has the potential to further increase admission hypothermia rates.

Objectives To reduce the number of preterm babies (<32 weeks' gestation) who are hypothermic on admission to the neonatal unit, whilst promoting and practising deferred cord clamping and delivery room cuddles.

Methods We completed a 13-month quality improvement project using a series of Plan, Do, Study and Act (PDSA) cycles, from December 2019 – December 2020. Data were collected at each preterm delivery. All cases with an admission temperature < 36.5°C were identified and reviewed by a multidisciplinary team. Potential causes of hypothermia were identified and strategies to address this were implemented. These strategies included clear guidance on the use of Neohelp™ bags and TransWarmers™, providing an uninterrupted power supply for the overhead heater during transit to the neonatal unit, checking the temperature at defined times in the delivery room to guide thermoregulation interventions and covering the baby's body during vaginal breech deliveries. These strategies were promoted through 'top-tip' posters, lesson of the week announcements, social media posts and education sessions. Performance data was distributed prospectively to the staff in a regular newsletter which also included recent top tips and lessons learnt.

Results 146 preterm babies (<32 weeks') were admitted to the neonatal unit during the project. Only 2 babies (1%) were admitted with moderate hypothermia (32°C – 35.9°C) and 12 babies (8%) were admitted with mild hypothermia (36°C – 36.4°C). There were no cases of severe hypothermia (<32°C). Documentation revealed 101/134 babies (75%) had deferred cord clamping on the LifeStart™ trolley. 77 babies (57%) had a least 2 minutes of deferred cord clamping whilst 22 babies (16%) had at least 1 minute before the cord was clamped. 79% of the babies (80/146) were documented to have received delivery room cuddles.

Conclusions These PDSA cycles and implemented strategies have greatly improved our admission temperatures and almost eradicated significant hypothermia. This has been achieved whilst maintaining high rates of deferred cord clamping and delivery room cuddles, both of which are of benefit in the immediate care of the preterm baby.

British Society of Paediatric Endocrinology and Diabetes

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EFFECTIVENESS OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION WITH OR WITHOUT CONTINUOUS GLUCOSE MONITORING IN ADOLESCENTS WITH TYPE 1 DIABETES

Suman Fathima, Neemisha Jain, Olga Lipova. *Surrey and Sussex Healthcare Trust*

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Background Insulin therapy is required to prevent diabetic ketoacidosis and to optimise blood glucose levels in order to to minimise vascular complications in all Children and Young People with Type 1 Diabetes (T1D).

Objectives To compare the use of Continuous Subcutaneous Insulin Infusion (CSII) with Multiple Daily Injections (MDI) Insulin therapy and to evaluate effectiveness of

using Continuous Glucose Monitoring (CGM) on glycemic control (GC). Secondary outcomes included to calculate episodes of severe hypoglycemia and DKA re-admissions and the proportion of adolescents achieving target HbA1c as per NICE (<48mmol/mol) and International Society for Paediatric and Adolescents with Diabetes (ISPAD<53mmol/mol) guidelines.

Methods Data(age,Insulin delivery, blood glucose monitoring, Diabetic ketoacidosis(DKA) and severe hypoglycemia episodes requiring admissions) collected from FileProMaker Database retrospectively for study period between June 2019-October 2020 for adolescents >12years(y) under the care of the Paediatric Diabetic Unit. Mean glycated haemoglobin (mHbA1c) in mmol/mol was calculated for each patient from every diabetes associated appointment. Analysis undertaken to compare GC in two groups according to Insulin delivery modality: CSII and MDI, further sub-grouped according to the modality used for blood glucose monitoring (GM): Continuous, Flash (FGM) and Self blood GM (SBGM).

Results

- A total of 163 adolescents >12y were included.
- In the whole cohort 40% (65) were on CSII and 60% (98) on MDI Insulin therapy.
- Overall mHbA1c in mmol/mol was 69.09.
- The mHbA1c in CSII users was 63.69 (SD 10.8) vs 74.5 (SD 18.93) in MDI users, which was statistically significant ($t=-6.2, p<0.001$).
- CGM/FGM was used by 56% (92). CGM used by 22%, FGM by 34% and SBGM by 44%.
- The lowest mHb was in patients on CSII+ CGM.
- The highest mHb was in patients on MDI+ FGM.
- There was statistically significant difference in overall mHb in those using CGM/FGM and CSII vs MDI ($p<0.007$).
- In CSII users mHb in CGM vs FGM users: 60.3 vs 66.06 ($t=-1.72, p=0.09$) and CGM vs SBGM: 60.3 vs 64.4($t=-1.22, p=0.22$), not statistically significant.
- In MDI users mHb in CGM vs FGM users: 73.2 vs 78.4 ($p=0.31$) and CGM vs SBGM: 73.2 vs 72.1($p=0.79$),not statistically significant.
- Target mHb in mmol/mol of <48 achieved by 4.3%(7), 48–53 by 6.8%(11) and 53–58 by 9.2%(15).
- Admissions with DKA episodes were 3, 66.7% (2) were on MDI and 33.3%(1) on CSII.
- Admissions with severe hypoglycaemia were 8, 75%(6) on MDI and 25%(2) on CSII.

mHb(in mmol/mol +SD) vs Insulin Delivery vs Glucose Monitoring

GM Method	CGM		FGM		SBGM	
	No.	mHb (S.D)	No.	mHb(S.D)	No.	mHb(S.D)
Insulin Delivery						
CSII (65)	20	60.3(11.3)	22	66.06 (10.29)	23	64.4(10.54)
MDI (98)	16	73.2(13.54)	34	78.4(22.65)	48	72.1(17.43)

Conclusions In our cohort of patients CSII usage led to statistically significant improved GC in adolescents with T1D.

More than half (56%) of T1D Adolescents were using either CGM/FGM.

Using CSII + CGM offered significant advantage in GC overall.

Only a small percentage of T1D Adolescents achieved Target HbA1c as per NICE (5%) and ISPAD (11%) guidelines.

Complications of DKA and severe hypoglycemia episodes were less pronounced in those on CSII in our cohort during the study period.

British Society of Paediatric Gastroenterology, Hepatology and Nutrition

492 IMPACT OF GASTROSTOMY ON GROWTH IN CHILDREN: A SYSTEMATIC REVIEW

¹Aminah Hussan, ¹Risha Johar, ²Caroline Parry, ³Veronica Kelly, ²Iain Yardley. ¹GKT King's College London Medical School, London, UK; ²Department of Paediatric Surgery, Evelina London Children's Hospital, London, UK; ³Department of Paediatric Neurosciences, Evelina London Children's Hospital, London, UK

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Background Gastrostomy placement in children is invasive and costly, both in terms of finance and impact on the child and their family. The primary goal of inserting a gastrostomy is usually to support the child's nutrition and ensure adequate growth is maintained.

Objectives We performed a systematic review to evaluate the effectiveness of a gastrostomy on improving physical growth in children.

Methods Medline and Embase databases were searched following PRISMA guidelines. The inclusion criteria for articles were studies: reporting the use of gastrostomy to support nutrition, reporting at least one anthropomorphic outcome measure, and reporting outcomes in children exclusively under 19 years of age. Exclusion criteria were studies: containing fewer than five subjects, reporting systematic reviews, meta-analyses or qualitative findings. Screening of studies identified by the search strategy was carried out independently by two reviewers, and consensus achieved with any discrepancies. Data were extracted using a standardised proforma.

Results Thirty studies were included in the systematic review – 19 retrospective, 9 prospective, 1 both prospective and retrospective and 1 cross-sectional. No relevant randomised controlled trials were found. Studies included encompassed 1618 children from 18 countries. Although most common indications for a paediatric gastrostomy were covered by the studies included, many studies focussed on a single condition, chiefly cerebral palsy or cystic fibrosis. The majority of studies reported an increase in weight. This was most marked in the first 6 months following gastrostomy tube placement, and in children under 3 years old. Changes in body mass index (BMI) tended to follow a similar trajectory. Conversely, there was considerable variation in effect on height between studies, with only 7/12 studies (58%) showing a significant increase in height post gastrostomy-placement. Other anthropometric measures of growth were infrequently reported.

Conclusions There is good evidence that gastrostomy-tube feeding is effective in improving weight gain in children. However, evidence for improvement in other measures of growth following gastrostomy insertion is weaker. Care needs to be taken to ensure adequate overall growth and avoiding obesity in children with a gastrostomy. There is some evidence to support early gastrostomy placement with catch up growth appearing better in younger children. Further work is needed

to investigate the effect of gastrostomy feeding on broader anthropometric measures including height, skinfold thickness and head circumference. This will provide a clearer understanding of how gastrostomy feeding impacts a child's overall growth, and how this compares with other interventions to improve nutritional status.

493 A SYSTEMATIC REVIEW OF SOCIAL OUTCOMES IN PATIENTS WITH BILIARY ATRESIA

¹Emma Alexander, ²William Greaves, ³Hrisheekesh Vaidya, ¹Charlotte Burford, ¹Vandana Jain, ¹Marianne Samyn. ¹King's College Hospital; ²University College London; ³Northwick Park Hospital

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Background Biliary atresia is an inflammatory obliterative cholangiopathy which presents in early infancy with obstructive jaundice. It is the most common indication for liver transplant in childhood. Following improved medical outcomes for children with biliary atresia, a new clinical and research focus is on promoting long-term well-being and quality of life. However, information on social outcomes, including markers of societal integration such as education, employment, and family outcomes, are inconsistently documented in existing studies, and have never previously been systematically reviewed.

Objectives We aimed to systematically review the social outcomes of patients with biliary atresia (BA) including education, employment, family and social functioning outcomes.

Methods A systematic review of four databases (Medline, Embase, Global Health, Maternity and Infant Care Database) was conducted in April 2020, supplemented by reference searching, with NHLBI scoring for quality appraisal. Each abstract and full text was independently reviewed by two researchers, and quality appraisal was independently conducted by two researchers. The protocol was registered on PROSPERO (CRD42020178846).

Results 55 studies met inclusion criteria (39 cohort, 11 cross-sectional, five case-control), including 5,156 participants from 16 countries. BA post liver transplant (LT) (18 studies), native liver survival (NLS) (16 studies), mixed LT/NLS (16 studies) and 5 of other cohorts (e.g. listed for LT) were incorporated. Study outcomes included; education (n=39), employment (n=19), pregnancy (n=24), and social functioning (n=25). Patients with BA had lower school functioning scores than controls, with no difference when comparing those with and without LT. The need for additional educational support ranged between 2% and 48% of children. Adult patients with BA were employed at high rates (range 60–100%), with no difference between post-LT and NLS cohorts when compared in 1 study. Successful pregnancies were reported in 19 studies, with mostly small sample sizes. In 6/7 NLS studies mentioning pregnancy, complications included derangement in liver function and variceal bleeding secondary to portal hypertension. Social functioning scores did not significantly differ from healthy controls when compared in 7/9 studies.

Conclusions Existing evidence on social outcomes for children and adolescents with BA is predominantly from non-controlled, single centre studies and based on parental surveys. The current findings suggest that school functioning is lower compared to peer groups and not influenced by having a