

## **THEME 1: CLINICAL SCIENCES AND THERAPEUTICS FOR HEALTH**

### **ABSTRACTS FOR ORAL AND POSTER PRESENTATIONS**

#### **ORAL PRESENTATIONS**

CSTH-O-01

#### **STAC3 disorder: A common cause of congenital hypotonia in Southern African patients**

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**Abstract:** STAC3 disorder, or Native American myopathy, is characterized by congenital myopathy, hypotonia, musculoskeletal and palatal anomalies, and susceptibility to malignant hyperthermia. A STAC3 c.851G>C (p.Trp284Ser) pathogenic variant, common in the Lumbee tribe, has since been identified worldwide, including patients of African ancestry. This study aimed to screen patients of Southern African ancestry with congenital hypotonia for c.851G>C, to determine the carrier frequency of c.851G>C in the Southern African population, and to assess the likelihood that this is a common ancestral founder variant. A cohort of 127 unrelated patients of African ancestry (0-5 years) with hypotonia, and previously testing negative for spinal muscular atrophy and Prader-Willi syndrome underwent screening for c.851G>C using targeted Sanger sequencing. The frequency of c.851G>C was determined using WES data from 278 healthy, unrelated individuals. Haplotype analysis was performed on five tested on a diagnostic SNP array, all homozygous for c.851G>C. Furthermore, SNPs included in the Sanger sequencing amplicon were examined. In total, 25/127 (20%) patients were homozygous for STAC3 c.851G>C. A high carrier rate of 1/56 (5/278) and a high predicted birth rate of 1/12 500 was estimated. Haplotype analysis showed overlapping regions of homozygosity that encompassed STAC3. STAC3 disorder is a common African myopathy and has important clinical implications for the diagnosis, treatment, and genetic counselling in African families. This may also suggest that Native American myopathy is likely of African origin. The condition has not been recognized as a common African cause of hypotonia and birth defects.

**Keywords:** STAC3 disorder, hypotonia, African myopathy, Native American myopathy

CSTH-O-02

**Clinical differences between elderly onset rheumatoid arthritis and young onset rheumatoid arthritis in South Africans**

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**Abstract:** Elderly onset rheumatoid arthritis (EORA), defined as disease onset at 60 years or older, in western populations is characterised by explosive symptom onset, mainly large joint involvement and greater functional disability compared to young onset RA (YORA). We undertook a retrospective records review to compare disease activity, functional disability, laboratory features and comorbidities at diagnosis of EORA and YORA patients attending the Arthritis Clinic, Chris Hani Baragwanath Academic Hospital. Overall, 482 [EORA (124), YORA (358)] patients were mostly female (84.4%), and median age and clinical disease activity score (CDAI) at diagnosis were 50 years and 25.5, respectively, the latter indicating moderate to high disease activity. Wrists were the most commonly affected joints (82.6%) and most were seropositive for rheumatoid factor (92.1%) and anti-CCP (78.4%). There was no difference in CDAI scores and seropositivity between the groups, but EORA group compared to YORA group, had significantly worse functional disability assessed using the American College of Rheumatology functional classification ( $p=0.02$ ), had more metacarpophalangeal joint (MCPj) involvement (84.4% vs 76.6%,  $p=0.04$ ), and a trend towards less early morning stiffness ( $p=0.05$ ). Hypertension and diabetes were more common in EORA group (70.2% vs 23.2%; 12.1% vs 3.9%,  $p=0.0001;0.001$ , respectively) and HIV was documented almost exclusively in YORA group ( $p=0.01$ ). In this study of mainly indigent black South Africans with moderate to high disease activity at diagnosis overall, we found no significant differences in overall disease activity, but significantly worse functional disability, more frequent MCPj involvement and higher burden of hypertension and diabetes in EORA patients.

**Keywords: Elderly Rheumatoid Arthritis Africans**

CSTH-O-03

**Technical evaluation of the improved formulation Roche free thyroxine assay**

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**Abstract:** Thyroid dysfunction is a prevalent endocrine disorder with free thyroxine (fT4) a cornerstone of thyroid function assessment. Roche Diagnostics developed an Elecsys FT4(IV) immunoassay to address previous limitations and this study aimed to assess its analytical performance. Method comparison between Elecsys FT4(IV) and FT4(III) assays was conducted using 61 patient samples according to Clinical and Laboratory Standards Institute (CLSI) EP09A2 guidelines. A positive bias (0.84%) compared to the FT4(III) assay was observed, which was within the acceptable range for European Federation of Clinical Chemistry and Laboratory Medicine biological variation (3.5%). Assay precision was evaluated using Roche commercial controls (PCU) following CLSI EP15A3 guidelines. Intra-assay (0.8% and 1.5%) and inter-assay (1.2% and 1.3%) coefficient of variation measurements for PCU1 and PCU2, respectively, met manufacturer specifications. Linearity of the assay was assessed according to the European Medicines Agency Q2(R1) guideline, with eight dilutions spanning a concentration range of 2.5-45pmol/L using the low and high fT4(IV) calibrators. Linearity was confirmed across a range of 10-45pmol/L. Clinical sample stability was evaluated at recommended storage temperatures (20-25°C, 2-8°C, and -4°C) and matched manufacturer claims. Analytical sensitivity was determined following CLSI EP17 protocols. The Roche Universal Diluent served as the blank sample, while the Roche FT4(IV) Calset low-level calibrator was used as a surrogate for a low-concentration patient sample. The observed elevations in the limit of blank (2.18pmol/L) and limit of detection (2.35pmol/L) is unlikely to affect clinical results since sample dilution is not recommended for this assay. The Elecsys FT4(IV) assay demonstrates acceptable analytical performance.

**Keywords:** fT4, Roche assay, technical evaluation

CSTH-O-04

**The outcomes of adult patients recovering from major thoracic trauma who participated in a programme of myofascial release and active exercise therapy**

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**Abstract:** Thoracic trauma results in decreased pulmonary function and pain which affects survivors' quality of life (QOL). The effects of myofascial release and active exercise therapy on patients' clinical outcomes are unknown. To determine the outcomes of adults recovering from

major thoracic trauma who received myofascial release and active exercise therapy interventions over six months after hospital discharge. Prospective, longitudinal, quasi-experimental repeated measures design. Consecutive sampling was done to recruit those with major thoracic trauma from a private trauma hospital. Outcomes assessed prior to hospital discharge, and at four and twelve weeks included QOL, pain, physical activity, pulmonary function, muscle strength, and thoracic range of motion (ROM). Physiotherapy intervention included heat therapy, intercostal muscles and diaphragm myofascial release, breathing exercises and active thoracic cage ROM exercises. Most participants were male (n=27/35; 77%). At 3-months thoracic ROM (left:p=0.001; right:p=0.004) and pulmonary function (MIP:p=0.004; PEFr:p<0.001) and at 6-months pain (BPI:p<0.05; EQ-5D:p=0.023), handgrip strength (p<0.001), and physical activity changed significantly, as did QOL, compared to baseline. Myofascial release and active exercise therapy contribute to the recovery of those with major thoracic trauma. Findings are encouraging and contribute to the limited evidence in this field.

**Keywords: 'Thoracic Trauma', 'Active exercise therapy', 'Pain', 'Muscle strength'**

CSTH-O-05

### **Thoracic trauma care in South Africa and Sweden: A prospective observational study**

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**Abstract:** Thoracic injuries contribute to the global disease burden. Multidisciplinary team management ensures patient survival. To describe and compare South African (SA) and Swedish thoracic trauma contexts for patient demographics, clinical profiles, acute care management, complications identified and discharge destinations. A prospective observational multi-center study using a clinical record review. Adults with thoracic injury (n=1918) were screened. Descriptive and inferential analyses were done at p-value ≤0.05 significance level. Most were male [n=170/179 (95.0%)SA; n=125/185 (67.6%)Sweden] and aged 30 to 64 years [n=103

(57.5%)SA; n=107 (58.8%)Sweden]. Type and mechanism of injury differed: penetrating (82.7%SA) versus blunt (94.6%Sweden),  $p<0.001$ ; assaults (89.9%SA) versus falls (43.8%Sweden),  $p<0.001$ . Management differed: oxygen therapy administration ( $p=0.02$ ), intercostal drain insertion ( $p<0.001$ ), surgical rib fixation ( $p<0.001$ ). Swedish participants experienced more pain (day 1: $p=0.05$ ; day 2: $p<0.001$ ; day 3: $p<0.001$ ). Shortness of breath during activity was more for the Swedish cohort. Hospital LOS was shorter for SA participants [5.4( $\pm$ 4.3) versus 6.6( $\pm$ 5.1) days;  $p=0.024$ ]. Pulmonary complications ( $p=0.013$ ) and moderate-to-severe pain on day 3 ( $p=0.005$ ) influenced LOS. Discharge destination was mostly home (98.8%SA, 55.7%Sweden,  $p<0.001$ ). The diversity of SA and Swedish thoracic trauma populations and their management is highlighted. This lays the foundation for future comparisons of acute care practice and conversation about clinical patient management.

**Keywords: Thoracic trauma; Pain; Shortness of breath; Length of stay**

CSTH-O-06

**Challenges related to providing dental care for children with special needs at South African academic hospitals: Perspectives of oral health professionals**

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**Abstract:** Background: Children with special healthcare needs (CSHCN) may experience poorer general and oral health than healthy children requiring specialised healthcare services provided through multi-disciplinary teams at tertiary hospitals. Aim: To investigate the dental care provided to CSHCN including challenges faced from the experiences of oral health professionals (OHP) at academic dental hospitals (ADHs) in South Africa (SA). Methods: A mixed methods sequential research design. The population included OHP ( $n=100$ ) providing dental care for CSHCN at ADHs ( $n=5$ ). Purposive sampling was used. Data were collected using a self-administered online questionnaire and later focus group discussion. Descriptive analyses were computed for the survey data. The qualitative data were analysed thematically. Both findings were presented by narrative synthesis. Results Fifty OHP from 4 academic hospitals completed the survey and 5 participated in the discussion. Most of the OHP (86%) provided dental care to between 2-5 CSHCN per month (59%). Dental care services provided for CSHCN were mainly extractions for pain relief (52%). Oral surgery and/or rehabilitation (22%) and orthodontics (20%) for CSHCN with craniofacial anomalies. Challenges reported by OHP included: concerns over the child's medical condition (risk of care), inadequate resources (facilities, human resources, time) and lack of supportive environment (poor inter-disciplinary collaboration). Conclusion Dental care provided to CSHCN consisted mainly of emergency pain relief, and some specialty dental

services. Resource constraints affected dental care for CSHCN. There is a need to provide adequate resources and a supportive clinical environment to enhance service delivery to CSHCN to improve quality of care at ADHs.

**Keywords: Dental care, children with special healthcare needs, oral health professionals, academic hospitals**

CSTH-O-07

**Pharmacokinetics, clinical characteristics, and outcomes in kidney transplant recipients: A 10-year retrospective review**

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**Abstract:** Successful kidney transplantation depends on multiple factors, including the immune response to the allograft. Calcineurin inhibitors (CNIs) are essential in achieving this immunosuppression, but wide variability exists between individuals' drug concentrations, creating a double-edged sword for the clinician. Under-dosing leads to a significant risk of acute graft rejection, but over-dosing increases the risks of unwanted side effects. Therapeutic drug monitoring is used to guide immunosuppressant dosing but relies on post-exposure measurements, which predispose patients to a significant risk of adverse reactions. Better approaches are needed to determine effective dosages of immunosuppressive agents before or immediately after kidney transplantation. This 10-year retrospective review of kidney transplant patients at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) focuses on the pharmacokinetics of CNIs cyclosporine and tacrolimus and their correlation with clinical outcomes. Drug blood concentrations at various time points post-transplantation, time taken to achieve the target concentration, and factors such as gender, ethnicity, and donor type (living or cadaver) were analyzed. The impact of antibody induction, smoking, and alcohol status on patients' pharmacokinetics and transplant outcomes were also investigated, along with the correlation between pharmacokinetic parameters and biopsy-proven acute rejection. Furthermore, we examined the incidence of hypertension and new-onset diabetes after transplantation, two common complications that can significantly affect patient prognosis. Our findings highlighted the significant pharmacokinetic variability among patients and probed the influence of individualized medication dosing to potentially reduce rejection rates. Our preliminary data indicates a possible link between these conditions and drug pharmacokinetics, underscoring the need for personalized therapeutic strategies.

**Keywords: Calcineurin inhibitors, Personalized medicine, Kidney transplantation, Therapeutic drug monitoring.**

CSTH-O-08

**Laboratory, research, and industry based genetic counsellors in South Africa - a qualitative study.**

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**Abstract:** Genetic counselling is a relatively young profession both globally and in South Africa. Historically, genetic counsellors in South Africa have been employed through academic and public institutions, with only a few practicing privately. Recently there has been a noticeable shift in the employment trends of genetic counsellors worldwide and in South Africa, transitioning away from traditional roles and gravitating toward non-traditional practice. It is, therefore, becoming more common to find counsellors employed in laboratory, research, and industry settings, redefining the role of a genetic counsellor. Although this trend has been explored elsewhere, mainly in the United States of America, it is yet to be explored locally. This study aims to explore the perspectives and experiences of non-traditional genetic counsellors employed in laboratory, research, and industry based settings in South Africa. Data collection aims to begin in July, and this study will employ a qualitative methodology. Semi-structured interviews using an interview guide with open-ended questions will be conducted with qualified genetic counsellors in South Africa who are currently employed outside of clinical practice. Reflexive thematic analysis using coding and generating themes will be employed to evaluate non-traditional genetic counsellors' experiences and perspectives and provide insight into the rationale behind this transition. Data will be completed by the time of the conference. This study will investigate a previously unexplored topic in a local setting, potentially elucidating crucial aspects regarding the scope of practice of genetic counsellors in South Africa. Moreover, its findings may assist in policy decisions regarding genetic counselling training.

**Keywords: genetic counselling, non-traditional genetic counsellors, perspectives**

CSTH-O-09

**Perceptions about male circumcision among HIV vaccine efficacy trial participants in Soweto, South Africa: a qualitative study**

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**Abstract:** In South Africa, men may circumcise for health and cultural reasons. We explored perceptions of male circumcision among HIV vaccine trial participants in Soweto, South Africa. Using a grounded theory approach, we conducted a qualitative study, purposively sampling participants using face-to-face and telephonic recruitment. Eligible participants were aged 18-35 years, living without HIV, and participated in the HVTN 702 efficacy trial in 2018. At the research site, we facilitated four focus group discussions (<2 hours each), stratified by age, gender, and sexual orientation. Of 28 participants, fourteen identified as heterosexual men, nine as heterosexual and bisexual women, five as men who have sex with men, with one identifying as a transgender female. We audio-recorded focus group discussions, transcribed and translated to English. We calculated descriptive statistics using Microsoft-Excel. We analysed transcripts using thematic analysis, generating themes from the data. Four main themes emerged: (1) everyone had accurate knowledge about what male circumcision is, with some participants correctly reporting that it partially reduces acquisition of HIV and sexually transmitted infections; "But then again also male circumcision helps, it doesn't prevent, it doesn't like 100% prevent you from getting HIV... But it minimizes the risk." (F25-35); (2) Emerging distrust of cultural circumcision because of perceived lack of transparency and concern for adverse events; (3) perception that circumcision boosted masculinity; and (4) influence of parents, family and female partners on the choice to circumcise. The study revealed that young South African HIV vaccine trial participants understand the HIV prevention advantages of male circumcision, yet their decisions for uptake are influenced by cultural, sexual, masculine norms and values.

**Keywords: HIV prevention; Circumcision; Vaccine; Cultural.**

CSTH-O-10



## **Co-aerosolized Pulmonary Surfactant and Therapeutics for Acute Respiratory Distress Syndrome (ARDS)**

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**Abstract:** Acute respiratory distress syndrome (ARDS) is currently a challenge to treat because there is no cure for it. ARDS is characterized by a reduction in surfactant in the alveoli. A drug delivery system that has the potential to deliver co-administered drugs as therapeutic agents, viz., aerosolizing agents and nanocarrier vesicles may prove to be beneficial. The study aims to design a co-aerosolized ambroxol (AMBX) loaded nanostructured lipid carrier (ANLC) for potential ARDS intervention. The ANLCs were prepared with AMBX, a mixture of solid lipids, a liquid lipid and surfactants in varying ratios using hot emulsification ultrasonication method. A design of experiments (DoE) approach was used to establish the effect of formulation variables of the surfactants used. The formulations were characterized in terms of Zeta potential (ZP), particle size (PS), polydispersity index (PDI), encapsulation efficiency % (EE %). The physicochemical characteristics involved small PS with an average of  $101.5 \pm 16.4$  nm, uniformly distributed particles within a narrow range PDI of  $0.175 \pm 0.03$ , with considerable stability ZP of  $+38.4 \pm 5.3$  mV, and the highest EE%  $82.4 \pm 0.02$ . The data showed that the different surfactants had significant effects on the response variables. SEM images revealed sphere-shaped and smooth surface of the ANLC. FT-IR and XRD spectra for the drug-loaded and placebo nanoparticles look similar. This suggests that the nanosystem has the capabilities of physically and efficiently encapsulating AMBX for delivery. Further studies to test aerosolization, in vitro and in vivo studies of the nanoparticles will be carried out.

**Keywords:** Acute respiratory distress syndrome (ARDS), Drug delivery systems, Pulmonary delivery, Nanoparticles

CSTH-O-11

**Development of dermal thin hydrogels for the delivery of bioactives to treat ulcerative skin cancer.**

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**Abstract:** Skin cancer is a widespread disease with a significant burden in countries like South Africa, where people are exposed to significant levels of ultraviolet radiation. The treatment of skin cancer often involves invasive procedures like surgery or chemotherapeutic interventions, which can have undesirable adverse effects for patients. Therefore, it is important to explore alternative therapies that minimize complications while maximizing effectiveness. Herein, an investigation proceeded to address this need through the design, formulation and analysis of a transdermal drug delivery system composed of dermal thin hydrogel films loaded with nano-lipid vesicles (transethosomes) as delivery vehicles to enhance the permeation of 5-fluorouracil for the management of ulcerative skin cancers. The rationale behind this system lies in the capacity of thin films to enhance transdermal drug delivery because of their permeation enhancing and mucoadhesive effects, increasing site-specific targeting and decreasing systemic side-effects. The formulated transethosomes were characterised for their vesicle size, PDI, zeta potential and entrapment efficiency, with the formulated hydrogel examined for its thickness and tensile strength. The optimised transethosomes formulation yielded a  $94.78 \pm 4.28\%$  drug entrapment (high entrapment allows for accurate dosing),  $156.1 \pm 15.12\text{nm}$  particle size (suitable for epidermal skin permeation),  $0.125 \pm 0.06$  PDI value (desired particle size distribution), and a  $-25.7 \pm 2.05\text{mV}$  zeta potential (allows for particle stability and prevents particle aggregation), with the hydrogel possessing ideal physicochemical (thickness of  $<100\mu\text{m}$  similar to dermal skin layer) and mechanical properties (resistance to tensile strengths of  $>5000\text{mN}$ ). In conclusion, the developed transethosome-loaded dermal thin hydrogel films provides a promising alternative for ulcerative skin cancer treatment.

**Keywords:** Skin cancer, thin films, topical drug delivery, permeation

CSTH-O-12

### **Plant derived extracellular vesicles in a Nasogel for Stimuli- Responsive Nose-To-Brain Bioactive Delivery**

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**Abstract:** Central nervous system (CNS) disorders are difficult to treat due to the inability of the drug to permeate the Blood Brain Barrier (BBB). The BBB limits the entry to positively charged, lipophilic molecules greater than 400 Da in size - including beneficial molecules. Recently, plant-derived extracellular vesicles (PDEVs) have garnered extensive interest due to their biomimetic and therapeutic properties, as well as transporting bioactives across the BBB. PDEVs are highly lipophilic in the size range of 30-100nm and constitute proteins and nucleic acids. In this study,

PDEVs derived from *Aloe arborescens* (aloe), *Zingiber officinale* (ginger) and *Nigella sativa* seeds (black cumin) were extracted using a combination of serial centrifugation and filtration. The PDEVs were loaded with itraconazole or teriflunomide through a series of sonication and incubation. Overall size distribution of the PDEVs ranged from 70.0-140.0nm and the loaded PDEVs with an entrapment efficiency of 85-90% increased to 260nm. Zeta potential (-11.0 to -17.3mV) showed high repulsive forces between the PDEVs preventing aggregation which indicates a stable colloidal system. Bioactive-loaded PDEVs were further incorporated in a stimuli-responsive nasal gel which transitions from liquid to gel at nasal temperature. In vitro drug (itraconazole) release was evaluated over 7 days (pH 7.4) which shows a burst release in 24h and sustained release for 4 days with 25% drug release. Future work includes improving the release of both drugs and to test the permeability of the nasal gel through the olfactory epithelium and the bioactive-loaded PDEVs across the BBB to provide targeted drug delivery.

**Keywords:** Extracellular vesicles, plants, nasal gel, blood brain barrier

CSTH-O-13

### **Assessing the mental health literacy of healthcare workers at a Johannesburg tertiary hospital**

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**Abstract:** Background: The prevalence of mental illness in South Africa is on the rise. Good mental health literacy (MHL) has proven to aid in providing adequate and timely care, promote positive attitudes towards mental health, and assist in the integration of mental healthcare with other services. Studies have shown that enhancing the MHL of healthcare workers (HCWs) can help alleviate the burden of mental illness. Aim: To explore the MHL of HCWs at a tertiary hospital in Johannesburg. Setting: The study was conducted at Helen Joseph Hospital. Methods: A quantitative, descriptive, cross-sectional study via a self-administered questionnaire consisting of 1: a demographic, work and exposure to mental illness and mental healthcare services questionnaire and 2: the Mental Health Literacy Scale (MHLS). The MHLS assists in identifying people with low MHL who can benefit from further interventions. Results: 252 HCWs participated in the study and obtained an overall median score of 129 for MHLS. The 20-30-year-old HCWs with less than 5 years of experience scored higher. Doctors scored the highest in professions, while the anaesthetic and psychiatric departments obtained higher MHLS scores. Personal exposure to mental illness and mental health services resulted in higher MHLS scores. Conclusion: This study highlighted areas where education and awareness of mental health are lacking, which are crucial for improving MHL. The findings can guide targeted interventions to fill

these identified gaps. Contribution: There is a paucity of literature examining the MHL of HCWs in developing countries. No previous study has been done in South

**Keywords: mental health literacy, psychiatry, mental illness, mental health, Mental Health Literacy Scale, stigma, South African healthcare workers**

CSTH-O-14

**Psychedelics as a novel treatment: Describing the awareness and attitudes of South African psychiatrists**

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**Abstract:** Background: Psychedelics have shown promising outcomes as a novel treatment option across a range of mental illnesses. There is a growing body of literature that has preliminarily shown classical psychedelics to be effective and relatively safe. The literature up to now has been focused on the drug properties of psychedelics and the experience of the users; the researchers identified a gap in research describing the prescribers and their awareness, interest, and confidence regarding these novel agents. Aim: The aim was to describe the awareness and attitude of South African Psychiatrists towards psychedelics as novel treatment agents. Setting: The study was set to focus on qualified and registered Psychiatrists practicing in South Africa. Methods: The study was a cross sectional online survey. The researchers designed and generated the questionnaire. Probability random sampling was employed within a sampling frame. The online survey was distributed using the data base from the South African Society of Psychiatrists Results: The results showed that South African psychiatrists are interested and keen to receive more information however high rates of hesitancy surrounding psychedelic treatments were evident. Conclusion: The population of South African psychiatrists requires more training and information in order to be confident in prescribing the novel treatment of psychedelics Contribution: The research has highlighted the need to consider prescribers when implementing novel treatment agents. There is a need to address prescriber concerns and improve training

Keywords: Novel, Psychedelics, Attitudes, Awareness

CSTH-O-15

**Hello darkness, my old friend: Loadshedding's impact on sleep and studying habits in South African University Students**

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**Abstract:** Loadshedding has known impact on the economy and people's everyday lives. In the absence of alternative sources of power during loadshedding, individuals can no longer control artificial lighting, room temperature and the use of generators increases noise pollution. All this disrupts sleep which in turn may impact all aspects of health. University students are a group known to have poor sleep and high academic pressure, and thus could be particularly vulnerable to the sleep related effects of loadshedding. The current study investigated loadshedding-related sleep changes in university students during 2023, the worst year in South Africa's loadshedding history. A self-administered, cross-sectional, online questionnaire was used and distributed to all students registered at Wits University. A total of 1124 students (average age 22, 72% female) responded. Median bedtime was 23:00 and waketime was 06:00, with 7h average time in bed. Most students (73%) reported loadshedding affected sleep, with 80% reporting worse sleep. The most reported sleep disruptions were increased sleep fragmentation (51%) and onset latency (32%). Those with worse sleep due to loadshedding reported a drop in grades more frequently compared to those not reporting sleep changes (59% vs. 38%,  $p=0.015$ ). Having access to alternative power (40% of students) reduced the odds of worse sleep by nearly 60% in multivariable adjusted analysis (OR [95%CI]= 0.43 [0.32-0.56]). Loadshedding has significant impacts on sleep, studying habits and grades, and could lead to increased risk for mental and physical health problems. Solutions for mitigating its effects on sleep and safeguarding health are needed.

**Keywords:** Loadshedding, sleep, university students, academic performance

CSTH-O-16

**Investigating the patterns of abnormal uterine bleeding in women using intramuscular depot medroxyprogesterone acetate, a copper intra-uterine device or a levonorgestrel implant for contraception**

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**Abstract:** Contraception access is crucial for women's rights and health globally. In South Africa, over 80% of women access contraceptives through the public health sector. However, side effects often lead to discontinuation. Understanding menstrual changes linked to contraceptives aids counselling, fostering shared decision-making, and improving uptake while reducing unwanted

pregnancies. This study was a secondary analysis of ECHO trial data (NCT02550067), a multicenter, randomized, open-label trial focusing on women seeking reliable contraception in South Africa. Data from 5743 participants across nine healthcare facilities were analysed using R software. Categorical data were analysed with Pearson's chi-squared tests. Standardized residuals assessed variable contributions. Significance was set at 0.05. 3026 patients' data were analysed, representing three contraceptive modes: copper IUD (n = 1595), intramuscular depot medroxyprogesterone acetate (DMPA-IM) (n = 561), and Levonorgestrel implant (n = 870) ( $\chi^2 = 558.58$ ,  $df = 2$ ,  $p < 0.001$ ). Contraceptive use significantly altered bleeding patterns within six months ( $p = 0.035$ ). Bleeding frequency, duration, volume, and patient perception significantly varied amongst different methods. Obesity and smoking also influenced bleeding patterns. Bleeding severity impacted discontinuation, with heavy and prolonged bleeding playing a significant role ( $\chi^2 = 80.17$ ,  $df = 4$ ,  $p < 0.001$ ). Contraceptive methods significantly influence bleeding patterns, affecting method choice and continuation. With this knowledge, healthcare workers can adopt a more comprehensive counselling approach, helping patients select methods appropriate to their specific needs. This has the potential to lead to increased compliance and continuation rates thereby generating an overall improvement in contraceptive outcomes in South Africa.

**Keywords:** contraception, compliance, bleeding patterns, access

CSTH-O-17

### **An interim analysis of the "Burden of Cerebral palsy Spasticity in South African Adults (BOCSSA)" study**

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**Abstract:** Introduction: Cerebral palsy (CP) is a lifelong, majorly disabling, chronic neurological condition which is prevalent in South Africa (SA). Spasticity is a frequent consequence of CP, however the burden that it places on adult patients in a low to middle income country, like SA, is unclear. This study aimed to evaluate the burden of spasticity, the medical and therapeutic interventions employed, and the impediments to treatment, to adult CP patients. Methodology: The study employed a cross-sectional targeted, quantitative survey analysis. Inclusion criteria included adult patients (>18 years of age) with confirmed CP diagnosis. Duplicate and incomplete surveys were excluded. Patient demographics, CP phenotype, complications, medical and therapeutic treatment, and treatment impedances were obtained through an electronic Redcap survey. Results: 404 of 414 responses received met the entry criteria, of which 206 (51%) were male, 196 (48.5%) female and 2 (0.5%) unspecified. The mean

age was 33.2±14.5 years. 354 (87.6%) of the respondents reported symptoms associated with spasticity. 352 (99%) of the participants with reported spasticity had complications related to spasticity, including pain, mobility, hygiene, medical and surgical management. Additionally, caregiver burden was increased with 219 (61%) respondents needing a caregiver. Of all the respondents, 336 (83.16%) indicated receiving regular therapy during childhood, however in adulthood only 86 (21.39%) regularly follow up with a doctor, and 100 (24.75%) receive some form of regular rehabilitative therapy. Conclusion: This large survey of adults with CP in SA demonstrates, firstly, that CP is often complicated by spasticity in children and this complication remains

**Keywords: Adult, Cerebral palsy, Spasticity**

CSTH-O-18

### **Biopsychosocial factors associated with sexual dysfunction in self-identified females in Gauteng, South Africa, during 2013-2023**

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**Abstract:** Female sexual dysfunction (FSD), a significant public and sexual health issue is associated with social and economic well-being of individuals and communities. Despite concerns and acknowledgement of complexity, little research has been done within the South African context to determine contributing factors to FSD. The aim was to examine biopsychosocial factors e.g. pain, contraception, patient concern, and relationship status, associated with sexual dysfunction in self-identified females in Gauteng, South Africa, during 2013-2023. A cross-sectional design was used to analyse 1,595 patient records. Prevalence of FSD and associations were examined in relation to biopsychosocial exposure variables and FSD (measured with the Female Sexual Function Index) using odds ratios and logistic regression. Prevalence of FSD was 84.17% (N = 1595). FSD by factors such as concern about sex drive, orgasm, or sexually transmitted infections, had the highest prevalence (> 90%). Prevalence ratios of FSD to factors varied between 0.87-1.34. Predictive factors of FSD ( $p \leq 0.005$ ) were pain during sex (AOR = 6.02), concern about sex drive (AOR = 6.48) and orgasm (AOR = 5.22), number of sexual partners (AOR = 0.61) and relationship status (AOR = 0.17). Contraception use (OR = 1.33), urinary symptoms (OR = 2.22), concern about STI (OR = 0.37), and doing exercise (OR = 0.56) were also associated with FSD ( $p < 0.05$ ). The association of biopsychosocial factors with FSD vary among populations and literature. It emphasises the complexity of FSD and that it should be researched and clinically addressed within a specific public health context.

**Keywords: female sexual dysfunction, biopsychosocial, predictive factors**

## **POSTER PRESENTATIONS**

CSTH-P-01

**The use of atazanavir limits cross-resistance to darunavir in the South African public sector**

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**Abstract:** Background: The 2023 South African ART Clinical Guidelines recommend the use of dolutegravir. However, some patients might still require treatment with protease inhibitors (PI). Atazanavir/ritonavir (ATV/r) is preferred over lopinavir/ritonavir (LPV/r), except for patients on TB treatment. We reviewed resistance profiles obtained from patients failing PI-based treatment in the public sector in South Africa. **METHODS:** Patients failing PI-based regimens that had an HIV drug resistance test performed at the HIV Molecular Laboratory in Johannesburg in 2022 were included in this retrospective data analysis. Pol sequences were obtained by Sanger sequencing and submitted to Stanford HIVdb v9.4 to generate resistance profiles. Resistance was defined as low-level resistance or higher. Statistical analysis was performed using GraphPad Prism 9.0, a p-value < 0.05 was considered significant for the two-tailed  $\chi^2$  test. **RESULTS:** The population consisted of 769 (62.0%) females. Most patients were failing LPV/r (n=951), whereas 293 patients failed ATV/r-based regimens. Accumulation of  $\geq 3$  major PI mutations was significantly more in patients failing LPV/r-based treatment (194/951, 20.4%), versus ATV/r-based regimens (12.3%, p=0.0018). Cross-resistance to darunavir (DRV/r) was more common in the LPV/r group (14.5%) compared to the ATV/r group (8.8%, p=0.0126). **CONCLUSION:** These findings justify the preference of ATV/r over LPV/r as the preferred PI, as accumulation of  $\geq 3$  major PI mutations was less common in patients failing ATV/r regimens. These patients presented with less cross-resistance to DRV/r, thereby, preserving the drug for use in third-line regimens in these cases.

**Keywords: HIVDR, ART, Darunavir**



CSTH-P-02

**Detection of CTX-M-14 and CTX-M-15 extended-spectrum beta lactamase (ESBL) producing Enterobacterales using the RESIST CTX-M (Coris BioConcept) amongst urinary tract isolates from Chris Hani Baragwanath Academic Hospital (CHBAH)**

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**Department of Clinical Microbiology & Infectious Diseases Pathology**

**Abstract:** Antibiotic resistance remains a pressing global health challenge, with ESBL-producing Enterobacterales constituting as a profound threat to effective treatment strategies. Among ESBL variants, CTX-M enzymes have emerged and proven to be alarming due to their rampant dissemination and resistance to numerous antibiotic classes. Concurrently, urinary tract infections (UTIs) represent a formidable healthcare concern, demanding prompt and accurate diagnosis and management. Chris Hani Baragwanath Academic Hospital (CHBAH), as a leading healthcare facility in South Africa, is confronted with the imperative of controlling UTIs, particularly those caused by CTX-M enzymes. In response to this plight, the study aims to investigate the prevalence of CTX-M ESBL-producing Enterobacterales in a minimum of 30 UTI urine isolates from various clinical departments at CHBAH and evaluate the diagnostic performance of the RESIST CTX-M lateral flow assay. Employing a prospective study design, urinary tract samples collected from patients presenting with UTI symptoms over a 3-month period will be processed at the on-site microbiology laboratory according to standard operating procedures. Urine isolates that are confirmed CTX-M ESBL-producing Enterobacterales using the Vitek2 automated instrument will then undergo enzymatic detection of CTX-M using the lateral assay. Results of the lateral flow assay will be compared to those obtained using the Vitek-2 system as the gold standard - with the expectation that the RESIST CTX-M lateral flow assay will demonstrate good accuracy and reliability in detecting CTX-M ESBLs in urinary isolates. Evaluation of the assay contributes to enhanced infection control measures and more timely management of UTIs caused by multidrug-resistant pathogens.

**Keywords: CTX-M, ESBLs, RESIST lateral flow assay, urine**

CSTH-P-03

**Exploring the reliability of deep learning for optic nerve sheath diameter measurement in black South African adults**

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**Abstract:** Background: Diagnosing raised intracranial pressure (ICP) at the bedside is challenging, especially in areas with limited access to specialised imaging. Measuring the optic nerve sheath diameter (ONSD) using point-of-care ultrasound (POCUS) is a potential solution, but accuracy is hindered by inter-observer variability. Deep learning systems (DLS) may offer a way to automate and standardize this process. Hypothesis: A DLS trained on transorbital ultrasound images can reliably measure ONSD, demonstrating strong agreement ( $ICC > 0.8$ ) with measurements taken by a trained ultrasound provider. Update on Model Development: The initial Deep Learning model achieved fair agreement (ICC of 0.12) but wide Limits of Agreement (LoA) on Bland-Altman analysis. It is being refined (ongoing feasibility assessment) to improve reliability. This likely involves model tuning and advanced image processing. Significance: While early results require improvement, they suggest the potential of deep learning for this application. Further development is underway, which could ultimately lead to more accurate ICP diagnosis using POCUS in resource-limited settings.

**Keywords:** POCUS, AI, ONSD, ICP

CSTH-P-04

**Global spectrum of clinical symptoms in endometriosis: A scoping review**

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**Abstract:** Endometriosis affects an estimated 10-15% of reproductive-aged women, up to 70% of women with chronic pelvic pain, and 50% of those with infertility. With no cure and prolonged diagnostic delays, understanding symptomatology is crucial for early detection. This scoping review aims to identify the range of clinical symptoms reported in patients with endometriosis globally. The review includes studies reporting symptoms in female patients with a confirmed diagnosis of endometriosis from any population worldwide. Following the Joanna Briggs Institute (JBI) framework and the PRISMA-ScR guidelines, we reviewed literature published in English over the past 20 years. Searches were conducted in PubMed and Scopus. A two-step screening process was employed, starting with titles and abstracts, followed by full-text reviews by two independent reviewers. Included articles were managed using EndNote 20. The review considered various study designs, including randomized and non-randomized controlled trials, cross-sectional studies, case reports and observational studies. Relevant systematic reviews were also included. Out of 1001 screened articles, 90 met the inclusion criteria. The most

frequently reported symptoms were dysmenorrhea, painful sexual intercourse, pelvic pain and alternating gastrointestinal symptoms. Majority of the women were diagnosed only at the time of presenting with infertility. This review highlights the broad spectrum of symptoms experienced by women with endometriosis, emphasizing the need for heightened awareness and comprehensive symptom assessment to facilitate timely diagnosis and management of this condition. The findings underscore the importance of multidisciplinary approaches in addressing the diverse and often debilitating manifestations of endometriosis.

**Keywords: Endometriosis, Women's health, Reproductive health, Chronic pain**

CSTH-P-05

**Assessment of health-related quality of life among HIV-infected patients at a tertiary hospital in Johannesburg, South Africa**

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**Abstract:** Antiretroviral therapy (ART) has significantly increased the life expectancy of people living with HIV and AIDS (PLWHA) in South Africa. However, to evaluate the benefits and side-effects of ART investigating health-related quality of life (HRQoL) is necessary. The aim of this study was to assess the HRQoL of PLWHA who received ART regimen containing tenofovir, lamivudine and dolutegravir at a tertiary hospital in Johannesburg, South Africa. This descriptive, quantitative, and cross-sectional study was conducted with 103 patients who provided written consent to participate. Data were collected using WHOQOL HIV-BREF, socio-demographic and health-related characteristics and adherence questionnaires which were self-administered. More than half of the participants were males and middle-aged (36-50 years (51.5%, n=53), and employed (52.4%, n=54). Majority of the patients were single (74.8%, n=77), earned less than R 5000 (79.6%, n=82) and perceived that their health is good (79.6, n=82) and did not consider themselves ill (82.5%, n=85). More than quarter of the participants reported non-adherent to ART in this study over a 7-day (31.0%, n=32) and 4-week period (32.1%, n=33). Adherent ( $\geq 95\%$ ) patients reported better HRQoL compared to non-adherent ( $< 95\%$ ). Level of income, education, perception of health and illness of the participants had a significant

**Keywords: HRQoL, WHOQOLHIV-BREF, socio-demographic, Adherenceic**

CSTH-P-06

**A multi-phasic controlled release system for the treatment of skin cancer**

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**Abstract:** Skin cancer remains a significant global health challenge, driving the exploration of diverse treatment approaches and innovative strategies to improve outcomes and prevent recurrence. Traditional treatments often encounter issues like drug resistance, underscoring the interest in combination therapies using multiple agents to enhance efficacy while minimizing side effects. This study focuses on utilizing magnetic iron oxide nanoparticles (FeO-MNPs) functionalized with curcumin, a natural polyphenolic compound recognized for its anticancer properties, to target human skin melanoma. Curcumin influences various biochemical and signaling pathways, inducing apoptosis and inhibiting tumor proliferation and invasion. The synthesis of curcumin-stabilized Fe<sub>3</sub>O<sub>4</sub> nanoparticles (Cur-FeONPs) was achieved through a one-step coprecipitation method, yielding particles averaging 95.37 nm for FeONPs and 92.8-138 nm for Cur-FeONPs. Furthermore, interferon-alpha (IFN $\alpha$ ) was encapsulated in PLGA nanoparticles (IFN $\alpha$ -PLGANPs) to allow controlled drug release and protect against degradation when co-administered with Cur-FeONPs. The spray-drying formulation technique produced nearly spherical nanoparticles averaging  $92.61 \pm 2.5$  nm, characterized by SEM and Zeta-potential analyses. The study proposes a combination approach of chemotherapeutic-immunotherapy treatment using a multi-phasic controlled-release patch incorporating Cur-FeO-MNPs and IFN $\alpha$ -PLGANPs within a loaded hydrogel system, designed for targeted delivery into skin lesions. This innovative strategy holds promise for improving treatment outcomes in skin cancer, offering a multifaceted and controlled therapeutic approach to combat this challenging disease.

**Keywords: Skin cancer; A multi-phasic Controlled Release System; Melanoma; IFN- $\alpha$ 2b-loaded PLGA Nanoparticles.**

CSTH-P-07

**The effect of one nostril inspiration, added to standard physiotherapy management, on hospital length of stay and pulmonary complications in patients with thoracic trauma: A randomised trial**

**Sameer Tootla**

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**Abstract:** Background: Thoracic trauma is a common cause for hospitalisation in South Africa. Physiotherapists play an important part in the management of patients with thoracic trauma to prevent lung volume loss and retention of secretions. One nostril inspiration (ONI) is a type of resistance breathing with limited use in physiotherapy clinical practice. Objectives: To investigate the effects of ONI, added to standard physiotherapy management, on participants' primary (hospital length of stay (LOS) and incidence of pulmonary complications) and secondary (pain, functionality, exercise capacity, and adverse events) outcomes. Design: A single-centre, single-blinded, randomised trial was conducted. Methods: Group one received standard physiotherapy care and group two received standard physiotherapy plus ONI. Participants in group two performed ONI during physiotherapy treatment sessions, and every second waking hour, and when experiencing pain. Descriptive statistics were used to summarise the data and inferential statistics were used for group comparisons. Results: Majority of participants were male (n=139/150, 93%). The most common cause of thoracic trauma was assault (n=124, 83%). The groups were comparable at baseline. The ONI group had a significantly longer length of stay (0.49 days; p=0.008). No participants developed pulmonary complications. Pain decreased in both groups over time. There were gradual improvements in functional outcomes and exercise capacity in both groups. No adverse events occurred during physiotherapy sessions. Conclusion: Findings suggest that ONI added to standard physiotherapy management of patients with thoracic trauma has limited impact on clinical outcomes.

**Keywords:** Thoracic trauma; physiotherapy; breathing; length of stay.

CSTH-P-08

**A retrospective study of radiological detection of oesophageal injuries after penetrating neck trauma comparing CTA and fluoroscopic oesophagography**

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**Abstract:** Background: Oesophageal injury after penetrating neck trauma is associated with high morbidity and mortality.(1) It is therefore important to pick up these injuries early. Patients in our units are often imaged using both computed tomography angiography (CTA) and contrast swallow studies (fluoroscopic oesophagography) when there is concern for an oesophageal injury. Objective: To ascertain , the incidence of oesophageal injuries secondary to penetrating

neck trauma, and to review the clinical and radiological findings. Methods: A retrospective analysis of CTA and fluoroscopic oesophagography data from reports of patients suspected to have oesophageal injury secondary to penetrating neck trauma at Chris Hani Baragwanath Academic Hospital between January 2018 and December 2022. Results: 76 records were reviewed. The mean age for the participants was 31.5 years, with a range of 0.75-66 years. In our study 6 (8%) patients had confirmed oesophageal injury on fluoroscopy, which is considered gold standard. The majority of penetrating neck injuries were experienced by the 20-29 years age group, with 33 (43%) injuries. The males with injury accounted for 67 (88%). Stab wounds as the mechanism of injury accounted for 57 (75%). Dysphagia was experienced by 10 (13%) of those who had injuries. An open wound was the most common sign, with 60 (78%). Zone I injuries accounted for 33 (43%) of the injuries. Conclusion: The incidence of oesophageal injuries secondary to penetrating neck injuries is comparable to previously reported numbers. CTA has a high sensitivity but low specificity. Fluoroscopic oesophagography should therefore be performed in patients having abnormal CTA coupled with clinical signs and symptoms of oesophageal injury.

**Keywords: Radiological detection oesophageal injury**

CSTH-P-09

**Navigating the psychosocial impact of a diagnosis of rare developmental disorders in families with multiple affected children- a DDD-Africa study**

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**Abstract:** Developmental disorders (DDs) constitute a diverse spectrum of conditions that disrupt typical childhood development. These disorders arise from multiple factors, with genetic causes contributing to approximately 40% of cases. Due to the clinical and genetic heterogeneity of DDs, diagnosis requires exhaustive and costly evaluations. However, in resource-constrained regions, there is a lack of access to diagnostic tools such as whole exome sequencing (WES), which has shown up to a 40% increase in diagnostic yield for DDs. For these reasons, families of children with DDs endure lengthy diagnostic journeys. DDs typically manifest in childhood, and the burden of care predominantly falls on primary caregivers, impacting not only their quality of life but also affecting unaffected siblings. The strain intensifies for families with multiple affected children, exacerbating existing challenges and straining familial dynamics. Of the total eligible cohort (5.3%,

19/358 families), only a fraction (26.3%, 5/19) have received returnable results thus far. This study included 5 families with an average diagnostic wait time of  $6.1 \pm 3.20$  years from their first genetic consultation. Diagnoses varied, including congenital muscular dystrophy, neurodevelopmental disorders, and neurodegenerative conditions. The key themes that emerged included several families expressing relief at the conclusion of their diagnostic journey (5/5) and finding closure through identifying the condition (5/5). However, financial strains (3/5), concerns about future care continuity (3/5), and reproductive decisions weighed heavily on many families (3/5). These findings highlight the complex psychosocial challenges experienced by families caring for individuals diagnosed with rare diseases.

**Keywords: Genomics, rare diseases, psychosocial**

CSTH-P-10

**Prescribing patterns and cost of medicines during the COVID-19 "delta wave" for outpatients in Gauteng, South Africa**

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**Abstract:** COVID-19, caused by SARS-CoV-2, affects individuals of all ages, with the elderly and those with comorbidities being most susceptible to severe illness. South Africa reported its first COVID-19 case in March 2020, followed by multiple waves and variants, including the Delta variant in mid-2021. Despite many patients being treated out of hospital, there is limited evidence on outpatient management and treatment costs in South Africa. Delivering rational, evidence-based outpatient treatment could prevent severe disease progression, hospitalization, and death. This retrospective cross-sectional study analysed prescription claims data with ICD-10 codes for COVID-19 from the IQVIA™ database for the Gauteng Province between 01 March to 30 September 2021. Data were processed in Excel (2019) and Stata version 17 (2021), assessing prescription counts, usage rankings, gross and average costs. For all 7,433 patients 180,455 medications were prescribed, peaking in July (37.47%) and June (24.62%) 2021. Antibacterials for Systemic Use (37.14%), Vitamins (34.59%), and Medicines for Obstructive Airway Disease (33.6%) were most prescribed. Total medication costs were R23,851,299.60, with highest spend on Drugs for Obstructive Airway Disease (R4,727,411), Antithrombotic Agents (R3,860,503), and Vitamins (R2,108,311). Generic (44%) and patent medications (32.6%) were commonly prescribed. The average out-of-pocket cost per prescription was R497.45. Notably, the widespread use of

antibiotics like azithromycin, despite limited evidence, indicated irrational prescribing, increasing the risk of antimicrobial resistance and higher patient treatment costs. This first-of-its-kind study in South Africa underscores the need for guideline adherence to ensure rational and evidence-based outpatient treatment during a pandemic.

**Keywords: Prescribing Patterns COVID-19 Outpatients**

CSTH-P-11

### **3D Neuro-mimetic platforms for therapeutic intervention of glioblastoma multiforme**

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**Abstract:** Background: Polymers are used frequently in brain drug delivery for a sustained release of hydrophilic and hydrophobic drugs. This project aims to synthesis and evaluate the effectiveness and efficacy of an injectable-hydrogel in a 3D brain-tissue mimetic system modelling in-vitro and loaded with cancer therapeutics for the treatment of GBM in-vivo in animal models. MATERIALS & METHODS: The injectable-hydrogel system was synthesised using Sodium Alginate (SA), Methylcellulose (MC) and Poly(Vinyl) alcohol (PVA) with superparamagnetic iron oxide nanoparticles (SPIONs) for MRI imaging. The neuro-mimetic ECM scaffold was synthesised using Gelatin Type B (GelB) and Hyaluronic Acid (HA) polymers and crosslinker EDC and NHS. This injectable-hydrogel/neuro-mimetic ECM scaffold model was analysed to quantify and confirm its physiochemical and biomechanical properties, neuro-compatibility, and biopharmaceutical actions. RESULTS: Injectable-hydrogel rheology analysis highlighted properties of a thermo-responsive (gelling temperature = 35.62°C) and thixotropic hydrogel with tissue strength (628Pa) similar to brain-tissue (600-1000Pa). ECM scaffold texture analysis highlighted compressive stress of 2.97kPa (30% strain) and 6.86kPa (50% strain) for GelB4.0\_HA1.0 comparable to brain-tissue (1-3kPa at 30% strain and 6-8kPa at 50% strain) and suitable for cell-culture. FTIR and DSC analysis has shown interactions between SA, MC and PVA polymers, and crosslinking of GelB and HA with EDC and NHS. SPIONs were sized at 242.9 (PDI = 0.136) and potential of -32.0 to -41.7 mV. CONCLUSION: These results show evidence of a neuro-mimetic model system comprising of an injectable-hydrogel and neuro-mimetic ECM scaffold. We also expect to successfully administrate cancer drug therapeutics using the injectable-hydrogel in-vitro and in-vivo.

**Keywords: Drug Delivery, Hydrogels, Cell-Culture Scaffolds, Brain Therapeutics, Pharmaceuticals**



CSTH-P-12

**Change in severity of pelvic floor dysfunction in females three months after sustaining pelvic fractures: a reason for screening**

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**Abstract:** Background & objectives Early identification and physiotherapy intervention of PFD is important to improve QoL. Research is sparse on the occurrence and contributing factors of PFD in females post pelvic fracture in South Africa. Pelvic fractures are a risk factor for PFD. This study aimed to determine PFD symptoms and associated factors among females three months post-pelvic fracture compared to preinjury symptoms. Methods A three-month quantitative longitudinal study was conducted, of all females from CHBAH/CMJAH, aged 18 years or older, not pregnant and >4 months postpartum, recruited within three months of a pelvic fracture. Patient medical records and symptoms were collected through a questionnaire and APFQ. Correlation tests and linear regression analysis were used. Results The injury limited sexually active in 45.45% participants. Significant change was noted in Total ( $p=0.0216$ ), Bladder ( $p=0.0062$ ) and Sexual ( $0.0087$ ) APFQ scores from preinjury to three months post-injury; and between acute and three months post APFQ Total ( $p=0.0361$ ), Bladder( $p=0.0002$ ) and Bowel( $p<0.0001$ ) scores. Prolonged urinary catheters usage increases risk for high bladder PFD scores ( $n=37$ ,  $r=0.1585$ ). Factors associated with less PFD at three months include number of vaginal deliveries preinjury, and bedrest with non-weight bearing choice of treatment ( $p\text{-value}0.046$ ,  $\text{coeff-}4.00$ ,  $95\%CI\text{:}-7.92$  to  $-0.08$ ). Conclusion PFD is present prior to and at three months post pelvic fracture with an increase in frequency and severity at three months. Symptoms are most prevalent in the acute phase. The results of this study support the relevance of screening for PFD within the acute phase and at three months for females following pelvic fractures

Keywords: Pelvic fracture, PFD, pelvic floor dysfunction

CSTH-P-13

**Takayasu Arteritis in South Africa: A Single Center Retrospective Study**

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**Abstract:** Takayasu arteritis (TA) is a female predominant, chronic large vessel vasculitis of unknown aetiology with an incidence of 0.9 to 2.2 persons per million. TA has a variable presentation amongst different ethnicities and age groups and has been associated with both active and latent tuberculosis (TB). TA in sub-Saharan Africans is poorly described. This study aimed to investigate the clinical, angiographic, laboratory, TB associations, therapy and outcomes in TA in a South African population. A retrospective record review was conducted on patients with TA attending the Rheumatology Outpatient Department at a tertiary center in Gauteng. There were no exclusion criteria. Data collected pertained to demographics, clinical presentation, investigations and therapeutic interventions. Thirty-four patient records were reviewed. The majority of patients were female (n=29, 85.3%) with a mean age of 21 years ( $\pm$  8.9 years). 88% of the cohort were of African ethnicity. Hypertension (35.3%) and stroke (32.4%) were the most common presenting complaint. Eight patients were simultaneously diagnosed with TB and TA, two had TB in the preceding year and two patients were diagnosed with TB while on therapy for TA. The common carotid artery (64.7%) and the subclavian artery (50%) were most frequently involved. Methotrexate and corticosteroids were frequently used immunosuppressants with a good response to therapy in the 21 patients who continued follow-up. Our study largely mirrored the demographic and clinical findings in previous literature. The higher prevalence of TB highlights the need to adequately screen for both latent and active TB in patients presenting with TA.

**Keywords:** Takayasu Arteritis, Southern Africa

CSTH-P-14

**Spectrum of autoimmune bullous diseases seen at Chris Hani Baragwanath Academic Hospital and Charlotte Maxeke Johannesburg Academic Hospital, South Africa**

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**Abstract:** Autoimmune bullous diseases (AIBDs) are potentially life-threatening blistering dermatoses in which autoantibodies target skin and mucous membranes. Epidemiologic data about AIBD subtypes are limited. We described the number of new cases of AIBDs at two academic hospitals in Johannesburg, South Africa, by demographics, AIBD subtype and year of diagnosis. We conducted a retrospective observational study of histopathology records from the laboratory database and patient demographic information from the hospital database. Eligible records included new diagnoses of AIBD confirmed between 2013 and 2021 by histology and direct immunofluorescence with or without salt-split skin testing. We collected data on

demographics (age at diagnosis, sex, and race), AIBD subtype, and year of diagnosis. Descriptive statistics were calculated. Over nine years, 169 people were newly diagnosed with AIBD, with a median age of 65 years. Most were female (66.9%) and Black African (91.1%). The commonest AIBD subtypes were bullous pemphigoid (68%), pemphigus foliaceus (9.5%), pemphigus vulgaris (7.7%) and linear IgA bullous dermatosis (7%). The median age at diagnosis and male: female ratios, respectively, for AIBD subtypes, were 68 years and 1:2.3 (bullous pemphigoid), 55.5 years and 1:1 (pemphigus foliaceus), 46 years and 1:3.3 (pemphigus vulgaris) and 16 years and 1:0.7 (linear IgA bullous dermatosis). Per annum, there was a mean of 18.8 new AIBD cases. Few new AIBDs are diagnosed in Johannesburg, predominantly in older, Black African females. Subepidermal bullous disease, specifically bullous pemphigoid, is the most common AIBD, while pemphigus foliaceus is the predominant intraepidermal bullous disease.

**Keywords:** Autoimmune bullous diseases, pemphigoid, pemphigus, demography

CSTH-P-15

**T-cell responses induced by NVX-CoV2373 vaccine to ancestral SARS-CoV-2 and Omicron variant six months following primary vaccination**

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**Abstract:** The nano-particle SARS-CoV-2 index-virus vaccine (NVX-CoV2373) induces humoral and cell-mediated immune responses that protects against severe Covid-19, including cross-protects against SARS-CoV-2 variants. T-cell responses can be detected from day-7 after the first dose, with no increase following a second dose within 3 weeks of the first dose. There is a paucity of

information on cell-mediated immune responses in people that did not receive both NVX-CoV2373 vaccinations compared with recipients of a homologous booster. Here we investigated SARS-CoV-2-specific T-cell responses in 38 participants enrolled in the parent placebo-controlled randomised vaccine trial who had a blinded crossover at six months after study enrolment. Peripheral blood mononuclear cells were collected from participants (naïve to SARS-CoV-2 infection) seven days after vaccination with one dose (n=19; placebo group in main trial) or a homologous booster (n=19; third dose). The full-length spike (FLS) glycoprotein of wild-type (WT) SARS-CoV-2, as well as mutated spike protein regions found in the Omicron variant (B.1.1.529) were targeted by flow cytometry. WT-specific CD4+ T cells elicited similar FLS-specific responses in participants that received one dose compared with after the third dose (1.20% vs. 1.27%; p=0.871); and similarly so for CD8+ T cells (1.35% vs. 1.43%; p=0.491). CD4+ and CD8+ T-cell responses directed at B.1.1.529 were similar between first- (0.84% and 0.88%; p=0.874) and third-dose recipients (0.91% and 0.97%; p=0.961). CD4+ T cells displayed reduced reactivity to B.1.1.529 (0.84%) compared with WT SARS-CoV-2 in one-dose recipients (1.27%; p=0.01) and after the third dose (0.91% vs. 1.21%; p=0.028). Our results collectively demonstrate comparable T-cell responses between people who received one NVX-CoV2373 vaccine and those who received a homologous booster, suggesting that a booster dose may not increase T-cell immunity. Additionally, T-cell immunity acquired through NVX-CoV2373 vaccination appears to confer a greater T-cell response to ancestral SARS-CoV-2 compared with the B.1.1.529 variant.

**Keywords: NVX-CoV2373 (Novavax) vaccine; T-cell responses; SARS-CoV-2; Omicron variant**

CSTH-P-16

**Analysis of single nucleotide variants and copy number variants in patients with features suggestive of a RASopathy using whole exome sequencing.**

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**Abstract:** The RASopathies are a group of developmental disorders (DDs) caused by the disruption of genes involved in the RAS/Mitogen activated protein kinase pathway. Phenotypic overlap is observed between the RASopathies and other rare DDs, presenting as RASopathy-like phenotypes. Additionally, RASopathies and other developmental disorders display genetic heterogeneity. These factors make both clinical and molecular diagnoses challenging to attain. Traditionally, RASopathies are diagnosed using NGS targeted gene panels, however whole exome sequencing (WES) is quickly becoming the gold standard for the diagnosis of genetic disorders with phenotypic overlap and genetic heterogeneity. Due to the resource constrained setting of

South Africa, WES is not used in a diagnostic setting. The aim of this study was to determine if WES can identify clinically significant single nucleotide variants (SNVs) and copy number variants (CNVs) in 8 African patients with RASopathy-like phenotypes who tested negative using a targeted gene panel. WES enabled the identification of three clinically significant variants, two pathogenic variants in NF1 and PTPN11 respectively, and one likely pathogenic variant in KMT2A. The detection rate achieved in the current study was 37.5%. This study highlights the value of using WES for the identification of both SNVs and CNVs in African patients presenting with RASopathy-like phenotypes. To our knowledge this is the first report of a KMT2A variant associated with Wiedemann Steiner Syndrome in South Africa. Furthermore, this study demonstrates the utility of WES as a reflex testing method to identify false negative results generated using targeted gene panels.

**Keywords: RASopathies, Whole Exome Sequencing, Developmental Delay, Molecular Genetics**

CSTH-P-17

**What is the level of knowledge and attitudes of PCOS among university students? A scoping review protocol.**

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**Abstract:** Polycystic ovarian syndrome (PCOS) is a prevalent endocrine disorder that affects reproductive, metabolic, and psychological health. Understanding of and attitudes toward PCOS among students are important areas of study due to the rising incidence of the condition among premenopausal women. This scoping review highlights a gap in the literature, particularly the lack of studies from South Africa and the limited research on PCOS awareness among male individuals. Following the JBI reporting system framework and PRISMA guidelines, a comprehensive search was conducted using 3 databases (PUBMED, Scopus, and MEDNAR). Data analysis was undertaken using MS Excel (2013) and Stata MP Software (version 15). Among the studies reviewed (n=2415), 20 met the inclusion criteria. Out of the 20 studies, 12 of them were categorized as cross-sectional studies. These studies assessed knowledge of PCOS through questions on familiarity with the term, recognition of symptoms, awareness of treatment options, and understanding of associated risks and complications. The findings indicate varied levels of understanding among participants: 7 studies reported a significant lack of knowledge, 7 studies showed satisfactory knowledge, and 6 studies found inadequate knowledge. Enhancing the knowledge of PCOS within this specific demographic has the potential to improve health-seeking

behaviour, minimise delays in the diagnosis and treatment of the condition and consequently influence the general well-being of those affected and those at risk.

**Keywords: PCOS, knowledge, attitude, students**

CSTH-P-18

### **Occupational therapy for a Psychiatric Day Hospital: Guiding principles**

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**Abstract:** Background Globally, mental illness affects one in seven people, underscoring the demand for accessible mental health services like day hospitals. The Evexia Psychiatric Day Hospital Group, licensed in South Africa in 2014, includes occupational therapists who provide therapy and facilitate therapeutic group programme. Through experimentation and intuition, therapists developed an 'operational group therapy programme' for patients. Aims/Objectives This article reports on the reflections of occupational therapists and patients on the current guiding principles of the occupational therapy programme at a psychiatric day hospital. Materials and Methods Occupational therapists and patients underwent individual interviews, with data collectively analysed using reflexive thematic analysis. Results Four themes emerged from the interviews: skilled and competent facilitator with good understanding of groups; the group as a being; the patient as an individual; and the ongoing interplay among evaluation, intervention and outcomes. Conclusions Results show that when patients gather in a group format, facilitated by a competent facilitator and guided by occupational therapy principles, in an interactive and experiential manner, births the life of 'the group', which holds power for healing and propels change in behaviour. Significance Group therapy and its inherent potency were identified as the foremost and vital guiding principles, ingredients, and catalysts within the occupational therapy programme at the psychiatric day hospital.

**Keywords: Occupational therapists, group therapy, programme, mental health, guidelines.**

**Association between reactogenicity and received but not perceived intervention assignment in HIV Vaccine Trials Network (HVTN) HIV vaccine efficacy trials**

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**Abstract:** Disaggregating reactogenicity by received and perceived interventions may inform interpretation. We analysed if perceived and received interventions were associated with reactogenicity in HIV vaccine efficacy trials. For our retrospective analysis, eligible participants were: (a) enrolled in HVTN randomized double-blinded preventive HIV vaccine efficacy trials published by 05 Mar 2024, and (b) injected, and completed perceived intervention assignment assessments at month 6-6.5. Participants eligible for analysis (n=5165) were from HVTN 502, HVTN 503, and HVTN 702 trials. At month 6-6.5 (after the third injection time point), 19%(n=1002) reported any reactogenicity. Perceived interventions were 27%(n=1413) vaccine, 8%(n=429) placebo and 64%(n=3323) unsure. Vaccine recipients reported reactogenicity significantly more than placebo-recipients (23% vs. 16%, p<0.0001). Participants who perceived and received placebo reported the lowest proportion of reactogenicity (14%). Reactogenicity was similar in vaccine-recipients regardless of perceived vaccine or placebo assignment (25% vs. 31%, p=0.4027). In univariate analysis, reactogenicity was not significantly associated with perceived placebo (OR 0.926, 95% CI: 0.713-1.203) or perceived vaccine (OR 1.093, 95% CI: 0.936-1.277) assignment, relative to perceived unknown assignment. These findings suggest that HIV vaccine reactogenicity differs by received, but not perceived, intervention assignment. Reactogenicity reported by placebo-recipients was only one-quarter less than vaccine-recipients; thus reactogenicity cannot be automatically presumed to be related to study vaccines. Conceivably, the acts of injection/measurement or comorbidities explain a considerable proportion of reactogenicity events.

**Keywords:** Reactogenicity, Perceived intervention, Received, intervention, Vaccines.