REVIEW

Management of childhood constipation

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The effective management of constipation in childhood requires an understanding of the ways that the physical and psychological factors interact. The early difficulty with defecation that leads to pain, fear, and refusal to use the pot or lavatory often progresses to the formation of vicious cycles of increasing faecal retention as the rectum increases in capacity and the experience of passing large, hard stools is repeated. There is increasing distress as overflow faecal incontinence compounds the problem for the older child. The medical, psychological, and surgical management strategies are reviewed together with the rationale for their use.

3. Are there factors that are responsible for the apparent increase in prevalence of childhood constipation in developed countries that could be modified?
4. Is the age of the child a useful guide to the main cause of constipation?
5. Is there an effective treatment protocol once constipation is established?
6. What can be done when childhood constipation is not responding to treatment?
7. Are there new strategies that might accelerate the resolution of childhood constipation?
8. How can individual professionals increase their effectiveness in managing childhood constipation?

There are a series of questions that arise during the management of childhood constipation. This article is structured in a way that aims to guide the reader through these commonly asked questions to produce a clearer understanding of the underlying physical and psychological processes that form the foundation for effective management. Childhood constipation is often compounded by faecal incontinence that becomes the dominant complaint as peer and social pressures increase with age. The evidence base for the treatment of constipation is secure only at the level of expert opinion as there are few useful randomised controlled trials in the medical literature. This partly reflects the unglamorous nature of the problems for potential researchers. It is also the consequence of the variability in the balance between the physical and psychological factors that operate in the provocation and persistence of constipation in individual children. The diverse needs of children with constipation are best met within a therapeutic team that incorporates nurses, paediatricians, general practitioners, child psychiatrists and psychologists, and paediatric surgeons all working at one time or another within a dynamic partnership with the child and family. This partnership usually starts by being professionally led. However, lasting success is only possible if the child takes on the lead role in understanding how various management strategies work, and particularly in recognising the subtle messages arising from his or her own body.

THE QUESTIONS

1. What do professionals and families understand by the term constipation?
2. Is childhood constipation a physical or behavioural problem in childhood?

BACKGROUND

The history of treating constipation in childhood is a long and often misleading story. Thomas Fayre's first book on children's illness to be written in English (1545) contains a section on the "Stopping of the belly". Walter Harris in his 1742 *Treatise of the Acute Diseases of Children*, erroneously stresses the risk of autointoxication by retained stool, which became a major dogma in the early 20th century: "which being too long retained sends up noxious, and in a manner venomous steams, that should be expelled through the common sink, either by nature or by art". The poetry of his words does not excuse the incorrect content that still influences the thinking of parents and a number of their advisors. Taking into account this history should be a cautionary insight when so much of our current management advice is founded upon opinion rather than objective evidence.

1. WHAT DO PROFESSIONALS AND FAMILIES UNDERSTAND BY THE TERM CONSTIPATION?

There is often confusion generated when the term constipation is used in consultations. This can be avoided by clarifying the nature of the problem that the child is having with defecation. Constipation is used to describe delayed defecation, painful defecation, and the degree of hardness of the stool. Children have a similar range of frequency of defecation as adults¹ but many parents expect every child to pass a daily stool. Infrequent defecation is likely to lead to the formation of hard, dry stools that are inevitably more uncomfortable to pass than more malleable soft ones.

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Table 1 Inter-related physical and psychological factors in childhood constipation

Early physical factors	Early behavioural factors
Familial high capacity rectum	Poor or faddy eating
High milk, low fibre intake	Fear of pain related withholding of faeces
Hard non-malleable stools	Avoidance of defecation
Anal fissure	Too early or coercive pot training
Perianal group A streptococcal infection	Pot/lavatory refusal
Cows' milk allergy/eosinophilic proctitis	Parental anxiety, tension, and anger
Medication—for example, diuretics, analgesia	Fear of medication (particularly by anal route)
Rare: Hirschsprung's disease, anal stenosis, hypercalcaemia, hypothyroidism, coeliac disease	
Later physical	Later behavioural
Hypertrophied rectum (megarectum)	Embarrassment/shame related to soiling
Residual stool (faecaloma/faecalith)	Parental blame/anger related to soiling and lavatory refusal
Episodic rectoanal inhibition and overflow faecal soiling	Teasing and bullying related to incontinence
Poor rectal sensation	Dissociation and denial
Less common: child abuse (anal sexual abuse), coeliac disease, cerebral palsy, lead poisoning	Medicine and lavatory routines refusal
	Decreased mobility/activity

2. IS CHILDHOOD CONSTIPATION A PHYSICAL OR BEHAVIOURAL PROBLEM IN CHILDHOOD?

As with many health problems, a variation in structure or function may be within the normal range but may generate a cycle of physical and psychological responses that produces a complaint as ordinary life is disrupted. An example of this is best illustrated by a typical case history of a child presenting with constipation at the peak age of around 2 years:

The boy has been noticed to have episodes of straining, as if to defecate, throughout the day and he eventually screams as he passes a large hard stool often streaked with fresh blood. Over the last two weeks, the intervals between the stools have extended to four days. He tends to hide behind furniture during these episodes of straining and resists contact with his parents even though he appears afraid. He had no problems with defecation either as a newborn or as an infant, but since age of 1 year had occasional dry stools described as "rabbit droppings" by his mother. This had been explained as being a result of his high cows' milk intake and poor eating. He has a family history of a similar but milder problem occurring in his older sister at the same age and his mother admits to being able to avoid using lavatories outside her own home with a maximum delay in defecation of eight days during one holiday in France.

A commentary on this case may help to explain the balance between the physical and behavioural factors and their evolution over the months as he and his family struggle with the problem.

He probably has a familial predisposition to delayed defecation by having a rectum of a larger capacity than average. This allows him to accumulate stool rather than being forced to pass it as his rectal contractions, in response to distension by retained stools, provoke the rectoanal inhibitory reflex leading to more prolonged and more profound internal anal sphincter relaxation.^{2,3} If he has a large capacity rectum it will require a higher volume of stool to provoke complete inhibition of his internal anal sphincter. Over the four days of his intervals between stools, the rectal volume reaches the point where the internal sphincter is fully relaxed and the stool descends. He has learned to perceive

this sensation as the precursor to anal pain. He then strains to withhold the stool to avoid anal pain by contracting his external anal sphincter and pelvic floor muscles often reinforced by a change in posture (extended legs, arched back—described as the "banana posture"). He has also learned that being distracted during this active withholding straining period is likely to allow the stool to descend and so he avoids contact with his parents. As with most hollow viscera, overloading or obstructing the emptying of the organ will lead to dilatation and hypertrophy. This is clearly seen in congenital obstructive pyloric stenosis in infants and in the bladders of elderly men with prostatism. A similar gradual increase in capacity and retentive activity of the rectum may occur allowing the child to withhold for longer and longer periods. Eventually reaching a point where incomplete emptying occurs leaving a residual hardening stool that itself adds to the obstruction of the rectum and making the withholding activity more successful. Fortunately for the child's health but not his social development, episodes of reflex internal anal sphincter relaxation continue to occur in response to the regular rectal contractions and overflow faecal incontinence prevents intestinal obstruction. So it can be seen that a whole series of physical predisposing conditions lead to a behavioural response as an understandable avoidance of pain that leads to withholding of stool that itself increases the physical capacity for retention. Table 1 lists the potential elements in the evolution of the inter-related physical and psychological factors and will help to generalise beyond this case and allow some of the other child/parent interactions to be considered.

3. ARE THERE FACTORS THAT ARE RESPONSIBLE FOR THE APPARENT INCREASE IN PREVALENCE OF CHILDHOOD CONSTIPATION IN DEVELOPED COUNTRIES THAT COULD BE MODIFIED?

It is estimated that childhood constipation accounts for 25% of paediatric gastroenterologists' workload and is in the top 10 reasons for a general paediatric outpatient consultation.⁴⁻⁶ There appears to be an increase in incidence in recent years and a higher prevalence in more developed countries compared with that in developing countries. Although this perceived increase is difficult to prove due to a lack of epidemiological evidence, a number of factors could account for this. Considering these may stimulate a search for further evidence. The reduction in diarrhoeal disease in developed countries over the last 30 years has altered the case mix in children's wards where it is now unusual to see children with post-gastroenteritis syndromes. It is tempting to speculate that our species has evolved a tendency to limit the impact of agents in producing diarrhoea. The high death rate from diarrhoeal illness in children under 5 years in the past (and still in some resource-poor countries), as well as survival on long thirsty migrations, may have selected our ancestors on the basis of their colonic water reabsorption capacity. In our current environment with cheap food and refrigerators, with legally enforced "sell by" dates and rapid reheating by microwave ovens, our evolutionarily valuable colonic function may put our children more at risk of faecal retention. This is probably compounded by low exercise rates with many children being ferried to school in cars by parents anxious about kidnapping or road traffic accidents. Many entertainments that engage the modern child involve little exercise as they watch television and videos, even though they may attain a precocious expertise on the computer keyboard. The restriction that most schools put on children's access to water also increases the risk of constipation.

Obviously no one wants to return to the high mortality rates related to diarrhoeal disease, but more could be done to

improve the diet, fluid intake, and exercise in the modern child.

4. IS THE AGE OF THE CHILD A USEFUL GUIDE TO THE MAIN CAUSE OF CONSTIPATION?

Even the brief list in the table above demonstrates the value of considering the age and developmental stage of the child in the practical management of these problems.

Newborn and early infancy

Constipation occurring in the newborn should raise the suspicion of an obstructed large bowel by a short aganglionic segment in Hirschsprung's disease or anorectal anomaly with anal stenosis. The presence of vomiting, abdominal distension, failure to thrive, and particularly any delay in the passage of meconium should lead to these conditions being excluded. This is essential if the newborn baby has other structural problems such as congenital heart disease, vertebral anomalies, renal tract anomalies, tracheo-oesophageal fistula, and particularly chromosome defects (the incidence of Hirschsprung's disease is increased 10-fold in Down's syndrome).

Infancy

Constipation with an onset in infancy beyond 4 weeks of age is unlikely to be Hirschsprung's disease,⁷ unless early constipation has gone unreported and the family have been using regular per anal treatments or procedures (suppositories, enemas, or digital evacuation) that might relieve the non-relaxing aganglionic segment. Most constipation starting at this age is fluid/feed intake related. Thus children who are difficult to feed because of prematurity, gastro-oesophageal reflux disease, cleft palate, cerebral palsy, multiple operations, or even those intolerant to cows' milk protein or gluten may present with difficulty in passing stools. This is usually effectively managed by improving their fluid and food intake but vigilance is required to avoid the development of the vicious cycles of hard stools producing pain and possibly anal fissures resulting in involuntary pain related spasm in infancy. This could lead to the accumulation of stool in the rectum that probably leads to abdominal discomfort or pain with feeding as a result of the gastrocolic reflex filling the rectum and provoking more intense and painful rectal contractions down onto the hard stool. Thus the feeding problem can both cause and result from constipation in children who are prone. In severe cases of feeding problems and constipation, especially in association with gastro-oesophageal reflux and poor thriving, rare gut motility problems such as intestinal pseudo-obstruction should be considered.⁸⁻¹¹

Toddlers and preschool

Constipation in the toddler has been illustrated in the case history above. The importance of seeking out the predominant factors operating in the individual child's problem is critically important if the vicious cycles involving the physical and psychological development are to be averted.

School age children

Constipation involving the school age child becomes predominantly the struggle with the resulting overflow faecal incontinence. Often the child's constipation has gone unnoticed for many months or years where the continuous loose stool in the underclothing has been accepted as laziness or immaturity. It is only when the problem comes to the notice of peers and teachers that medical help is sought. Often the medical conclusion that the faecal incontinence problem is being caused by constipation is met with incredulity. The child and family can be persuaded to accept this interpretation if they have experienced a temporary

remission of soiling after the child passing a massive (and often lavatory blocking) stool. Often they need to be convinced with the help of an abdominal radiograph taken five days into a sequence where the child ingests radio-opaque gut transit markers for the first three days. Usually all the markers are present either surrounding the faecal ball visible as a coarse "ground glass" smooth rounded mass in the pelvis or also extending up into the colon. Abdominal palpation usually reveals the degree of faecal rectal loading that leads to problems of overflow soiling, and it is helpful to involve older children in palpating their own mass to improve their understanding of their condition and as a stage towards improving their ownership of the problem. Some children with significant constipation are discovered during their school years because of recurrent urinary tract infections or enuresis. However, at one stage a routine abdominal radiograph was recommended for all children who had had a urinary tract infection and that resulted in a number of children being labelled as constipated as a result of faecal loading of their colons. Many of these children experienced abdominal pains when given laxatives and some acquired faecal incontinence in addition to their urinary incontinence as a result of unnecessary laxative treatment. Use of radio-opaque transit markers is likely to provide a more realistic insight into whether the gut is sabotaging the activity of the bladder. This association between urinary tract infection and constipation is very real with about 13% of children with severe constipation having had treatment for urinary tract infections in two surveys of children attending our constipation referral clinic.

Older children and teenagers

Constipation that afflicts young people in their teenage years is either a continuation of the problems of faecal retention in the megarectum with overflow faecal incontinence or it is the early onset of more adult type pancolonic slow transit constipation. Those who suffer from slow transit constipation differ from those with megarectum in their gender and relative lack of faecal incontinence. Most childhood constipation clinics report a 2-3 to 1 male to female ratio whereas with adults there is a marked female predominance. With older children and teenagers with persistence of the megarectum and faecal incontinence, there is a tendency for increasing denial and dissociation that infuriates their parents and teachers, limits the effectiveness of psychological input, and sabotages any physical treatments. This leads to them forgetting their medication, disregarding routine use of the lavatory, and ignoring faecal incontinence when it occurs. The increasing intolerance of their peers to the incontinence seems to spur some older children and young people to devise effective coping strategies at school only to lapse at home to the despair of their parents. Some others develop "belle indifference" as the denial and dissociation deepens. Only a joint physical and psychological approach is likely to help. Any change in their ownership and engagement with their problem is unlikely to occur without episodes of success in avoiding soiling that might come as a result of effective but intensive physical treatment.

5. Is there an effective treatment protocol once constipation is established?

Many of the preventative strategies were considered above for the different age groups but an outline is given here for the active management of the child with a residual faecal mass, overflow faecal soiling, and long delays from the passage of one large stool to the next.

One of the commonest reasons for laxatives to be ineffective is that they are given in an incorrect order or at an incorrect stage.

The first stage for a child with a hard stool extending to the umbilicus on abdominal palpation is to soften it. Lactulose is often used because of its mixed function of osmotically retaining water in the colon and by encouraging the growth of the colonic bacteria. It is probably more effective once the faecal mass has cleared in reducing colonic transit time and producing softer stools. Sodium docusate has some detergent properties and is more likely to erode a very large dry stool in the expectation that the stool will become more streamlined and be passed. Polyethylene glycol (macrogol) solutions may have a similar effect.

The evacuation phase is the most difficult one for the clinician and the patient. The risk of using forceful but effective physical means to clear the stool must be balanced against the stress caused to the anxious child as this may intensify the psychological factors that operate in the persisting problem. If the stool has been softened and there is a history of the eventual passage of massive stools, it might be kinder to await this event. If the mass is not evacuated spontaneously, then a high dose of stimulant laxative such as senna or picosulphate may successfully clear the retained stool. However, this risks increasing soiling and provoking abdominal pain to such a degree that it undermines the child and family's confidence in the medication that will be so essential in the maintenance phase. Suppositories and enemas are effective but disliked to the point of phobia in some children. A phosphate enema given under sedation by an expert nurse may be acceptable but if the mass of faeces is larger than the bony pelvic outlet then a manual disimpaction under general anaesthesia may be the kinder option. A compromise is the use of polyethylene glycol (Klean-Prep, Golytely, or Movicol). The solution can be drunk or given via nasogastric tube. A number of younger children find it difficult to understand how a tube in their nose helps the problem with their bottoms and may fear this as profoundly as the enema. Thus the choice of evacuation procedure will depend on the severity of the faecal impaction and the child's fears and sensitivities as well as the resources for safe anaesthesia locally. What is obvious is the need to complete the evacuation phase effectively and sensitively but then to use sufficient maintenance medication to prevent reaccumulation.

If the child has had to undergo any of the evacuation methods, there is a degree of motivation from child and family to avoid that being needed again. They are likely to start to take regular stimulant laxatives regularly if they have had the rationale for the treatment explained carefully. Unfortunately there is a great deal of misinformation about laxatives and their supposed dangers of causing "lazy" bowels or physical dependence. Because of the size of the rectum, accumulation will occur unless the stool is accelerated. Senna (Senokot) or sodium picosulphate will provoke more profound rectal contractions and increase the chance of the stool being passed. For the school age child the rather longer mode of action of senna (often 24 hours from ingestion because of the need for activation by colonic bacterial) can be helpful where the evening dose is more likely to provoke an evening stool the next day. Picosulphate works faster. In some children the timing of the onset of the laxative provoked defecation is very predictable but with others it is not and may lead to embarrassing incontinence accidents about which they should be warned. Once a pattern of defecation has been established, parents are tempted to reduce the medication to see if it is still necessary. Unfortunately this is likely to provoke a relapse that might even require a repeat of the rigours of the evacuation phase. Frequent attempts at reducing the child's dose seem to lead to an overall higher input of laxative over time as a result of dealing with reaccumulation. Those children who take a steady

dose (only to reduce if the stool frequency, looseness, or urgency demand a reduction) may need more than a year on stimulant laxatives but at least they avoid further distressing evacuation procedures. There is also controversy over whether, in addition to stimulant laxatives, a stool softener is helpful in the maintenance phase. Methylcellulose or lactulose may be helpful in children with poor dietary fibre intake and Movicol may improve the colonic transit to allow a lower effective stimulant dose. However, too much softener may increase risk of soiling and too much bulk may add to episodes of discomfort. Liquid paraffin (mineral oil) may assist some children but in others it adds to the penetration of clothing by the faecal overflow soiling.

Table 2 summarises some of the key advantages and disadvantages of the commonly used treatments.

6. WHAT CAN BE DONE WHEN CHILDHOOD CONSTIPATION IS NOT RESPONDING TO TREATMENT?

The first question to ask is whether the child is being given the medication regularly or whether the child is taking it. Parents may not report accurately on the regularity of giving medication and they may have become muddled by the complexity of the multistage regimen. They may have come under the influence of family members who increase their anxiety about the medication and occasionally meet other health professionals who undermine their confidence in their current medication by suggesting their own favourite remedy often without having taken a sufficiently detailed history to judge the wisdom of this interference. A very effective way of combating this is for regular follow up especially in the early weeks of initiating treatment. Nurse-led clinics have been shown to be effective and are particularly helpful in consolidating the family's understanding of the problem and in customising the laxatives. The nurse is more likely to be able access local resources such as school nurses, more likely to be able to influence teachers to allow the child better lavatory access, and may be able to arrange home visits to ensure all family members share the same understanding of the treatment rationale.

Sometimes it is the intensity of the child's behavioural response to the defecation problems that blocks the effectiveness of the medication regimen. Most countries have fewer mental health professionals than are needed for the complexity of children's lives. A number of psychological strategies can be safely started in the paediatrician or nurse-led clinic. Rewards for overcoming the fear of pots/lavatories in the form of star charts are surprisingly effective especially if the design of the star or token is changed with time and the parents encouraged to use their creativity in designing the chart. Older children may become more inspired by a computer based diary or token chart. However, the older child is more likely to need incremental tokens that lead to a more definite reward. This does not need to be expensive as quality time with a parent may be the most effective reward (for example, 25 stools passed in the lavatory might equate with a four hour fishing session or reaching a total of 10 stools in the pot an extra story at bedtime on that day).

Dealing with the denial and dissociation problem of the older child is more likely to need expert psychological input. Here the child mental health team may use stricter lavatory use regimens or even establish systems of graded sanctions if obvious soiling accidents are ignored. More intensive child and family psychotherapy may be needed when the problems with the bowel are enmeshed with other emotional or behavioural problems in the family. Sometimes the behaviour problem that is

Table 2 Advantages and disadvantages of commonly used treatments

Medication	Advantage	Disadvantage
Lactulose	Increase colonic water and gut flora, acceptable to most children	Appears to lose effectiveness over time, increases "wetness" of soiling
Docusate	Emulsifying effect on hard faeces	Increases "wetness" of soiling, taste often disliked by children
Liquid paraffin/mineral oil	Increases lubrication of hard stools	Disliked by most children, increases soiling penetration into clothing, theoretical lung aspiration risk
Methyl cellulose Senna	Provides fibre and bulk Provokes rectal filling and contraction after a time delay that helps school age children plan their day	Only the tablet form is currently licensed Provokes abdominal pain and increases soiling if used when large retain stool is in rectum
Sodium picosulphate	Provokes rectal filling and contraction after shorter time delay than senna	May be difficult to find the ideal time in day for use in school age children
Polyethylene glycol/macrogol (Kleanprep/Movicol)	Flushes unabsorbable water into colon without having to resort to enemas	High volumes needed to clear large stools may be difficult to drink and require hospital admission for nasogastric tube
Enema/suppository	Direct immediate action on the loaded rectum	Provokes fear/humiliation in children and young people unless able to administer it themselves

preventing any improvement in the bowel routines is evidence of attention deficit hyperactivity disorder or autism.

Often the child and family are trying very hard to manage the problems but the rectum is so huge and overactive that reaccumulation of faeces occurs despite maximum medical treatment.

7. ARE THERE NEW STRATEGIES THAT MIGHT ACCELERATE THE RESOLUTION OF CHILDHOOD CONSTIPATION?

Surgical approaches to severe intractable constipation have a long history but as little evidence base as the medical treatments. If it is accepted that there is a degree of hypertrophy of the internal anal sphincter as part of the gross pathophysiology of the megarectum, the traditional paediatric surgical approaches of vigorous anal dilatation under anaesthetic or internal anal sphincter partial myectomy have credibility.¹² However, there are anxieties that these procedures may cause lasting damage in the adult age group.¹³ Randomised controlled trials of these procedures are being carried out as there seems good evidence that measurement with anorectal manometry demonstrates the higher capacity of the megarectum, the high anal pressures, and relatively poor rectoanal inhibitory reflexes until high volumes are in the rectum. Thickening of the internal anal sphincter can be seen with endoanal sonography as well as surprising little evidence of damage caused by anal dilatations in the past. There is increasing experience of the use of intrasphincteric botulinum toxin injections that may well prove to be the compromise between neglecting the obstructive nature of the internal sphincter in megarectum and risking lasting damage. The rationale is that during the period of maximum activity of the toxin in reducing the sphincter pressure, ordinary laxatives and lavatory routines allow the rectum to begin to shrink. By the time the toxin has worn off, the frequency and completeness of defecation will have improved due to the partial resolution of the megarectum, as well as the boost to confidence that improvement in symptoms produces. Early

evidence from randomised controlled trials suggests an equal effectiveness of botulinum toxin to internal anal myectomy in improving symptoms in the months after the procedure.

Sometimes the megarectum is so large that only enemas, frequent high dosage polyethylene glycol, or manual evacuations will clear the faecal retention and create brief remissions of the overflow faecal soiling. In these children forming a stoma to allow antegrade continence enemas (ACE) is the kindest and most productive way forward.¹⁴ Experience, from using ACE stomas in children with neuropathic rectum or where the residual sphincter zone is extremely narrow or weak after repair of anorectal anomalies, suggests that this is well tolerated and effective in achieving more regular and predictable stools with less incontinence. ACE stomas are unlikely to be successful unless the psychological factors or fear or dissociation are addressed but the quality of life of the child who is enema dependent is likely improved if spared the apparently endless repetition of the per anal treatments he/she dreads. For ACE stoma to be successful, the child and family should also be well motivated and comply with the need for regular antegrade enemas through the appendix stoma.

More rarely the megarectum is of such extreme dimensions that resection is considered.^{15 16} This is more likely to be an option in teenagers where all else has failed and there is clear evidence of the extreme capacity of the rectum. For example, if the stool mass extends up to the ribs on palpation of the faecal mass in the abdomen and is confirmed with radio-opaque transit markers and an abdominal radiograph on the fifth day.

An essential precaution is vital when considering this escalation of surgical treatments. All clinicians need to be vigilant for the unusual situation where symptoms are exaggerated to the point of fabrication (factitious illness ("Munchausen") by proxy). Clinicians rely on the reports on the severity of symptoms from parents and children. If the physical findings on clinical examination or on imaging do not fit the severity of the symptoms being reported, fabricated illness should be suspected. Child protection is

every health worker's responsibility as emphasised in the Laming Inquiry into the life and death of Victoria Climbié.^{17 18}

8. HOW CAN INDIVIDUAL PROFESSIONALS INCREASE THEIR EFFECTIVENESS IN MANAGING CHILDHOOD CONSTIPATION?

Rather than weaving through a complex algorithm, a series of questions may help the professional in refining an individual child orientated constipation management plan:

- What evidence do I have that the child suffers from significant constipation?
 1. Are stools palpable on abdominal examination or has the child just passed a very large stool after a several day delay?
 2. Is there a history of faecal incontinence that remits or improves if the child passes a very large stool?
- Why hasn't the child's problem resolved already?
 1. Has the child been prescribed effective laxatives?
 2. Has the child been taking the medication?
 3. Is the child actively obstructing defecation by avoiding lavatory visits, by going into a withholding (hyperextended "banana" shape) posture or by rejecting medication?
 4. Is there a residual faecal mass in the rectum that is too large to pass under the stimulus of mild laxatives?
- Am I failing to get provide the input that is needed for this particular child?
 1. Have I sufficient time available and would a colleague have more?
 2. Does the child and family need a more intense psychological input?
 3. Are there possible surgically correctable elements that are blocking progress such as extreme megarectum (especially in older children), undiagnosed Hirschsprung's disease or anorectal anomaly (especially in infants and young children)?

CONCLUSION

Despite the many challenges to the clinician's patience and perspicacity that are posed by the chronicity of severe

constipation, the growing child's potential to develop normal defecation must be safeguarded. Effective teamwork, that must involve the child and the family, produces a positive outcome in the majority of children. There are few more satisfying experiences in working with children than seeing the transition from the distraught child within the stool-focused family to the child showing his/her full potential.

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REFERENCES

- 1 Talley NJ, Weaver AL, Zinsmeister AR, *et al.* Functional constipation and outlet delay: a population based study. *Gastroenterology* 1993;**105**:781-90.
- 2 Porter NH. A physiological study of the pelvic floor in rectal prolapse. *Ann R Coll Surg Engl* 1962;**31**:379.
- 3 Callaghan RP, Nixon HH. Megarectum: physiological observations. *Arch Dis Child* 1964;**39**:153.
- 4 Agnarsson U, Clayden GS. Constipation in childhood. *Maternal and Child Health* 1990;**August**:252-6.
- 5 Loening-Baucke VA. Constipation in early childhood: patient characteristics, treatment and long term follow up. *Gut* 1993;**34**:1400-4.
- 6 Fitzgerald JF. Constipation in children. *Pediatr Rev* 1987;**8**:299-302.
- 7 Ghosh A, Griffiths DM. Rectal biopsy in the investigation of constipation. *Arch Dis Child* 1998;**79**:266-8.
- 8 Schuffler MD. A familial neuronal disease presenting as intestinal pseudo-obstruction. *Gastroenterology* 1978;**75**:889.
- 9 Roy AD, Bharucha H, Nevin NC, *et al.* Idiopathic intestinal pseudo-obstruction: a familial visceral neuropathy. *Clin Genet* 1980;**18**:291-7.
- 10 Navarro J, Sonsino E, Boige N, *et al.* Visceral neuropathies responsible for chronic intestinal pseudo-obstruction syndrome in pediatric practice. Analysis of 26 cases. *J Pediatr Gastroenterol Nutr* 1990;**11**:179-95.
- 11 Krishnamurthy S, Heng Y, Schuffler MD. Chronic intestinal pseudo-obstruction in infants and children caused by diverse abnormalities of the myenteric plexus. *Gastroenterology* 1993;**104**:1398-408.
- 12 Freeman NV. Intractable constipation in children treated by forceful anal stretch or anorectal myectomy: preliminary communication. *J R Soc Med* 1984;**77**:6-8.
- 13 Speakman CTM, Burnett SJD, Kamm MA, *et al.* Sphincter injury after anal dilatation demonstrated by anal endosonography. *Br J Surg* 1991;**78**:1429-30.
- 14 Malone PS, Ransley PG, Kiely EM. Preliminary report: the antegrade continence enema. *Lancet* 1990;**336**:1217-8.
- 15 Cheu HW, Grosfeld JL. The atonic baggy rectum: a cause of intractable constipation after imperforate anus repair. *J Pediatr Surg* 1992;**27**:1071-4.
- 16 Lee SL, DuBois JJ, Montes Garces RG, *et al.* Management of chronic unremitting constipation and fecal incontinence associated with megarectum: a preliminary report. *J Pediatr Surg* 2002;**37**:76-9.
- 17 Powell C. Lessons to be learnt from the Victoria Climbié inquiry. *Br J Nurs* 2003;**12**:137.
- 18 Hall D. Child protection—lessons from Victoria Climbié. *BMJ* 2003;**326**:293-4.