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Rotorua

Encopresis and Investigation of UTIs in Children - Concurrent Workshop Repeated
Saturday, 22 June 2013
Start 8:30am
Start 9:35am
Duration: 55mins
Duration: 55mins
Monet
Monet
Faecal Incontinence
Investigation of UTI in children

JOHAN MORREAU GPCME 2013
# Frequency of Bowel Motions

## Normal frequency of bowel movements

<table>
<thead>
<tr>
<th>Age</th>
<th>Bowel movements per week</th>
<th>Bowel movements per day</th>
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</thead>
<tbody>
<tr>
<td>0–3 months [breast fed]</td>
<td>5 – 40</td>
<td>2.9</td>
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<tr>
<td>0–3 months [formula fed]</td>
<td>5 – 28</td>
<td>2.0</td>
</tr>
<tr>
<td>6–12 months</td>
<td>5 – 28</td>
<td>1.8</td>
</tr>
<tr>
<td>1–3 years</td>
<td>4 – 21</td>
<td>1.4</td>
</tr>
<tr>
<td>≥3 years</td>
<td>3 – 14</td>
<td>1.0</td>
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</tbody>
</table>

Adapted from Fontana et al, 1987.
Constipation

- Difficult passage of infrequent, dry, hard stools that often cause pain and discomfort
- Less than three stools per week
- More than one episode of faecal incontinence per week
- Large stools in the rectum or palpable on abdominal examination
- Passing of very large stools that obstruct the toilet
- Retentive posturing and withholding behaviour
Faecal Incontinence

- Passage of stools in an inappropriate place – for 8/52.

**Faecal impaction**
- Severe constipation with a large faecal mass in the rectum or the abdomen – not likely to be passed voluntarily
**Constipation - causes**

- Usually functional
- Always ask about cows milk intake, timing of passage of meconium, medication

**Food changes**
- When changing from breast to formula feeding and when weaning onto solids
- When switching formula feeds.

**Dehydration**
- Reduced fluid intake (illness-altitude) and Activity
Constipation - causes

Pain

• Nappy rash can lead to pain on defecation.

• Following an anal tear or anal fissure caused by passing hard and large stools.

• Acute perianal infection due to group A beta haemolytic streptococcal infection.

Environmental factors postponing defaecation

• Not wanting to go to the toilet at school
Constipation - causes

Control issues - Psychosocial stressors

• Birth of a sibling
• Parental disharmony
• Moving house
• Abuse including neglect
What happens? Physiology?

- Up to 63% of children with constipation and soiling have had painful defecation beginning <3 years of age.
- Voluntary withholding of the stool by the child to avoid pain initiates a vicious circle.
- A very large stool reinforces the experience of pain and anal trauma.
- Overflow diarrhoea or soiling is caused by watery faeces trickling through hardened faeces that have been retained in the rectum and colon.
- Rectal sensation diminished (brain switches off!)


THE VIOLENT CYCLE OF CONSTIPATION

Large hard stool

Stretches and may tear anus

Child attempts to avoid defecation because it is painful. Contracts anal sphincter and gluteal muscles

Long delay in passing stool

Figure 3:
Adapted from Loening-Baucke, 1996.
Symptoms/Complications

- Abdominal pain
- Reduced appetite
- Nausea and vomiting
- Urinary incontinence or bedwetting
- Recurrent urinary tract infection
- Urinary retention
- Vulvovaginitis

Always Rx Constipation first
History/Examination

- Chronologic History is critical – answers most questions re etiology, primary vs secondary pathology, complications

- Establish parental / age appropriate motivation, capability to engage

- Examination – General well being, walking, weight, abdomen, anus, faeces
- + /- Xray, thyroid function, Anemia, ??
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rabbit droppings</td>
<td>Separate hard lumps, like nuts (hard to pass)</td>
</tr>
<tr>
<td>2</td>
<td>Bunch of grapes</td>
<td>Sausage-shaped but lumpy</td>
</tr>
<tr>
<td>3</td>
<td>Corn on cob</td>
<td>Like a sausage but with cracks on its surface</td>
</tr>
<tr>
<td>4</td>
<td>Sausage</td>
<td>Like a sausage or snake, smooth and soft</td>
</tr>
<tr>
<td>5</td>
<td>Chicken nuggets</td>
<td>Soft blobs with clear-cut edges (passed easily)</td>
</tr>
<tr>
<td>6</td>
<td>Porridge</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>7</td>
<td>Gravy</td>
<td>Watery, no solid pieces ENTIRELY LIQUID</td>
</tr>
</tbody>
</table>

Concept by Professor DCJ Candy and Emma Denney, based on the Bristol Stool Form Scale produced by Dr. WD Heineken, British Medicine of the 1930s.
Management

Education
- To alleviate blame
- To enlist cooperation

Disimpaction. Always look up doses if uncertain / make yourself familiar with a regimen
- Oral
- Rectal
- Manual
Critical to disimpact before starting maintenance therapy.

The oral route is preferred - adherence to the prescribed regimen may be a problem.

Suppositories and enemas are rarely indicated - invasive and distressing - may achieve disimpaction sooner.

The treatment of choice is best decided after discussion with the child and their family - essential for compliance.

Choice of medication is not as important as the parents’ and child’s compliance.
Oral Treatment course for faecal impaction

- 2-11 years: Movicol Half (Osmotic laxative)
- >12 years or older: Rx Movicol
- 60ml H₂O per sachet plus fluids+

### Treatment course for faecal impaction in 2–11 year-olds

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
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<tbody>
<tr>
<td>2–5</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
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<tr>
<td>6–11</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>
Oral Disimpaction

- Movicol Half (Australia / NZ) (osmotic)
- Movicol
- Picoprep (stimulant) eg for older child - one satchet in large glass of water followed by 1 litre fluid (sometimes difficult to get them to drink it) Repeated 1-3 times

- Senna (stimulant) - melanosis coli - best thought of as ‘staining’ the bowel rather than affecting it adversely.
Rectal disimpaction

- Micro-enemas such as Microlax®
- Glycerol suppositories
- Bisacodyl suppositories
Maintenance therapy

Medications
a. Stimulants eg Senna at night
b. Softeners eg lactulose - enough to keep motion formed but soft
c. Ongoing Movicol eg Movicol ½ , 1 sachet per day

Toileting programs
May need psychologist , social worker support
eg star charts, child chosen reinforcement (with parents making a big deal of it )for achievable , agreed milestone
a. Sitting on toilet after meal (5-10 min)
b. Doing a pooh (teko) on the toilet
Diet

- Overemphasized
- Regular, balanced meal pattern.
- Adequate fibre intake. Aim for a variety plus fruit and vegetables
- Ensure an adequate intake of fluids.
- Rx Whole of family approach including purchasing
Follow up

- Regular follow-up needed take a ‘whole child’ approach. Some DHB’s have an Encopresis nurse
- Demystify constipation and faecal impaction
- No blame
- Include structure in the child’s toileting routine
- Emphasize need for long-term treatment to avoid relapse (6 months plus)
- Continue to assess general health and appetite.
- Regular contact via telephone or clinic is needed.
- IT WORKS – especially if everyone takes time and is motivated
IMPACT

- Paediatric Bowel Care Pathway, Australia
Urinary Tract Infection

Case

- Neonate – 15% weight loss @ 18 days of age
Urinary tract infection (UTI) – Historical Changes in emphasis

- Incidence of around 5% across populations.
- Past Practice was to look for vesico-ureteric reflux (VUR) and give antibiotic prophylaxis to prevent further infection and damage.
- Renal abnormalities are now known to usually be congenital, not acquired.
- UTI may be a marker for underlying renal and urological structural abnormality but is seldom the cause.
- In older children UTI is often a marker for bladder &/or bowel dysfunction.
Current focus-NICE guideline in 2007/, AAP guidelines in 2011

a. Make a correct diagnosis
b. Provide appropriate treatment
c. Target investigations to a selected group of children.– reduce investigations
d. do not support the routine use of prophylaxis
e. reduce invasive imaging of children after their first febrile UTI (esp reducing the use of micturating cystourethrogram, MCU).
Non specific symptoms (usually very young)
- fever, irritability
- poor feeding
- vomiting and diarrhoea
- weight loss

Specific symptoms (usually older children)
- smelly urine, dysuria
- abdominal pain, loin or suprapubic pain
- fever
Other factors

Examination is often normal apart from a fever.

Some children may look well while others may appear very unwell.

Background of antenatal ultrasound renal dilatation is not uncommon

Associated features include constipation
Bag Urines

- Can **exclude** a UTI but can’t accurately diagnose – up to 85% false positive rate.
- If +ve for WBC or nitrates need a clean catch, catheter urine or suprapubic aspirate.
- Children who can void on request (usually >3yr) can perform an MSU.
- Bag urine should NOT be sent to the laboratory for culture - screening test only.
Clean Catch Urines

- Worth trying before performing a catheter urine (depending on urgency).
- Place clean nappy on the child then feed.
- Wait 30 minutes
- Have sterile open urine collecting pot ready to collect sample
- Undo nappy, clean perineum with sterile water, palpate abdomen suprapubically and if needed tap the symphysis pubis. A child will frequently produce a urine specimen
- If a successful clean catch urine is obtained then if dipstick +ve treat for UTI while awaiting culture.
- If unsuccessful then catheter urine or supra pubic aspirate is needed.
Dipstick Urine

- Can detect urinary protein, blood, nitrites (produced by bacterial reduction of urinary nitrate), and leucocyte esterase (an enzyme present in white blood cells)
- Screening test only. If UTI is suspected, a specimen should be sent for microscopy and culture.
Diagnostic Difficulty

BUT

- Blood and protein are unreliable markers of UTI
- Not all organisms produce nitrites and nitrites take time to develop in urine - poor sensitivity test.
- Not all patients with UTI have pyuria, especially the very young & neutropenic patients.
- Leucocyte esterase can only be detected with relatively high WBC counts in urine - low sensitivity.
- Leucocytes from local sources (vagina, foreskin) may contaminate urine.
- Leucocytes appear in the urine in many other febrile illnesses eg URTI, pneumonia, meningitis etc.
Positive Culture

- A pure growth of usual Bacteria > $10^8$ CFU/litre indicates infection.
- A pure growth > $10^5$ may indicate early infection and requires a repeat specimen.
Rx Antibiotics – Check sensitivities and adjust therapy in 24 to 48 hours

1. Amoxicillin + Clavulanate - 10mg/kg/dose of amoxicillin component, three times daily
   Issues – Penicillin Allergy, Palatability, Diarrhoea
2. Cotrimoxazole - 4mg/kg/dose of Trimethoprim component (0.5ml/kg/dose of Cotrimoxazole suspension), twice daily
   Issues – Allergy, Small risk of blood dyscrasia
3. Cefaclor - 10mg/kg/dose, three times daily for
   Issues – Allergy, serum sickness, resistance, candida

DURATION 10 days total if < 2 years of age, 7 days if > 2 years
Treatment options for prophylaxis

In order of preference:-

- Cotrimoxazole – 2mg/kg of trimethoprim (0.25ml/kg of cotrimoxazole mixture) at night to a max dose of 10ml or 480mg.
- Cefaclor – 10-15mg/kg at night. Max 250-500mg/dose
- Nitrofurantoin 1- 2 mg/kg at night

**Routine prophylaxis** is no longer recommended. First UTI < 2 years plus ? older child with recurrent UTI - Rx prophylaxis while awaiting US
consult with local paediatric team:

- Child under 6 months of age
- Child with known renal tract abnormalities
- Any child who looks severely unwell and needing full septic work up, intravenous antibiotics
Atypical UTI

- UTI associated with sepsis or bacteraemia
- Concern regarding obstructive uropathy
- Failure to respond to antibiotics within 48 hours
- Associated impaired renal function
- Infection with a non E. coli organism
Inpatient/acute US is indicated for:

- Children with atypical UTI eg Hospitalized children not responding to treatment after 48 hours, Infants admitted under 3-6 months old.

Outpatient US within 6 weeks

- < 12 months old with first febrile UTI
- severe illness/ recurrent febrile UTI/ atypical history

Older children do not require an ultrasound post first UTI, but Rx US for recurrent UTI.
MCU

- No evidence of benefit from detecting VUR for majority of children
- MCU is no longer routine.

MCU should be considered for
- < 3 months with US abnormalities after first febrile UTI and /or atypical UTI (VUR or PUV)
- <6 months with recurrent febrile UTI and / or abnormal US
- Older children with intractable recurrent UTI
Follow up

Check urine sample 3 days after completing therapy to confirm the UTI has cleared.

The following children should be considered for follow up, referral to Paediatric Service:

- Children with abnormal imaging results
- Children admitted with UTI with atypical infection
- Children with recurrent UTI.

Royal Children’s Hospital Melbourne, Clinical Guidelines, UTI

Nice Guidelines (2007) cited 1 May 2013 Urinary tract infection in children: diagnosis, treatment and long-term management. NICE clinical guideline 54 Developed by the National Collaborating Centre for Women’s and Children’s Health
# 2012 Antibiotic Susceptibility Profiles

## Rotorua Sensitivities

<table>
<thead>
<tr>
<th>Organism</th>
<th>Sl. aureus</th>
<th>Streptococcus pyogenes</th>
<th>Streptococcus pneumonia</th>
<th>Moraxella catarrhalis</th>
<th>Haemophilus influenzae</th>
<th>Pseudomonas aeruginosa</th>
<th>E. coli</th>
<th>Klebsiella species</th>
<th>Proteus mirabilis</th>
<th>Enterobacter/Serratia spp.</th>
<th>Enterococcus species</th>
<th>Staphylococcus saprophyticus</th>
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<tbody>
<tr>
<td>Number of Isolates</td>
<td>1963</td>
<td>79</td>
<td>290</td>
<td>200</td>
<td>110</td>
<td>1178</td>
<td>164</td>
<td>78</td>
<td>42</td>
<td>109</td>
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<tr>
<td>Penicillin</td>
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<td>R 89</td>
<td>R 78</td>
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<td>V</td>
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<td>R 96</td>
<td>S</td>
<td>R</td>
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<td>R 93</td>
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<td>R 96</td>
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<tr>
<td>AMox / Clav</td>
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<td>R 96</td>
<td>R 96</td>
<td>S</td>
<td>R</td>
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</tr>
</tbody>
</table>

The percentage of organisms susceptible to an antibiotic is recorded (with the sample size in the first column of the table). 
(e.g. *Staphylococcus aureus* vs. *flucloxacillin* 86% susceptible, n=1963)

- **S** = Not specifically tested, but known to be ordinarily susceptible.
- **R** = Organism resistant or antibiotic inappropriate.
- **V** = Variable susceptibility.