score was associated with both internalising ($B=0.22$, 95% CI 0.08–0.36, $p<0.01$, $f^2=0.03$) and externalising symptoms ($B=0.40$, 95% CI 0.20–0.61, $p<0.001$, $f^2=0.05$), but not with cognitive outcomes in toddlers ($B=-0.21$, 95% CI -0.49–0.06, $p>0.05$). Maternal EPDS, and toddlers' CBCL and Q-CHAT scores did not differ between preterm and term participants.

Conclusions Our findings indicate that children whose mothers had increased depressive symptoms in the early postnatal period exhibit more maternally-reported behavioural, emotional and neurodevelopmental problems in toddlerhood. Further research is needed to confirm the clinical significance of these findings.

141 CONTINUOUS INFUSION OF VANCOMYCIN IMPROVED THERAPEUTIC LEVELS IN TERM AND PRETERM INFANTS

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Background Growing evidence suggests that continuous infusion of vancomycin (CIV) is superior to intermittent infusion of vancomycin (IIV) in neonates. Prescribing CIV in neonates in the UK remains relatively untested and is an unlicensed use. This quality improvement (QI) project aimed to transition from IIV to CIV with earlier and improved attainment of therapeutic vancomycin levels.

Objectives This project aimed to clarify the utility, benefit and safety of CIV over current IIV usage in our department, aiming to inform future vancomycin regimens both locally and more widely. Following baseline measurements of IIV, a QI project was undertaken for implementation of CIV using sequential Plan Do Study Act (PDSA) cycles over 10 months (July 2019 to May 2020) with Specific, Measurable, Achievable, Realistic and Timely (SMART) aims to:

1. Reduce the time taken to achieve vancomycin target level by 50%.
2. To increase first TDM levels within target range from 36% to 60%.
3. To increase total TDM therapeutic levels from 44% to 70% in neonates.

If successful, this would add to current evidence that CIV is superior to IIV in neonates and should be regarded as best practice.

Methods The Model for Improvement framework with Plan Do Study Act cycles was used. Prospective data were collected during three phases: IIV, CIV-1 and CIV-2.

Results Using IIV, 36% (9/25) of first vancomycin levels were within target range. CIV achieved therapeutic levels twice as quickly as IIV ($p < 0.05$) with improved first vancomycin target levels (IIV 36%, 9/25; CIV-1 55%, 16/29; CIV-2 61%, 14/23) and total therapeutic levels (IIV 44%, 37/84; CIV-1 56%, 55/98; CIV-2 69%, 79/114).

Conclusions It was established that IIV outcomes were not meeting expected standards, particularly in terms of delayed time to therapeutic levels and high percentage of out of range levels. This project was successful in establishing a change to CIV which produced a modest benefit over IIV, particularly in regard to time taken to achieve vancomycin target levels and proportion of therapeutic levels. The findings of this project and information regarding our

implementation process provide guidance to other NICUs to transition from IIV to CIV.

143 HOSPITAL MORTALITY IN PATIENTS WITH RARE DISEASES DURING THE COVID-19 AND SARS PANDEMICS: RESULTS FROM A 7.5 MILLION POPULATION

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Background The threat of pandemics occur differently for different groups. The rare disease population is at particular risk of being further marginalised during pandemics.

Objectives To assess hospital mortality in the rare disease and general populations during the coronavirus disease of 2019 (COVID-19) and severe acute respiratory syndrome (SARS) pandemics in the 7.5 million population in Hong Kong.

Methods Using the Clinical Data Analysis and Reporting System (CDARS), a population-level database that records all public healthcare records in Hong Kong, all admission records during the COVID-19 (January 23 – August 23, 2020) and SARS (March 11 – June 30, 2003) pandemics were extracted. Patients with rare diseases were identified using one or more of the 1,084 10th version International Classification of Diseases and Related Health Problems (ICD-10) codes cross-referenced with 467 ORPHA codes. Admission records during the same period in 2019 and 2002 were retrieved for comparison. Primary outcomes were COVID-19/SARS mortality in hospital. Secondary outcomes were overall hospital mortality during the COVID-19 and SARS pandemic periods. Subgroup analysis by age-group (≤ 18 , >18 to <60 , ≥ 60) was performed to understand the mortality patterns. Logistic regression was used to estimate the odds ratios with 95% confidence intervals (CIs).

Results During the COVID-19 pandemic, 407,219 patients were admitted to one or more of the 43 public hospitals in Hong Kong, of which, 39,576 (9.7%) were paediatric patients ≤ 18 years old, and 13,894 (3.4%) were rare disease patients. Of the 4,381 patients admitted with COVID-19, 81 (1.8%) died during the same admission, of which, 5 (6.2%) were patients with rare diseases. COVID-19-related mortality was almost exclusively seen in patients ≥ 60 years in both rare disease and general populations, with mortality being 21.7% and 7.4%, respectively. None of the COVID-19 patients ≤ 18 years died by the time of data extraction. Patients with rare diseases had an adjusted 3.4 times odds of COVID-19-related hospital mortality compared with that of the general population (95% CI 1.24–9.41). In contrast, 158,930 patients were admitted during the SARS pandemic, with 24,045 (15.1%) being ≤ 18 years and 5,249 (3.3%) being rare disease patients. Of the 1,449 patients admitted with SARS, 234 (16.1%) died during the same admission, of which, 1 (0.4%) was ≤ 18 years, and 6 (2.6%) were patients with rare diseases. While age-related increase in mortality was observed for the general population during the SARS pandemic, this pattern was not observed in the rare disease population. Rare disease patients ≤ 18 years had a 12.5 times higher SARS-related mortality than those in the general population (12.5% vs 1.0%). Patients admitted during the same pandemic periods without coronavirus infection had a significantly higher hospital mortality