SAJCH and SAPA Research Day Abstracts: 16 September 2022

1. Characteristics and outcomes of infants with cytomegalovirus infection in Bloemfontein

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Introduction. Congenital and postnatally acquired cytomegalovirus (CMV) may significantly contribute to morbidity and mortality in infancy.

Objectives. This study aims to describe the outcomes and characteristics of congenital and postnatal CMV-infected infants in a human immunodeficiency virus (HIV) -prevalent population.

Methods. A retrospective, descriptive study was conducted by reviewing hospital records of infants who had a positive CMV test and were admitted to the academic hospitals in Bloemfontein.

Results. Inpatient mortality for CMV-infected infants was 13.3%. Of the patients who died, 66.6% were HIV exposed and 33.3% had CMV/HIV co-infection. The most common causes of death were sepsis (38.9%), pneumonia/pneumonitis (33.3%) and multi-organ failure (11.2%). Of all the CMV-positive infants, 60.7% were HIV exposed and 20.7% were HIV infected. Further, 55.6% had a birthweight less than 2.5 kg and were preterm; and 33.3% were small for gestational age at birth, with suboptimal postnatal growth in 62.2%. Microcephaly was present at birth in 25.2%. Poor brain growth led to postnatal microcephaly in 46.6% of patients. The most common clinical presentations were CMV pneumonia/pneumonitis (60%) and hepatomegaly (50.4%). Thrombocytopenia was a common finding (41.5%). Half (50%) of the infants who died were not treated with antiviral medication.

Conclusion. CMV infection in infancy is under-appreciated in South Africa. It contributes to morbidity and mortality, particularly in preterm and low-birthweight infants, and HIV-exposed or -infected infants. Clinicians should have a high index of suspicion for CMV infection in infants who have postnatal growth failure and postnatal microcephaly.

2. Return of congenital syphilis: Disease spectrum and modifiable factors identified in a semi-rural regional hospital in KwaZulu-Natal, South Africa

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Introduction. The incidence of congenital syphilis (CS) in South Africa (SA) has been increasing in the last decade. There is little current literature about the disease spectrum and the factors influencing the current increase of CS in SA.

Objective. To describe the clinical presentation of CS in our hospital and identify modifiable factors resulting in the occurrence of CS.

Methods. In this retrospective study, all cases of CS admitted at GJGM Regional Hospital, KwaDukuza, SA, between 1 December 2019 and 31 December 2020 were traced using the National Institute for Communicable Diseases (NICD) notification system, case identification forms (CIF), birth register and discharge summaries. Maternal and neonatal files were obtained to collect data about maternal history and neonatal clinical presentations.

Results. Fifty-four cases of CS in live-born infants were identified, including two sets of twins. The majority of CS cases were symptomatic (n=40). Mortality was 18% in the symptomatic neonates (n=7). The most common clinical symptoms were rash (50%), hepatosplenomegaly (68%), pneumonia (50%) and hydrops (13%).

Ten mothers never initiated antenatal care (19%). Fourteen mothers had a negative rapid plasma reagin (RPR) test at booking, but seroconverted during pregnancy (27%). Thirty-four percent (n=15) of mothers had a positive booking RPR but still delivered a baby with CS, mostly related to booking RPR not traced/treated (n=9).

Conclusions. Most of the neonates admitted with CS were symptomatic and associated with high morbidity and mortality. Main modifiable factors for CS in our study were non-clinic cases, seroconversion during pregnancy and booking RPR not traced or treated. There is still an urgent need to improve antenatal care to decrease the number of CS cases.

3. Observed birth prevalence of congenital anomalies among live births at a regional facility in KwaZulu-Natal Province, South Africa

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Introduction. Congenital disorders (CDs) are an important contributor to the disease burden in developing countries, including South Africa (SA). The size and extent of the problem in SA is underestimated owing to a lack of recent reliable data.

Objectives. To measure the birth prevalence of CDs among live births, and describe the pattern of CDs at Edendale Hospital (EDH) in KwaZulu-Natal. The collected data were compared with existing published SA data and modelled estimates.

Methods. A retrospective, observational, descriptive review of

CDs diagnosed at birth within the neonatal service at EDH in 2018 was conducted. All in-house live births diagnosed with CDs were included in the study. Data were extracted from the birth registry, neonatal admission register and the individual Birth Defect Notification Tool (BDNT).

Results. There were 117 neonates diagnosed and notified with a CD from the 7 516 live births examined. The birth prevalence was 15.57 per 1 000 live births. The most affected systems were the musculoskeletal (32% (polydactyly)), circulatory systems (19% (ventricular septal defect)) and chromosomal disorders (13% (Down syndrome)). Birth prevalence rates of key CDs were comparable with previously published SA data and are in line with current modelled estimates.

Conclusion. The study responds to the paucity of birth prevalence data on CDs in SA and serves as a starting point for comparison locally and with other national and international data. It offers evidence on the size and nature of the health burden represented by CDs in SA and the need to prioritise the surveillance, care and prevention of these conditions as a healthcare priority.

4. Metabolic bone disease of prematurity in a cohort of neonates at Groote Schuur Hospital

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Introduction. Metabolic bone disease of prematurity (MBD) is common in extremely preterm babies, with significant associated risks to growth and respiratory morbidity.

Objective. To describe the incidence and patient characteristics of infants treated for MBD per unit protocol at a South African tertiary neonatal unit.

Methods. A retrospective study including all babies admitted to Groote Schuur Hospital with a birthweight less than 1 501 g between 1 January 2018 and 31 December 2018, who were treated with oral phosphate for MBD as per unit clinical protocol, was conducted. Biochemistry data were obtained from the National Health Laboratory Service.

Results. A total of 535 very low-birthweight babies were admitted over the period, of whom 363 (67.8%) qualified for screening. Treatment was prescribed in 85 (15.9%). The incidence of extreme low-birthweight (<1 001 g) babies was 26.1% (46/176). The median birthweight and gestational age (GA) were 985 g (interquartile range (IQR) 335 g) and 28.0 weeks (IQR 2.0 weeks), respectively. The mean alkaline phosphatase (ALP) and inorganic phosphate values were 500 IU/L (standard deviation (SD) 211.3) and 1.59 mmol/L (SD 0.36 mmol/L), respectively. Comorbidities included necrotising enterocolitis (18.8%), bronchopulmonary dysplasia (9.4%) and late-onset sepsis (17.6%).

Conclusion. The incidence of MBD was similar to incidences reported previously in high-income countries. The potential short- and long-term physical effects of MBD warrant further research on prevalence and treatment in developing countries.

5. Feeding practices for infants born to mothers living with and without HIV residing in Tshwane, South Africa

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Introduction. Mothers living with HIV and on lifelong antiretroviral therapy should exclusively breastfeed for the first six months of life and continue to breastfeed in addition to complementary feeding until 24 months. Lack of knowledge and fear of breastfeeding is high, despite the nutritional benefits of breastfeeding.

Objective. To describe the feeding practices of infants who are HIV exposed uninfected (HEU) and unexposed uninfected (HUU) in Tshwane, South Africa (SA).

Methods. This sub-study forms part of the Siyakhula Study, a descriptive prospective cohort study where data collection started from November 2018 and is ongoing at the Kalafong Provincial Tertiary Hospital. For this sub-study, a cross-sectional design was deployed where the World Health Organization infant feeding questionnaire was used to assess the feeding practices of 215 mother-infant pairs. Mann-Whitney and Pearson's chi-square tests were performed using SPSS.

Results. Mothers intended to exclusively breastfeed their infants. Differences in breastfeeding practices were seen at six months' 63% HEU v. 55% HUU infants ($p<0.05$). HUU infants received other foods than breastmilk/formula milk within the 6-month period in weeks (14.4 ±8.8; $p<0.001$), while 72% HUU infants received complementary foods much earlier than HEU infants (57%) $p=0.025$, respectively. Water (>80%) and Mabele porridge (49%) were the first liquid and food introduced to the infants. Health influenced early introduction of complementary feeding (20.7%; $p=0.028$) in HEU infants.

Conclusion. Infants were introduced to solid foods much earlier than recommended. Understanding of breastfeeding terms, training of healthcare professionals and mothers is needed to increase breastfeeding rates in SA.

6. Awareness, knowledge and attitude of mothers of high-risk infants on donor breastmilk: A cross-sectional study

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Introduction. The use of donor breast milk (DBM) in high-risk infants with lack of access to own mothers' milk for immunological and protective effects is well described.

Objective: To assess the knowledge, attitude and awareness of DBM in mothers of high-risk infants.
Methodology. A cross-sectional mixed-methods study in a cohort of mothers of high-risk infants at a regional level neonatal unit between April 2021 and January 2022 was conducted. Demographic and questionnaire data on awareness, knowledge and attitude on DBM were collected. Qualitative data from open-ended questions were thematically analysed. Comparative analysis using independent sample *t*-tests and logistic regression to determine differences in variables and to understand associations related to knowledge were conducted.
Results. A total of 163 mothers with a mean (SD) age of 27.1 ±6.3 years were included. The majority (49.7%) had post-high school qualifications, were unemployed and receiving social security (82.8% and 87.0%, respectively). A larger proportion (64.4%) had inadequate knowledge of DBM. Over a third had a positive attitude to DBM and would recommend and donate DBM (69.3% and 73.6.%, respectively). A higher level of education did not confer better knowledge ($p<0.01$). Awareness of DBM had the strongest association with better knowledge of DBM (AOR 25.25; 95% CI 10.60 - 68.40; $p<0.001$). Negative attitude towards DBM was driven largely by concern of infection, contamination and lack of trust.
Conclusion. Lack of awareness was associated with poor knowledge of DBM. Lack of awareness drives the poor uptake of this critical nutritional source for high-risk infants. Implementation of targeted educational programmes in antenatal clinics may assist to address this knowledge gap.

7. Audit of discharge summaries of neonates admitted with hypoxic ischaemic encephalopathy in the Universitas Academic and Pelonomi Tertiary Hospital Complex, Bloemfontein, for the years 2018 - 2019

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Background. A discharge summary may be the only available health record for a patient, especially in resource-limited settings with suboptimal record-keeping. Considering the risk of litigation, the quality of summaries for neonates with hypoxic ischaemic encephalopathy (HIE) is particularly important.
Objectives. To audit electronic discharge summaries of neonates admitted with HIE to two tertiary hospitals in Bloemfontein, South Africa.
Methods. A retrospective, quantitative study was conducted. Summaries of late preterm and term neonates with HIE, admitted in 2018 and 2019, were audited for relevant information: final diagnosis, birth history, clinical evaluation, management, investigations, plan at discharge, and counselling of parents.
Results. The final diagnosis of HIE appeared in 87 (66.4%) of 131 audited summaries. Half (52.7%) lacked correct ICD-10 coding for HIE. Information on fetal distress and sentinel events was absent in 61.1% and 42.0%. Requirement for resuscitation was recorded in 90.8% of summaries. Performance of cardiac compressions and adrenaline administration were not specified in 46.6% and 54.2%, respectively. Admission blood gas results, particularly base deficit, lactate and glucose, were absent in 42.7%, 63.4% and 90.8% of summaries, respectively. Eligibility for therapeutic hypothermia was not captured in 41.2%. Cranial ultrasound, neuro-imaging, exclusion of meningitis, or multisystem involvement was not mentioned in 80.9%, 99.2%, 80.2% and 96.2%, respectively. Notes on counselling of parents were lacking (83.2%). Final cause of death was unspecified in 12 of 14 (85.7%) patients who died.
Conclusion. Discharge summaries of neonates at risk of adverse neurodevelopmental outcomes secondary to HIE lacked essential information. Quality improvement and regular auditing of patient records must be prioritised.

8. A descriptive study of the obstetric and neonatal outcomes of adolescent pregnancies at a tertiary academic hospital

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Introduction. Adolescent mothers (10 - 19 years old) are at high risk of morbidity, mortality and poorer perinatal outcomes. Adolescent pregnancy and childbearing have significant health, social and economic consequences.
Objectives. To describe the demographics and obstetric and neonatal outcomes of adolescent pregnancies and to identify risk factors for stillbirths.
Methods. Obstetric, perinatal and neonatal records of adolescents who delivered at or were referred to a tertiary academic hospital from January to December 2015 were reviewed. Comparison of study variables between age groups was conducted using the chi-squared test for categorical variables, and one-way analysis of variance.
Results. The records of 2 022 adolescent mothers and 2 039 neonates were reviewed; 229 (11.3%) had had previous pregnancies. Hypertension occurred in 249 (12.3%) mothers, with 142 (57.0%) having related complications. A third of deliveries were by caesarean section: most commonly, 353 (60.2%), for fetal distress. Perineal injuries were a frequent complication of normal vaginal deliveries; half required episiotomies and 2.1% (28/1 430) had significant perineal tears. There were no differences in pregnancy outcomes between the adolescent groups by age. There were 54 stillbirths. Mothers who did not access antenatal care (RR 9.9; 95% CI 5.9 - 16.7) and low-birthweight babies (RR 8.1; 95% CI 3.3 - 20.0) were at higher risk of stillbirth. A quarter (533 (26.4%)) of neonates were premature; 344 (17.0%) babies were admitted, 150 (8.6%) for respiratory complications.

Conclusion. Adolescent mothers had complications including premature births, perineal injuries and high caesarean section rates. Numerous repeat pregnancies suggest the need for public health and social interventions addressing family planning.

9. A systematic review of cerebral palsy in African paediatric populations

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Introduction. Most knowledge on cerebral palsy (CP) comes from studies of North American and European populations. Translating this information into African contexts is difficult and flawed because of the dearth of information on CP in the region.

Objective. To review the literature on the prevalence, aetiology, comorbidities, therapies and functional outcomes of African children with CP over a 20-year period.

Methods. PubMed, SCOPUS and Web of Science databases were searched for original research on children with CP aged <18 years published from 2000 - 2020. A total of 1 452 articles underwent 3-stage screening against explicit inclusion and exclusion criteria, until 58 articles were finally selected.

Results. Prevalence of CP ranged from 0.8 - 10 per 1 000 children, with most studies reporting a prevalence of 2 - 3 per 1 000 children. Almost half had identifiable risk factors in the perinatal period but up to 26% had no identifiable risk factor. Hypoxic ischaemic encephalopathy and kernicterus were important risk factors for CP in Africa. Spasticity was the most common clinical subtype and up to two-thirds of children with CP had at least one comorbidity. Hospital-based populations had a larger proportion of more severely impaired children compared with the community, but all children had a disproportionately low level of access to assistive devices or rehabilitation services. Children with CP showed functional improvement with interventions compared with controls.

Conclusion. Prevalence of CP in Africa may approximate the global North, but African children have a different risk factor profile and higher levels of impairment and comorbidities. Significant barriers prevent these children from accessing optimal care.

10. Outcomes of right ventricular outflow tract stenting as a palliative procedure in tetralogy of Fallot patients

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Introduction. Certain groups of tetralogy of Fallot (TOF) patients require a palliative procedure until factors permit a full surgical repair. An aorto-pulmonary shunt is the gold standard palliative procedure but requires a cardiothoracic surgeon in a well-equipped facility. In the government sector in a developing country, this limited resource has an overwhelming caseload. Right ventricular outflow tract (RVOT) stenting via cardiac catheterisation by a trained paediatric cardiologist is a possible alternative.

Objective. To demonstrate that RVOT stenting is a safe and effective palliative procedure in TOF patients in a resource-limited setting.

Method. A retrospective, cohort observational study at Steve Biko Academic Hospital of TOF patients who underwent RVOT stent insertion from January 2014 to March 2021.

Results. Thirty-seven patients required RVOT stent placement out of a total of 132 TOF patients seen over the same period. Mean age of presentation was 2.3 years with a mean age of first stent placement of 3.6 years. Mean oxygen saturation increased from 65% to 95% post stent insertion. Mean pulmonary artery (PA) growth, measured by the McGoon ratio, increased from 1.36 to 2.05. Average intensive care unit stay was two days, with a zero 30-day mortality. Three stents fractured, requiring replacement.

Conclusion. Stenting the RVOT in TOF patients who present at an older age, with multiple comorbidities and often in extremis, has yielded good results. Significant improvement in oxygen saturations and PA growth permits a majority of our patients to achieve full TOF surgical repair.

11. Mid-upper arm circumference as a predictor of morbidity in infants under six months of age

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Introduction. The effect of mid-upper arm circumference (MUAC) on morbidity in infants under six months old was assessed.

Objective. To identify a value of MUAC which would detect those infants under six months at risk of morbidity.

Methods. A prospective, analytical cohort study was conducted, collecting data on MUAC, feeding, diagnoses and morbidity as measured by length of hospital stay, pitting oedema, number of days readmitted to hospital after entering the study, and number of non-routine clinic visits. Receiver operating characteristic (ROC) curves were drawn against MUAC, and areas under the curve (AUC) were calculated to show the best cut-offs for MUAC to predict morbidity. Sensitivities, specificities, and positive and negative predictive values were calculated for morbidity to assess MUAC's utility as a case definition for malnutrition.

Results. The study included 46 participants, each followed up for six months, over a period of a year. The duration of admission was the only morbidity measure that was significantly affected by MUAC. MUAC had a significant main effect on total duration of hospital stay (morbidity) (p=0.013). Individuals who were admitted >6 days or died (the group with morbidity) had a mean MUAC of 112 ±3 mm compared with the healthy group with a mean MUAC of 134 ±6 mm.The best cut-off for MUAC to predict morbidity was 119 mm.

Conclusion. MUAC is a statistically significant predictor of morbidity. It fulfils many of the requirements for a case definition for malnutrition in infants <6 months.

12. Impact of the COVID-19 pandemic on HIV viral load testing and suppression rates in children and adolescents in Durban, South Africa

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Introduction. The COVID-19 pandemic poses challenges to the world's largest paediatric and adolescent HIV treatment programme in Durban, South Africa. Several modelling exercises raised concerns over the increase in paediatric HIV infections and the potential impact of disruptions to HIV care.

Objectives. To assess the impact of the COVID-19 pandemic on HIV viral load (VL) testing rates in children and adolescents.

Method. We used routinely collected, aggregated data of monthly VL counts done on all those less than 19 years old in Durban, South Africa, from January 2018 to February 2020 (pre-COVID-19) and March 2020 to January 2022 (COVID period). We conducted an interrupted time series analysis using a Prais-Winsten linear regression model, including terms for COVID-19 lockdowns and excess mortality (as a proxy for healthcare disruption) to determine trends in monthly VLs.

Results. The unadjusted mean VL was 2 166 (CI 252.2) and 2 016 (CI 241.9) (p=0.039) for the COVID and pre-COVID periods, respectively. The % VL suppression rates across these periods (72.9, CI 2.4% v. 73.6%, CI 1.8) did not show any significant difference (p=0.262). In the interrupted time series analysis, modelled monthly VL counts did not differ significantly by lockdown level (e.g. level 5 lockdown -210.5 VLs, 95% CI -483.0 to +62.1, p=0.138) or by excess mortality (-0.1, 95%CI -6.3 to 6.1, p=0.969). However, there was evidence of a significant downward trend in VL testing over time, including during the pre-COVID-19 period (-6.6 VL per month, 95% CI -10.4 to -2.7, p=0.002).

Conclusion. Despite the onset of, and lockdown levels imposed by, the COVID-19 pandemic, VL monitoring for children and adolescents remained robust throughout. A concerning trend identified was a decrease in the number of VLs performed per month that pre-dates the COVID-19 pandemic. This raises concerns that changes in the ART programmes for children and adolescents may account for this, requiring further scrutiny.

13. ICU experience of the respiratory syncytial virus season after two years into the COVID-19 pandemic in a single institution

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Introduction. Bronchiolitis is a viral infection affecting children. At the beginning of the COVID-19 pandemic, the South African government implemented non-pharmaceutical interventions (NPIs) to prevent a rise of infections of COVID-19. These led to a decline in hospital admissions for acute exacerbations of asthma and viral infections and suppressed the respiratory syncytial virus (RSV) season during 2020 - 2021. However, 2022 has seen an increase in the number of children with bronchiolitis including, anecdotally, more severe disease.

Objectives. To investigate whether the season post the two years of the COVID-19 pandemic showed an increase in hospital admissions of children with bronchiolitis, and to investigate the severity and epidemiology of hospitalised RSV.

Methods. We analysed routine data on paediatric RSV-related admissions to the pulmonology ward and ICU between February 2020 and June 2022.

Results. The total number of bronchiolitis admissions increased but, of those, RSV-related admissions ranged from 53% (2020) to 64% (2021) and 43% in 2022. In 2022, compared with the years 2020 and 2021, patients were mainly female, presenting with severe disease requiring longer stays in ICU with the highest mode of ventilation. Children in 2022 were mostly <1 year. Bronchiolitis was still mainly caused by RSV.

Conclusion. NPI measures prevented the spread of respiratory viruses. In 2021, the RSV season was delayed to November, possibly owing to lockdown measures. However, in 2022, there was an increase in numbers of patients hospitalised, and a greater number of admissions to ICU, with more severe disease, requiring longer stays in ICU, and higher modes of ventilation. Females seem to be more affected than males, and children <1 year to present more commonly.

14. Accidental poisoning among children in a regional hospital in northern KwaZulu-Natal before and during the COVID-19 pandemic

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Introduction. Poisoning has been reported as the fifth most common cause of injury-related deaths in children <5 years worldwide. Little is known about accidental poisoning among children in the regional setting. During the COVID-19 pandemic, lockdown measures may have increased home-based unintentional poisoning.

Objectives. To determine the frequency, outcome and type of accidental poisoning in children admitted to a regional hospital and compare cases before and during the COVID-19 pandemic.

Methods. A review of admissions to Queen Nandi Regional Hospital in Empangeni was performed to document cases of accidental poisoning >2 years. Equal periods during 2019 and 2020 (April to December) were compared. Children <13 years were included. Age, sex, date of admission, death, survival and type of poisoning were collected.

Results. Accidental poisoning made up a small proportion of the total admissions (n=252/5 071; 4.97%) with a low case fatality rate

(0.40%). Boys made up the majority (n=132/252, 52.38%). Most were <5 years (n=220/252, 87.30%,). Medicines (n=114/252, 45.24%), hydrocarbons (n=61/252, 24.21%) and pesticides (n=26/252, 10.32%) were the main types of poisoning. Domestic cleaner, sanitiser or disinfectant-related admissions were significantly increased during the pandemic (p=0.020).

Conclusion. Accidental poisoning commonly occurs in younger children. Medicines, hydrocarbons and pesticides make up the majority of cases. Domestic cleaner, hand sanitiser and disinfectant ingestion increased during the COVID pandemic. Future research involving primary care facilities and risk factors related to poisoning should be investigated.

15. Minimal clinical impact of the COVID-19 pandemic on paediatric oncology patients at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), South Africa

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Objective. The effects of SARS-CoV2 infection on paediatric oncology patients were not fully understood. The objective of this study was to investigate the effects of COVID-19 infections on these patients at CMJAH.

Methods. Patients under 18 years and their caregivers were tested. Nasopharyngeal COVID-19 PCR tests were performed on all patients with symptoms suggestive of COVID-19 infection, and those admitted for procedures, chemotherapy and treatment of any intercurrent illness. Results of all COVID-19 swab tests with corresponding full blood count results were prospectively collected. Simple descriptive statistics were used to describe the study population.

Results. From 1 May 2020 to 30 September 2021, 646 COVID-19 tests were performed on 432 patients. Thirteen tests (3% of patients) were positive. Six (0.9%) of the lodger caregivers also had positive swabs, suggesting positive contacts. Five of the positive patients were admitted for chemotherapy, and three were admitted for febrile neutropenia. No other patients were neutropenic. One neutropenic patient had COVID pneumonia, requiring facemask oxygen therapy and was managed safely in the in-patient ward. The most common symptoms included fever and mucositis (23%) followed by fever and cough (15%), while 54% were asymptomatic for COVID disease. All positive patients recovered fully and did not have any features of 'long COVID'.

Conclusion. The low numbers of positive oncology patients for COVID-19 may be explained by effective isolation techniques owing to pre-existing immunosuppression and effective health education. The clinical impact of the COVID-19 pandemic on paediatric oncology patients at CMJAH has been minimal.

16. Defensive medicine and the implications for ethical practice

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Introduction. Defensive medicine is a practice whereby doctors pre-emptively take action to defend themselves from patient complaints and malpractice litigation. This can include ordering tests which are not clinically indicated, carrying out unnecessary interventions or procedures, arranging unnecessary referrals to other specialties, prescribing unnecessary medication, unnecessary hospital admissions, or refusing to treat high-risk patients or perform high-risk procedures. On the face of it, defensive medicine can potentially be harmful to children.

Objective. To determine if defensive medicine is an ethical clinical practice in paediatrics.

Method. This comprises desktop analysis of common defensive medicine practices (described above) against the four principles of autonomy, beneficence, non-maleficence and justice. It includes consideration of the implications of defensive medicine on the ethical duty of a doctor to promote the best interests of the child.

Results. Defensive medicine is contrary to autonomy (the child and parent are not properly informed of the reasons for medical decisions and therefore cannot provide informed consent). Depending on the type of defensive practice, it can cause significant physical, emotional and (indirect) financial harm (non-maleficence). It may have beneficent outcomes, but this is incidental and is not the primary motivation for the conduct. The risk of harm outweighs the possibility of benefit. It violates the justice principle as it unnecessarily redirects valuable health resources.

Conclusion. Defensive medicine is an unethical practice and is a breach of a doctor's duty to uphold the best interests of the child. Coupled with an understanding of children's rights, this research may inform changes to the regulatory framework.

17. Clinical use and indications for head computed tomography in children presenting with acute medical illness in a low- and middle-income setting

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Introduction. Computed tomography (CT) imaging is indispensable in managing acute paediatric neurological illness. Clear guidelines exist for use of CT in trauma. However, the case is different for medical emergency.

Objective. To describe indications for non-trauma head CT and the findings at a tertiary paediatric hospital.

Methods. Records of children presenting with acute illness to the medical emergency unit of Red Cross War Children's Hospital, Cape Town, over one year were retrospectively reviewed. Participants were included if they underwent head CT scan within 24 hours of presentation with a non-trauma event. Clinical data and reports of CT findings were extracted.

Results. Inclusion criteria were met by 311 patients. The median age was 39.2 (IQR 12.6 - 84.0) months. The most common indications for head CT were seizures (*n*=169; 54.3%), reduced level of consciousness (*n*=140; 45.0%), headache (*n*=74; 23.8%) and suspected ventriculoperitoneal shunt (VPS) malfunction (*n*=61;19.7%). In 217 (69.8%) patients, CT showed no abnormal findings. In 94 (30.2%) with abnormal CT results, the predominant findings were hydrocephalus (*n*=54; 57.4%) and cerebral oedema (*n*=29; 30.9%). Post-CT surgery was required by 47(15.1%). A larger proportion of patients with VPS (25/62; 40.3%) required surgery compared with patients without VPS (22/249; 8.8%; $p<0.001$).

Conclusion. The majority of head CT scans in children with acute neurological illness were normal. Patients with VPS constituted the majority of patients with abnormal CT scans that required neurosurgical intervention. Evidence-based guidelines are required to guide the best use of head CT in the management of children without head trauma.