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Evaluating the Utility of Diagnostic Workups for Biliary Atresia in Neonates with Cholestatic Jaundice Following Prolonged TPN

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Introduction: Parenteral nutrition associated cholestasis (PNAC) develops in 40-60% of premature infants following TPN for 2-4+ weeks. The incidence of biliary atresia is low and there is a 60-day, post-term window for corrective surgery. There is limited data on both the natural history of PNAC in premature infants following prolonged TPN, as well as the utility of diagnostic tools investigating biliary atresia in these patients.

Methods: A retrospective chart review using EMR data from the Intensive Care Nursey was performed with the following criteria: premature babies diagnosed with cholestasis, born at <1500 grams, and received TPN for ≥ 14 days. Ultimately 61 babies met criteria and data was collected and pooled to produce descriptive statistics and graphs describing laboratory trends.

Results: Median gestational age was 26 [IQR 25, 28] weeks, birth weight was 732 [650, 930] grams and 60% (36/60) were male. After being on TPN for a median of 51 [38, 73] days and developing cholestasis, 12/61 (19.7%) babies underwent hepatobiliary scintigraphy, three of which also underwent repeat scans, 29/61 (47.5%) received GI consults and 32/61 (52.5%) underwent abdominal ultrasounds. No babies were

diagnosed with biliary atresia. Graphical depiction of laboratory trends demonstrates an initial spike in direct bilirubin after TPN cessation, followed by a gradual decline 3-4 weeks later.

Discussion: Despite many diagnostic procedures and consults, PNAC was the only observed diagnosis at discharge for this cohort of babies. Based on the laboratory trends, delaying the investigation of elevated bilirubin until 3-4 weeks after ceasing TPN might prevent unnecessary diagnostics and improve resource allocation.