

Supplementary Material 15: Evidence gaps identified during the SUCCESS project

Level (from Logic model / SUCCESS Pyramid)	Topic / intervention	Research Question / Evidence gap	Judgement of certainty in evidence	Evidence that this may be beneficial? (i.e. 'promising' intervention')
0	Cows milk free diet	What is the best way to implement a trial of a cows milk free diet, the advice and information required by parents to do this safely, and the role of specialist services (and how parents can access this)? When, and with which children, should a cow's milk free diet be trialled?	Low quality	Yes
0	Toilet training	What is the optimal content and mode of delivery of information to parents around toilet training?	Very low quality	Yes
0 + psychosocial	Toilet training	What is the effectiveness of different toilet training strategies, and behavioural interventions to support these?	Very low quality	Yes
0	Selenium supplements	What is the effect of selenium supplements on constipation related outcomes?	Very low quality	Yes
0	Fibre	What is "adequate" fibre for children, and what is the best way to provide parents with this knowledge in a way which is accessible and understandable?	Low quality	-
0	Milk formula	What are the effects of different milk formula in infants?	Insufficient evidence	-
0	Sugars	What is the effectiveness of sugars (brown sugar, figs syrup, black sugar molasses)?	Insufficient evidence	-
0	Other dietary intake	What is the effectiveness of other / alternative dietary intake (including dried fruits of cassia fistula, paraffin oil and magnesium-containing mineral water)?	Insufficient evidence	-
0	Combined dietary and behavioural interventions	What is the effect of combined dietary and behavioural interventions?	Insufficient evidence	-

0	Diet – breast milk	What are the benefits of breast milk, as compared to formula, on constipation in babies and infants?	GAP	-
0	Diet – gluten free diet	What are the effects on CFC of eliminating or reducing gluten from the diet?	GAP	-
0	Diet – soya milk	What is the effect of soya milk, as an alternative to cows milk?	GAP	-
0	Diet – goats milk yoghurt	What is the effect of goats yoghurt, as a supplement?	GAP	-
0	Diet - other	When should proteins other than milk be excluded from the diet?	GAP	-
0	Physical activity	What is the effect of physical exercise in children with constipation? What is the effect of increased time spent standing in children with constipation?	GAP	-
0	Information & support	What is the optimal content and format of providing information to children and families?	GAP	-
0	Information & support	Does use of creative arts as a form of providing information to children improve outcomes?	GAP	-
0	Recognition	How can parents/carers recognise constipation & does this improve outcomes? How can children recognise that they are constipated & does this improve outcomes? What drives families/carers to seek help?	GAP	-
0	Equipment	Can continence containment products support the management of CFC?	GAP	
0	Equipment	What are the effects of different toileting equipment (e.g. toilet seats, types of potties) on constipation in children?	GAP	-
1	Laxatives	What are the relative effects of different types of laxatives?	Low quality	Yes
1	Laxatives	What are the best combinations of laxatives, when a single laxative is ineffective or partially ineffective?	GAP	-
1	Pelvic floor muscle	What is the effect of pelvic floor muscle training, in	Low quality	Yes

	training	addition to normal physical exercise?		
1	Combined pharmacological, diet and behaviour programs	What is the effect of combined programs delivered by primary care services?	Low quality	Yes
1	Identification / diagnosis	How can the wider children's workforce support the early identification and diagnosis of constipation?	GAP	-
1	Combined programs	What are the effects of behavioural interventions combined with laxatives, for children with normal development?	GAP	-
1	Combined programs	What are the effects of behavioural interventions combined with laxatives, for children with special needs (e.g. autistic spectrum disorder)?	GAP	-
1	Information	What is the best format and content of information provided by the wider children's workforce to children and parents/carers/families?	GAP	-
2	Combined oral and enema therapy	What is the optimal regime of combined oral and enema therapy?	Low quality	yes
2	Transanal irrigation	What is the effect of transanal irrigation, in children who have not responded to conventional treatment? (RCTs required)	Low quality	yes
2	Transanal irrigation	What experience is required to deliver transanal irrigation? What is the cost effectiveness of transanal irrigation?	GAP	
2	Combined programme	What are the components of an effective program combining behavioural therapy, pharmacological and dietary interventions?	Very low quality	yes
2	Alternatives to laxatives	What are safe, effective alternatives to laxatives?	Low quality	yes
2	Enemas	What is the relative effect of different types of enemas.	Low quality	-

		Including microenemas and suppositories? Who should enemas be used with and when (i.e. for disimpaction)? ?		
2	Enemas	What support is required, and what is the benefits of this, for children requiring disimpaction using enemas	GAP	
2	transcutaneous electrical stimulation	What is the effect of transcutaneous electrical stimulation?	Insufficient evidence	-
2	standing programme for children with severe cerebral palsy	What is the effectiveness of a standing programme for children with severe cerebral palsy?	Insufficient evidence	-
2	dietary exclusion of fructose and lactose	What is the effect of dietary exclusion of fructose and lactose?	Insufficient evidence	-
2	Physiotherapy interventions	What is the effect of physiotherapy interventions, including rebound therapy and pelvic floor muscle exercises.	GAP	-
2	Tibial nerve stimulation	What is the effect of tibial nerve stimulation?	GAP	-
3	Botulinum toxin	What is the effect of botulinum toxin in the treatment of CFC?	Very low quality	Yes
3	ACE / MACE	What is the safety, effectiveness and adverse events relating to use of ACE or MACE, as compared to other Level 3 interventions? (including on children with special needs)	Very low quality (GAP for children with special needs)	Yes
3	Sacral neuromodulation	What is the safety and effectiveness of sacral modulation	Very low quality	Yes
3	Surgical interventions	What is the relative effect and long term implications of different surgical options?	GAP	-
3	Manual evacuation	What is the safety, effect and long term outcomes relating to manual evacuation?	GAP	-
3	Assessment	Which initial assessments or knowledge sharing / confirmation of understanding should be undertaken when a child is referred to Level 3?	GAP	
Complementary	Herbal medicines	What is the safety, effectiveness and adverse events of	Low quality	Yes

		herbal medicines, as an adjunct to conventional treatment?		
Complementary	Dry cupping therapy	What is the effect of dry cupping therapy, compared to placebo (as an adjunct to conventional treatment)	Very low quality	-
Complementary	abdominal massage	What is the effect of abdominal massage (in children with or without disabilities)?	Insufficient evidence	-
Complementary	chiropractic or osteopathic manipulation	What is the effect of chiropractic or osteopathic manipulation?	Insufficient evidence	-
Complementary	reflexology	What is the effect of reflexology?	Insufficient evidence	-
Complementary	acupuncture	What is the effect of acupuncture?	Insufficient evidence	-
Complementary	Baby massage	What is the effect of baby massage?	Gap	-
Behavioural therapies	Behavioural therapy techniques	What is the effect of behavioural therapy techniques delivered by specialist practitioners?	Very low quality	Yes
Behavioural therapies	Psychological support	What are the best ways to support children to deal with the psychological effects of constipation (including soiling)?	GAP	-
Behavioural therapies	Social stories	Are social stories effective in helping children manage CFC?	GAP	-
Behavioural therapies	Psychological support	What are the best ways to support parents when dealing with children who require enemas?	GAP	-
Models of service delivery	Nurse led clinics	What are the effects and cost-effectiveness of nurse led models of care (as compared to physician led models)?	Very low quality	yes
Models of service delivery	Algorithm or care pathway used in primary care settings	What are the effects of an algorithm or care pathway to guide the management and referral of children with constipation within primary care services?	Very low quality	yes
Models of service delivery	Specialist (level 2) services	What are the effects of specialist services, including specialist dieticians, psychologists, physiologists and teams providing specific, generally multidisciplinary, bowel management programs, including elements such as laxatives, diet and toilet training	Very low quality	yes

Models of service delivery	Highly specialist (Level 3) services	Which children should be referred for level 3 assessment?	GAP	-
Models of service delivery	Models of service delivery	What are the key components and features of an effective team involved in care of children with CFC?	GAP	-
Models of service delivery	Models of service delivery	How can a child's 'journey' through the different levels of care be as seamless and direct as possible?	GAP	-
Implementation	Child protection	What are effects of child protection issues in the implementation of interventions for CFC?	GAP	-
GENERAL / across the Logic Model	Outcome measures	How can consistent use of core outcome measures across research be ensured?	-	-
GENERAL / across the Logic Model	Outcome measures	What outcomes should be recorded before and after interventions to allow clinical evaluation of a response?	-	-
GENERAL / across the Logic Model	-	How can care best be provided during transition to different levels of service, and from child to adult services?	-	-
GENERAL / across the Logic Model	-	What happens if constipation is not well treated early – what is the impact of not diagnosing and treating it on adolescence and later life?	-	-
GENERAL / across the Logic Model	-	What investigations are appropriate for childhood constipation and when should these be used?	-	-
GENERAL / across the Logic Model	-	What is the best approach for children who withhold faeces?	-	-
GENERAL / across the Logic Model	-	Is the experience and management of constipation in children with additional support needs different from those without?	-	-
GENERAL / across the Logic Model	-	Aetiology of CFC and biological plausibility of interventions.	-	-