POSTER ABSTRACTS

(P – 01)

Sensitivity and specificity of clinico-radiological assessment in predicting necessity for operative exploration – the Jamaican experience at Kingston Public Hospital and the University Hospital of the West Indies

A Duncan[1], G Channer[2], C Cherian[2], H Ashman[1], C Eaton
[1]Department of Otorhinolaryngology Head and Neck Surgery, University Hospital of the West Indies, Mona, Kingston, Jamaica and [2]Departments of Otorhinolaryngology Head and Neck Surgery and General Surgery, Kingston Public Hospital, Kingston, Jamaica

Objective: Penetrating neck injuries are seen frequently at our institutions which serve as referral centres for the management of penetrating neck injury. We aimed to document the clinical outcomes of these injuries, and determine the sensitivity and specificity of clinical assessment in predicting injuries requiring operative intervention.
Methods: A combined retrospective and prospective study was done of all patients with a diagnosis of penetrating neck injuries in our institutions from August 2016 to December 2017.
Results: A total of 152 patients with a diagnosis of penetrating neck injury were included in this study. Most victims of penetrating neck injury were males (88.7%). Knives were found to be used most commonly as the offending instrument (55.7%). Zone 2 injuries were identified 40% of the time. For the duration of the period of study examined, there were no cases of mortality.
Conclusion: Penetrating neck injuries contribute significantly to the spectrum of trauma in Jamaica. Clinical examination remains a sensitive and specific tool in the detection of clinically significant penetrating neck injuries requiring operative intervention.

(P – 02)

Splenectomy in sickle cell disease: experience with a selective blood transfusion protocol in children

OO Steele, AL Duncan, LN Simms, SA Duncan, BSE Dundas, ND Duncan

Department of Surgery, Radiology, Anaesthesia and Intensive Care, The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: To review morbidity and mortality post-splenectomy utilizing a selective transfusion protocol in children with sickle cell disease (SCD).
Methods: Patients were either not transfused (those at steady state haemoglobin (Hb) or above) or transfused (when Hb values were > 1 g/dL below steady state). Blood was transfused to raise sub-steady state Hb cases to approximately 10 g/dL. We conducted a retrospective study of splenectomies performed between November 1994 and October 2017. Acute chest syndrome (ACS) and other complications post-operatively were quantified.
Results: A total of 150 open splenectomies were performed: 127 with homozygous sickle cell (SS) disease and 23 with non-SS SCD disease. Of the 127 patients with SS disease, 9 of 99 who were not transfused developed ACS (9.1%). Only 1 of 28 who were transfused developed ACS (3.6%). One of 23 non-SS patients developed ACS, and that patient was not transfused. Acute chest syndrome developed in 5 of 77 SS disease patients with acute splenic sequestration (ASS) who were not transfused but in none of the 16 ASS transfused homozygous patients. About 18.2% of non-transfused chronic hypersplenism (CHS) SS disease patients developed ACS, compared to 8.3% among CHS transfused patients. Cases with Hb ≥ 10 g/dL on pre-operative evaluation had no ACS.
Conclusion: The Mona Blood Transfusion SCD Protocol, a low mortality and low morbidity option, is suited to scarce blood products environments.
Keywords: Sickle cell disease, splenectomy

(P – 03)

Antibiotic susceptibility and epidemiological characteristics of MRSA at the University Hospital of the West Indies

C Thoms-Rodriquez, J Griffith, K Nesbeth, J Gay, B Lawrence, T Kawall, K Kerr, AM Nicholson

The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: To determine the epidemiology and resistance patterns of methicillin-resistant *Staphylococcus aureus* (MRSA) isolates at the University Hospital of the West Indies (UHWI).

Methods: All de-duplicated clinical samples submitted for routine analysis between January and December 2017 were included to determine the epidemiology and antibiotic susceptibility of MRSA. Samples were processed using standard laboratory methods for culture and susceptibility testing. Comparisons were made with data obtained in 2008 and 2013.

Results: In 2017, there were 689 *Staphylococcus aureus* isolates among 7304 samples, 31 (4.5%) of which were methicillin-resistant. Most of these were obtained from adults (19–64 years), surgical wards (29%), the Accident and Emergency Unit (16%), and Intensive and Critical Care Units (13%). Of the MRSA isolates, 40% were obtained from wound and tissue samples, 23% from blood, 14% from sputum, 7% from eye swabs and the remaining 21% from other samples including urine. All MRSA isolates showed 100% susceptibility to vancomycin, linezolid, minocycline, rifampin and topical chloramphenicol, neomycin and tetracycline. The highest level of resistance was to erythromycin (93%).

Conclusion: The prevalence of MRSA at the UHWI remains below 10%, and overall susceptibility patterns have remained unchanged over the last 10 years.

Keywords: MRSA, resistant, *Staphylococcus*

(P – 04)

The distribution of environmental and clinical fungal isolates over three years at The University of the West Indies' microbiology laboratory

G Reynolds, N McKnight
Department of Microbiology, The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: To determine the distribution of fungal isolates identified over a three-year period at the Microbiology Laboratory of The University of the West Indies, Mona, Jamaica.

Methods: Laboratory information system data were used to facilitate retrospective analysis of all samples sent to the department between January 1, 2016 and December 31, 2018. Environmental samples were acquired through the use of settle plates, and clinical samples were subject to routine mycological identification procedures.

Results: Of the 24 062 samples submitted during the period, 4710 were positive for fungi. *Penicillium, Aspergillus* and other dematiaceous and hyaline species accounted for the majority of the 1122 environmental isolates. De-duplication exercises revealed that clinical isolates were from 2643 patients: 72% (n = 1910) females; 27% (n = 718) males; 1% (n = 15) gender unknown. The age group of over 60 years had the largest number of patients (n = 796), followed by the age group of 21–30 years (n = 524). *Candida albicans* accounted for 45% of clinical isolates (n = 1183), followed by non-albicans (n = 919), *Aspergillus* (n = 105) and *Cladosporium* species (n = 65). *Cryptococcus neoformans* was the 10th most commonly isolated organism, with 56% being from cerebro-spinal fluid samples. High vaginal swabs provided the bulk of the clinical isolates (27%, n = 708), followed by urine (n = 614), sputum (n = 363) and nails (n = 259). *Candida* species remained the most commonly isolated fungi among all patient sources, except for hair and scalp scrapings where *Trichophyton* species predominated.

Conclusion: Speciation and susceptibility testing of *Candida spp* is necessary in this setting to guide anti-fungal therapy. Patients aged over 61 years are at an increased risk for these fungal infections and their associated morbidity and mortality. The use of settle plates for the determination of building contamination, while not being the gold standard, remains beneficial in resource-limited settings.

Keywords: Candida, environmental, fungal

(P – 05)

Knowledge and practice related to lifestyle among adults with diabetes and hypertension

CR Campbell[1], DCK Campbell[1], KL Estick[1], MD McCallum[1], MN McIntosh[1], JTL Masters[1], AA Mentor[1], YO Morris[1], TA Phillip[1], GSA Ranjit[1], OA Smith[1], GN Whyte[1], NK Waldron[2]
[1]MBBS Class of 2020, Department of Community Health and Psychiatry, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica and [2]Department of Community Health and Psychiatry, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: Diabetes and hypertension are among the leading causes of preventable morbidity and related disability worldwide. The shift in disease burden from infectious diseases to non-communicable diseases has been attributed to dietary and physical activity changes.

Methods: This cross-sectional study used 150 randomly selected adults from primary healthcare centres in seven parishes of Jamaica. A 69-item interviewer-administered questionnaire was used. The questions measured knowledge and lifestyle practices related to diet, smoking, exercise and alcohol consumption.

Results: The majority (76.0%) of the sample were female, and most (68.6%) persons were within the age group of 56 years or over. The mean knowledge score for exercise was

4.7 (standard deviation (SD): 1.2) with a score range of 1 to 6. There were no statistical differences in mean knowledge score of exercise by socio-economic and demographic characteristics. Nine of the 10 questions assessing knowledge of diet were answered correctly by the majority (50.7–93.3%). The mean knowledge scores for alcohol consumption and smoking were 5.5 (SD: 0.9) and 2.9 (SD: 0.3), respectively. Just over half of the sample reported exercising (52.3%) and consuming sugar-sweetened beverages (53.0%) respectively. A minority (10.7%) reported having consumed alcohol in the past three months, and less than 1 in 20 (4.7%) of the sample reported that they were currently smoking.

Conclusion: The mean knowledge scores for exercise, alcohol consumption and smoking were relatively high, while harmful lifestyle practices among participants were relatively low. We recommend further research to assess the facilitators and barriers to adopting lifestyle changes among Jamaican adults.

Keywords: Diabetes, hypertension, knowledge, lifestyle, practice

(P – 06)
The replantation experience of the University Hospital of the West Indies

R Venugopal, S Moore, C Neblett, J Jones, R Thomas, G Arscott
Department of Surgery, Radiology, Anaesthesia and Intensive Care, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: The University Hospital of the West Indies (UHWI) is the referral centre for extremity replantation in Jamaica. Factors affecting successful outcomes of the patients replanted at UHWI were analysed to inform future management and referral protocols.

Methods: A retrospective review of UHWI replant cases done between 2004 and 2018 was performed. Factors analysed included: age, gender, smoking status, mechanism of injury, geographic location (distance from referral centre), flexor zone of injury, and length of surgical time. Data were analysed using the SPSS Version 20.0.

Results: Thirty-one replantations were performed at UHWI between 2004 and 2018: 87% (27 patients) were machete assault injuries and 13% (four patients: three being industrial and one from a motor vehicle accident) were crush injuries. Of the 31 cases reviewed, 93.5% were male and 81% were 40 years or under. Twenty-three out of 31 patients (74.2%) had successful replantations. Nineteen of the 31 were smokers, with 79% of smokers having had successful procedures ($p = 0.98$). An 85% success rate was noted for injuries that occurred in zone 4 or proximal. Zone 3 or distal had a 50% success rate, unless it was the thumb which had a success rate of 77.8%. Success was noted in 91% of the cases if surgical time was below six hours compared to 59% success if surgical time was over six hours ($p < 0.007$). Eighty-three percent of the cases with a surgical time of over six hours occurred in flexor zones 2 and 3. One-third of the study population presented from Kingston and St Andrew which had a 90% success rate. The other parishes combined had a comparable success rate of 85%.

Conclusion: The UHWI has the largest local body of experience in extremity replantation in the last 15 years in the English-speaking Caribbean. As with trauma epidemiology, young men accounted for the majority of the cases, the majority being due to interpersonal violence. The geographical point of referral and a history of smoking did not affect the success rate. The most significant factor for success was surgical time of six hours or below which also correlated to more proximal amputations. Amputations of single digits had relatively poor outcomes and should not be replanted unless it is a thumb.

(P – 07)
Need for intervention to improve glycaemic control among patients at the University Health Centre

K Allen-Dougan[1], T Kennedy-Dixon[1], B Anglin-Brown[2], M Gossell-Williams[1]
[1]Department of Pharmacology and Pharmacy, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica and [2]University Health Services, The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: To examine the level of patient knowledge of Type 2 diabetes mellitus (T2DM) drug therapy, adherence to drug therapy, and glycaemic control among patients at the University Health Centre (UHC), The University of the West Indies, Mona, Jamaica.

Methods: A cross-sectional study was conducted between July 1 and 19, 2019 at the UHC Pharmacy. Patients with T2DM were recruited according to eligibility requirements. Eligible patients were required to give consent before completing a data collection form, a pharmacy-led educational programme receptiveness form, a medication knowledge assessment questionnaire and an adherence assessment tool. Adherence to drug therapy was measured using Morisky Green Levine Tool. Both fasting blood glucose (FBG) and the glycosylated haemoglobin (HbA1c) were used to evaluate glycaemic control.

Results: Twenty-three patients were recruited, 15 of whom reported being registered at UHC for over 10 years. Most patients (14/23) were taking two or three anti-diabetic drugs, and 17 patients were taking between one and eight other drugs for co-morbidities. Most of the patients (12/23) had medium adherence to their overall drug therapy, six had high adherence and five had low adherence. Most patients (17/23) knew all the drugs that they were taking to treat

their T2DM, while six knew some or none. There was no correlation between knowledge of T2DM drug therapy and adherence. There was significant negative moderate correlation of HbA1c, FBG and adherence to drug therapy (Spearman's rho (r) = -0.492, $p = 0.017$, $r = -0.489$ and $p = 0.018$ respectively), but most patients had poor glycaemic control with a mean (standard deviation) HbA1C of 7.8 (1.6)% and FBG of 8.6 (4.1) mmol/L.

Conclusion: The results support that good adherence is related to good glycaemic control. The poor glycaemic control obtained for the group suggest a need for interventions beyond knowledge of T2DM drug therapy to improve adherence.

(P – 08)
Attitudes towards older adults and ageing: the UWI (Mona) physiotherapy students' perspective

SKP Williams[1], W Palmer[2]
[1]*Section of Physical Therapy, Department of Basic Medical Sciences, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica and* [2]*Department of Surgery, Radiology, Anaesthesia and Intensive Care, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica*

Objective: This study investigated first- to third-year undergraduate physiotherapy students' attitudes towards older people and ageing, and explored associations among student characteristics, exposure to older adults, completion of gerontology course content and their attitudes.

Methods: Data for this cross-sectional study were collected from students in the BSc Physical Therapy programme at The University of the West Indies, Mona, Jamaica, using the Kogan's Old People Scale (KOPS) and a demographic questionnaire. Descriptive and inferential statistics were used in data analysis.

Results: A total of 110 students participated, representing approximately 90% of the student population. Forty-one (37.3%) were from year one, 39 (35.5%) from year two and 30 (27.3%) from year three. Ages ranged from 18 to 31 years, with a mean of 21.5 years, a median of 21.0 years and a mode of 20 years. The majority (n = 80; 72.7%) were female. Attitude measured by the KOPS was overall slightly positive (mean = 147.06 ± 17.00; median = 149.00; mode = 150.00). Those who were female, who had been exposed to older adults in the clinic, who had completed the course content in gerontology, and who had reported a fulfilling social relationship with an older adult had marginally more positive attitude scores. However, these differences were not of statistical significance. Regarding working with older adults after graduation, students who reported an interest to work with older adults and those who were not sure about their interest had more positive KOPS mean scores (147.22 ± 17.01 and 151 ± 17.80 respectively) than those who did not want to work with older adults (140.04 ± 17.80) ($p = 0.04$).

Conclusion: It appears that students who had been exposed to and were educated about older adults were likely to have more positive attitudes. However, further research is needed.

(P – 09)
Investigation of the preliminary mechanism of action for the acute anti-inflammatory activity of the methanol extract of *Smilax ornata*

A Khan, P Singh, P Reese, J Howden, M Golding, T Thomas
Department of Basic Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: In folkloric medicine, the dried rhizome (1–4 g) of the Jamaican sarsaparilla (*Smilax ornata)* is given as a decoction three times daily to treat chronic rheumatism and rheumatoid arthritis. This particular claim has been scientifically validated. However, the mechanism for its anti-inflammatory activity is still unknown; hence, it forms the reason for this investigation.

Objective: To investigate the mechanism of the anti-inflammatory activity of the methanol extract of *Smilax ornata*.

Methods: The methanol extract was prepared using the Soxhlet apparatus. The preliminary mechanism of action was investigated using models of oedema induced by histamine, bradykinin and prostaglandin E_2.

Results: For the histamine-induced oedema model, the methanol extract (400 mg/kg) reduced the oedema formation; however, it was not significant ($p > 0.05$). For the bradykinin-induced oedema model, the methanol extract (400 mg/kg) exhibited significant ($p < 0.05$) anti-inflammatory activity when compared with that of the control (saline) group, with an onset on 60 minutes and a duration of two hours. For the prostaglandin-induced oedema model, the methanol extract (400 mg/kg) exhibited significant ($p < 0.05$) anti-inflammatory activity when compared with that of its control group, with an onset on 120 minutes and a duration of 1.5 hours.

Conclusion: The methanol extract of *Smilax ornata* produced significant anti-inflammatory activity in the bradykinin-induced and prostaglandin-induced oedema models. It is possible that the mechanism by which it acts is by reducing the concentration of these mediators.

(P – 10)
Introducing medical students to pharmacovigilance through a basic research skills special study module

M Gossell-Williams[1], M Palmer[2], DL Riley[2], M White[2], R Baker[2], S Ennis[2], J Guthrie[2], I Hemmings[2], T Hoe[2], C Johnson[2], J Levene[2]

[1]*Section of Pharmacology and Pharmacy, Department of Basic Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica and [2]MBBS students, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica*

Objective: Pharmacovigilance is an important aspect of clinical practice. However, it is not a formal theme in the Bachelor of Medicine, Bachelor of Surgery (MBBS) programme. The aim of this study was to introduce MBBS students to the importance of pharmacovigilance through a special study module of basic research skills.

Methods: Ten students completing years one and two of the MBBS programme volunteered to work with the module coordinator from May 16 to June 12, 2019 to complete 40 hours of structured content sessions and self-directed activity. Sessions focussed on the importance of pharmacovigilance and guided steps to complete a non-experimental qualitative research focussed on an adverse reaction reported for a drug of personal interest to each student. The final output was a poster displayed at an open mini-symposium at which each student gave a five-minute oral presentation for grading. Posters were assessed for agreement with guidelines provided and graded by academic staff and senior research graduate students. Grades were analysed using median with interquartile range [IQR] out of a maximum score of 12.

Results: All students completed the research project and produced posters which followed the guidelines by more than 70%. Median grades were 9.8 [3.1] for the presence of the required elements, 10.0 [2.0] for relevance of the poster graphics, 9.5 [2.0] for attractiveness/neatness and 10.0 [2.5] for the oral presentation.

Conclusion: Students in the MBBS programme were competently able to complete this structured module of basic research skills which focussed on the importance of pharmacovigilance and could be adopted into the curriculum.

(P – 11)

Assessing the effects of alcohol, nicotine and cannabis on the heart rate and rhythm using *Danio rerio* (Zebrafish) as an animal model

C Witter[1], MK Ali[2]
[1]*Biotechnology Centre, Faculty of Science and Technology, The University of the West Indies, Mona, Kingston 7, Jamaica and [2]Department of Biochemistry, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica*

Background: Heart disease is a major health concern and according to the World Health Organization, it is the main cause of deaths worldwide. Due to the implications, it is important to find a way to screen effectively substances that possibly result in heart diseases. This study focussed on evaluating the effects of alcohol, nicotine and cannabis and how they impacted the heart rate and function, using the Zebrafish (*Danio rerio*) as an animal model. Zebrafish were selected due to their larval transparency and genetic similarity (70%) to humans.

Methods: Zebrafish larvae were selected for testing depending on their age and condition. For each experiment, the larvae were treated with the particular substance dissolved in a 3–4% methyl cellulose medium, and were allowed to stand for at least five minutes before being tested using a dissecting microscope with a digital camera attached to record the larvae placed in 96-wellplate. The video recordings of the heart were then analysed using the ImageJ software and the data compiled in Microsoft Excel.

Results: The control heart rate was found to be between 215 bpm and 223 bpm, for the ventricle and atrium, respectively. However, the heart rate changed significantly when the larvae were exposed to alcohol, nicotine and cannabis. Alcohol resulted in a decrease while nicotine and cannabis both increased the heart rate, similar to that seen in literature.

Conclusion: The results indicate that these addictive drugs all influenced the heart rate of Zebrafish.

Keywords: Cannabis, heart disease, Zebrafish

(P – 12)

Reconstitution of resveratrol and alcohol affects caudal fin regeneration and mortality differently when compared to red wine

D Taite, I Hewitt, S Rose, MK Ali
Department of Basic Medical Sciences, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Introduction: Wine is an alcoholic beverage made from the fermentation of fruit juices, usually grapes. It has been a popular beverage since ancient times. Resveratrol is a polyphenol found in grapes that is associated with growth inhibition. There have been many contradictory reports on the overall health benefits of regular wine consumption, with some sources claiming that it has positive effects on growth while others claiming that it is inhibitory. This study used adult Zebrafish to assess the effects of red wine, grape juice (GJ) and resveratrol on growth and wound healing.

Methods: Zebrafish growth was assessed *via* the regeneration of the caudal fin (CF). For this, the CF of adult Zebrafish was amputated, and the fish were subjected to treatments with different concentrations of alcohol, GJ, resveratrol, red wine, and combinations of alcohol and GJ (A + GJ) or resveratrol (A + RV). One-hour treatments were done three times daily with a one-hour recovery period between treatments for 14 days. After 14 days, the growth of the CF was assessed using Fiji ImageJ.

Results: Treatment with GJ, alcohol and red wine led to significant reductions in CF regeneration in a concentration-dependent manner when compared to untreated fish. A + GJ resulted in increases in regeneration compared to GJ, but the regeneration observed was still lower than that seen in untreated fish. Resveratrol-treated fish showed higher CF regeneration when compared to the control. There was a high degree of toxicity observed in the A + RV treatments when high concentrations of resveratrol were used. However, lower doses led to reductions in CF regeneration.

Conclusion: The inhibition of growth seen in red wine and GJ may not be solely due to resveratrol but the interaction of resveratrol with the other components of GJ and/or alcohol.

Keywords: Alcohol, grapes, growth, red wine, Zebrafish

(P – 13)
Evaluation of the anti-inflammatory properties of the bark of *Colubrina elliptica* on acute inflammation in the hind paw oedema model

R Layne-Yarde, P Singh, J Howden
Department of Basic Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: The bark of the *Colubrina elliptica (Sw) Briz and Stern* plant is used traditionally in Caribbean history for its various therapeutic benefits, such as its anti-rheumatic activity. Therefore, this study sought to investigate the possible anti-inflammatory effects of the bark of *Colubrina elliptica* in an animal model.

Objective: To investigate the anti-inflammatory activity of the ethanol and ethyl acetate extracts of the bark of *Colubrina elliptica* using a carrageenan-induced inflammatory model.

Methods: Five groups containing six rats each were administered their respective treatment intraperitoneally, followed by an injection of carrageenan into the hind paw. A plethysmometer was used to measure the paw volumes at 30-minute intervals for a duration of four hours. The data were analysed using analysis of variance (ANOVA) followed by the post-hoc Tukey's test for multiple comparisons.

Results: The results from the ANOVA analysis showed that there was a highly significant difference between the groups from the 60-minute interval and beyond ($p < 0.01$). The results from the Tukey's test showed that the significant difference occurred between the ethanol extract and water control group at and after 60 minutes ($p < 0.01$). The ethyl acetate extract group showed no significant difference when compared to the oil control group.

Conclusion: The ethanol extract from the bark of *Colubrina elliptica* has significant anti-inflammatory properties.

Keywords: Bark, *Colubrina elliptica*, ethanol extract, ethyl acetate extract

(P – 14)
Vancomycin-induced pancytopenia

M Palmer[1], M Gossell-Williams[2]
[1]Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica and [2]Department of Basic Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: Pancytopenia is one of the most serious adverse drug reactions of vancomycin. This occurs when the cell counts for all the blood cells fall below their normal values. Vancomycin is most commonly used to treat methicillin-resistant *Staphylococcus aureus*.

Objective: To use peer-reviewed case reports to determine the association between vancomycin and pancytopenia, analyse literature reviews to find information that support this association, and ascertain whether there were additional factors from the case report that characterized the nature of the adverse reaction.

Methods: A literature search was conducted to find case reports on PubMed using the terms 'vancomycin', 'pancytopenia' and 'case report'. Thirteen articles were found, but only one was used, as it was the only English case study published between 2013 and 2018. PubMed was also used to find articles that provided possible mechanisms through which vancomycin induced pancytopenia.

Results: Based on the articles found in the literature review, vancomycin was a probable cause of pancytopenia, and vancomycin-induced pancytopenia occurred by means of immune and non-immune mechanisms. The immune mechanism refers to the action of vancomycin-dependent antibodies that destroy mature platelets and neutrophils, while the non-immune mechanism refers to bone marrow hypoplasia which causes a reduction in the number of myeloid and granulocyte precursors. No additional factors were found that characterized the nature of the adverse drug reaction.

Conclusion: Vancomycin induced pancytopenia, and this can worsen a patient's clinical course.

(P – 15)
Evaluation of BOX-A1R-based repetitive extragenic palindromic PCR in the genetic characterization and distinction of actinomycetes from soil in Jamaica

KE Graham, SE Brown
Department of Basic Medical Sciences (Biochemistry section), Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: Throughout scientific history, actinomycetes have gained a lot of attention due to their biotechnological applications across many fields. The molecular characteri-

zation of this group of bacteria was done to reveal several genomic data that would allow researchers to fully understand their potential.

Methods: In this study, 86 actinomycetes isolates from soil taken from five different parishes in Jamaica were characterized using BOX-PCR. Different PCR parameters and conditions were employed to achieve amplification of the selected actinomycetes isolates. The bacteria were cultured, and genomic DNA was extracted using the boiling lysis method and was used as the template DNA for the BOX-PCR. A gel analysis image software was used in the analysis of the banding patterns.

Results: The results showed that 86 distinct banding patterns were established with a few variations. From the constructed dendrogram using the gel analysis image software, four distinct clusters were organized. The dendrogram indicated that the majority of the isolates in this study were highly diverse and genetically heterogeneous. Of the 86 isolates examined, there were only two bacteria that had similar banding patterns. However, one of these isolates had an extra band, which concludes that the isolates overall had a different DNA fingerprint.

Conclusion: The strain differentiation power of BOX-PCR allows scientists to filter out the most genetically diverse isolates in any study that requires bacterial characterization. Further work is needed to fully characterize these isolates at this level, but BOX-PCR analysis provides a strong foundation for this type of work.

Keywords: Actinomycetes, BOX-PCR, genetic characterization

(P – 16)
Environmental enrichment paired with virgin coconut oil supplementation improves learning and memory in adolescent Swiss albino mice

T Butler, L Young-Martin, K Thaxter-Nesbeth
Department of Basic Medical Sciences, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Background: Environmental enrichment (EE) improves learning and involves physical and social stimulation. There are also claims that dietary supplementation with virgin coconut oil (VCO) improves cognitive decline.

Objective: To examine the combined effects of VCO supplementation and EE in a mouse model utilizing a discriminative avoidance learning paradigm.

Methods: Twelve one-month-old Swiss albino female mice were randomly divided into a standard housing (SE) group (n = 6) and an enriched housing (EE) group (n = 6). Standard plastic cages were lined with pine shavings. The EE group was a large plastic cage with pine shavings to facilitate burrowing, a running wheel and toys. Each mouse was fed 0.1 mg of standard rat chow with 0.1 ml VCO added, and was exposed to a single trial plus maze discriminatory avoidance task. Acquisition was tested by recording the number of entries and time spent in the enclosed arm of the maze (AEA) which was made aversive by the onset of light and noise as the mouse attempted to explore the AEA. Memory retrieval was tested 24 hours later using entries and time spent in the AEA on a second 10-minute exploration of the maze, in the absence of the aversive stimuli.

Results: Both groups spent significantly less time and made fewer entries to AEA ($p < 0.05$) in the first test session. However, the EE group exhibited early acquisition of the avoidance task and increased time spent in the enclosed arm on subsequent test sessions, demonstrating true learning and not indiscriminate avoidance.

Conclusion: Environmental enrichment paired with VCO supplementation improved cognition in an avoidance learning task.

(P – 17)
Protein profile of *Bacillus thuringiensis* isolated from Jamaican soil

D Marshall, S Brown
Department of Basic Medical Sciences (Biochemistry section), Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: *Bacillus thuringiensis* (Bt) is an aerobic, gram-positive, spore-forming bacterium that is primarily characterized by its ability to produce proteins which are toxic to various insect orders. These proteins are expressed during the sporulation phase of the growth cycle. This study sought to isolate and characterize *Bt* from Jamaica, examine and evaluate proteins produced by the isolates.

Method: *Bacillus thuringiensis* was isolated using the acetate selection method. Pure isolates were cultured in a step-up fermentation. Identification of Bt was carried out based on the colony morphology, gram staining and phase contrast microscopy. The protein quantification was carried out using the Bradford determination method. Further protein profiling was done with 10% SDS-Page. The protein patterns were analysed with GelJ software and the Jaccard's Coefficient similarity index, and a dendrogram was constructed using the unweighted pair group arithmetic average (UPGMA) cluster analysis based on the similarity matrix. The toxicity of the crude protein was evaluated against corn earworm *(Helicoverpa zea)*, a lepidopteran pest.

Results: One hundred strains of *Bt* were isolated and identified *via* phase contrast microscopy. Twenty-one different combinations of parasporal morphology were observed among isolates. The parasporal conformations included amorphous, bipyramidal, cuboidal, round, rectangular and hourglass. The protein profile of the Jamaican isolates

revealed the presence of proteins ranging from 18 to 234 kDa. From the UPGMA cluster analysis, the isolates were grouped into seven categories. All isolates in groups G and F were toxic when tested against corn earworm. Isolates in group G had amplification of the *cyt* and *cry2* gene while isolates in group F had a single *cry* gene profile.

Conclusion: Protein profiling by SDS Page was a useful tool in the grouping of *Bt* isolates and predicting potential toxicity. Jamaican *Bt* showed a great potential in the management of corn earworm pest.

(P – 18)

A quantitative analysis of the cornus ammonis of the hippocampal formation in control and seizure-induced Sprague-Dawley rats

D Dennie, J Dawson, JP Louboutin
Department of Basic Medical Sciences, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Objective: To quantitatively assess the changes occurring in the cornu ammonis (CA) region of the hippocampus during experimental seizures and compare the use of different software in carrying out histo-morphometric analysis in the brains of rat.

Methods: Kainic acid-induced seizures were generated in Sprague-Dawley rats. Rats presenting with at least a stage four seizure (classification of Racine) were sacrificed seven days after the seizure. The animals were euthanized using pentobarbital before perfusion with formaldehyde. The brains of the rats were harvested, and serial coronal sections were stained with Nissl staining. These sections were digitized, and two different softwares (Image J and QuPath) were used to assess the changes that occurred in the brain.

Results: The results were compared with the data measured in controls. We found that both softwares were effective in assessing the neuronal loss in the brain with no major difference in the results obtained. However, Image J appeared easier to handle and more user-friendly. Therefore, it was chosen to complete the assessment. There was a significant loss of neurons in the hippocampus of the animals with kainic acid-induced seizures, more particularly in the areas of CA1 and CA3.

Conclusion: This study emphasized the role of morphometry in assessing neuronal loss in experimental seizures. It can be an important tool in evaluating therapeutic approaches in this context.

(P – 19)

Sexual dimorphism of the hard palate in the Afro-Caribbean skull

SA Fearon, M Gardner, W McLauglin
Section of Anatomy, Department of Basic Medical Sciences, The University of the West Indies, Mona, Kingston 7, Jamaica

Introduction: Determination of sex is the first stage of identification of human remains in forensic anthropology and is an integral part of a post-mortem examination. Anthropological methods of identification offer a simple, cost-effective, relatively reliable and accurate form of determination of sex. When faced with remains where the soft tissue may be lost due to carbonization, trauma or advanced stages of decomposition, resulting in partial or full skeletal, the anthropologist becomes critical to the identification of the victim through determination of sex, stature and age in medico-legal cases.

Objective: To collect baseline measurements of the palatal length and breadth to calculate the average palate size and maxillo-alvelolar index in Afro-Caribbean skulls.

Methods: Morphometric data were collected from 18 dry skulls within the collection of anatomical specimens in the Department of Basic Medical Sciences, Faculty of Medical Sciences at The University of the West Indies, Mona, Jamaica. The study included 11 males and 7 females aged from 40 to 70 years; they were identified as free of deformity, damage and fully ossified. Measurements were taken of the interpalatal distance following standard palatine landmarks with an emphasis on the incisive canal using digital callipers. With these results, we were able to determine maxilla-alveolar breath, maxillo-alveolar length and external palate breadth. The values were then used in the calculation of maxillo-alveolar index and size of palate, using formulas from Sumati and Phatak (2012).

Results: The size of the palate [39.007 ± 3.062 mm (males) and 35.192 ± 4.197 mm (females)] was the only variable found to demonstrate sexual dimorphism according to the Wilcoxon Rank Sum Test ($p < 0.05$). No statistical difference was observed for the maxillo-alveolar index. This study had a low sample size which had to be taken into account when analysing the data.

Conclusion: The size of palate calculation in males showed the only statistical differences between the sexes, with females demonstrating a smaller palate. This univariate analysis of the crania would not be recommended for sexual dimorphism as the hard palate did not show enough statistical difference to sex. Additional morphometric data are needed to produce an overall baseline average for the Caribbean population cranial landmarks.