Poster Abstracts

(P – 1)

Trends in the incidence of *Staphylococcus aureus* bacteraemia at a teaching hospital in Nassau, The Bahamas, 2012 to 2015

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Background: *Staphylococcus aureus* bacteraemia (SAB) is a leading cause of infection-related morbidity and mortality within healthcare systems. A rising incidence of SAB has been seen in institutions with advances in medical interventions. There are sparse data regarding the incidence and outcomes of SAB in the Caribbean healthcare system.
Methods: A retrospective sample of adult patients (≥ 18 years) admitted to a teaching hospital in Nassau, The Bahamas, with SAB between January 1, 2012 and December 31, 2015 was identified using patient medical records and microbiology database. Data were analysed using Microsoft Excel and the 2015 version of the Statistical Package for the Social Sciences.
Results: A first episode of SAB was seen in 10.3% (201) of the cases. Men represented 62.69% of the cases, and the age group of 40–59 years was most affected (42.52%). No obvious source of infection was identified in 43.78%, nosocomial acquisition represented 12.44%, healthcare-associated acquisition represented 67.66%, and community acquisition represented 19.9%. There was a significant 4.4% increase in the occurrence of SAB (range: 8.66–11.54%). Methicillin-sensitive *Staphylococcus aureus* (MSSA) represented 73.68% of the cases. Thirty-day SAB mortality was 29.35% (range: 22.22–32.20%). The odds of death within 30 days from methicillin-resistant *Staphylococcus aureus* was 1.90 compared to MSSA. The 30-day risk of death from community acquisition was 3.25 compared to healthcare-associated acquisition and 2.57 compared to nosocomial acquisition.
Conclusion: *Staphylococcus aureus* bacteraemia remained an important bacterial infection with high 30-day mortality rates as demonstrated in this study. Strategies such as infectious disease consultation, improved antimicrobial stewardship and timely interventions are warranted to improve outcomes in these patients.

(P – 2)

Protective effect of gallic acid in experimental model of ketamine-induced psychosis: possible behaviour, biochemical, neurochemical and cellular alterations

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Background: Gallic acid has been reported to possess a number of psychopharmacological activities. These activities are attributed to the antioxidant potential due to the presence of phenolic moiety.
Objective: To investigate the protective effects of gallic acid in an experimental model of ketamine-induced psychosis in mice.
Methods: Ketamine (50 mg/kg, intraperitoneal) was used to induce stereotyped psychotic behavioural symptoms in mice. Behavioural studies (locomotor activity, stereotype behaviour, immobility duration and memory retention) were carried out to investigate the protective effect of gallic acid on ketamine-induced psychotic symptoms, followed by biochemical and neurochemical changes and cellular alterations in the brain.
Results: Chronic treatment with gallic acid for 15 consecutive days significantly attenuated stereotyped behavioural symptoms in mice. Biochemical estimations revealed that gallic acid reduced the lipid peroxidation and restored the total brain proteins. Furthermore, gallic acid remarkably reduced the dopamine levels, AChE activity and inflammatory surge (serum TNFa), and increased the levels of gamma-aminobutyric acid (GABA) and increased glutathione in mice.
Conclusion: The study revealed that gallic acid could ameliorate psychotic symptoms and biochemical changes in mice, indicating protective effects in psychosis.

(P – 3)

The effect of whey protein on cytochrome enzyme CYP450 3A4

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Background: Supplements are widely used among student athletes as a part of their regular physical development routine, especially whey powder which is used for providing more energy in athletes with increased workout activity and for recovering from injuries. Currently, supplement manufacturers and distributors are not required to obtain approval from the Food and Drug Administration in the United States of America before marketing dietary supplements, and often the supplements contain unknown ingredients with unknown effects. It has been reported that ingredients in supplements inhibit cytochrome P450 enzymes which are the major class of enzymes responsible for drug metabolism. This is a concern, particularly if multiple supplements and drugs metabolized by the same enzyme are consumed together, as increased levels caused by metabolic inhibition may lead to extended pharmacological activity, enhanced detection and toxicity.
Objective: In this investigation, one protein supplement, whey powder, was used to test if it inhibited one of the principal enzymes, CYP3A4.
Methods: A microtiter plate-based fluorescence assay was used, and experiments were performed in triplicate in a 96-well plate format. The experimental set-up consisted of a pro-fluorescence probe compound (BFC) along with a NADPH regenerating system (also a fluorescence coenzyme) to produce the metabolite HFC (a fluorescent compound).
Results: The median inhibition concentration (IC_{50}) value for the supplement was 167.95 μg/mL and the standard error 18.12. From the control assays, there were no interferences.
Conclusion: The results showed that whey powder was a poor inhibitor of cytochrome CYP3A4. Therefore, there was no concern surrounding the metabolic effects and drug interactions with the use of the studied whey protein supplement.

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Dual university system to promote health research collaboration to achieve sustainable goals

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Background: A dual system of collaboration between The University of the West Indies (UWI) and the State University of New York (SUNY) was created and implemented by a joint Health Research Faculty Task Force for an integrated approach to Sustainable Development Goals (SDGs).
Methods: A needs assessment identified research and education priorities, and a dual system linkage structure was created to promote health and wellness. Scientific working groups were established to identify high priority areas and clinical research infrastructure requirements.
Results: An Infectious Diseases Research Centre, a Clinical Research Centre, an Antimicrobial Resistance and Stewardship Programme and a Liver, Kidney and Metabolic Disease Programme were identified as highest priorities. Cannabinoid Sciences and a joint effort in Cancer Research, Natural Products and Nanotechnology to identify indigenous compounds and to develop nanomedicine were also key areas. In addition, synergy among efforts in education and research training opportunities for graduate and undergraduate students as well as clinical research workforce development were identified.
Conclusion: A framework has been established to enable the SUNY UWI Joint Health Research Faculty Task Force to begin implementation of health research initiatives as a foundation for multiple SDGs and to drive regional timelines and milestones.

(P – 5)

The association of symptomatic hypoglycaemia and hypoglycaemia fear on health-related quality of life in patients with diabetes mellitus: a cross-sectional study

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Objective: To examine the association between symptomatic hypoglycaemia and hypoglycaemia fear on health-related quality of life (HR-QOL) in diabetic patients.
Methods: This cross-sectional study was conducted at the Diabetes Clinic of the University Hospital of the West Indies, Kingston, Jamaica. Demographic and clinical data were obtained from patient-investigator interviews and review of medical records. Patient-reported symptoms of hypoglycaemia and hypoglycaemia fear were measured using the Hypoglycaemia Fear Survey-II (HFS-II). Health-related quality of life was assessed using the Modified Diabetes-39 QOL questionnaire.

Results: We recruited 121 patients (67% women; aged 52.7 ± 15.7 years; 80% with Type 2 diabetes; mean HbA_{1c} 9.1 ± 2.5; 21% with HbA_{1c} < 7%). About 62% reported at least one hypoglycaemia episode in the prior 12 months; 48% (36/75) reported that their most severe symptoms were mild, 20% (15/75) moderate, and 32% (24/75) severe. Patients who were women, had Type 1 diabetes, longer duration of diabetes, or who used insulin were more likely to have hypoglycaemia ($p \leq 0.01$). Patients who had hypoglycaemia had lower HFS-II scores and higher Diabetes-39 QOL scores ($p > 0.7$). Hypoglycaemia fear correlated with HR-QOL: HFS-Behaviour (r = 0.49, $p < 0.001$), HFS-Worry (r = 0.41, $p \leq 0.001$) and total score (r = 0.50, $p \leq 0.001$). Multivariate regression revealed that HFS-Behaviour was independently associated with HR-QOL, but only in women.
Conclusion: Symptomatic hypoglycaemia was common in Jamaican patients at a tertiary care centre. Hypoglycaemia fear was associated with lower HR-QOL. These data suggested that patients, especially high-risk patients, should be regularly screened for hypoglycaemia.

(P – 6)
Investigation of anti-inflammatory potential of a methanolic extract of ackee leaf (*Blighia sapida*) on rheumatoid arthritis (CFA model) and acute toxicity profile

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Background: Rheumatoid arthritis is an auto-immune disease that affects the joints. There is a preponderance of evidence that women are more affected than men. A majority of cases are patients over 40 years of age. Users of tea prepared from ackee leaves in Jamaica have reported that they experience a reduction in joint inflammation. This study aimed to investigate this claim.
Methods: A total of 18 rats were placed into three groups (n = 6/gp). Group 1 rats were given Diclofenac (25 mg/kg) and Group 2 ackee leaf (*Blighia sapida*) extract (120 mg/kg). Rats from group 3 were treated with saline (2 mL). The knee joints of the rats were injected with CFA (0.5 mL) 30 minutes post-treatment. Knee joint measurements were taken over a period of 28 days. Blood samples were also collected *via* cardiac puncture. Sections of knee joints and the liver were taken for histopathological studies. Acute toxicity studies were evaluated using mice (n = 12).
Results: Diclofenac (25 mg/kg) caused the greatest reduction in swelling of the knee joints of the rats ($p < 0.001$) and also the extract ($p < 0.001$). In both test groups, the total leukocyte count was insignificant ($p > 0.05$). Signs of cartilage degradation in the extract-treated group were less severe than the control group. Liver histology showed slight hepatocyte damage. Acute toxicity testing indicated that the extract was not toxic.
Conclusion: The methanolic ackee leaf extract could be useful in reducing swelling of the knee joints since it protected cartilage integrity. With further chemical analysis, the major bioactive component could be fully investigated. Ackee leaf extract appeared to be non-toxic at a dose of 2000 mg/kg.

(P – 7)
A study of the effect of *Plectranthus amboinicus* extracts on carbachol-induced contractions of the guinea pig tracheal smooth muscle strips

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Background: In folklore practice in Jamaica, the leaves of *Plectranthus amboinicus*, commonly known as Spanish thyme, are used to relieve the symptoms of asthma. In this study, the efficacy of n-hexane extract and ethyl acetate extract from the Jamaican cultivar of *Plectranthus amboinicus* was investigated on guinea pig tracheal strips. This was done to justify the use of the plant in folklore medicine for treating respiratory conditions.
Methods: Tracheal strips were dissected from guinea pigs and used in an organ bath system for *in vitro* studies. A polygraph with a transducer component was used to assess isometric tension in strips. The effects of the n-hexane extract (2 mg, 4 mg and 8 mg), ethyl acetate extract (2 mg, 4 mg and 8 mg), ethanol (0.2 mL) and atropine (0.4 mg) were tested on tracheal strips pre-contracted with cumulative doses of carbachol.
Results: All doses of each extract and atropine showed significant relaxant effects on carbachol-induced contractions ($p < 0.05$ to $p < 0.001$), while ethanol showed no significant effect ($p > 0.05$) on the carbachol-induced contractions. No significant difference was observed between the relaxant effects of atropine and several doses of n-hexane extract ($p > 0.05$), and doses of ethyl acetate extract ($p > 0.05$).
Conclusion: The results were possibly due to the non-competitive muscarinic antagonism produced by various bioactive compound(s) of each extract. Studies have suggested the possible involvement of carvacrol and thymol in this mechanism. The extracts of *Plectranthus amboinicus* tested positive for terpenoids which are similar in structure to carvacrol. However, further spectral studies and bioactivity-directed responses of purer samples must be carried out to confirm the main bioactive secondary metabolite or metabolites present in *Plectranthus amboinicus* found in Jamaica.

(P – 8)

The effect of extracts from *Desmodium canum* (strong back weed) on testosterone levels in Sprague-Dawley rats

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Objective: Testosterone is an anabolic steroid that is important in the erectile physiology of the penis. *Desmodium canum* is believed to have aphrodisiac properties. This study aimed to determine its effects on testosterone levels and on the weight of the testes in male Sprague-Dawley rats.

Methods: Crude hexane, ethyl acetate and methanol extracts of *Desmodium canum* were obtained and administered daily to male Sprague-Dawley rats by oral gavage for 28 days at a dosage of 250 mg/kg body weight. Blood was collected from the renal vein after which the rats were sacrificed and the testes harvested, weighed and expressed as relative testes weight. Serum testosterone levels were assayed using an ELISA kit from Crystal Chem Incorporation.

Results: The hexane extract showed the most significant increase in serum testosterone level (1.96 ng/mL) compared with the negative control, corn oil (0.80 ng/mL; $p < 0.04$). No significant difference was observed for the hexane extract compared with the positive control (testosterone). The methanol extract showed a significant increase (0.42%) in the relative organ weight of the testes *versus* the dimethyl sulfoxide control (0.32%; $p < 0.04$). The ethyl acetate extract had no significant effect on either the testosterone level or the organ weight of the testes.

Conclusion: The hexane extract significantly increased the concentration of the serum testosterone level when compared with the corn oil and therefore may have potential for increasing libido and penile erection responses. The methanol extract increased the size of the testes, indicating the possibility of increasing the testosterone level.

(P – 9)

Application of NIH ImageJ$_{wrmtrck}$ plug-in for study of sleep-like state in zebrafish (*Danio rerio*)

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Objective: Sleep is an essential neurobiological expression conserved across the animal kingdom and is critical for normal physiology and cognition. Recently, zebrafish has emerged as a promising new model for sleep study. Zebrafish sleep study involved video-based automated swim tracking using commercially available tracking software from Noldus Information Technology or Viewpoint Life Sciences. However, such tracking software is costly and hard to afford for a small-budget researcher. Therefore, in this investigation, we evaluated the possibility of using freely downloadable NIH ImageJ software for zebrafish sleep research.

Methods: Zebrafish swimming in vertical or horizontal novel tanks was recorded (10 frames/second) for three consecutive days (10 hours daylight/14 hours dark blue light) using an iSpy video recorder. The compressed video was converted to tiff image sequences using video-to-picture software. Using NIH ImageJ, the image sequence was converted to stack, fish image threshold after subtracting from background. Finally, fish sleep was analysed with ImageJ$_{wrmtrck}$ plug-in.

Results: Plotting of minimum threshold of six-second track data of zebrafish swimming at one pixel/second (2.5 mm/second) against the recording times showed a comparable sleep-like profile as that reported by commercial tracking software. Duration of sleep-like state increased during the night compared to daytime. However, the increases were variable depending on various conditions, such as fish population, presence or absence of stimulating drugs, and oxygen level in the novel tanks.

Conclusion: NIH ImageJ$_{wrmtrck}$ plug-in could effectively be employed for studying the sleep-like state in zebrafish. Most of the zebrafish sleep features (such as total sleep, sleep bout number, sleep bout length, sleep latency, average activity per waking minute) could be evaluated using the same program. In addition to being cost-effective, the program could track multiple fish from single recording, thus increasing data.

(P – 10)

The accuracy, quality and timing of referrals to the Ophthalmology Department at the University Hospital of the West Indies

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Objective: The Ophthalmology Department at the University Hospital of the West Indies receives emergent/urgent and routine referrals. The aim of this study was to determine the accuracy, quality and timing of ophthalmic referrals, improve the quality and appropriateness of referrals and therefore improve patient outcomes.

Methods: This was a prospective study on new patients seen in the Ophthalmology Department from August 3

to November 3, 2016. It excluded patients who had been referred for disease screening. The data were collected using a pro forma. All patients gave voluntary written consent and remained anonymous.

Results: A total of 207 patients were recruited, including 114 (55%) males and 93 (45%) females, aged four months to 87 years. The majority (33%) were referred from general practitioners, followed by ophthalmologists (28%) and emergency physicians (23%). The most common conditions were glaucoma (12%), cataract (10%) and uveitis (10%). Only 20% of the referrals contained a history, examination, visual acuity and diagnosis. Ophthalmologist referrals were most accurate (89%), while general practitioner referrals (29%) were least accurate. The mean time to be seen was 82 days for routine referrals and 4.2 days for emergent/urgent referrals. There were 41 adverse events, which included delays due to poor-quality referrals or prolonged time to presentation, lack of prior disease screening, and use of inappropriate medications.

Conclusion: There was a high rate of poor referrals and inaccurate diagnoses. Inadequate communication, poor timing of referrals, inaccurate diagnosis and treatment affect patient outcomes. With standardized referrals, patient morbidity may be reduced.

(P – 11)

Delta-9-tetrahydrocannabinol potentiates acetylcholine-induced contractions of the human umbilical artery

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Background: With the decriminalization of cannabis in Jamaica, there is an increased possibility that pregnant women will be exposed to it. One component of cannabis, delta-9-tetrahydrocannabinol (THC), can pass from the maternal blood to the foetus through the umbilical cord.

Objective: To determine the acute *in vitro* effect of THC on the contractions of the human umbilical cord blood vessels.

Methods: Umbilical cord samples were collected from the University Hospital of the West Indies within the first hour of delivery in Krebs-Henseleit solution. Blood vessels were isolated and cut into 0.5 cm rings, while being aerated with 95% O2/5% CO_2. The rings were attached to a force transducer to measure isotonic contractions with the use of the PowerLab data acquisition system and kept under a resting tension of 2 g. Blood vessel contractions were induced by the addition of acetylcholine 7.21 x 10^{-3} M, and the effects of 0.1 nM of THC on these contractions were examined. Shapiro-Wilks test confirmed the contractions to be normally distributed. Thus, data were expressed as mean ± standard deviation and students paired *t*-test used for inferential statistics.

Results: Acetylcholine-induced contractions of the arteries at the dose of 7.21 x 10^{-3} M were significantly potentiated by the presence of THC, 0.04 ± 0.01 g to 0.06 ± 0.02 g (n = 6; $p = 0.01$). The contractions of the vein were not changed by the presence of THC, 0.10 ± 0.01 g to 0.11 ± 0.09 g (n = 6; $p = 0.19$).

Conclusion: Acute exposure of THC could potentiate the contractile response to acetylcholine. The implications to foetal outcomes require further investigation.

(P – 12)

Cannabinoid profile of the Jamaican cannabis

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Background: Cannabinoids are chemical compounds unique to and responsible for the potency of cannabis. The two most studied cannabinoids with claimed therapeutic value are delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD). The former has psychoactive effects while the latter does not. A useful measure of potency is the ratio of THC to CBD. Jamaica has had a long-standing reputation for its top-quality 'high-grade' cannabis, but this claim has not been substantiated with scientific measurements.

Objective: To measure the cannabinoid levels of cannabis grown in various parts of Jamaica.

Methods: Cannabis samples were supplied by the police from seizures made in Jamaica from 2011 to 2015. Liquid Chromatography with tandem mass spectrometry (LCMSMS) was used to analyse extracts prepared from the mature cannabis buds for cannabinoid levels.

Results: The mean THC concentration expressed as a percentage (g/100 g) of the samples was 6.8% (range: 0.3–24%). Cannabis buds had a mean CBD content of 1.7% (range: 0.07–7.7%). The majority of the plants tested (86%) had more THC than CBD. Plants with the highest THC levels (24.2%) were found in St Elizabeth while those with the highest CBD levels (7.7%) were found in St Catherine. Plants collected in 2011–13 had lower THC/CBD ratios on average, compared with those collected in 2014–15.

Conclusion: The landrace strains of Jamaican cannabis were predominantly higher in THC than CBD. The potency of the Jamaican cannabis has increased over the years. Of significance was the detection of high CBD varieties which had positive implications for the development of the medical marijuana industry in Jamaica.

(P – 13)

Molecular epidemiology of oral human papillomavirus among adults residing in Kingston, Jamaica

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Background/Objective: Human papillomaviruses (HPV) are double-stranded DNA viruses with a site predilection for squamous epithelium of skin and mucosa. They are associated with oral cancers, especially squamous cell carcinoma. A recent report suggested that 30% of oral cancers were related to HPV infection. Oral cancers related to HPV are related to sexual behaviour, particularly the number of life time sexual partners, oral sexual practice and HIV infection. The molecular epidemiology of oral HPV in the Jamaican population had not yet been studied. This study was conducted to determine the prevalence of oral HPV and associated factors in a selected population in Kingston, Jamaica.
Methods: Patients attending dental polyclinic and the Centre for HIV/AIDS Research, Education and Services (CHARES) were recruited. Salivary samples were tested for molecular analysis of 37 HPV types using linear array HPV genotyping test (Roche Molecular systems). A survey questionnaire was used to obtain demographic details, smoking and alcohol practice, sexual behaviour and HPV testing history.
Results: The HPV prevalence was 9.37% among the study population (n = 96) aged 18–64 years. No high risk HPV types were found in the study participants. The study observed low risk HPV types, and prevalence among HIV patients was 8.33% and that among dental polyclinic patients was 10%. Clinically, no mucosal pathologies related to HPV were observed.
Conclusion: The prevalence of oral HPV (low risk) was lower than that reported in other countries. Expanding the study to the national level probably may give a broader picture on the burden of oral HPV infection in Jamaica.

(P – 14)

The role of computed tomography in the evaluation of first episode psychosis

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Background: Neuroimaging in patients with first episode psychosis on a background of a normal neurological examination is often done, in spite of published evidence suggesting limited benefit of such practice.
Objective: To evaluate the diagnostic value of computed tomography (CT) in a cohort of patients at a major tertiary level teaching hospital in the Caribbean.
Methods: A retrospective cross-sectional study was performed, reviewing CT brains of 88 patients with first episode psychosis and a documented normal neurological examination over a three-year period. Images were assessed for the presence or absence of an abnormality, along with the type and location of any abnormality found.
Results: The cohort included a total of 53 males and 35 females ranging in age from 12 to 95 years. Abnormalities were identified in 11.4% of the patients, the majority of which were incidental and of limited clinical significance. Of the patients, 3.4% had abnormalities potentially related to their psychosis, including two patients with non-specific white matter disease and one patient with multiple brain dysmorphisms including non-communicating hydrocephalus, likely due to aqueductal stenosis.
Conclusion: Computed tomography appeared to be of limited diagnostic value in patients with first episode psychosis who had normal neurological findings on clinical examination. Given the minimal demonstrable benefit and considerable cost and radiation risks, routine CT for first episode psychosis seems unjustified in the absence of neurologic symptoms.

(P – 15)

Cancer in the HIV population at a specialist HIV/AIDS centre in urban Jamaica

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Objective: To determine the prevalence and spectrum of cancer in patients with HIV managed at a specialist clinic at the University Hospital of the West Indies.
Methods: We conducted a retrospective review of clinical records for HIV-infected individuals who were also diagnosed with cancer during the period 2005–15. A standardized data extraction template was used to record patient demographics (age and gender), cancer diagnosis (grouped as AIDS-defining *eg* cervical cancer, non-Hodgkin lymphoma and Kaposi sarcoma and non-AIDS-defining *eg* breast, gastrointestinal and lung cancers) and HIV/AIDS parameters (CD4 count and HAART use). Univariate analyses were used to provide descriptive summary statistics.
Results: The age of the patient population ranged from 18 to 71 years. The prevalence of malignancy was 1.7%. AIDS-defining cancers were more prevalent (53%). Non-Hodgkin lymphoma was the most common malignancy overall (33% of all cases), in addition to being the most common AIDS-defining cancer (60% of cases). Of those with AIDS-defining cancer, 30% were under the age of 30 years. Breast cancer was the most common non-AIDS-defining malignancy (33.3%).
Conclusion: In HIV-affected individuals, AIDS-defining malignancies were more prevalent and more likely to affect

individuals under the age of 30 years. Adolescent and young adult transmission of HIV remains a significant issue which needs to be addressed. Additional recommendations with respect to cancer screening and education may be warranted in this at-risk population.

(P – 16)

Utilization of the lateral mass of the atlas (C1) for posterior cervical atlanto-axial stabilization

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Background: Trauma and rheumatoid arthritis are the major causes of C1-C2 subluxation seen at the University Hospital of the West Indies, Kingston, Jamaica. In the past, sub-laminar wires and hooks were used to attempt stabilization with variable success.
Objective: To demonstrate the first utilization of lateral mass screws in C1 to stabilize the posterior cervical spine.
Methods: Posterior cervical exposure was done, and a sub periosteal dissection from the C1 arch was used to expose the lateral mass. The overhanging posterior arch was resected with a diamond drill. An awl, a hand-drill and a tap were used to prepare the lateral mass for a poly-axial screw. The screw was left proud to allow for ease of connection to the rod. A radiolucent Mayfield skull clamp, intra-operative nerve monitoring and fluoroscopy were used to improve patient safety and accuracy.
Results: A total of 22 C1-screws were placed in 11 patients with follow-ups ranging from one to eight years. The average screw length was 20 mm, the range was 18–30 mm, and the diameter was 4.0–4.5 mm. A length of 6–10 mm of the screw was placed in the lateral mass from direct posterior to anterior and 20–30 degrees cephalad.
Conclusion: The lateral mass of C1 was a reliable block of bone that could be used to achieve stabilization of the C1-C2 junction. Nerve monitoring improved the accuracy of delivery, allowing for a more solid construct and producing bone fusion.

(P – 17)

An assessment of nerve monitoring to improve patient safety in spinal surgery: a prospective clinical trial

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Background: Spinal surgery was previously performed under general anaesthesia with no feedback to assess the integrity of nerve function during surgery. As more minimally invasive and less exposure procedures are performed, the need for real-time feedback has become more critical.
Objective: To show that intra-operative nerve-monitoring can provide real-time feedback at surgery with intervention to prevent post-operative neurological deficit.
Methods: All patients who underwent a spinal operation at the University Hospital of the West Indies, Kingston, Jamaica, between December 2012 and June 2017 and who had intra-operative nerve monitoring had their data recorded prospectively on the NIM eclipse neuro-monitoring software. All events requiring the surgeon to make an adjustment to reverse loss of function was documented and analysed.
Results: A total of 320 consecutive patients had a spinal operation with nerve monitoring, 159 of whom were male and 161 female. Seventy-nine had a cervical spine procedure, 155 had a lumbar spine procedure, and 16 had thoracic procedures. There were a total of eight intra-operative events requiring a surgical adjustment. Four had motor function loss in the feet, two in the hands and two in both upper and lower limbs. This represented a total of a 2.5% rate of nerve monitoring resulting in an adjustment for patient safety.
Conclusion: Intra-operative nerve monitoring was an indispensable tool in improving patient safety in spinal surgery. It should be mandatory as it provides the surgeon with real-time feedback while the patient is under general anaesthesia.

(P – 18)

***Chlamydia trachomatis* genital infection in Jamaican women**

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Objective: To describe the epidemiology of *Chlamydia trachomatis* genital infection in Jamaican women and assess healthcare practitioners' use of the diagnostic and treatment guidelines from the Ministry of Health.
Methods: A sample of 180 women who attended a sexually transmitted infection (STI) clinic in Jamaica were recruited. Pelvic examination was performed on each participant to obtain endocervical swabs which were tested using a rapid diagnostic test. Interviewer-administered questionnaires were also completed, and the patients' dockets were reviewed to obtain clinical information.
Results: The prevalence of *Chlamydia trachomatis* genital infection was 10%. Demographic characteristics, sexual history and clinical features had no statistically significant association with *chlamydia* infection. Vaginal intercourse had a statistically significant association with *chlamydia*

infection (p = 0.020). The diagnosis of an uncomplicated STI was made in 98% of women presenting with cervicitis, 98.6% of women presenting with mucopurulent cervical discharge, and all women presenting with contact bleeding of the cervix. Among women noted to have adnexal tenderness and cervical motion tenderness, 65% and 70.7%, respectively, were diagnosed with a complicated STI. All patients diagnosed with STIs including *Chlamydia trachomatis* received combination therapy with the appropriate antimicrobial agents for the recommended duration.

Conclusion: Vaginal intercourse was the only factor significantly associated with *Chlamydia trachomatis* genital infection. Although healthcare practitioners in a few cases failed to document examination findings and make appropriate diagnoses based on clinical features observed, the antimicrobial therapy given was in keeping with the Ministry of Health guidelines for syndromic treatment of STIs.

(P – 19)

Anxiolytic and anti-depressant potential of the *Arachis hypogaea* plant testa

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Background: It has been reported in Jamaican folklore that a tea made from the testa of the *Arachis hypogaea* (peanut plant) induces a 'calming effect' and may reduce anxiety and improve the mood of depressed individuals. However, there is a lack of scientific evidence in the literature to validate these claims.

Objective: To investigate the anxiolytic and anti-depressant properties of aqueous preparations of *Arachis hypogaea* testa in Swiss albino mice.

Methods: Testa from fresh raw peanuts were milled and boiled in distilled water (60 g in 500 mL) to obtain aqueous preparations. Thirty male Swiss albino mice (15–20 g) were divided into five equal groups: a positive control (diazepam (2 mg/kg) or fluoxetine (18 mg/kg)), a negative control (water) and three groups administered the aqueous preparations (15, 30 or 60 g/kg). The Light/Dark box was used as an animal model of anxiety, in which increased time in light would indicate less anxious behaviour. The Tail Suspension Test was used as a model of depression, in which high mobility would indicate behaviour less associated with depression.

Results: Mice administered *Arachis hypogaea* testa (15 or 30 g/kg), or the anxiolytic agent, diazepam, spent significantly longer periods in the light chamber of the Light/Dark box than mice administered water ($p < 0.05$). Mice administered *Arachis hypogaea* testa (30 g/kg), or the anti-depressant agent, fluoxetine, demonstrated significantly higher mobility ($p < 0.001$ and $p = 0.042$, respectively) than mice administered water.

Conclusion: *Arachis hypogaea* testa produced anti-anxiety and anti-depressant activity in mice. The effects appeared to be dose-dependent.

(P – 20)

An investigation of dietary supplement usage in young Jamaican high school athletes aged 14–19 years in the Kingston and St Andrew metropolitan area

J Smith, S Roopchand-Martin, A Mansingh, S Turfus

Background: With stricter guidelines being enforced on athletes by regulatory authorities, the usage of supplements among high school athletes has surfaced as an important theme to be investigated because of potential negative implications.

Objective: To identify supplement habits among high school athletes aged 14–19 years in the Kingston and St Andrew metropolitan area.

Methods: A questionnaire containing 28 questions was employed, and data analysis was conducted using Microsoft Excel 2013 and SPSS Version 20. Fisher's exact test was performed, with a p-value of ≤ 0.05 which was considered statistically significant.

Results: Of the 87 respondents, 54 were male and 33 female. The average age was 15.79 ± 1.105 years, and the average number of years in sport was 3.03. A total of 57.5% (n = 50) of the respondents were supplement users, with 64% (n = 32) being male and 36% (n = 18) female. The most commonly used supplements were amino acid preparations, protein products, Vitamin C, iron, echinacea, calcium and caffeine. The primary reasons for taking supplements were for health and to increase energy levels. Respondents obtained information about supplements mostly from parents/guardians. The supplements were primarily obtained from parents and coaches. A p-value of 0.014 was obtained from the Fisher's exact test for age, gender and supplement usage, indicating a relationship among the three variables that was not solely due to chance.

Conclusion: The findings were similar to those in previous studies. This study was limited by the small sample size but was indicative that athletes had some experience of using dietary supplements. Further studies on the topic are recommended.

(P – 21)

The effect of *Cannabis sativa* extracts on the growth of fly larvae and analysis of Δ^9-tetrahydrocannabinol (THC) and 11-carboxy-delta-9-tetrahydrocannabinol (CTHC) using GC-MS

M Scarlet, L Foote, S Turfus

Background: Forensic entomotoxicology is the study of insects as an alternative to traditional matrices for toxicological analysis. The potency of marijuana as well as cannabis-related fatalities have progressively increased, but there is limited information on how cannabinoids affect the development of fly larvae, used to determine the post-mortem interval (PMI).
Objective: To determine whether cannabinoids influence larvae development of the hairy maggot blow fly (Diptera: Calliphoridae) and flesh fly (Diptera: Sarcophagidae), and the viability of using these larvae species to determine the presence of cannabinoids.
Methods: A pig's head was left in an open field. Subsequently, larvae eggs were collected and grown on homogenized pig tenderloin. The instar stage was determined by viewing the spiracles of the larvae using a microscope, and length and weight measurements were taken. Samples were subjected to liquid-liquid extraction and GC-MS to establish the presence of Δ^9-tetrahydrocannabinol (THC) and 11-carboxy-delta-9-tetrahydrocannabinol (CTHC).
Results: When compared to larvae not exposed to cannabis extract, larvae showed retarded growth when exposed to THC extract dissolved in 1% methanol and increased growth when exposed to THC extracts dissolved in 5% and 15% methanol. Δ^9-tetrahydrocannabinol was detected in cannabinoid extract as well as fly and larvae samples exposed to a cannabinoid solution. 11-carboxy-delta-9-tetrahydrocannabinol was detected in cannabinoid extract and meat spiked with 1% methanol-THC solution, but not in larvae.
Conclusion: Larvae could be used for the toxicological analysis of cannabinoids. In determining PMI using larvae, the presence of a drug must be considered.

(P – 22)

The investigation of levels of anxiety and psychological distress and their associated factors in male partners of women undergoing *in vitro* fertilization at the University Hospital of the West Indies

K Robinson

Objective: Infertility and the process of *in vitro* fertilization (IVF) can cause significant emotional distress. This study sought to examine the levels of anxiety and psychological distress experienced by the male partners of women receiving IVF in the local population and to identify clinical and sociodemographic factors which influence these levels.
Methods: A cross-sectional study methodology was employed, recruiting the entire male population of the couples presenting to The Hugh Wynter Fertility Management Unit. Thirty-five male partners were asked to complete three self-administered questionnaires: a general intake questionnaire, the Beck Anxiety Inventory (BAI) and the Kessler-10 (K10). A comparator group of 70 fertile men, matched for age and social class, was obtained from the Accident and Emergency Department (stable/non-emergent cases) of the University Hospital of the West Indies. Levels of anxiety and psychological distress were compared between the groups. Associations between clinical and sociodemographic factors with anxiety and distress levels of the 'infertile' group were analysed.
Results: There was no significant difference in the mean BAI or K10 scores between the groups. Higher levels of anxiety were associated with female factor infertility ($p < 0.05$), relationship problems ($p < 0.01$), low relationship satisfaction and stress in their relationships ($p < 0.01$). A significant positive correlation was observed between levels of psychological distress and relationship problems ($p < 0.05$), relationship regret ($p < 0.01$), low relationship satisfaction ($p < 0.05$), financial stress and other social stressors.
Conclusion: Male partners of women undergoing IVF were not found to have higher levels of anxiety or distress as compared to the general population. However, relationship instability and social stressors may be associated with higher levels of anxiety and distress.

(P – 23)

Are Viagra tablets sold on the streets of downtown Kingston counterfeit and do they contain sildenafil citrate, the active pharmaceutical ingredient in Viagra®?

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Objective: To investigate whether Viagra tablets sold on the streets of downtown Kingston were counterfeit and if they actually contained sildenafil citrate, the active ingredient in Viagra®.
Methods: Tablets of 'Viagra' were obtained from 10 vendors chosen at random on the streets of downtown Kingston. A genuine Viagra® tablet marketed by Pfizer was purchased from a pharmacy. Packaging and tablet features were evaluated using visual and physical methods. The tablets were weighed and crushed using a pestle and mortar, extracted with methanol, and assessed for the presence of sildenafil

citrate (the active pharmaceutical ingredient) using a Sildenafil ELISA kit (Bioo Scientific) and microplate reader.
Results: Two types of counterfeit Viagra were identified: 'Red Viagra' and 'Blue Viagra'. They differed in mass, colour and shape from the genuine drug and also lacked the Pfizer logo and 'VGR' mark. The results obtained from the ELISA method confirmed that all 10 tablets contained sildenafil citrate in amounts ranging from 43.2 mg to 61 mg.
Conclusion: Although all the samples of street Viagra were clearly counterfeit compared to the genuine Pfizer drug, they all contained sildenafil citrate which is the active ingredient used to treat erectile dysfunction.

(P – 24)
Suicidal behaviour among attendees at the University Hospital of the West Indies Psychiatric Outpatient Clinic

R Hunter

Objective: Patients diagnosed with a psychiatric condition have higher rates of suicide than patients without. There are currently no local data that assess suicidal behaviour specifically within the Jamaican psychiatric population. In this research, the prevalence of suicidal behaviour, its association with selected sociodemographic variables and primary psychiatric diagnosis as well as suicidal behaviour severity and the impact of depressed mood on these behaviours were explored among psychiatric patients.
Methods: A total of 160 patients were sampled. The Suicide Behaviours Questionnaire – Revised (SBQ-R) was utilised to identify persons with a history of suicidal behaviour. The Scale for Suicidal Ideation and the SBQ-R were used to assess the severity of suicidal behaviour. Subjective feelings of depressed mood using the Patient Health Questionnaire-9 were examined for an association with the presence of suicidal thoughts.
Results: Of all patients, 54% were found to have a history of suicidal behaviour. The highest association (50%) was found in those with major depressive disorder (MDD) and anxiety disorder. A total of 33% of females had suicidal ideations, and 13% had a history of suicide attempt. A statistically significant difference ($p = 0.014$) was found in suicidal behaviour within the age group of 18–29 years compared to the older groups. There was a significant association ($p < 0.05$) between feeling depressed and having suicidal thoughts within each diagnosis assessed with the exception of MDD ($p = 0.114$).
Conclusion: There was a high prevalence of suicidal behaviour in patients diagnosed with a psychiatric condition. Depressed mood was significantly associated with the presence of suicidal ideations in all diagnoses other than MDD.

(P – 25)
An assessment of nurses' knowledge, attitude and practice of pharmacovigilance at the University Hospital of the West Indies, Kingston, Jamaica

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Objective: To assess nurses' knowledge, attitude and practice (KAP) of pharmacovigilance.
Methods: This was a cross-sectional study that utilized a questionnaire to evaluate nurses' KAP of pharmacovigilance at the University Hospital of the West Indies, Kingston, Jamaica. A sample size of 234 nurses was selected using a 5% confidence interval. Data obtained from completed questionnaires were analysed using descriptive statistics, and χ^2 test was used to examine associations.
Results: A total of 260 questionnaires were distributed to nurses, and 209 were returned completed, giving an 80% response rate. Of the 209 nurses, only 13.5% had heard of the term 'pharmacovigilance' prior to the study. However, 58.4% of the respondents correctly stated the functions of pharmacovigilance, and 93.7% of the nurses felt it was a professional obligation for nurses to report adverse drug reactions (ADR). While 55.3% of the nurses indicated they had reported an ADR, in most cases, the reports were made to doctors (52/104), and only 1.9% were aware of the national pharmacovigilance programme of the Ministry of Health.
Conclusion: This study demonstrated that registered nurses had a high awareness of the importance of reporting ADRs, but they were unaware of the Ministry of Health's national pharmacovigilance programme. This study highlighted the need for instituting pharmacovigilance training programmes.

(P – 26)
Audit of the diabetic retinopathy screening (DRS) at the UHWI: saving vision

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Background: Diabetic retinopathy is a leading cause of blindness in diabetic patients between 20 and 65 years of age. The Diabetic Retinopathy Screening (DRS) Clinic at the University Hospital of the West Indies (UHWI) was established in association with the VISION 2020 Links programme to assist Jamaica with reducing avoidable blindness. Increased awareness of this screening can help prevent blindness in Jamaica.

Objective: To determine the effectivity of the new DRS Clinic at the UHWI.
Methods: An audit of all diabetic patients referred to the DRS Clinic at the UHWI was done. Data were collected on the age, gender, type of diabetes mellitus, blood pressure, and best corrected visual acuity. Retinal images acquired through the use of a Topcon fundus camera were graded. Patients diagnosed with Proliferative Diabetic Retinopathy or Maculopathy were promptly referred to the UHWI Retina Clinic for specialist review and treatment.
Results: The UHWI DRS Clinic screened 171 patients aged 25–86 years during the 16-month period from March 2016 to June 2017. The majority of the patients (96%) had Type 2 non-insulin-dependent diabetes mellitus (NIDDM). A minority of the patients (4%) screened had Type 1 insulin-dependent diabetes mellitus (IDDM); however, 28% of these had background diabetic retinopathy compared with 24% of the Type 2 diabetics. Men were found to be more commonly affected with Type 1 IDDM comprising 71% of these patients, whereas only 29% of the Type 1 IDDM were female. Of the total clinic attendees, 61% were female and 39% male. Analysis of the clinic data showed a slightly higher incidence of background diabetic retinopathy in men than women: 26% of male diabetic patients compared to 23% of females. Of note, roughly twice as many women (6%) had clinically significant macular oedema compared to men (3%). There were 38.5% of patients who presented with blood pressures ≥ 140/90. One case of proliferative diabetic retinopathy was detected in a female patient.
Conclusion: The DRS Clinic had its role in reducing avoidable blindness in Jamaica, where diabetic retinopathy was the leading cause of blindness in the working age group. Most of the patients seen at the UHWI have Type 2 NIDDM which could be prevented through early risk factor modification. Men had a higher incidence of background diabetic retinopathy than women and were also less likely to attend the screening clinic. A multi-disciplinary approach must be utilized to encourage all diabetic patients to attend the DBS Clinic.

(P – 27)
Herbal supplements increase spawning but differentially influence egg fertilization in male zebrafish (*Danio rerio*)

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Background: Over the years, the use of herbal supplements (such as fenugreek seed, tongkatali and saw palmetto) to alter sexual performance has become a very popular practice, particularly in men. However, the effectiveness of most of these supplements has not been evaluated experimentally. Zebrafish (*Danio rerio*), as an animal model, for drug screening and evaluation has been approved by the Federal Drug Administration in the United States of America.
Objective: To assess the effectiveness of the herbal supplements of fenugreek seed, saw palmetto and tongkatali on zebrafish spawning and fertility.
Methods: Male zebrafish aged approximately one year were separately treated with saw palmetto (150 mg/L), tongkatali (1.7 g/L) and fenugreek seed (1.7 g/L) for five hours over 12 consecutive days. Alcohol (0.5% v/v), a known reducer of fertility in zebrafish, was used as a treatment positive control. Breeding was performed on alternative days starting on day two.
Results: Analysis of the breeding efficiency showed that all treated males had a high response to female courting activities. However, analysis of egg fertilization indicated increases in sperm motility only in males treated with fenugreek seed and tongkatali but decreases in males treated with saw palmetto and alcohol compared to untreated controls.
Conclusion: Our investigation showed that treatment with the selected herbal supplements increased the spawning of males with females compared to controls. However, each herbal supplement produced differences in sperm motility, thereby differentially influencing fertilization rates.

(P – 28)
The nostalgic value of Jamaica's landrace *Cannabis sativa* genetics

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In the 1960s, Jamaica gained international reputation with the development of an illegal logistical framework that saw the cultivation, processing, exportation and distribution of ganja to Europe and North America. The cultivation of the landrace cultivars that developed and stabilized within Jamaica's biogeography known as *Cannabis sativa* subspecies *sativa* came under heavy law enforcement eradication efforts. In the 1990s, local farmers then resorted to the importation and cultivation of *Cannabis sativa* subspecies *indica* from the Northern temperate climates. The *Cannabis sativa* subspecies *indica* is known to produce a shorter, higher yielding plant within a shorter time frame as compared to the *Cannabis sativa* subspecies *sativa* in reaching maturity, thereby making cultivation more inconspicuous for law enforcement. However, in Jamaica's tropical climate where shorter days, relatively high temperatures and humidity are experienced, the *indica* cultivar does not grow true to type and comes under intense pest, fungal, disease com-

plexes. The extensive co-cultivation and cross-breeding that exist with the monoculture style of production in Jamaica have produced hybrids that exhibit phenotypic expressions that are consistent with *indica*-related cultivars. However, remote rural areas where the maroons reside and patriarchs of the Rastafari faith are are the most likely places to find these landrace genetics. The phyto chemical profile of cannabinoids and terpenoids that are expressed within these landrace cultivars are unique to Jamaica and its micro climate of being positioned in the Caribbean Sea. Therefore, by quantifying, classifying, stabilizing and replicating the characteristics of these landrace cultivars, therapeutic and medical connotations could be added to the nostalgic value of marketing and branding Jamaica's cannabis products.

(P – 29)

The distribution of THCA-synthase and CBDA-synthase genes in locally grown *Cannabis sativa*

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Background: The genetic characterization of *Cannabis sativa* has become increasingly important in order to be able to identify cultivars that are suitable for medicinal use. The presence or absence of the tetrahydocannabinolic acid-synthase (THCA-synthase) or cannabinolic acid-synthase (CBDA-synthase) gene can potentially provide information on the chemotype of the plant and subsequently an avenue for growing cultivars for specific medicinal applications that are safe, efficient in cannabinoid production and of high quality for use in the medicinal cannabis industry. THCA-synthase and CBDA-synthase genes are reported to be co-dominant.

Objective: To identify the distribution of the THCAS and CBDAS genes present in locally grown *Cannabis sativa* plants and to determine if there were any associations between the phenotype of the plants and the genes they expressed.

Methods: *Cannabis sativa* samples previously collected from three parishes in western Jamaica and the F1 population from crosses between two S1 parents heterozygous for the THCAS and CBDAS genes were analysed with the molecular markers B1080 and 1192 for the THCAS and CBDAS, respectively in a multiplex PCR reaction. The PCR amplicons were separated by agarose gel electrophoresis. Phenotypic characteristics from the F1 population such as plant height, leaflet number, stem and petiole colour and male and female plants were recorded.

Results: Individual samples were classified based on the genotype that was generated from the markers and their characteristic phenotype. A total of 81% of the cannabis samples collected from the field were heterozygous for the THCAS and CBDAS genes, 19% were homozygous for the THCAS gene, and none was found to be homozygous for the CBDAS gene. These genotypes were distributed across all three parishes. Crosses between two selfed (S1) parents heterozygous for the THCAS and CBDAS genes resulted in 62% of the offspring being heterozygous, 37% being homozygous for the THCAS gene and 1% homozygous for the CBDAS gene. A total of 67% of the F1 plants were female.

Conclusion: The majority of the cannabis plants were heterozygous for the THCAS and CBDAS genes which could be the natural genetic make-up of the population. Earlier work showed that there was a high genetic diversity among the cannabis population in Jamaica. Knowledge of the two different types of markers associated with the locus determining the chemotype in *Cannabis* could be used as a tool in marker-assisted selection for possible application in the medicinal cannabis industry.

Notes

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