprung's disease, spinal and anal anomalies, previous colon surgery, metabolic or renal abnormalities, mental retardation N=169 Gender: M/F: 109/60; Age: median (25th-75th centiles) 8.4 yrs (7.0-10.5); Onset: median age 3.5 yrs (1.0-4.0) Severity: median BMs/wk 2.0 (1.0-2.0); median encopresis freq/ wk: 10.0 (5.5-21.0) Setting: Paediatric gastroenterology department</td>
<td>High fibre diet, toilet advice, laxatives (lactulose, desimpaction with enemas) and biofeedback training or anorectal manometry.</td>
<td>12 months Loss to FU: no information</td>
</tr>
<tr>
<td><strong>Elshimy et al., 2000</strong> 18</td>
<td>Inclusion: &lt;5 years of age with constipation (unspecified) Exclusion: no criteria presented N=42 Gender not presented Age mean 21months (range 1-58); Duration: 12,5 months (range 1-48) Severity: not presented Setting: General paediatric department</td>
<td>Laxatives, advice of generous intake of dietary fibre and fluids</td>
<td>18 months Loss to FU: 2.2%</td>
</tr>
<tr>
<td>Recovery definition</td>
<td>Recovery at end of follow-up</td>
<td>Prognostic factors</td>
<td>Results</td>
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</tr>
<tr>
<td>≥ 3 BMs/week with no fecal soiling, with or without the use of laxatives during the last 6 months</td>
<td>off laxatives: 60% with laxative use: 10%</td>
<td>None presented</td>
<td></td>
</tr>
</tbody>
</table>
| ≥3 BMs/week, <1 episode of encopresis/2 weeks, with or without laxatives for at least 1 month. | off laxatives: 57.7% with laxative use: 9.9% | 1) Male gender (history)  
2) Presence of a rectal or abdominal mass (PE)  
3) CTT>100 hrs  
4) Defecation frequency  
5) Encopresis frequency  
6) Presence of nighttime encopresis  
7) Production of large stools (history) | 1) OR 0.34 (95%CI 0.16-0.70)  
2) OR 3.39; (95%CI 1.30-8.83)  
3) OR 0.31 (95%CI 0.12-0.85)  
4-7) No statistical significant association |
<p>| Unspecified | off laxative use: 71% with laxative use: 88% | Complicating psychosocial factors | No statistical analysis performed |</p>
<table>
<thead>
<tr>
<th>Study, quality score (QS)</th>
<th>Study population</th>
<th>Treatment</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loening-Baucke 1987 22</td>
<td>Inclusion: children with encopresis and constipation (unspecified) for &gt;1 yr and presence of a large amount of stools in the rectum. Exclusion: age &lt;5 yrs, previous colon surgery, hypothyroidism, Hirschsprung's disease, mental deficiency, chronic debilitating disease. N=25 Gender: M/F 19/6; Age mean 9.9 yrs (range 5.8-15.4); Duration &gt;1 yr. Severity: encopresis freq. range 3-10/day Setting: General paediatric department</td>
<td>Disimpaction in case of enormous fecal retention, milk of magnesia, high fibre diet, instructions in bowel training techniques</td>
<td>9-16 months Loss to FU: 0%</td>
</tr>
<tr>
<td>Loening-Baucke 1989 23</td>
<td>Inclusion: children with chronic constipation (unspecified) and overflow incontinence Exclusion: age &lt;5 yrs, hypothyroidism, Hirschsprung's disease, mental deficiency, chronic debilitating disease, previous colon surgery. N=104 Gender: M/F:69/28. Age mean 9.0 years (±2.4). Duration: not presented, Severity: mean soiling freq: 15/wk, palpable fecal mass in the abdomen: 45% Setting: General paediatric department</td>
<td>Disimpaction in case of enormous fecal retention, milk of magnesia, high fibre diet, instructions in bowel training techniques</td>
<td>12 months Loss to FU: 6.7%</td>
</tr>
<tr>
<td>Loening-Baucke 1993 24</td>
<td>Inclusion: children £4 yrs with constipation (£3BMs/wk or painful defecation, or rectal impaction, or an abdominal fecal mass. Exclusion: hypotonia, cerebral palsy, severe mental retardation, Hirschsprung's disease, anal atresia, or spinal disease N=174. Gender: M/F: 87/87. Age mean 2.2 (±1.3) yrs; Duration: mean age of onset: 11 (±13) months; Severity: &lt;1BM/wk: 13%, 1-3 BMs/wk:32%, &lt;3BMs/wk:58% Setting: General paediatric department</td>
<td>Disimpaction (phosphate enema), education, prevention by daily laxative use (milk of magnesia) and an increase of dietary fibre, and scheduled toilet sittings</td>
<td>mean 6.9 (±2.7) yrs. Loss to FU: 48.3%</td>
</tr>
<tr>
<td>Recovery definition</td>
<td>Recovery at end of follow-up</td>
<td>Prognostic factors</td>
<td>Results</td>
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</tr>
<tr>
<td>≥3 BM/wk, ≤2 smear/month or no soiling at all, while off laxatives for at least a month</td>
<td>12 month recovery rate: 36%</td>
<td>1) presence of a palpable abdominal fecal mass 2) ability to relax external sphincter 3) ability to defecate rectal balloon 4) age at presentation 5) time of onset of constipation/encopresis 6) soiling frequency 7) history of severe abdominal pain</td>
<td>1) P&lt;0.0001 2) Recovery 70%(yes) vs. 13% (no) 3) Recovery 64%(yes) vs. 14% (no) 4-7) No association measures presented; no statistical significant association.</td>
</tr>
<tr>
<td>≥3 BM/wk, ≤2 smear/month or no soiling at all, while off laxatives for at least a month</td>
<td>12 month recovery rate: 43%</td>
<td>1) mean soiling freq/ wk (recovered vs non-recovered) 2) presence of a palpable abdominal fecal mass 3) inability to defecate rectal balloons 4) abnormal contraction of the external anal sphincter 5) gender 6) age at presentation 7) time of onset of constipation and soiling 8) defecation frequency 9) history of severe abdominal pain 10) nighttime urinary incontinence 11) previous urinary tract infection</td>
<td>1) 10 vs 18, p&lt;0.002 2) 26% vs 62%, p&lt;0.0006 3) in relation to treatment failure (p&lt;0.04) 4) in relation to treatment failure (p&lt;0.01) 5-11) No association measures presented; no statistical significant association.</td>
</tr>
<tr>
<td>≥3 BM per week, no soiling, and receiving no drugs or treatment</td>
<td>12 month recovery rate: 63%</td>
<td>1) gender 2) age at presentation 3) time of onset of constipation 4) defecation frequency 5) stool withholding 6) urinary tract infection 7) abdominal or rectal mass</td>
<td>1-7) No association measures presented; no statistical significant association</td>
</tr>
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<tr>
<td>Loening-Baucke 1996(^{26}) QS 6</td>
<td>Inclusion: children with constipation (unspecified) and encopresis. Exclusion: Hirschsprung disease, hypothyroidism, mental deficiency, chronic debilitating diseases or neurologic abnormalities, and previous surgery of the colon. N=232. Gender: M/F:176/56; Age mean 9±3 yrs; Duration: not presented; Severity: not presented; Setting: General paediatric department</td>
<td>Disimpaction, education, prevention by daily laxative use and an increase of dietary fibre, and scheduled toilet sits. In case of anismus: biofeedback</td>
<td>12 months. Loss to FU: 40%</td>
</tr>
<tr>
<td>Miele et al., 2004(^{26}) QS 5</td>
<td>Inclusion: children with a FGID according to the Rome II criteria. Exclusion: no criteria presented. N=66. Gender: M/F 30/36; Age mean 3.9±2.8 yrs, Duration: age at onset:2.1±1.8 yrs, Severity: not presented; Setting: General paediatric department</td>
<td>Disimpaction, followed by maintenance therapy with an osmotic laxative and recommendations to increase dietary fibre</td>
<td>12 months. Loss to FU: 29%</td>
</tr>
<tr>
<td>Polanco et al., 2004(^{27}) QS 6</td>
<td>Inclusion: children with constipation (&lt;3 BM/wk for at least 3 months with difficult and painful defecation). Exclusion: no criteria presented. N=154. Gender: M/F: 72/82; Age mean 6.3±3.33 yrs; Duration: age of onset 2-4 yrs: 23.8%, onset &gt;4 yrs: 39.5%; Severity: abdominal pain: 53.2%, palpable abdominal mass: 8.15%; Setting: Paediatric gastroenterology department</td>
<td>Toilet training, diet rich in fibre, maintenance medication if necessary</td>
<td>6 months. Loss to FU: no information</td>
</tr>
<tr>
<td>Staiano et al., 1994(^{26}) QS 8</td>
<td>Inclusion: children with constipation (unspecified) for at least 6 months. Exclusion: hypoparathyroidism, hyperparathyroidismspinal and anal anomalies and mental retardation. N=103. Gender: M/F: 61/42. Age median 4.7 yrs (range 1.3-11.3), Duration: at least 6 months; Severity: median def.freq./wk 2 (range 1-4). Setting: not specified</td>
<td>Toilet training, high fibre diet, removal of impacted feces by enemas, microlax suppositories, or rectal infusion of saline, and high doses of lactulose for 3-5 days. Lactulose was continued for 3 months.</td>
<td>5 yrs. Loss to FU: at 1 yr: 30%; At 5 yrs: 39.8%.</td>
</tr>
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<td>Recovery definition</td>
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</table>
| A) ≥3BM/wk and ≤2soiling episodes per month while off laxatives for at least one month  
B) ≥3BM/wk and ≤2soiling episodes per month, no abdominal pain, irrespective of laxative use | A) 41.7%  
B) 47.5% | 1) ability to defecate a 100 ml rectal balloon  
2) secondary encopresis (medical history) | 1) OR 2.13 (95%CI 1.06-4.29), p<0.04  
2) OR 2.09 (95%CI 1.04-4.23), p<0.04 |

| unspecified | 70% | None presented |

| ≥3 BM/day | At 6 months: 98.4% | None presented |

| >4BM/wk and/or TGTT <33 hr After 5 year: 48% while off laxatives for at least a month | 1) history of constipation in the first year of life  
2) pos. family history  
3) presence of abdominal pain at 1 yr from diagnosis  
4) age of onset  
5) soiling frequency  
6) age at presentation  
7) presence of abdominal pain at presentation  
8) gender  
9) defecation frequency  
10) megarectum/megacolon at diagnosis  
11) TGTT at diagnosis | Recovered vs non recovered (1-3):  
1) 33.3% vs 53.1% (p<0.05);  
2) 26.6% vs 40.6% (p<0.05);  
3) p<0.05 with persistence  
4) 3.0±2.9 vs 1.8±1.4 (p<0.05);  
5-11) no statistical significant association |
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| Van den Berg et al., 2005\(^{30}\) | Inclusion: children with constipation (one of the following: <3/BMswk; painful def; use of laxatives) in first year of life. Exclusion: organic causes of constipation such as gastrointestinal malformations, spinal abnormalities, cerebral palsy, Hirschsprungs diseases. N=47 Gender: M/F: 28/19 Age median (25th-75th centiles) 3.5 months (2.0-13.5). Duration: median 3 (2-9.2) mo Severity: median 2 BM/wk (0-7); Setting: Paediatric gastroenterology department | Elimination of fecal impaction with enemas (sodiumducosat sorbitol or sodiumlaurylsulfoacetate) followed by oral laxatives (lactulose or PEG) | Median FU 20 months (range 6-52) Loss to FU: 11%.
| van Ginkel et al., 2003\(^{9}\) | Inclusion: children with constipation (≥at least 2 of the following: <3BMswk, ≥2 episodes of encopresis/wk, periodic passage of very large amounts of stool at least one every 7-30 days, palpable abdominal or rectal mass) Exclusion: organic causes of constipation and children using drugs influencing gastrointestinal function other than laxatives N=418 Gender: M/F: 139/279 Age median (25th-75th centiles) 8 (6-10) yrs Duration: period of symptoms before intake median 5 yrs +5 mo Severity: median 2 (1-5.5) BMs/ wk; median encopresis freq/wk: 2 (3-17) Setting: Paediatric gastroenterology department | Standard conventional treatment protocol (enemas, lactulose, high fibre diet, education). 297 children received additional treatment (biofeedback or anorectal manometry) | Median FU 5 yrs (range 1-8). Loss to FU at 1 yr: 4.5%.
| Martinez-Costa et al., 2005\(^{31}\) | Inclusion: children >4 yrs with chronic functional constipation (≥3 BM/wk since the previous 2 months; voluminous or scybalous stools; pain or straining; ≥2 soiling episodes/wk). Exclusion: organic causes of constipation such as encefalopathy, Hirschsprung’s disease etc. N=62 Gender M/F 25/37 Age median 6.1 yrs (range 1-14); Duration ≥2 months, Severity: encopresis 31%, faecal impaction 27% Setting: Paediatric gastroenterology department | Disimpaction and maintenance treatment (senna/mineral oil) | 12 months. Loss to FU and
Van den Berg et al., 2005

Inclusion: children with constipation (one of the following: <3 BMs/week; painful def; use of laxatives) in first year of life.

Exclusion: organic causes of constipation such as gastroinestinal malformations, spinal abnormalities, cerebral palsy, Hirschprungs disease.

N=47

Gender: M/F: 28/19

Age median (25th-75th centiles) 3.5 months (2.0-13.5).

Duration: median 3 (2-9.2) mo

Severity: median 2 BMs/week (0-7);

Setting: Paediatric gastroenterology department

Elimination of fecal impaction with enemas (sodium ducosate, sorbitol or sodium laurylsulfoacetate) followed by oral laxatives (lactulose or PEG)

Median FU 20 months (range 6-52)

Loss to FU: 11%.

At least 4 weeks with ≥3 BMs/week, no pain during def and no laxative use

- Positive outcome: ≥3 BMs/week, no pain, <2 soiling episodes/month

At 12 months off laxatives: 60%

- At 12 months with laxatives: 17%

1) <2 months of treatment before presentation

2) <3 months of symptoms before intake

3) gender

4) age of onset

5) def freq at presentation

6) prematurity at birth

7) delayed passage of meconium

8) pos fam history

(standardized questionnaire)

van Ginkel et al., 2003

Inclusion: children with constipation (=at least 2 of the following: <3 BMs/week, ≥2 episodes of encopresis/week, periodic passage of very large amounts of stool at least 1 every 7-30 days, palpable abdominal or rectal mass)

Exclusion: organic causes of constipation and children using drugs influencing gastrointestinal function other than laxatives

N=418

Gender: M/F: 139/279;

Age median (25th-75th centiles) 8 (6-10) yrs;

Duration: period of symptoms before intake median 5 yrs + 5 mo

Severity: median 2 (1-5.5) BMs/week; median encopresis freq/week: 2 (3-17)

Setting: Paediatric gastroenterology department

Standard conventional treatment protocol (enemas, lactulose, high fibre diet, education). 297 children received additional treatment (biofeedback or anorectal manometry)

Median FU 5 yrs (range 1-8).

Loss to FU at 1 yr: 4.5%.

At least 4 wks with ≥3 BM/wk, with ≤2 encopresis episodes/month, no laxative use

- At 12 months off laxatives: 59%

- At 12 months with laxatives: 24%

1) onset of complaints >4 yrs (<1 yr = ref)

2) difference of 7 encopresis episodes/week at intake

3) duration of symptoms

4) pos fam history

5) - hard fecal bolus found on physical examination

6) male sex

1) RR 2.4 (95% CI 1.2-4.8)

2) RR 2.5 (95% CI 1.1-3.7)

3-6) no statistical significant association

Martinez-Costa et al., 2005

Inclusion: children >4 yrs with chronic functional constipation (≤3 BMs/week since the previous 2 months; voluminous or scybalous stools; pain or straining; ≥2 soiling episodes/week).

Exclusion: organic causes of constipation such as encephalopathy, Hirschsprung’s disease etc.

N=62

Gender M/F 25/37;

Age median 6.1 yrs (range 1-14);

Duration ≥2 months,

Severity: encopresis 31%, faecal impaction 27%

Setting: Paediatric gastroenterology department

Disimpaction and maintenance treatment (senna/mineral oil) 12 months. Loss to FU and recovery at end of follow-up

Positive outcome: ≥3 BMs/week, no pain, <2 soiling episodes/month

After 6-12 months: 85% None presented

Prognostic factors

None presented

Results

None presented

1) RR for first succes: 1.55 (95%CI 1.11-2.15)

2) 0.87 (95%CI 0.80-0.94)

3-6) no statistical significant association

Appendix chapter 4
Table 3. Prognostic factors (best evidence synthesis)

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<tr>
<th>Prognostic factor</th>
<th>Methodological quality</th>
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<tbody>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Age at intake</td>
<td>Low</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical history</td>
<td></td>
</tr>
<tr>
<td>Age of onset</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive family history for childhood constipation</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>&lt;3 months symptoms before presentation</td>
<td>High</td>
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<tr>
<td>&lt;2 months treatment before presentation</td>
<td>High</td>
</tr>
<tr>
<td>Premature birth</td>
<td>High</td>
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<tr>
<td>Delayed passage of meconium</td>
<td>High</td>
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<tr>
<td>Clinical symptoms</td>
<td></td>
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<tr>
<td>Defecation frequency</td>
<td>High</td>
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<tr>
<td></td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of fecal incontinence episodes</td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of fecal incontinence episodes</td>
<td>High</td>
</tr>
</tbody>
</table>

OR = odds ratio
### Table 3. 
Prognostic factors (best evidence synthesis)

<table>
<thead>
<tr>
<th>Study</th>
<th>Prognostic factor</th>
<th>Methodological quality</th>
<th>Association with recovery</th>
<th>Best evidence synthesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>OR 0.34 (0.16-0.70)</td>
<td>neg</td>
<td></td>
<td>Conflicting</td>
</tr>
<tr>
<td>31</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>OR 1.08 (0.82-1.42)</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>OR 1.71 (0.62-4.77)</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>no association measures presented</td>
<td>no</td>
<td>Limited evidence for no association</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>no association measures presented</td>
<td>no</td>
<td>Conflicting</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>&gt;4y (&lt;1y = ref): RR 1.55 (1.11-2.15)</td>
<td>pos</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>recovered 11.1y±3.4 vs. non-recovered 10.3y±3.1 (p=0.34)</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>no association measures presented</td>
<td>no</td>
<td>Strong evidence for no association</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>RR 1.14 (0.79-1.64)</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>recovered 26.6% vs non-recovered 40.6% (p&lt;0.05)</td>
<td>neg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>no association measures presented</td>
<td>pos</td>
<td>Limited</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>no association measures presented</td>
<td>pos</td>
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<td>31</td>
<td>no association measures presented</td>
<td>no</td>
<td>Limited</td>
<td></td>
</tr>
<tr>
<td>17**</td>
<td>≥3/wk OR=1 (ref)</td>
<td>Strong evidence for no association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>OR 0.34 (0.16-0.70)</td>
<td>neg</td>
<td></td>
<td>Conflicting</td>
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<td>31</td>
<td>no association measures presented</td>
<td>no</td>
<td></td>
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<tr>
<td>23</td>
<td>recovered 5±4wk vs. non-recovered 4±5 (p=0.28)</td>
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<tr>
<td>24</td>
<td>no association measures presented</td>
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<td>29</td>
<td>recovered 2.3±1.7/wk vs. non-recovered 1.9±1.8 (p=0.37)</td>
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<tr>
<td>25</td>
<td>OR 2.09 (1.04-4.23) (p&lt;0.04)</td>
<td>pos</td>
<td>Insufficient</td>
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<tr>
<td>29</td>
<td>recovered 6.6% vs. non-recovered 12.5%</td>
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<tr>
<td>OR 1.81 (0.34-11.82)</td>
<td>no</td>
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<tr>
<td>17**</td>
<td>no encopresis: OR=1 (ref); &lt;1/day: 0.58 (0.14-2.43)</td>
<td>no</td>
<td>Conflicting</td>
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<tr>
<td>1-2/day: 0.44 (0.11-1.68); ≥2/day: 0.44 (0.12-1.68)</td>
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<tr>
<td>Prognostic factor</td>
<td>Methodological quality</td>
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<td>------------------------------------------------------------</td>
<td>------------------------</td>
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<tr>
<td>Abdominal pain at presentation/ history of abdominal pain</td>
<td>Low</td>
<td></td>
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<tr>
<td>Production of large stools</td>
<td>High</td>
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<tr>
<td>Urinary tract infection</td>
<td>Low</td>
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<tr>
<td>Nighttime urinary incontinence</td>
<td>Low</td>
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<tr>
<td>Stool withholding</td>
<td>Low</td>
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<tr>
<td>Physical examination</td>
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<tr>
<td>Absence of a rectal or abdominal mass</td>
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<tr>
<td>Absence of a rectal or abdominal mass</td>
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<tr>
<td>Additional examination</td>
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<tr>
<td>Balloon defecation</td>
<td>Low</td>
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<tr>
<td>Relaxation of external sphincter</td>
<td>Low</td>
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<tr>
<td>CTT/TGTT</td>
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<tr>
<td>CTT/TGTT</td>
<td>Low</td>
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<tr>
<td>Megarectum and/or megacolon at diagn</td>
<td>Low</td>
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</table>

*: not included in best evidence synthesis  **: results summarized as ’no’
## Study Results

<table>
<thead>
<tr>
<th>Study</th>
<th>Results</th>
<th>Association with recovery</th>
<th>Best evidence synthesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Difference of 7 encopresis episodes/wk at intake:</td>
<td>RR = 0.87 (0.80-0.94)</td>
<td>neg</td>
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<tr>
<td>22</td>
<td>No association measures presented</td>
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<tr>
<td>23</td>
<td>Recovered 10/wk vs non-recovered 18/wk, p&lt;0.002</td>
<td>neg</td>
<td>Limited evidence for no association</td>
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<tr>
<td>22</td>
<td>No association measures presented</td>
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<tr>
<td>23</td>
<td>Recovered 49% vs. non-recovered 44%, OR 1.22 (0.55-2.74)</td>
<td>no</td>
<td>Limited evidence for no association</td>
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<tr>
<td>29</td>
<td>No association measures presented</td>
<td></td>
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</tr>
<tr>
<td>17</td>
<td>OR 1.09 (0.51-2.30)</td>
<td>no</td>
<td>Limited evidence for no association</td>
</tr>
<tr>
<td>23</td>
<td>OR 0.35 (0.09-1.27)</td>
<td>no</td>
<td>Insufficient</td>
</tr>
<tr>
<td>24</td>
<td>No association measures presented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>No association measures presented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>No association measures presented</td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>Rectal mass: OR 3.39 (1.30-8.83)</td>
<td>pos</td>
<td>Conflicting</td>
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<tr>
<td>32</td>
<td>Rectal mass: OR 1.23 (0.49-3.10)</td>
<td>no</td>
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<td>22</td>
<td>Hard fecal bolus: RR 0.97 (0.74-1.28)</td>
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<tr>
<td>22*</td>
<td>Presence of abdominal mass related to non recovery: p&lt;0.0001</td>
<td>neg</td>
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<tr>
<td>23</td>
<td>Abdominal mass: recovered 26% vs non-recovered 62%, p&lt;0.0006</td>
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<tr>
<td>23</td>
<td>Abdominal / rectal mass: no association measures presented</td>
<td>neg</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Ability to defecate at least 2/3 balloons: no association measures presented</td>
<td>pos</td>
<td>Insufficient</td>
</tr>
<tr>
<td>22</td>
<td>Inability to defecate a 100ml balloon in ≤1 min related to treatment failure: p&lt;0.04</td>
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<tr>
<td>23*</td>
<td>Ability to defecate balloon: OR 2.13 (1.06-4.29) (p&lt;0.04)</td>
<td>pos</td>
<td></td>
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<tr>
<td>25</td>
<td></td>
<td>pos</td>
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<tr>
<td>22</td>
<td>Ability to relax external sphincter: no association measures presented</td>
<td>pos</td>
<td>Insufficient</td>
</tr>
<tr>
<td>23*</td>
<td>Abnormal contraction of external sphincter related to treatment failure: p&lt;0.01</td>
<td>pos</td>
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<tr>
<td>17</td>
<td>CTT&gt;100 hrs: OR 0.31 (0.12-0.85)</td>
<td>neg</td>
<td>Limited evidence for negative association</td>
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<tr>
<td>29</td>
<td>TGTT (hrs): recovered: 87.6±22.0 vs. non-recovered 89.3±19.9 (p=0.75)</td>
<td>no</td>
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<tr>
<td>29</td>
<td>Recovered 53.3% vs non-recovered 62.5%</td>
<td>no</td>
<td>Insufficient</td>
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</tbody>
</table>