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ORAL PRESENTATIONS

Noise levels in intensive care units at Charlotte Maxeke Johannesburg Academic Hospital

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Background. Noise exposure can negatively affect both patients and staff in the Intensive Care Unit (ICU). Patients may experience sleep disturbances, delirium and sympathetic stimulation. Communication can be hindered, and staff may develop alarm fatigue. The World Health Organization (WHO) recommends time-averaged sound levels of 35 decibels (dB). However, studies on noise levels in adult ICUs in South Africa are lacking.

Objective. Noise levels were measured at patient cubicles and nursing stations in six ICUs and compared with WHO recommendations, across ICUs and between recording zones.

Method. An ethics waiver was obtained from the Human Research Ethics Committee of the University of the Witwatersrand. A prospective cross-sectional research design was used. A class 2 sound level meter recorded noise levels over three 24-hour periods per ICU.

Results. Time-weighted sound levels (Leq) ranged from 48 to 65 dB. No statistically significant differences were found when comparing noise levels by ICU size, layout or recording zone. Daytime noise levels at the central station were higher than nighttime levels ($p<0.001$), but no diurnal variation was observed in patient cubicles. All ICUs exceeded WHO recommendations more than 80% of the time. Noise levels above 85 dB were infrequent.

Conclusion. ICU size and layout do not appear to influence noise levels. Elevated daytime noise levels at central stations may be attributed to increased staffing and activity during the day. Noise-protective equipment is not required, as levels did not exceed 85 dB for more than eight hours; however, noise-reduction strategies should be broadly implemented to improve the critical care environment.

The effect of amino acid supplementation and mobilisation on skeletal muscle during the late acute phase of critical illness

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Background. Muscle wasting is a hallmark of critical illness (CI). We evaluated the effect of amino acid (AA) supplementation and mobilisation on skeletal muscle during the late acute phase of CI.

Method. This randomized trial included adult patients admitted to the surgical ICU of Tygerberg Hospital. Participants were assigned to two groups, both receiving standard care nutrition and mobilisation. The intervention group received an intravenous AA bolus with 45 minutes of cycle ergometry, starting on ICU day 3 - 4 for a mean duration of 6 days. Primary co-outcomes were changes in myofiber cross-sectional area (CSA) from biopsies and ultrasound-derived muscle CSA between the pre-(Day 2) and post-intervention (Day 8) time points, analysed using mixed modelling. Secondary outcomes included the protein-to-DNA (muscle mass), muscle echogenicity (muscle quality) and markers of muscle strength and functional capacity.

Results. Fifty patients (90% male, age 37 (12) years) were included. Controls received 1.23 (0.18) g/kg/day protein; while intervention patients received 1.57 (0.27) g/kg/day, including 0.37 (0.05) g/kg/day from the supplement. Significant muscle loss occurred over time (biopsy: −12%, $p=0.011$; ultrasound: −13%, $p<0.001$), with no significant differences between groups. Serial ultrasound measurements suggested greater muscle loss in the intervention group before day 5. The protein-to-DNA ratio increased significantly across the cohort (+16.27%, $p=0.007$), with a more pronounced increase in the intervention group. No significant differences were observed in muscle quality, strength and functional capacity.

Conclusion. A short-duration combined intervention of AA supplementation and cycle ergometry, limited to the late acute phase of CI, did not reduce muscle loss or improve muscle quality, strength and functional capacity.

The African Critical Illness Outcomes Study (ACIOS): A point prevalence study of critical illness in 22 nations in Africa

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Background. Limited data exist on critically ill patients in Africa.
Objective. This study aimed to assess the prevalence of adult critical illness, the care provided, and the outcomes of these patients in acute care hospitals across Africa.
Method. This multicenter, prospective, point-prevalence study was conducted between September and December 2023 in hospitals across 22 African countries and territories. All inpatients ≥18 years were assessed for critical illness and 7-day mortality. Hospital resources and patient care practices were documented. All participating hospitals fulfilled their national and local ethics requirements.
Results. From 180 hospitals, 19 872 patients were included. The median age was 40 years (IQR 29 – 59) and 11 078/19 862 (55·8%) were women. There were 967/19 780 (4·9%) deaths. On the census day, 2 461/19 743 (12·5%) patients were critically ill, with 1 688/2 459 (68·6%) cared for in general wards. In-hospital mortality for the critically ill was 507/2 450 (20·7%) and 458/17 205 (2·7%) for the non-critically ill. Critical illness on census day was independently associated with subsequent in-hospital mortality (adjusted odds ratio 7·72 (6·65 – 8·95)). Among critically ill patients, those with respiratory failure, 557/1 151 (48·4%) were receiving oxygen; circulatory failure, 521/965 (54·0%) were receiving intravenous fluids or vasopressors; and with low conscious level, 387/784 (49·4%) were receiving an airway intervention or placed in the recovery position.
Conclusion. One in eight patients was critically ill, with one in five dying within 7 days. Most critically ill patients were cared for in general wards, often without access to essential emergency and critical care interventions.

Evidence informed workplace wellness guidelines to support nurses who experience substance abuse in the Eastern Cape, South Africa

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Background. The unique workplace stressors faced by nurses, particularly in specialty units, increase their vulnerability to substance abuse. Due to barriers such as stigma, nurses experiencing substance abuse often do not seek support. Current workplace approaches and employee wellness programs frequently provide inadequate support, hindering rehabilitation, career safeguarding, and the quality of nursing care. The research question underpinning this study was: "What are the constructs inherent in evidence-informed workplace wellness guidelines that may be used to support nurses experiencing substance abuse?"
Objective. This presentation is part of a larger study and focuses on Phase I, which aimed to explore and describe how nurses, nurse managers, and employee wellness practitioners perceive wellness interventions and support for nurses experiencing substance abuse.
Method. Phase I employed a qualitative design. Twenty-three participants working in specialty units were purposively selected from private and public healthcare facilities within Nelson Mandela Bay. Data were gathered through semi-structured individual interviews and field notes, and analysed using Braun and Clarke's thematic analysis. Ethical clearance was obtained, and the principles of the Belmont Report were applied.
Results. Four main themes emerged: the walls of support, shouldering the responsibility to support, workplace dehumanization of the nurse, and creating a path to support.
Conclusion. This study contributed to the development of evidence-informed workplace wellness guidelines to support nurses experiencing substance abuse.

Punching above its weight: How New Zealand boosted deceased organ donation through national coordination and local clinician empowerment

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Background. Organ Donation New Zealand (ODNZ) has grown from humble beginnings to become a national agency facilitating the life-changing gift of deceased organ donation for a population of approximately five million across two islands. New Zealand presents unique geographical and logistical challenges for coordinating donation.
Objective. We present an overview of how New Zealand has developed a collaborative network of local champions, offering a potential model for financially constrained or geographically challenging countries to build a national program.
Method. New Zealand has limited resources for deceased donation and comparatively low per-capita intensive care capacity. ODNZ has implemented a hub-and-spoke model, with a small core agency of clinical specialists coordinating a 24-hour national donation service. This agency is linked to a network of hospital-based clinicians who champion and facilitate donation locally. The network spans 24 hospitals, operating with relatively limited resources - 5.35 nursing full-time equivalents (FTE) nationally. ODNZ also provides on-site training and education.
Results. With dedicated champions and a modest increase in resources, annual deceased organ donation grew from 7.8 donors per million population (dpmp) in 2013 to 14.7 dpmp in 2019. In 2024, ODNZ facilitated 358 organ and tissue donations from 70 deceased organ and tissue donors and 66 tissue-only donors, and became the sixth country to facilitate donation after assisted dying.
Conclusion. Despite limited resources, it is feasible to increase national deceased donation through central coordination and the training of local clinicians.
The authors certify that all ethical requirements were adhered to.

Anchoring family involvement in critical care: Development and validation of a multicomponent intervention for mechanically ventilated patients with delirium

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Background. Family-centred care is vital to quality critical care. In ICUs, however, delirium and mechanical ventilation often disrupt patient orientation and recovery, and structured family involvement remains

limited. Meaningful family engagement can help reduce disorientation and support recovery. This study addresses a gap in the literature by proposing a standardized, evidence-based approach to support family involvement in the care of intubated patients with delirium.

Objective. To develop and validate a multicomponent intervention that enhances family involvement in the care of mechanically ventilated patients with delirium.

Method. A mixed-methods design, informed by the MRC Framework, was used in three phases: (*i*) Exploratory: a scoping review, qualitative interviews with family members, and focus groups with critical care nurses to explore experiences and perceptions of family involvement; (*ii*) Development: generation of an initial 115-item intervention aligned with nine core domains, iteratively refined; (*iii*) Validation: a two-round Delphi study with 12 critical care nurse experts who evaluated the intervention's clarity, relevance, and feasibility. Ethics approval was obtained.

Results. The final intervention consisted of 39 validated items addressing key areas, including family education, reorientation strategies, communication, emotional support, and involvement in decision-making. Participants reported the intervention as relevant and appropriate, noting that it could drive collaboration, alleviate anxiety, and enhance patient-centred care.

Conclusion. This evidence-based intervention provides a guide for critical care nurses to integrate families as active participants in patient care, promoting excellence, resilience, and sustainability in critical care practice.

Exploring family involvement in the care of critically ill patients with delirium: A qualitative study

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Background. Sustainable healthcare systems in Africa require community-centred approaches that actively involve families in critical care. Family members play a crucial role in providing emotional support, aiding patient reorientation, and alleviating the burden on nurses. However, their participation remains limited due to institutional barriers, restricted visitation, and inadequate guidance. This study explores family members' perspectives, experiences, and challenges regarding their involvement in the care of loved ones with delirium in the intensive care unit (ICU), highlighting their potential contribution to sustainable healthcare and informing the development of targeted interventions.

Objective. To explore the perspectives of patients' family members regarding their participation in the care of loved ones with delirium in the ICU, and identify strategies to enhance their meaningful participation.

Method. A qualitative descriptive design was employed. Semi-structured interviews were conducted with family members of critically ill patients with delirium in an academic hospital in South Africa. Data were analysed using content analysis. Ethical approval was obtained from the university's ethics committee, and informed consent was secured from all participants.

Results. Family involvement provided essential emotional and cognitive support and improved nurse-family communication. Participants expressed a strong willingness to engage in care activities and decision-making. However, ICU-related fear, rigid visitation policies, and lack of structured guidance hindered their participation. Key facilitators included clear communication, family education, and institutional policy reform.

Conclusion. Implementing structured frameworks for family engagement in ICUs can enhance patient outcomes, alleviate nurse workload, and foster sustainable, community-oriented critical care.

Workplace adversity: Challenges faced by South African ICU nurses

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Background. Workplace adversity is a multifaceted phenomenon arising from organisational, discipline-specific, and external factors that contribute to challenges in intensive care units (ICUs).

Objective. To describe the perceived causes of workplace adversity among professional nurses in adult, paediatric, and neonatal ICUs in public and private hospitals within the Eastern Cape Province, South Africa.

Method. This study employed a quantitative, cross-sectional correlational survey design. The target population comprised professional nurses. A census sampling method was used, inviting all eligible respondents to participate. Data were collected using a structured self-report questionnaire. Descriptive and inferential statistics were conducted using Statistica Version 13.5.

Ethical clearance was granted by Nelson Mandela University (approval number H20-HEA-NUR-024). Permission was subsequently obtained from the Department of Health (DOH) and private hospital groups throughout the Eastern Cape.

Results. A total of 353 questionnaires were completed. Respondents identified the perceived causes of workplace adversity as follows: 90% (n=312) cited staff shortages, 70% (n=243) indicated insufficient nurse-to-critically ill patient ratios, 57% (n = 197) reported limited access to professional development, and 50% (n=171) identified the leadership style of direct line managers as unsuitable.

Conclusion. Unaddressed causes of workplace adversity have the potential to destabilise intensive care unit environments, undermining staff well-being, patient care, and overall healthcare system performance. Identifying and mitigating these factors is, therefore, essential to sustaining effective and resilient intensive care settings.

Prevalence, risk factors and outcome of patients with iatrogenic withdrawal syndrome in a South African paediatric ICU

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Background. No published data exist on the occurrence of Iatrogenic Withdrawal Syndrome (IWS) in South African Paediatric ICUs (PICUs).

Objective. To describe the prevalence of IWS, the clinical characteristics of patients who develop IWS, identify potential **risk factors, and describe the short-term outcomes of IWS in a South African PICU.**

Method. A retrospective review was conducted of discharge summaries from Nelson Mandela Children's Hospital PICU for children who received analgosedation for at least 72 hours over a one-year period. Ethics approval was granted by the University of the Witwatersrand Human Research Ethics Committee.

Results. Of the 148 eligible patients, the overall incidence of Iatrogenic Withdrawal Syndrome (IWS) was 36.5% (95% CI 28.7–44.8%). Among patients with IWS, 81% received anti-withdrawal drugs before diagnosis.

Multivariable analysis identified age under 4 years, pressure-controlled ventilation, increasing number of analgosedation types, and empiric use of anti-withdrawal drugs during sedation weaning as risk factors for IWS. Conversely, the use of morphine boluses was associated with a decreased risk. Delirium, unplanned self-extubation, ventilator-associated pneumonia (VAP), and device dislodgement occurred significantly more frequently in patients with IWS. Patients with IWS also had significantly longer durations of ventilation and PICU stays.

Conclusion. IWS is a significant clinical problem, affecting more than one third of children in this study and is strongly associated with adverse events and delirium. These findings highlight the importance of routine screening for IWS in PICUs.

Carbapenem infusion preparation and administration process errors

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Background. Effective antimicrobial stewardship requires an understanding of the drivers of antimicrobial resistance.

Objective. To document nurses' carbapenem infusion administration practices and evaluate their compliance with expected medication standards, as well as implications for patient recovery or deterioration.

Method. Following ethical approval: (UKZN BREC BE709/18), this observational exploratory study assessed the administration process of intermittent carbapenem infusions in three general ICUs in KwaZulu-Natal. Infusion errors were categorised as those identified during preparation, administration, and documentation of carbapenem doses administered to study patients. A serial rectal swab CRE study protocol was carried out on all patients, and clinician ordered culture results were analysed.

Results. Multiple process errors were identified during both the preparation and administration phases of all carbapenem infusions (n = 223 observations) for 20 study patients. Non-compliance during dose preparation included: failure to follow expected medication safety measures, such as double-checking the prescription, vial, and infusion bag (72.6%); missed doses (5.4%); incorrect number of vials reconstituted (1.4%); reconstitution with inadequate diluent volume (53.4%); inaccurate labelling of infusion bags (91.7%); and inaccurate documentation (72.6%).

Inaccuracies during dose administration included: incorrect timing affecting desired dose intervals (65%), non-compliance with expected infusion duration (40%), and failure to flush the administration line to complete the dose (98.3%). Six patients (30%) were colonised with carbapenem-resistant Enterobacterales (CRE). Microbial culture and susceptibility analysis showed carbapenem resistance in seven patients (35%) and multidrug resistance in eight patients (40%).

Conclusion. Every aspect of carbapenem preparation and administration required improvement, with significant implications for the suboptimal delivery of treatment.

Are nursing infusion practices delivering full-dose antimicrobial treatment?

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Background. Sub-therapeutic levels of antimicrobial medicines occur when the concentration falls below the minimum inhibitory concentration (MIC).

Objective. To identify areas of error, based on the study hypothesis that intermittent intravenous carbapenem infusion administrations are flawed, resulting in non-delivery of a therapeutic dose.

Method. Following ethical approval (UKZN BREC BE709/18), carbapenem treatment of adult patients in three general ICUs in KwaZulu-Natal was assessed for dosing accuracy. Discarded intravenous administration equipment—including vials, syringes, infusion bags, and administration lines—was retrieved where possible. Residual antibiotic remaining in infusion items was calculated using: (*i*) observation of diluent volume, and (*ii*) measurement of extracted residual volume from discarded infusion items

Results. A total of 223 carbapenem administrations were observed in 20 patients. Twelve doses (5.4%) were missed. Non-delivery of the full prescribed dose occurred in all patients (n=211) due to residual antibiotic remaining in discarded infusion items. Undelivered carbapenem was detected in retrieved used and discarded items: 135 vials (n=137, 98.5%) and 70 syringes (n=94, 74.5%), resulting in incomplete doses delivered in 135 infusion bags (n=137, 98.5%). Mean percentage loss per item was 5.0% in vials and 1.5% in syringes. Residual antibiotic was also found in infusion bags and lines: 122 bags (n=144, 84.7%) and 82 infusion lines (n=82, 100%), with mean percentage loss of 7.5% and 34.8%, respectively.

Conclusion. Volumetric analysis of used and discarded infusion items demonstrated that carbapenem infusion practices failed to deliver the full prescribed dose.

Right ventricular dysfunction score in prognostic evaluation of patients with sepsis and septic shock

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Background. The Right Ventricular Dysfunction Score (RVDS), originally developed to grade severity in chronic heart failure, has not been used in patients with sepsis.

Objective. The primary objective was to determine the ability of the 5-parameter RVDS to predict 28-day all-cause mortality among septic patients. Secondary objectives included comparing the TAPSE/PASP ratio with RVDS and evaluating the relationship of RVDS with mechanical ventilation duration, vasopressor-free days, need for renal replacement therapy (RRT), and ICU length of stay.

Method. Following institutional ethics committee approval, 189 adult patients were recruited within 48 hours of a sepsis diagnosis (Sepsis-3 criteria). RVDS was computed at recruitment using five echocardiographic measurements: Doppler Pulmonary Artery Systolic Pressure (PASP), right ventricular end-diastolic area/body surface area, TAPSE, tricuspid regurgitation grade, and IVC collapsibility. Additionally, the TAPSE/PASP ratio, a marker of right ventriculo-arterial (RV-PA) coupling, was calculated. Patients were followed for prognostic outcomes.

Results. An RVDS >2 predicted 28-day mortality with an AUROC of 0.857 (95% CI 0.801 – 0.914). There was a significant linear correlation between RVDS and mechanical ventilation duration (p=0.39, p<0.0001), ventilator-free days (p=–0.46, p<0.0001), and vasopressor-free days (p=–0.35, p<0.0001). The AUROC of a TAPSE/PASP ratio ≤0.44 for predicting 28-day mortality was 0.883 (95% CI 0.829 – 0.937), comparable to RVDS (difference between AUROCs 0.026, p=0.09).

Conclusion. VDS has prognostic utility for predicting 28-day all-cause mortality in patients with sepsis and septic shock. The TAPSE/PASP

ratio performs comparably and may be used as a simpler alternative in clinical practice.

The effectiveness of music listening and exercise as a therapeutic intervention in cardio-thoracic surgery patients: A scoping review

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Background. Cardiac rehabilitation helps cardiac surgery patients restore lost function, primarily through physical exercise. Music listening has been shown to encourage physical activity and reduce anxiety, depression, and pain. A collaborative effort across biokinetics, music therapy, and nursing science sought to review the effectiveness of combining music and exercise as an intervention for cardio-thoracic surgery patients.

Objective. To appraise national and international evidence on the effectiveness of combined music and exercise interventions in cardio-thoracic surgery patients.

Method. The JBI methodology for scoping reviews was followed. Articles reporting combined exercise and music interventions in patients undergoing cardio-thoracic surgery were included. A literature search was conducted across six databases. After removing duplicates (n=60), 235 articles were screened by title and abstract. Sixteen full-text articles were reviewed, and eight met the inclusion criteria. A structured data extraction tool was used. Ethical approval was obtained from the University Research and Ethics Committee.

Results. The studies were conducted across diverse geographical locations, with sample sizes ranging from 17 to 168 and publication years from 2002 to 2024. Seven studies were randomized controlled trials, and one was a quasi-experimental pilot study. Reported benefits included improved oxygen saturation and pulmonary function, reduced pain and anxiety, enhanced mood, and better functional ability. As no studies of this nature have been conducted in South Africa, research in this context is warranted.

Conclusion. Future studies should design evidence-based interventions combining exercise and music, employ objective measures, and include long-term follow-up to accurately determine effectiveness in cardio-thoracic surgery patients.

POSTER PRESENTATIONS

A concept analysis of facilitation to improve clinical outcomes in critical care units

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Background. Facilitation is widely used in nursing education and clinical practice, yet its meaning remains imprecise within the critical care context.

Objective. This article reports a comprehensive concept analysis to clarify the meaning of facilitation in critical care by identifying its attributes, antecedents, and consequences, and by providing model cases to illustrate its application.

Methods. The eight-step approach of Walker and Avant was applied to explore and analyse the meaning of facilitation in critical care. Full-text, peer-reviewed articles, books, dictionaries and guidelines published between 1999 and 2023 were included. Electronic searches were conducted in EBSCOhost, CINAHL, PubMed, and Google Scholar using the keywords *facilitation*, *clinical facilitators*, and *concept analysis*.

Results. Sixty-three sources were included in the analysis of attributes, antecedents, and consequences of facilitation that impact nursing practice, education, and research. The identified attributes include dynamic, interactive processes; creation of a positive environment; mobilization of resources; assistance; student-centeredness; shared goals; collaboration; engagement; participation; and feedback. Antecedents for facilitation include facilitator qualities, motivation, a positive learning environment, the student–facilitator relationship, availability of time, and clearly specified learning outcomes. The consequences identified were change, professional development, competence, quality improvement, increased job satisfaction, staff retention, and enhanced self-confidence.

Conclusion. Definitions from dictionaries and thesauri help clarify the concept of facilitation as enacted by facilitators in a critical care context. Facilitators play a key role in supporting nursing students to develop competence, caring, excellence, critical thinking, independence, and a strong focus on patient safety in critical care environments.

Psychometric evaluation of a family-centered care tool in South African ICUs

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Background. The Measures of Processes of Care for Service Providers (MPOC-SP(A)) tool was developed by the CanChild Centre for Childhood Disability Research in Canada to assess service providers' perceptions of family-centered care (FCC) in adult rehabilitation. This study aimed to adapt and validate the MPOC-SP(A) tool for use in adult intensive care units (ICUs) to evaluate patient- and family-centered care in this context. The original tool comprised 27 items across four domains: *showing interpersonal sensitivity*, *providing general information*, *communicating specific information*, and *treating people respectfully*. Following an initial content validation study, the tool was refined to 24 items.

Objective. This study represents the final validation phase of the MPOC-SP(A) tool, aimed at evaluating its construct validity and reliability when adapted for adult ICUs in South Africa.

Methods. Following approval from the Human Research Ethics Committee, the 24-item tool was administered to 134 healthcare professionals working in adult ICUs across public and private hospitals in South Africa. A confirmatory factor analysis (CFA) was performed to assess the tool's factor structure and goodness of fit, while reliability was evaluated using Cronbach's alpha and intraclass correlation coefficients (ICC).

Results. The CFA supported a 17-item, four-factor structure, demonstrating moderate model fit indices. The overall internal consistency of the tool was excellent (Cronbach's $\alpha = 0.93$), while ICC values indicated moderate test–retest reliability.

Conclusion. The MPOC-SP(A) demonstrates validity and reliability as

a culturally sensitive tool for assessing healthcare providers' perceptions of family-centered care in South African ICUs.

Minimum inhibitory concentration targets among critically ill patients receiving amoxicillin-clavulanate and piperacillin-tazobactam by continuous infusion compared to intermittent bolus

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Background. Beta-lactams exhibit time-dependent bactericidal activity, and continuous infusion (CI) has been suggested to achieve superior antibiotic concentrations compared to intermittent bolus (IB) administration.

Objective. The primary objective was to compare beta-lactam levels relative to the minimum inhibitory concentration (MIC) target at 48 hours between IB (measured midway through the dosing interval) and CI (steady state). Secondary objectives included comparisons of antibiotic duration, time to white cell count normalization, emergence of new resistance, days on mechanical ventilation (MV) and vasopressors, ICU length of stay (LOS), and 90-day mortality between the groups.

Methods. This study is a sub-analysis of a randomized controlled trial comparing CI v. IB beta-lactam administration in ICU patients (University Ethics ref. no. M241197). The analysis focused on the most frequently used antibiotics: amoxicillin–clavulanate and piperacillin–tazobactam.

Results. Of 1 159 patients screened, 122 were randomized. Day-three blood samples for therapeutic drug monitoring (TDM) were available for 24 of 64 patients in the CI group and 23 of 58 in the IB group. The CI group had higher odds of achieving the target above the MIC threshold (OR 4.9, 95% CI 1.4 – 17.5). Antibiotic duration and time to white cell count normalization were similar between groups (p=0.11 and 0.44). Vasopressor and mechanical ventilation days were comparable (p=0.60 and 0.47). New resistance occurred in 68% of CI patients versus 84.6% in IB patients (p=0.32). Median ICU length of stay was 9 days (IQR 6 15) for CI and 13 days (IQR 6 – 20) for IB (p=0.22). Day-90 mortality was 16.7% in the CI group versus 30% in the IB group (p=0.334).

Conclusion. Continuous infusions of amoxicillin–clavulanate and piperacillin–tazobactam were significantly more likely to achieve free time above MIC targets at 48 hours compared with intermittent bolus dosing, although clinical outcomes such as ICU stay, vasopressor use, and mortality were similar between groups.

Haemoadsorption: The standard of care for organophosphate poisoning: A retrospective observational study

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Background. Pesticide poisoning causes approximately 150 000 deaths annually. In South Africa, organophosphate poisoning is a major concern, with ICU admissions at Chris Hani Baragwanath Academic Hospital (CHBAH) quadrupling between 2012 and 2017. A recent randomized controlled trial demonstrated improved outcomes with haemoadsorption (HA), prompting evaluation of its impact in this setting.

Objective. To compare ICU length of stay, anticholinergic use, mechanical ventilation (MV) and vasopressor days, severe complications, and mortality between patients treated with and without HA therapy.

Methods. This retrospective cross-sectional study was conducted in the CHBAH ICU from 1 October 2021 to 31 April 2024. Patients aged ≥16 years with confirmed cholinergic toxidrome were included. Those with mild disease or polypharmacy with a predominant alternative toxidrome were excluded. A minimum sample size of 40 was calculated. Ethical approval was obtained (University Ethics Certificate ref. no. M241197). Potential confounders and biases were considered.

Results. Of 131 patients screened, 75 met inclusion criteria: 41 received HA therapy and 35 received standard care. The HA group had a significantly higher predicted mortality, reflected by higher SAPS II scores (p=0.032). Prolonged ICU length of stay (p=0.697), anticholinergic use (atropine, p=0.85; glycopyrrolate, p=0.92), and days on mechanical ventilation (p=0.17) and vasopressors (p=0.70) were similar between groups. However, severe complications - including death - were more likely in the standard care group (OR 5.4, 95% CI 1.2 – 23.8).

Conclusion. Despite greater illness severity in the HA group, patients receiving standard care had significantly higher odds of developing severe complications, including septic shock, acute kidney injury, reintubation, tracheostomy, cardiac arrest, brain herniation, and death.

Haemadsorption therapy for suspected ACE inhibitor and calcium channel blocker overdose: A case report

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Background. A man in his early thirties was admitted to the ICU at Chris Hani Baragwanath Academic Hospital (CHBAH) following a non-fatal suicide attempt. He presented in shock requiring high-dose vasopressor support.

Objective. To describe the management and clinical course of a patient with suspected enalapril and amlodipine overdose.

Methods. This is a retrospective case report conducted in the ICU at CHBAH. Ethical approval was obtained (University Ethics Certificate ref. no. M2502108).

Results. On admission to the emergency unit, the patient was in shock, with a weak pulse and unrecordable blood pressure. Rapid titration of adrenaline (0.5 µg/kg/min) and phenylephrine (0.1 µg/kg/min) improved blood pressure (114/55 mmHg) and heart rate (128 bpm). The Glasgow Coma Scale improved from 12 to 15, and lactate was 10 mmol/L. The patient was subsequently transferred to the ICU, where vasoactive support was transitioned to noradrenaline (0.5 µg/kg/min) alongside intravenous fluids and calcium.

Over the next 18 hours, mean arterial pressure (MAP) improved, and vasoactive agents were weaned. Immediate discontinuation resulted in a MAP drop to 48 mmHg, requiring reinitiation of noradrenaline (0.3 µg/kg/min). Hemoadsorption (HA) therapy was initiated for six hours. During the HA cycle, noradrenaline was reduced by

two-thirds and stopped five hours after completion. MAP remained above 80 mmHg, and lactate remained below 1.5 mmol/L. The patient was discharged 24 hours later. Mass spectrometry demonstrated significant removal of enalapril during HA, with a marked decrease in enalapril levels post-treatment; amlodipine was undetectable.

Conclusion. In this case of enalapril overdose, hemoadsorption therapy was associated with rapid shock resolution within 11 hours and significant clearance of enalapril.

Histologic findings in adults hospitalized with hypoxaemic pneumonia during the COVID-19 pandemic in South Africa

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Background. Pulmonary histopathology reports in COVID-19 often describe diffuse alveolar damage (DAD). However, few studies compare findings between decedents who were mechanically ventilated and those who were not.

Objective. To describe pulmonary histological findings in decedents with hypoxaemic pneumonia during the COVID-19 pandemic, and within the COVID-19 cohort, to compare findings between mechanically ventilated decedents and those who received only supplemental oxygen.

Methods. This observational, prospective, single-centre study included adult decedents with hypoxaemic pneumonia attributable to COVID-19 or non-COVID-19 causes.

Results. A total of 81 decedents were enrolled, including 60 with COVID-19 and 21 with non-COVID-19 pneumonia. COVID-19 decedents had a lower SAPS II score than non-COVID-19 decedents (30 vs 39, p = 0.03). Histopathological findings more prevalent in COVID-19 included hyaline membrane formation (75% vs 33.3%, p=0.01; OR 1.67, 95% CI 1.25 – 2.25) and alveolar collapse (80% vs 52.4%, p=0.02; OR 1.49, 95% CI 1.08 – 2.05). COVID-19 decedents were also more likely to have type II pneumocyte abnormalities: hyperplasia (90% vs 61.9%, p=0.01; OR 1.88, 95% CI 1.23 – 2.87), cytomegaly (83.3% vs 42.9%, p=0.01; OR 1.86, 95% CI 1.33 – 2.62), nucleomegaly (70% vs 42.9%, p=0.01; OR 1.77, 95% CI 1.22 – 2.32), and multinucleation (70% vs 38.1%, p=0.02; OR 1.45, 95% CI 1.09 – 1.91). Among COVID-19 decedents, septal collagen deposition was more prominent in non-ventilated patients compared with ventilated patients (91.3% vs 64.3%, p=0.01).

Conclusion. Diffuse alveolar damage was more frequent in decedents with COVID-19 hypoxaemic pneumonia. Non-ventilated COVID-19 decedents exhibited greater septal collagen deposition, suggesting a potential role for patient self-induced lung injury.

Critical care nurses' perceptions of a continuing professional development in-house course in a private hospital organisation

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Background. Changes in nursing education and statutory regulations in South Africa have reduced the number of nurses being trained, limiting access to formal postgraduate programmes and decreasing the availability of critical care (CC) nurse specialists. To address this gap, many organisations have introduced short, informal continuing professional development (CPD) courses. One private hospital offers a four-month CPD programme covering foundational concepts in critical care nursing.

Objective. To explore the perceptions and experiences of students who successfully completed the course, assessing whether they felt adequately prepared to work in critical care, and examining their experiences of the course content, structure, teaching, learning, assessment activities, and learning environment.

Methods. A qualitative approach was employed. Ethical approval was obtained, and all ethical principles were adhered to. Purposive sampling recruited professional and general nurses who completed the course in 2023 within the region. Individual interviews were conducted, and data were analysed using Braun and Clarke's thematic analysis framework.

Results. Seven participants were interviewed. The course was perceived as beneficial, although the degree of benefit was influenced by participants' prior experience. Participants reported increased knowledge and skills upon completion and greater confidence to practice independently, while acknowledging that the course provides only foundational preparation. Teaching methods, learning activities, assessment strategies, and the learning environment were identified as factors impacting student learning.

Conclusion. In-house CPD courses can enhance knowledge, skills, and confidence to work in critical care to varying degrees. Optimising the teaching, learning, assessment, and environmental aspects of the course may further improve learning outcomes and preparedness for clinical practice.

Long-term health outcomes of COVID-19 critical care survivors: A cross-sectional study (preliminary data)

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Background. Long-term outcomes of COVID-19 critical care survivors (CCS) remain underreported in Sub-saharan Africa.

Objective. To describe the physical function, health-related quality of life, and fatigue of COVID-19 ICU survivors three years after hospital discharge.

Methods. This cross-sectional descriptive study included COVID-19

CCS aged ≥18 years who were discharged from a tertiary hospital in the Eastern Cape between August 2020 and October 2022. Follow-up assessments occurred in the hospital physiotherapy department from December 2024 to April 2025. Standardized tools were used to evaluate outcomes: Fatigue Severity Scale (FSS), Short Physical Performance Battery (SPPB), Jamar Hydraulic Hand Dynamometer for grip strength, and EQ-5D-5L for health-related quality of life. Ethical approval was obtained (ref. no. S22/02/003_COVID-19).

Results. Seventeen COVID-19 CCS (median age 48 years) were assessed. Long-term outcomes varied: 76% experienced normal fatigue, and 88% showed good physical function (SPPB score ≥11.6). Self-reported quality of life was generally positive, with 82% reporting no anxiety or depression. However, 24% experienced severe fatigue, 12% had lower physical capacity (SPPB score <8), 18% reported moderate to severe pain and mobility issues, and 12% indicated difficulties with usual activities. Mean hand grip strength was within normal ranges for males (50.33 kg) and females (24.09 kg).

Conclusion. COVID-19 CCS in this cohort largely demonstrated favourable long-term outcomes, including good physical function, normal fatigue, and positive self-reported quality of life. Nevertheless, a subset experienced persistent severe fatigue, pain, and mobility limitations, underscoring the need for targeted, individualized post-ICU rehabilitation strategies.

Myocardial Performance Index for prediction of an outcome in septic shock patients: A prospective observational cohort study

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Background. Myocardial Performance index (MPI), a tissue doppler derived global cardiac function that assesses both systolic and diastolic performance, has not previously been evaluated for outcome prediction in patients with sepsis.

Objective. This study aimed to investigate the predictive value of MPI for 28-day ICU mortality in patients with septic shock. Additionally, the correlation between MPI and other laboratory parameters and clinical outcomes was assessed.

Methods. After institutional ethics committee approval, a prospective observational cohort study was conducted in 104 adult patients (>18 years) with septic shock. All patients underwent transthoracic echocardiography at baseline and 24 hours later. Tissue Doppler measurements were used to calculate isovolumetric contraction time (IVCT), isovolumetric relaxation time (IVRT), ejection time (ET), and MPI. Serum levels of NT-proBNP and Troponin-I (Trop-I) were measured at both time points. Patients were followed up for prognostic outcomes.

Results. The 28-day mortality was 52.88%. Non-survivors exhibited a significantly greater median change in MPI (0.13 (IQR: 0.11 – 0.18)) compared to survivors (0.05 (IQR: 0.03 – 0.08), $p<0.0001$). Changes in MPI positively correlated with changes in Trop-I (r=0.303) and NT-proBNP (r=0.528). Worsening MPI and its components were associated with higher mortality, longer ICU stays, and prolonged mechanical ventilation.

Conclusion. In patients with septic shock, an increase in MPI within the first 24 hours is associated with higher 28-day mortality. MPI changes also correlate with elevations in Trop-I and NT-proBNP, supporting its potential utility as an early prognostic marker in this population.

A comparative audit of endotracheal tube cuff pressures across three ICUs at a tertiary South African Academic Hospital.

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Background. Endotracheal intubation with cuffed endotracheal tubes (ETTs) is a routine intervention in intensive care units (ICUs). Critically ill patients often require prolonged intubation, making regular monitoring of ETT cuff pressures essential to minimise morbidity. Both under- and over-inflation of the cuff can result in significant complications. South African best practice guidelines recommend maintaining cuff pressures between 20 – 30 cmH_2O, as measured using a manometer.

Objective. The primary objective was to measure and compare ETT cuff pressures in adult intubated patients across three ICUs-trauma, neurosurgical, and multidisciplinary—at a tertiary academic hospital. The secondary objective was to assess the degree of under- or over-inflation and evaluate whether cuff pressures varied by time of day (morning, afternoon, evening).

Methods. This prospective observational study was conducted at a tertiary hospital in Johannesburg, South Africa. A total of 300 ETT cuff pressure measurements were recorded over a 90-day period using a standardised manometer across three daily time points. Ethical approval, hospital permission, and head of department authorisation were obtained prior to data collection. The HREC waived patient consent, as this was an observational study; however, consent was obtained from the treating ICU physicians and operational nursing heads.

Results. More than 90% of ETT cuff pressures exceeded the recommended range. Overinflation was most pronounced in the trauma ICU, with similar but less severe findings in the neurosurgical and multidisciplinary ICUs. No significant variation in cuff pressures was observed across different times of day..

Conclusion. Widespread ETT cuff overinflation was identified, underscoring the need for protocolized and more frequent monitoring practices.

How well are we applying (F)amily engagement in the ABCDEF bundle?

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Background. Post-Intensive Care Syndrome (PICS) is a collection of health problems that remain or develop after admission to intensive care. The ABCDEF bundle has been shown to reduce the risk of PICS, however, the 'F' component – family engagement - remains under-applied in paediatric intensive care units (PICUs) in African settings.

Objectives. The Best Practice Project, a two-year practice development initiative, aimed to build the capacity of children's nurses in Africa to lead measurably excellent nursing care for children and their families. Ten nurse led teams, from eight hospitals in five countries were enrolled, three of which were PICU teams – two from Ghana and one from Kenya. Methods: One aspect of the project focused on increasing family involvement. Using the validated 'Care through Family' self-assessment tool, differences between knowledge and practice were highlighted on radar charts for six variables. PICU teams used an Appreciative Inquiry approach, with tools such as team conversations and photo elicitation, to reflect on practice and develop strategies to support greater family involvement. A post-assessment was conducted.

Results. Participants reported measurable increases in the presence and participation of mothers and caregivers in PICU care processes, contributing to improved parental emotional support and enhancing compassionate, effective care.

Conclusion. Critical illness and hospitalisation is traumatic for both children and their families. In PICU, separation from primary caregivers can cause significant physiological and psychological harm. The Care Through Family Model may help PICU teams involve families more meaningfully in care and thereby potentially lower the risk of PICS.

Describing five years of intensive care unit mortality in a resource-limited tertiary hospital in Ghana

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Background. Critical illness is increasingly common in African hospitals, with approximately one in eight hospitalized patients classified as critically ill. Reported mortality rates vary widely, ranging from 16.6% to 50%, depending on the criteria used to define critical illness.

Objective. To describe five-year mortality trends and associated factors in the intensive care unit (ICU) of the Cape Coast Teaching Hospital (CCTH) between January 2019 and December 2023.

Methods. With ethics approval from CCTH, a retrospective observational study was conducted using ICU admission data. De-identified patient-level information was extracted and analysed. Descriptive statistics summarized patient characteristics, and mortality prevalence was calculated annually and across the five-year period. Factors associated with mortality were evaluated using the Mann-Whitney U test and Chi-square test.

Results. The average age of participants (n=654) was 40 years (IQR: 25 - 59. The majority of the participants were males (51%). The overall ICU mortality prevalence was 45% (95% CI 41 - 49), with annual mortality ranging from 53% in 2019 to 39% in 2023. Mortality was significantly associated with admission Glasgow Coma Score ($p<0.001$). The average length of stay (LOS) was 4 days (IQR 2 - 10). There was no association between mortality and LOS, age, or sex (all $p>0.05$).

Conclusion. This five-year review demonstrates a high ICU mortality prevalence, albeit with a declining trend. The findings provide a foundation for further research into determinants of ICU mortality and inform targeted quality improvement initiatives.

The prevalence and nature of medication errors in paediatric patients in an academic hospital in Gauteng, South Africa

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Background. Medication errors are the most common type of error in hospitals and pose a significant threat to patient safety, particularly in paediatric populations due to differences in pharmacokinetics and pharmacodynamics. Limited data exists on paediatric medication errors in South Africa.

Objective. To determine the prevalence, types, and causes of medication errors in paediatric inpatients at a tertiary hospital in South Africa.

Methods. A prospective, cross-sectional observational study was conducted over 12 weeks in the paediatric, PICU, and NICU wards of a tertiary hospital. Patient charts were reviewed to compare prescribed and administered medications. Dispensed medications were assessed for appropriateness in drug selection, dosage form, and distribution. Direct observation of preparation and administration was conducted. Ethics approval was obtained from the relevant institutional ethics committee.

Results. A total of 868 medication errors were identified among 593 patients, corresponding to a prevalence of 79%. Administration errors were the most frequent (56%), followed by prescribing errors (30%). The most common error types were dose omission (31%), incorrect dose (28%), and wrong timing (18%). Key contributing factors included the absence of standard protocols and failure to adhere to existing procedures. Anti-infectives (55%) and analgesics (17%) were the medication classes most frequently involved.

Conclusion. Medication errors in this pediatric population were highly prevalent, predominantly occurring during administration and prescribing. These findings underscore the urgent need for targeted interventions, staff training, and system-level safeguards to enhance medication safety in South African pediatric hospital settings.

The Sleepless Watch: Sleep Quality Among Nurses in High Intensity work Environments

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Background. Nurses working in high-intensity environments such as intensive care units (ICUs), high care units, and emergency departments are essential to critical healthcare delivery. These settings are characterized by high patient acuity, complex clinical demands, rapid decision-making, and intense workloads. Nurses are expected to demonstrate advanced clinical competencies, critical thinking, and the ability to manage complex care independently. Adequate sleep is vital for maintaining performance, resilience, and overall well-being. While sleep deprivation among nurses is a well-documented global concern, there is limited research examining its impact specifically in high-intensity healthcare environments.

Objective. To explore the experiences of nurses in high-intensity work environments regarding their sleep quality.

Methods. An exploratory qualitative design was used. Three focus group discussions (N=21) were conducted with a purposively selected sample of nurses working in an academic hospital. Data were analysed using thematic analysis. Ethical clearance (ref. no. M210177) was obtained from the University of the Witwatersrand.

Results. Three major themes emerged: barriers to quality sleep, consequences of poor sleep, and coping mechanisms. Participants reported dissatisfaction with long working hours, staff shortages, and inadequate resources. These challenges were associated with demotivation, burnout, and high staff turnover, all of which were perceived to negatively impact patient care and safety.

Conclusion. Poor sleep quality is prevalent among nurses in high-intensity work environments and poses risks to both staff well-being and patient outcomes. The findings underscore the urgent need for targeted wellness interventions, institutional support, and policy reforms to promote healthy sleep practices in these settings.