P01 AUDIT OF LABINIC PROBIOTICS ON THE NEONATAL UNIT

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Background Our neonatal unit was reviewed by the GIRFT team (Getting It Right First Time) in 2019. One of the recommendations from their report was the introduction of probiotics, to help reduce the incidence of necrotising enterocolitis (NEC). NEC is a devastating illness, which contributes to significant morbidity and mortality in the neonatal population. A variety of probiotics were assessed for safety and clinical efficacy.[1–3] Labinic was chosen as it contained an optimum combination of probiotic organisms to minimise the risk of NEC developing. In January 2021, Labinic was added to the hospital formulary and Trust guidelines for babies aged < 32 weeks and/or weighing <1.5kg at birth.[4]

Aims To assess whether premature babies on the neonatal unit were receiving Labinic probiotic drops, as per recently published Trust guidelines.

Objectives To identify whether babies were prescribed and administered Labinic at the correct dose, frequency and timing according to the guidance.

Methods A report was run via Badgernet and Medchart to identify patients eligible for inclusion in the study, from January 2021 to October 2021.

Inclusion Criteria

1. Patient was prescribed Labinic
2. Patient was born at our hospital
3. Patient was born <32 weeks or was born aged 32–36 weeks and weighed <1.5kg

Badgernet was used to collect patient-related data:

- time of the patient's first feed/colostrum
- birth weight
- time of delivery
- location of birth

Medchart was used to gather data about Labinic prescribing and administration. Patient information was held in a password protected Excel spreadsheet to maintain confidentiality. A pilot data collection form was trialled for 1 week, then adapted. Ethics approval was not required for this study. The audit was registered with the Trust.

Results Data was collected for 76 patients who were prescribed and administered Labinic on the neonatal intensive care unit from January 2021 to October 2021. The mean gestational age of the patients was 28 weeks (23–36 weeks) and the mean weight was 990 grams (500–2200 grams). 76/76 (100%) babies eligible to receive Labinic were prescribed and administered the probiotic. 76/76 (100%) patients were prescribed the correct dose according to their age/weight. The recommendations are that Labinic should be administered either with the first feed or within 12 hours of birth, whichever comes first. Only 17/76 (22%) of infants received Labinic within the first 12 hours.

Conclusions The introduction of Labinic probiotics has been widely accepted and well implemented on the neonatal unit. Within 2 years of the GIRFT report's recommendations, the unit has gone from having 0% of eligible patients receiving probiotics to 100% of babies receiving them. Unfortunately, the number of patients included in the study was too low to assess the overall impact on NEC rates. Further education and training will be provided to nursing staff about the importance of administering the first dose of Labinic within the first 12 hours of life. The Trust guidance and electronic prescribing tools will be updated and re-circulated, to highlight that the first dose should be administered within 12 hours, and not delayed until after colostrum or expressed breast milk is available. The audit will be repeated in future to check good practice is maintained and timing of first dose is improved.

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P02 STRIVE TO PRESCRIBE AND DO NO HARM

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Aims Prescribing medication is a common intervention and hence prescribing errors are not uncommon events. From the literature 13% of paediatric prescriptions contain errors[1] and recently it was estimated that 66 million of the 237 million prescription errors had potentially clinically significant outcomes.[2] This has been highlighted following a recent critical incident and, as part of the learning recommendations; a multidisciplinary team (MDT) approach was formed to improve departmental prescribing education. The aim was to reduce the number of prescribing errors, therefore reducing harm to patients, and improving patient care. This was achieved through the joint efforts of trainees and ward pharmacist by developing robust evidence-based teaching not only at induction but as rolling sessions throughout the year which, due to COVID-19 restrictions, was delivered virtually. In conjunction there was also a revision of the induction paediatric prescribing test, regular review of the number of prescribing error incidents and drug chart audits with cycle completion and implementation of changes. The teaching programme and audits were started in December 2020 and are on-going.

Methods From December 2020 to May 2021, audits were undertaken initially using the RCPCH Paediatric Prescribing Error tool.[3] We later revised the audit tool to also include the standards defined in our hospital inpatient prescribing policy. 30 random drug charts from across three paediatric inpatient wards were analysed every month with the aim to achieve greater than 90% in each standard (taking into account a baseline level of human error) and then to maintain this over time. To achieve this, learning from the audit was fed back to all members of the team via regular electronic and visual/verbal reminders and the teaching programme was amended to include troublesome topics. Adverse incidents were reviewed

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and teaching from this was also included in the teaching programme.

Results Since December 2020, it took six months for the number of incidents due to prescribing errors to reduce from 14 in six months (December 2020-May 2021) to 10 in six months (June-November 2021). Audit results showed that since December 2020 we were scoring >90% in 3 out of the 10 domains. Three months into the teaching programme this improved to 4 out of 10 of the domains and at six months, 6 out of 10 domains. When re-audited with our revised audit tool, we achieved >90% initially in 10 out of 16 domains and then consistently maintained our standards across 11–12 out of 16 domains over a four-month period (October 2021-January 2022).

Conclusions This project has shown that despite a global pandemic, a combination of innovation, education, technology, multidisciplinary skills and MDT working can implement and embed change to improve patient safety. When considering the bigger picture, we recognise this is a small part of the larger systemic processes that can influence medication errors and that with perseverance, we can aim to reduce the risk of adverse events due to medication errors and therefore provide the best care for our patients.

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P03 LEFLUNOMIDE TREATMENT FOR INFLAMMATORY BOWEL DISEASE AND INTESTINAL FAILURE CAUSED BY TTC7A DEFICIENCY

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TTC7A deficiency Ultra-rare autosomal-recessive variants in tetratricopeptide repeat domain 7A gene (TTC7A) have been discovered in patients presenting with severe intestinal disease. Mutations in the TTC7A gene cause intestinal epithelial and immune defects resulting in apoptotic enterocolitis, multiple intestinal atresia, and recurrent intestinal stenosis. Patients face high mortality rates with palliation as the current standard of care.[1]

Leflunomide In 2020 a high throughput screen identified drugs that increased cell viability in patients with TTC7A; leflunomide reduced caspase 3 and 7 (responsible for cell death) activity in cells by 96%. In zebrafish with disruption of TTC7A, leflunomide restored gut motility, reduced intestinal tract narrowing, and increased intestinal cell survival.[1] From a literature review, only 3 patients in the world have been prescribed leflunomide for TTC7A deficiency with 'encouraging results'.[2] however no case reports have been completed on treatment safety or effectiveness.

A common adverse effect of leflunomide is liver toxicity due to production of a toxic intermediate; however, the reaction appears to be idiosyncratic and unpredictable.[3] Full blood count and liver function tests must be checked before initiation of leflunomide, every two weeks during the first six months of treatment, and every 8 weeks thereafter.[4]

The patient A 7-year-old male on home parenteral nutrition with TTC7A deficiency was admitted to hospital with high ileostomy output and persistent vomiting with a background of mucosal gastrointestinal inflammation and pyloric stenosis. On behalf of the gastroenterology team, the paediatric gastroenterology pharmacist applied for urgent internal funding and clinical governance approval for leflunomide treatment with the aim to ameliorate intestinal disease. Leflunomide 10 mg daily costs £3.11/month. Treatment was approved, the patient and his family were counselled by the pharmacist and the patient began treatment of leflunomide 10 mg via PEG tube daily.

Adverse event After two weeks of treatment the patient's alkaline phosphate (ALP) and Gamma GT (GGT) had doubled and their alanine transaminase (ALT) had increased 10-fold. Advice from the pharmacist was sought. On review of the leflunomide summary of product characteristics[4]: 'Rare cases of severe liver injury, including cases with fatal outcome, have been reported during treatment with leflunomide//If ALT elevations of more than 3-fold the upper limit of normal are present, leflunomide must be discontinued and wash-out procedures initiated.' A decision was made to stop treatment, however a washout procedure with cholestyramine or activated charcoal was not possible as the patient had minimal oral intake due to vomiting. The pharmacist filed a yellow card report.

Follow up The patient's ALT normalised after 3 weeks and GGT after 2 months of treatment cessation. It took 8 months for the patient's ALP to normalise.

Lessons learnt Unfortunately, it was impossible to assess the potential gastrointestinal benefits of leflunomide in this patient due to the rapid onset of significant liver toxicity. Liver toxicity may have been identified sooner if a blood test was taken 1 week after treatment initiation. Monitoring liver function earlier following initiation of leflunomide treatment may be helpful to minimise liver toxicity in patients with TTC7A deficiency.

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P04 CLINICAL PHARMACISTS' PERCEPTIONS OF THE BARRIERS AND FACILITATORS TO THE IMPLEMENTATION OF PAEDIATRIC CLINICAL PHARMACY SERVICES IN HONG KONG

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Aim To identify barriers and facilitators that influenced the implementation of paediatric clinical pharmacy service (CPS)

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