

Oral Abstracts

O – 1

Understanding the role of disease knowledge and risk perception in shaping the demand for preventive measures for selected vector-borne diseases in Guyana

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Objective: Individuals' behaviour, particularly choices about prevention, plays a key role in the transmission of vector-borne diseases (VBDs) as the actual prevalence of these diseases is often uncertain and individuals' behaviour is influenced by their risk perception. The objective of this study was to assess whether preventive behaviour was elastic to risk perception controlling for disease knowledge, focussing on malaria, dengue fever (DENV), Zika virus (ZIKV) and cutaneous leishmaniasis (CL) in Guyana.

Methods: Data were collected from 845 individuals between August and December 2017 in four regions of Guyana. Questions on disease knowledge, risk perception and use of preventative measures were asked for all four VBDs. A structural equation model (SEM) was estimated for data collected from private houses only to control for individuals' socio-economic and demographic characteristics (n = 497).

Results: The findings suggested that behaviour was not correlated with risk perception while it was significantly responsive to the level of disease knowledge. A one-unit increase in disease knowledge increased the demand for prevention by 0.72 unit for malaria, DENV and CL and by 0.67 unit for ZIKV. Furthermore, knowledge directly influenced behaviour without influencing risk perception.

Conclusion: People acted according to their knowledge of the disease but not according to their risk perception;

they behaved in the same way irrespective of their risk perception. This finding has important policy implications as it implies that even when the disease is close to elimination, people will not decrease their preventive behaviour as long as they are provided with the right information about VBDs.

O – 2

Cost-effectiveness of long-lasting insecticide-treated bed nets distribution in prevention of malaria deaths and morbidity in Guyana

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Objective: To undertake a cost-effective analysis of distribution of long-lasting insecticide-treated nets (LLINs) for the prevention of malaria deaths and morbidity in Guyana.

Methods: This study used cost-effectiveness methodology which employed the use of disability-adjusted life years (DALYs) using the threshold measure. The cost of the LLINs campaign was from the provider perspective. The comparator was the cost of not having the campaign. A model-based economic evaluation approach was used which examined the cost and outcomes, namely, the cost per LLIN distributed, the number of deaths averted and the cost per DALY averted.

Results: The average cost to deliver one LLIN to a recipient was \$3.29. The deaths averted were 387.4 over one year and 1162.3 over three years. The cost per death was estimated to be \$129.84 annually and \$32.51 across the three years. The total DALYs averted were 12 784.86 annually and 38 354.58 across three years. The Incremental Cost Effectiveness Ratio showed that the intervention was very cost-effective when examining the cost per DALY averted against Guyana's gross domestic product per capita at US\$3883 in 2017. Cost per DALY averted was \$3.93 annually which meant that it fulfilled the cost-effective criteria. Sensitivity analysis showed that the results were robust to the cost of the LLINs, life span of the LLINs, discount rate and the mortality impact.

Conclusion: It was concluded that the intervention was cost-effective and should be repeated. Similar studies should be conducted using other preventative methods such as indoor residual spraying and larvaciding.

O – 3

Prevalence and patterns of multimorbidity in Jamaica: a latent class analysis

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Objective: To determine the prevalence of multimorbidity in Jamaica and identify subgroups of the population with similar yet distinct disease profiles.

Methods: Latent class analysis was used to examine multimorbidity patterns in a sample of 2551 respondents aged 15–74 years, based on data from the nationally representative Jamaica Health and Lifestyle Survey 2007/2008. The analysis was based on self-reported and measured presence/absence of 11 chronic conditions.

Results: Nearly one-quarter of the sample (24.05%) were multimorbid (*ie* had \geq two diseases), with a significantly higher burden in females (31.58%) compared to males (16.11%) ($p < 0.001$). Latent class analysis revealed four distinct classes, including a predominant ‘Relatively Healthy’ class, comprising 52.70% of the sample, with little to no morbidity. The remaining three classes were characterized by varying degrees and patterns of multimorbidity and labelled Metabolic (30.88%), ‘Vascular-Inflammatory’ (12.21%), and Respiratory (4.20%). There was a very high likelihood of obesity across all multimorbidity classes. Further, the four diseases determined using physical assessments (obesity, hypertension, diabetes, hypercholesterolemia) were primary contributors to multimorbidity patterns, particularly Metabolic and Vascular-Inflammatory classes.

Conclusion: Findings revealed a high burden of multimorbidity in Jamaica that was predominantly borne by females. The high probability of obesity across all multimorbidity classes highlights the importance of this condition to the accumulation of chronic diseases in this population. Future research into the causes and consequences of multimorbidity patterns, with attention to variation in disease profiles according to gender, age and socio-economic status, can guide development of strategies that allow for more targeted prevention and intervention.

O – 4

Observed timelines for utilization of reperfusion therapy in acute ischaemic stroke patients at Princess Margaret Hospital, Nassau, The Bahamas

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Objective: To determine the timelines in utilization of reperfusion therapy and identify possible factors contributing to delays in the management of patients with acute ischaemic stroke.

Methods: A single-centre prospective observational study was conducted in the Accident and Emergency Department of the Princess Margaret Hospital (PMH) from January to August 2017. Adult patients who were diagnosed clinically or radiographically with an acute ischaemic stroke were eligible for participation. Socio-medico-demographic features and time intervals from onset or recognition of symptoms to hospital arrival, physician contact, computed tomography (CT) scan and thrombolysis were analysed. Data were collected using a face-to-face quantitative survey instrument.

Results: There were 189 participants, 52.7% of whom were females. The median interquartile range (IQR: Q1, Q3) of the participants’ age was 60–69 years. Fifty-six per cent of patients arrived at hospital beyond 4.5 hours. The median pre-hospital delay was 6.17 hours, and the median in-hospital delay was 3.95 hours. Participants with ischaemic strokes of mild severity took a longer time to arrive when compared with those who had moderate or severe strokes ($p = 0.043$). Six (3.2%) participants were evaluated by a physician within 10 minutes of arrival, four (2.1%) participants completed CT scan within 25 minutes of arrival, and no participant received thrombolytic therapy within the recommended 60 minutes.

Conclusion: Pre-hospital and in-hospital delays were major factors resulting in a low rate of reperfusion therapy (2.1%). A focus on how to make the public translate stroke knowledge into action should be conveyed. Institutional protocols are necessary to reduce in-hospital delays.

O – 5

Albumin creatinine ratio is associated with foot ulceration in people with diabetes: a case-control study in Barbados

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Objective: To investigate whether kidney injury, determined by albumin creatinine ratio, was associated with current non-healing foot wounds in diabetes.

Methods: One hundred Barbadians with diabetes were recruited: 50 cases with a current foot ulcer and 50 controls with no history of a non-healing foot ulcer. Cases were matched to controls using gender, age and duration of diabetes. Participants were from wound dressing and diabetes clinics at the Queen Elizabeth Hospital and Polyclinics, and from private healthcare practitioners. The relationship between albumin creatinine ratio and foot ulceration, adjusting for selected potential risk factors, was analysed using logistic regression and presented as odds ratios.

Results: Forty-four cases and 45 controls were matched, with no statistically significant difference in matching criteria. There were statistically important differences in measures of neuropathy, blood glucose, haemoglobin A1c and albumin:creatinine ratio between cases and controls. Cases had mean albumin creatinine ratio of 185 mg/g compared to controls of 41 mg/g ($p < 0.01$). Cases were three times more likely than controls to have microalbuminuria (95% confidence interval: 0.9, 10.2; $p = 0.08$). Cases were 7.4 times more likely than controls to have macroalbuminuria ($p = 0.04$).

Conclusion: The independent association of albumin:creatinine ratio with foot ulceration raises the possibility of its use in earlier identification of persons on the pathway to peripheral nerve dysfunction and diabetic foot.

O – 6

Adipose tissue function in gestational diabetes mellitus

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Objective: To compare ex-vivo adipose function from third trimester subcutaneous (SAT) and visceral adipose tissue (VAT) between women with gestational diabetes mellitus (GDM) and body mass index (BMI)-matched healthy controls. It was proposed that in GDM, excess triglycerides are stored in insulin-resistant hypertrophic adipocytes with higher expression of lipid storage genes than differentiation genes.

Methods: Adipose tissue biopsies were obtained from mothers with GDM ($n = 13$) and BMI-matched healthy controls ($n = 16$) undergoing elective Caesarean section. Adipocyte diameter was measured manually using microscopy and volume calculated. Basal, isoproterenol (200 nmol/L) stimulated and insulin (10 nmol/L) inhibition ex-vivo lipolysis experiments were done, and glycerol concentration measured as an index of lipolysis. Lipid storage and dif-

ferentiation gene expressions were measured by quantitative reverse transcription polymerase chain reaction. Paired t-test was used for comparing SAT and VAT within individuals and two sample t-test used for comparisons between GDM and control pregnancy.

Results: Preliminary data show that in GDM, visceral adipocytes had larger diameter and volume than controls (control mean diameter [SD diameter] 58.10 μm [10.16 μm] versus GDM 71.88 μm [11.06 μm]; $p < 0.010$) (control mean volume 0.97 μm^3 [0.50 μm^3] versus GDM 1.80 μm^3 [0.76 μm^3]; $p < 0.010$). Women with GDM and controls had similar expressions of differentiation genes. In GDM, there was higher expression of CIDEC/PPIA ratio ($p = 0.048$), a lipid storage marker in visceral adipocytes, than controls. Insulin sensitivity did not differ between GDM and control pregnancy. Basal lipolysis rates were higher in GDM visceral adipocytes than in controls ($p = 0.040$).

Conclusion: Impaired visceral adipose tissue function may have a role in the onset of GDM.

O – 7

Effect of β -hydroxy- β -methyl butyrate supplementation in conjunction with resistance exercise on muscle strength, protein metabolism and body composition in underweight adults with sickle cell anaemia

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Objective: Wasting is common in sickle cell anaemia (SCA). We aimed to assess the effect of resistance exercise combined with an anti-catabolic agent, β -hydroxy- β -methyl butyrate (HMB-EX group, $n = 12$) or maltodextrin (placebo, MLD-EX group, $n = 12$) on lean mass, muscle strength and amino acids oxidation in underweight adults with SCA.

Methods: A randomized, double-blinded and placebo-controlled, nine-week intervention was conducted in males and females aged 19 to 35 years with a body mass index of < 18.5 . The exercises were administered by certified trainers. The HMB-EX group received 3 g/d HMB, and MLD-EX got 3 g/d maltodextrin. Pre- and post-intervention measurements were: body composition using dual emission X-ray absorption, muscle strength using 1-repetition-maximum method for the upper and lower body, L-[1-¹³C]phenylalanine oxidation as the tracer for amino acids catabolism, resting energy expenditure (REE) using indirect calorimetry and blood tests. Safety was assessed using blood chemistry and haematology along with the administration of adverse event questionnaire. Repeated linear measures mixed model analysis was done.

Results: Ten participants in the HMB-EX group and seven in the MLD-EX group completed the study. No adverse

events were noted. Lean mass was higher at post-intervention compared to pre-intervention in both groups ($p < 0.05$), but there was no group difference. The intervention had no effect on REE. All strength parameters increased post-intervention ($p < 0.02$) except latissimus pull. Compared to MLD-EX, phenylalanine oxidation ($p = 0.07$) and cholesterol ($p = 0.05$) were marginally higher.

Conclusion: Resistance exercise improved muscle mass and strength, possibly augmented by a marginal synergistic effect of HMB through promoting synthesis of protein and cholesterol for making muscle.

O – 8

An analysis of the 2017 National Health Interview Survey for diabetes as a risk factor for heart disease among adults in the United States of America: lessons for the Caribbean

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Objective: To perform an analysis on the possible relationship between diabetes and heart disease

Methods: A cross-sectional study of 26 715 adults was done using the sample adult data of the 2017 National Health Interview Survey in the United States of America (USA). Descriptive analysis was conducted to determine the frequency for each variable. Bivariate analysis was done to test if there was any significant difference ($\alpha = 5\%$) between diabetes and heart disease. Backward logistic regression analysis was then performed, with heart disease as the outcome, to determine the best explanatory variables.

Results: The majority of the participants were diagnosed with type 2 diabetes (83%), while only 11% were diagnosed with type 1 diabetes. Women were slightly more likely to be diagnosed than men. The age groups with the highest prevalence of heart disease diagnosis were 81 years and older (22.5%) and 51 to 80 years (12.6%). The prevalence for participants who had diabetes and was also diagnosed with heart disease was 17.1%. Of those participants who reported having high blood pressure and also being diagnosed with heart disease (14%), 16.6% were also current smokers and 15.8% were hypertensive. The Chi-square test indicated statistical significance between a heart disease diagnosis and each demographic or clinical variable (p -value < 0.001). A diagnosis of diabetes adjusted for all other variables was predicted to increase heart disease diagnosis by 1.01 (CI: 0.79, 1.28) when the other confounding variables were held constant.

Conclusion: The findings of the study support the overwhelming evidence that diabetes is a very important risk factor for the development of heart disease in the USA.

O – 9

Chronic care model implementation in primary care in Trinidad and Tobago 2018

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Objective: To document and analyse the state of the expanded chronic care model (CCM) implementation by regional health authorities (RHAs) at primary care level in Trinidad and Tobago (TTO) in May to August 2018 and make recommendations to facilitate optimal TTO-contextualized CCM implementation.

Methods: A literature and desk review of CCM-focused TTO documents was undertaken. Change management and policy focussed interviews with RHA personnel informed by input from the Ministry of Health were administered. This was followed by RHA-specific dialogue meetings to validate the interview data collected and discuss the recommendations made. A SWOT (strengths, weaknesses, opportunities and threats) analysis using the CCM was the framework used to develop the interview schedule.

Results: There were gaps and constraints in all the RHAs for all seven CCM elements. Healthy public policy is under development. Supportive environments and strengthened community action would benefit from further investment. Self-management was limited. Decision support systems did not facilitate self-management. In reorienting health services and delivery systems, there were major staff shortages in primary care. Information systems were not electronic nor widespread and not designed to support self-management. There were also innovations in the human resource and programmes implemented.

Conclusion: This rapid assessment documented strengths, constraints and gaps of CCM implementation in TTO at the primary care level from May to July 2018 and made recommendations to optimize implementation of a contextualized-CCM by RHAs.

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Weight bias and stigma towards obese patients by physicians and medical students in The Bahamas

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Objective: To assess the prevalence of weight bias and stigma towards obese patients by physicians and medical students in The Bahamas in the context of contributing personal and professional factors.

Methods: A cross-sectional study with convenience sampling of licensed physicians and local full-time medical students was conducted using self-administered questionnaires. IBM SPSS software was used for statistical analysis.

Results: Of 879 persons (779 physicians and 100 medical students), 159 physicians and 62 medical students responded. The physicians' average body mass index (BMI) and age were 28.6 kg/m² and 36.4 years (standard deviation (SD): 8.96 years), respectively; 66% of the physicians were female. The medical students' average BMI and age were 26.4kg/m² and 26 years (SD: 2.28 years), respectively; 77.4% of the medical students were female. Physical inactivity, overeating and quality of food were rated as extremely important causes of obesity (60% of physicians; 96% of medical students). Ninety eight per cent of the physicians felt that obese patients overate and liked food. Ninety five per cent of the medical students felt that overweight/obese patients were self-indulgent, liked food and overate. Among the physicians, 68.1–89% viewed obese patients as unattractive, shapeless, slow, insecure and lacking endurance. Among the medical students, 76.7–83% felt that obese patients were unattractive and slow. Obesity treatment was rated equally effective to therapies for 9 of 10 chronic conditions. Regarding physicians, 50.6% agreed that a 10% body weight reduction would reduce obesity complications. Pertaining to physicians, 56.9% would spend more time working on weight management issues if compensated appropriately.

Conclusion: Physicians and medical students viewed obesity as a behavioural problem, thus contributing to stigmatizing attitudes, negative stereotypes and poor expectations of weight loss.

O – 11

A critical review of health system governance in the Caribbean

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Objective: To explore and assess health system governance arrangements in the Small Island Developing States of the English-speaking Caribbean and the challenges they face.

Methods: This study utilized grounded theory to collect and analyse data on the experiences and perceptions of 20 senior health managers/leaders on the governance arrangements of health systems from seven ministries of health across the region. It used semi-structured, in-depth interviews comprising open-ended questions. Data analysis comprised open, focussed and theoretical coding.

Results: Health system governance arrangements are inimical to quality delivery of service. The challenges that constrain efficient organization of these dynamic, complex health systems are tied to the unique cultural, organizational

and political characteristics of island states. The processes of governance serve to constrain the activities of senior managers who hold responsibility for an array of governance functions. There is a need for investigation into the competencies that senior health officials responsible for governance demonstrate, in order to effectively steer the governance apparatus of these healthcare delivery systems.

Conclusion: Small Island Developing States of the Caribbean had severe weaknesses in their organization and governance. Health system governance had largely been overlooked even in the case of serious calls for healthcare reform. Persistent inefficiencies in the quality of delivery of services was in large measure attributed to this malaise which would require political will for requisite transformation.

O – 12

Is there a link between the use of social media and video games and depressive symptoms among Barbadian teenagers?

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Objective: To determine the prevalence of depressive symptoms among Barbadian students aged 13 to 16 years and to establish whether a relationship exists between time expended on social media and video games and depressive symptoms among these students.

Methods: This was a cross-sectional descriptive survey of a convenience sample of 290 secondary school Barbadian students at three randomly selected public secondary schools. The Patient Health Questionnaire was utilized to detect the prevalence of depressive symptoms, and a modified Pew Research Centre questionnaire was used to garner information on demographic characteristics and habits of media use.

Results: A total of 290 questionnaires were analysed. The prevalence of moderate to severe depressive symptoms was calculated to be 28 % +/- 4.08. A Pearson's product moment r correlation test revealed no statistically significant relationship between the hours of time spent on social media and depression scores ($r = 0.011$; $p > 0.05$; $n = 286$). Chi-square analyses revealed no statistically significant association between the time spent playing video games and depressive symptoms, either during the week.

Conclusion: Over one quarter of the students surveyed were found to have significant depressive symptoms. However, this was not associated with the use of social media and video games. This study demonstrated that social media was an integral part of most students' lives, and further research is needed to examine its long-term impact on the mental health of the adolescents who use it.

O – 13

A model for decentralization – what can Guyana learn from the Nicaraguan healthcare system?

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Objective: To identify the key differences between the Nicaraguan and Guyanese healthcare systems and highlight best practices that can be emulated in Guyana.

Methods: A comparative analysis of decentralization was performed using the United States Agency for International Development (USAID) Health Systems Assessment framework utilizing primary data from a knowledge exchange exercise between the two countries and a literature review.

Results: While both systems had a similar level of decentralization of functions for 77% of the criteria in the framework, the Nicaraguan healthcare system had more clearly defined health legislature that provided a stronger regulatory base. Nicaragua's Ministry of Health also had a greater capacity to monitor and evaluate the performance of the SILAIS, the bodies responsible for service delivery. In addition, the SILAIS had a more clearly defined organizational and operational framework with both administrative and technical staff who supported a more efficient execution of health activities and greater utilization of health information at the sub-national level.

Conclusion: Based on the Nicaragua example, Guyana should seek to define more clearly the organizational and operational framework of its Regional Health Departments and strengthen its capacity to regulate their performance with stronger health legislature and monitoring and evaluation framework.

O – 14

Neighbourhood characteristics and substance use in the Caribbean context: Jamaica National Drug Use Prevalence Survey 2016

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Objective: To examine the role of neighbourhood-level violence and perceived disorder on polysubstance use among a

nationally representative sample of Jamaicans aged 12–65 years.

Methods: Secondary analysis was conducted on the Jamaica National Drug Use Prevalence Survey (JNDUPS), a cross-sectional nationally representative survey completed in 2016. The JNDUPS was administered to 4623 individuals aged 12–65 years in Jamaica. The 'neighbourhood' was defined as the enumeration district (ED). Clustering was measured using the Intra-Class Correlation Coefficient (ICC). Regression analysis and hierarchical modelling were performed to assess individual and neighbourhood-level effects on substance use behaviour.

Results: Significant clustering of substance use outcomes was observed at the neighbourhood level (ICC: > 2.0%). Objective measures of violence did not play a significant role in explaining substance use behaviour in this sample. However, there was a 15% increased likelihood of marijuana use for individuals living in neighbourhoods they perceived were more disordered (adjusted odds ratio: 1.15; 95% confidence interval: 1.05, 4.03; $p < 0.05$).

Conclusion: Contextual factors such as neighbourhood disorder played an important role on substance use behavior. Further investigation on the relationship between environmental factors and substance use is needed to develop effective multi-level interventions, especially in the Caribbean region where research on neighbourhood effects has only recently been introduced.

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Biomedical research publications and productivity in the selected CARICOM countries: an analysis of PubMed and SJR databases

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Objective: To compare biomedical research publication rates among selected CARICOM countries (The Bahamas, Barbados, Dominica, Grenada, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago) using PubMed and Scimago Journal & Country Rank (SJR) databases.

Methods: Biomedical publications of the selected CARICOM countries were retrieved using both databases. The publications for each country were then normalized by factors such as total population, gross domestic product (GDP) and Internet usage rate.

Results: The total number of papers published by all countries was 7281 and 8378 in PubMed (1990–2015) and SJR (1996–2017) respectively. Jamaica produced the highest number of publications [PubMed: 3928 (53.9%); SJR: 2850 (34%)]. In both databases, Grenada had the highest research

publications when adjusted per million population [4721 (42.65%) and 10 633 (52.55%)], per billion GDP [803 (42.42%) and 1651 (51.89%)] and per 1000 Internet users [15 (44.9%) and 34 (54.3%)]. For trend analysis, Jamaica produced the highest number of additional PubMed listed publications each year (averaging 4.8 per year), followed by Trinidad and Tobago (4.4). According to SJR, Jamaica had also the highest number of citations (42 311) and H-index (76), followed by Trinidad and Tobago (29 152 and 71). Barbados had the highest number of citations per document (24.9), followed by Haiti (18.4).

Conclusion: A marked imbalance was noted among these CARICOM countries in terms of biomedical research and publications. Biomedical research in the countries with low research output should receive special attention by the policymakers to generate evidence-based information for formulating health policies, reorienting health professional education curricula and alleviating diseases and poverty.

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Mental health in the Jamaican population – results of the Jamaica Health and Lifestyle Survey III

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Objective: To provide nationally representative estimates of the prevalence of depression and identify correlates of this outcome in Jamaicans aged 15 years or older.

Methods: A community-based interviewer-administered survey of Jamaican residents aged 15 years or older was conducted. Participants provided sociodemographic information, and mental health was assessed for the presence of symptoms of depression. The prevalence estimates for mental health outcomes were estimated, and bivariate analyses assessed the associations between depression and sociodemographic factors.

Results: The prevalence of depression in the Jamaican population aged 15 years or older was 14.3%. Significantly more females (18.5%) than males (9.9%) suffered from depression ($p < 0.001$), except in the age group of 55–64 years where the prevalence of depression in males (15.0%) was more than twice that of females (6.9%) ($p < 0.05$). Depression was highest in the over-75-year age group (20.8%) ($p < 0.001$). The prevalence exceeded 15% in persons categorized as unemployed, students or retired. Estimates of depression was least among rural males (7.3%) and highest among urban females (19.2%).

Conclusion: Being female and elderly appeared to be the major risk factors for depression in the Jamaican population. Further analyses to identify modifiable risk factors or

mediators are required in order to develop policies to address these disparities and reduce the burden on the health sector.

O – 17

The need for education as a primary vehicle for improving paediatric palliative care (PPC) in a small island developing state (SIDS): results of a qualitative exploration

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Objective: To explore the perceptions and experiences of paediatric palliative care (PPC) among healthcare providers (HCPs) providing care at the sole tertiary healthcare facility in the SIDS of Barbados.

Methods: Sampling was purposive. Twelve participants (six physicians and six nurses) with 2–28 years of paediatric experience participated in semi-structured, individual, face-to-face interviews conducted by the researcher. The average interview time per participant was 45 minutes. The interviews were audiotaped, transcribed verbatim by the interviewer and subject to thematic analysis with constant comparison *via* manual data management.

Results: It was shown that health professionals did not reference an internationally recognized definition or construct in framing their understanding of palliative care. There was consistent framing of palliative care as a terminal and end-of-life care point. This was made without reference to pain and symptom management across the disease trajectory of patients and their families who face life-threatening illnesses. Lack of education regarding what constitutes PPC, in addition to the practicalities of clinical PPC, was perceived as the primary barrier to providing appropriate evidence-based care, compounded by some physical plant resource limitations.

Conclusion: While provision of PPC is a legal and ethical obligation for SIDS in the Caribbean, provision will not be possible without urgently correcting clinical educational deficits as part of the pathway for culturally acceptable and sustainable PPC service design.

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Linking knowledge, attitudes and practices to behavioural change: using data for community action in the Caribbean

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Objective: To determine how the results of a knowledge, attitudes and practices survey can be used alongside models of behavioural change to reduce the risk of vector-borne diseases in the Caribbean.

Methods: Caribbean Red Cross Societies collected Zika Knowledge, Attitudes and Practices Surveys between June 5 and October 4, 2018. Staff and volunteers from 13 Red Cross National Societies (Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St Kitts and Nevis, St Vincent and the Grenadines, Suriname, The Bahamas, and Trinidad and Tobago) participated in the data collection.

Results: In total, 1667 surveys were collected. There was a difference between people's knowledge of risk reduction and their actions to engage in risk reduction. People's main concern about Zika was getting sick. However, 49% knew no signs of Zika, and less than one third of those surveyed knew that an unborn child was at risk of abnormal development in the womb due to Zika infection in pregnancy. While 54% reported removing stagnant water in their own homes, only 17% reported removing stagnant water to protect their communities.

Conclusion: The trans-theoretical model and the socio-ecological model were applied to interpret data to improve programme implementation. The Red Cross can use the data to identify knowledge gaps, main motivators and key behaviours to reduce their risk of Zika. To move beyond the individual level of the socio-ecological model, the Red Cross has an important role as conveners of the community to promote community prevention actions.

O – 19

Service delivery barriers to HIV testing by key populations in six Eastern Caribbean countries

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Objective: To assess the impact of modes of health service delivery on HIV testing by key populations in Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia, and St Vincent and the Grenadines.

Methods: Thirty-seven focus group discussions with men who had sex with men, sex workers and youth and 17 interviews with people living with HIV were conducted to explore experiences of HIV testing (diagnostic testing and CD4/viral load measurement). Impact on progress along the HIV care continuum was evaluated with respect to service

quality concepts (access, acceptability, equity, appropriateness). Training and weekly meetings of local Research Assistants were conducted via electronic conferencing. Confidentiality and informed consent procedures were approved by national ethics review bodies.

Results: Key populations' use of testing services was reduced by perceived threats to confidentiality. Reported practices that threatened confidentiality and exposed key populations to identification and HIV stigma and discrimination included testing in specific time slots or public places, labelling services as HIV services, creating files of different physical appearance for people living with HIV and revealing HIV status to healthcare workers beyond the immediate HIV care team. Location of HIV diagnostic testing and availability of equipment for CD4 and viral load testing also affected access.

Conclusion: Enabling environments for HIV testing by key populations would include ensuring the privacy of service delivery modes and integration with other testing and general health services. Involving networks of key populations in defining needs can assist in developing appropriate service delivery modes.

O – 20

Violence in Nevis: a retrospective analysis of homicides 2000–2017

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Objective: To determine the prevalence and distribution of homicidal violence in Nevis.

Methods: A retrospective descriptive observational research study design was used to analyse all police narratives of Nevisian homicides committed between January 1, 2000 and December 31, 2017. Eight variables were examined: month and year of homicidal incident, victim demographics (age and gender), perpetrator demographics (age and gender), weapon used, parish location of incident, motive, type of location where the homicide was committed (home, community, car or work), and if victim died at the hospital or was found dead at the scene.

Results: Nevisian homicides totalled 67 between 2000 and 2017. There was a strong correlation among female gender, motive and parish ($p < 0.05$). St John Figtree Parish was the lowest-ranking parish for overall homicides (10.5%) but disproportionately high in intimate partner violence-motivated homicides (42.9%). Nevisian women (71.4%) were 2.5 times more likely to be murdered in their intimate spaces than Nevisian men (28.4%). Over 71% of femicides were committed by intimate male partners. Knives (42.8%) and strangulation (28.6%) were the mechanisms most used

in femicide. In 2011, the per capita homicide rate in Nevis was 48.9 per 100 000. As a separate island from St Kitts, Nevis would rank as having the highest per capita homicide rate in the Caribbean for that year, outpacing Jamaica's per capita rate of 41.7 per 100 000 in 2011.

Conclusion: The findings provide valuable information for assessing homicidal violence in Nevis. Policy and health-care-driven interventions based on the data may prove more effective in the prevention of homicidal violence.

O – 21

Community property value and ideal cardiovascular health: findings from urban participants in the Jamaica Health and Lifestyle Survey 2016–2017

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Objective: To evaluate the relationship between ideal cardiovascular health (ICH) and community socio-economic status in urban Jamaica.

Methods: A cross-sectional analysis was conducted using data on ICH and sociodemographic characteristics from the Jamaica Health and Lifestyle Survey 2016–2017 and median unimproved land value for included communities from the National Land Agency. Ideal cardiovascular health include seven characteristics: current non-smoking, body mass index of $< 25\text{kg/m}^2$, ≥ 150 minutes of moderate physical activity weekly, healthy diet, normal blood pressure ($< 120/80$ mmHg), normal glucose (< 5.6 mmol/L) and normal cholesterol (< 5.2 mmol/L). Logistic regression, weighted for survey design, quantified association between the outcome (having ≥ 5 ICH characteristics (ICH-5)) and exposure variable (tertiles of median land value (MLV)).

Results: Analyses included 1025 participants (360 men and 665 women) with a mean age of 47.1 ± 17.5 years. Prevalence of ICH-5 was 22.9% (male: 24.5%; female: 21.5%; $p = 0.447$). In gender-specific multivariable models adjusted for age, education and household assets, men in the lowest tertile of community MLV had a 67% lower odds of ICH-5 (odds ratio (OR): 0.33; 95% confidence interval (CI): 0.12, 0.91; $p = 0.032$) compared to those in the upper tertile, while men in the middle tertile had a 54% lower odds of ICH-5 (OR: 0.46; 95% CI: 0.20, 1.04; $p = 0.062$). Women from communities in the lower and middle tertiles of MLV were

also less likely to have ICH-5: OR 0.72 (95% CI: 0.38, 1.34; $p = 0.295$) and 0.70 (95% CI: 0.38, 1.32; $p = 0.271$), respectively. Educational attainment was inversely associated with ICH-5 among men and positively associated among women. **Conclusion:** Lower community property value was associated with lower odds of ICH among urban Jamaicans, particularly among men.

O – 22

The Trinidad and Tobago experience: A successful model to develop an organ donation and transplantation system using SEUSA programme

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Objective: The objective was to evaluate the effectiveness of the SEUSA programme applied in Trinidad and Tobago (T&T) from 2010–2018 and to further analyse the possibilities to extend the programme to the whole CARICOM region.

Methods: SEUSA project was implemented in T&T in 2010, supported by the National Organ Transplant Unit (NOTU) and the Ministry of Health of T&T. The SEUSA programme includes: a) diagnosis of the current situation using Organ Donation Diagnostic Surveys (ODDS); b) creation of a human resources structure through Transplant Procurement Management (TPM); c) Detection of all deaths in the hospitals implementing the Deceased Alert System (DAS); e) In-hospital awareness based on the Essentials in Organ Donation (EODS) and f) External hospital audits. Continuous monitoring was performed.

Results: Thanks to SEUSA programme almost 200 health-care professionals have been trained in donation and transplantation, the Living Kidney Programme has been reinforced and the structure of the Deceased Donation network was defined. There were 24 deceased donors for the period 2010–2018 with an increase in donor per million per population from 0.8 in 2010 to 1.4 in 2017.

There were 179 kidney transplantation successfully performed. Of these transplants, 139 transplanted kidneys were from living donors and 40 kidneys were from deceased

donors. The total number of the deceased donors was 24. Additionally, six corneal transplants were performed.

Conclusions: The SEUSA methodology was a good option to consolidate donation and transplantation systems. SEUSA represents a valuable and replicable international collaborative strategy to improve organ donation worldwide.

O – 23

The management of critically ill patients on Montserrat, a small island British overseas territory. A retrospective case record review

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Objective: The study describes the care provided to critically ill patients who remain on Montserrat, on the admission during which they died and quantifies care through designating care delivery scores for individual systems affected by critical illness and preventable death scores for cases assessed.

Methods: Of the 215 patients who had died between January 2013 to February 2018 only the notes of 34 patients were suitable for the study. Data was extracted with a data collection sheet for comparison with care expected at a normal hospital.

Results: Sixty-two per cent of deaths in the study were considered preventable. Only 15% of patients in the study received cardiopulmonary resuscitation and no patients had do-not-attempt-resuscitation orders. Other inadequate aspects of care highlighted by the study included the complete absence of arterial blood gas sampling, invasive blood pressure monitoring and emergency echocardiography, the lack of availability of local computerized tomography scanning, the failure to transfer patients to a coronary care unit for coronary artery intervention, the very inadequate availability of renal replacement therapy and delays in definitive intervention for femur fracture patients.

Conclusions: The care provided to critically ill patients on Montserrat needs attention and resource allocation. Improving healthcare performance on island requires an investment in medical equipment and training, a focus on research and close attention to protocols and standards of care.

O – 24

Costing of the treatment of cervical cancer in Guyana

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Objective: The objective of this research was to conduct a cost of illness study on the treatment of the different stages of cervical cancers in Guyana.

Methods: The data used to calculate the cost of treating for one person with cervical cancer was sourced from the Oncology Department and from the Obstetrics and Gynecology Department of the Georgetown Public Hospital Corporation. In addition, the cost of treatment was also procured from the Cancer Institute of Guyana which also provides cancer treatment as a not-for-profit. Historic data on the incidence of cervical cancer was sourced from the Guyana Cancer Profile 2003–2013, as the profile was only dated up to 2013. The data set of incidence case was updated for this analysis with updated data from the Guyana cancer registry which was for the time period 2014–2016.

Results: The cost to treat Stages Ia was \$5540, Stage II b or II a \$12 038, Stage II b, III or IV a \$8846 Stage IV b \$4211. The greatest cost was the treatment of Stage II b or II a because of the high-cost of the radical hysterectomy. The least costly was Stage IV b which was the end stages of a person's life with cervical cancer.

Conclusions: Given the results of the cost-treatment and the high incident rate of cervical cancers, a robust public health approach is being recommended which should include screening and a mass media campaign to reduce the incidents level of cervical cancers.

O – 25

FEAR: A fall epidemiological analysis and risk factor assessment

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Objective: To determine the incidence of falls among older adults and examine the risk factors associated with falls.

Methods: In this cross-sectional study a sample of 416 participants from four distinct geographic regions completed an interviewer administered demographic questionnaire. Participants also answered questions on factors known to be related to fall risk in addition to performing functional tests of gait and balance. Data was analysed using SPSS Ver 23.0. Person Chi-squared test was used to identify factors associated with falls at a significance level of $p < 0.05$

Results: There were 331 females (79.6%) and 85 male (20.4%) with a mean age of 66.3 years (SD \pm 4.2) and a mean body mass index (BMI) of 24.1 kg/m² (SD \pm 3.5). The incidence of falls was 43% and the significant factors associated with falls included age, hypertension, glaucoma, and poly-pharmacy (> 4 drugs). Low scores in the functional tests, the use of walking aids and living alone were also significantly associated with the risk of falling.

Conclusions: Falls were very common in older persons. The significant risk factors for falls were similar to regional

and international studies. Fall prevention measures should target resources on this vulnerable group.

O – 26

Applications of geographic information systems - strengthening decision-making for vector control in small island developing states - the Trinidad and Tobago experience

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Objective: To describe, from a health systems perspective, the value of using a Geographic Information System (GIS)-based data collection and management system for mosquito larvae surveillance compared to the paper-based system that is currently used by the Insect Vector Control Division (IVCD); and the value of applying a suite of GIS analysis tools to the existing mosquito larvae surveillance system at the IVCD.

Methods: This paper was generated from a parent study designed to conduct mosquito larvae surveillance among 3029 individual properties within the village of Felicity over the period August to October 2017. The traditional paper-based data collection system was translated into a GIS-based system using GPS devices. Mosquito larvae surveillance teams conducted two cycles of surveillance using the GIS-based and paper-based systems simultaneously. Data collected using the GPS devices were transferred into a geospatial database and analysed using a suite of GIS tools.

Results: The GIS-based system allowed for the calculation of the House, Breteau, and Container indices, as did the paper-based system. However, the GIS-based system allowed for the reliable and timely generation of spatially accurate hotspot and density maps at the community level, thereby providing more robust evidence for decision-making including rationalising use of resources for vector control.

Conclusions: This paper highlights the value, from a health systems perspective, of using GIS technology in integrated vector management to collect, manage and analyse data in small island developing states. Geographic Information System supports vector management with reliable timely information to improved decision-making.

O – 27

Association of physical activity with blood pressure and hypertension in Afro-Caribbean men

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Objective: To test the association of objectively measured physical activity with blood pressure and prevalent hypertension in a sample of 310 Afro-Caribbean men.

Methods: Men were from the Tobago Health Study (aged 50–89 years). Systolic and diastolic blood pressures (SBP and DBP) were measured using an automated cuff and hypertension was defined as SBP = 140 mmHg, DBP = 90 mmHg, or current use of antihypertensive medication. Physical activity was measured using the SenseWear Pro armband and included daily step count, as well as, duration of time engaged in sedentary behaviour (SB), light physical activity (LPA), and moderate to vigorous activity (MVPA). Multiple linear or logistic regressions were used to test for associations using the isotemporal substitution framework. Models were adjusted for wear time, age, alcohol consumption, smoking, co-morbidities, family history of hypertension, salt intake and total body adiposity.

Results: Replacing SB with LPA was associated with lower SBP adjusted for wear time ($p < 0.05$), but this was attenuated after adjustment for age. However, replacing SB with LPA was associated with lower DBP and lower odds of hypertension, adjusted for wear time and age ($p < 0.05$ for both). Greater step count was associated with lower odds of hypertension after full adjustment ($p < 0.05$), but not after further adjustment for adiposity.

Conclusions: Replacing sedentary time with light activity was associated with lower blood pressures and odds of hypertension in older Afro-Caribbean men. These results suggest that increasing light activities, such as walking, is critical for blood pressure management in this population.

O – 28

Insecticide resistance in *Aedes aegypti* mosquitoes in CARPHA Member States over the period 2015 – 2018

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Objective: The main goal of this study was to determine the levels of insecticide resistance and current geographic distribution of insecticide resistant *Aedes aegypti* (*Ae aegypti*) mosquito populations in Caribbean Public Health Agency (CARPHA) Member States (CMS), as part of a preliminary Insecticide Resistance Profile of the Caribbean Region.

Methods: The level of usage of the insecticide resistance testing (IRT) service provided by CARPHA was determined by compiling information from IRT requests by CMS for the period January 2015 to December 2018 totalling four years. A chemical audit was completed by pooling data on CMS chemical usage. Identification of insecticide resistance patterns in *Ae aegypti* mosquitoes were accomplished

through analysis of the IRT results for the four-year period at CARPHA. Larval and adult bioassays were performed on the entomological samples using standard implemented by The World Health Organization/ Insecticide Resistance Testing (WHO/IRT) bioassay protocols.

Results: The IRT service usage translates to 7 out of 24, or 29% of CMS over the four-year period. The results show that the same three chemicals were used in the vector control programme in every CMS *ie* Temephos, Malathion and Permethrin. Resistance to temephos was noted in *Ae aegypti* populations from five out of six CMS. *Aedes aegypti* populations from five out of five CMS were susceptible to malathion with possible resistance noted in two CMS. Resistance to pyrethroid was noted in *Ae aegypti* populations from four out of four CMS.

Conclusions: In CMS, most vector control operations are centred around chemical reduction of mosquito populations. Given the current low usage of CARPHA's IRT services, the continued use of chemicals, the continued presence of a competent vector and circulating arboviruses, it is critical that IRT is used to inform integrated vector management programmes.

O – 29

The effects of permethrin and temephos on public health, for control of malaria in endemic region in Guyana, Region 8

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Objective: To review policies guiding vector control intervention in malaria endemic regions in Guyana.

Methods: Insecticide resistance/susceptibility tests were conducted on wild caught adult mosquitoes from central Mahdia and larvae samples collected from eleven villages in Region 8. These villages included: Jumbie Creek, Central Mahdia, St Elizabeth, Waterdog, St Lucia, Micobie, Tumatumari, Mini Hall, Salbora, Mowasi and Black Water. This study adopted The Centre for Disease Control and Prevention (CDC) bottle bioassay procedure and The World Health Organization (WHO) standards for studying insecticide resistance/susceptibility tests on *Anopheles* mosquito. In this investigation temephos and permethrin were used. Analysis were done in accordance to CDC and WHO standards. Resistance maps were created based on the outcome of this research.

Results: The outcome of this investigation ascertained that wild caught *Anopheles darlingi* mosquitoes are 100% susceptible to permethrin (21.5 µg/bottle). Additionally *Anopheles* larvae were also susceptible to temephos.

Conclusions: This study reveal that current vector control intervention using permethrin and temephos is effective to control malaria.

O – 30

Distribution of genetic mutations associated with cardiovascular disease in Trinidad and Tobago: A case-control study

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Objective: To examine the distribution of nine genetic mutations associated with cardiovascular disease (CVD) and determine whether a genetic risk score (GRS) can discriminate between CVD and non-CVD individuals.

Methods: Survey of 172 participants from a 2015 study by University of Trinidad and Tobago aged over 18 years of age; 87 had no prior CVD and 85 participants who reported prior CVD (CVD participants). Protocol was performed according to CVD Strip Assay®A; Vienna Labs. X2 and *t*-tests were performed to determine differences between risk factors and odds ratios (OR) were used to determine associations between genotypes and CVDs, as well as to develop GRS.

Results: Participants who tested positive for CVD showed significantly higher unweighted mean GRS of 4.62 ± 1.8 compared to the non-CVD participants with a GRS of 3.71 ± 2.2 . Weighted GRS using calculated OR showed significant difference between CVD (0.004 ± 0.6) and non-CVD (0.31 ± 0.5) participants. However, no significant differences were observed using published OR.

Conclusions: Efforts to increase awareness about CVD risk and to assess the reliability of genetic mutation identified in other populations is needed in Trinidad and Tobago. The results suggest that genetic mutations tested indicates a clinical utility of a score toward identifying CVD patients *a priori*.

O – 31

Human biting activities of malaria vectors at different seasons in Potaro Siparuni, Guyana

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Objective: To understand vector bionomics of *Anopheles* (*Anopheles spp*) mosquitoes at different seasons in Mahdia, Region 8, Guyana.

Methods: Human-biting patterns of *Anopheles* mosquitoes were monitored for eight nights in four houses using human landing catches (HLC) both indoors and outdoors between September and December 2018, in Mahdia village, Potaro Siparuni (Region 8) Guyana. This time coincides with four nights during the dry season in September and four nights during the wet season in December. Adult mosquitoes were

collected from 18:00 to 06:00 hours and identified to species. The nocturnal biting activities of each *Anopheles spp* was expressed as mean number of mosquitoes landing per person per hour. Analysis was done using analysis of variance calculations in Excel.

Results: Altogether 70 adult female *Anopheles* were collected; 7 (10 %) indoors and 63 (90%) outdoors. *Anopheles darlingi* was the predominant species and present study reveals that 61.4% being the majority are mostly active outdoor in wet season. No endophagic behaviour was noted. During human active period (18:00 to 22:00 hours) 95% nocturnality was recorded in wet season and 100% during dry period. Throughout peak sleeping hours 22:00 to 05:00 hours 40% nocturnality was confirm in wet season and 100% in the dry period. Moreover, there is no nocturnal behaviour during 05:00 to 06:00 hours.

Conclusions: The bionomics of malaria vectors changes with season. Present study provides baseline data that will guide future vector control interventions aiming to minimize occurrences of malaria in Mahdia.

O – 32

Arterial stiffness in relation to birth characteristics in the Jamaican 1986 Birth Cohort

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Objective: To examine the relationship between arterial stiffness and birth characteristics in a Jamaican cohort.

Methods: Participants from Jamaica's 1986 Birth Cohort had arterial stiffness and blood pressure (BP) measured by calibrated cuff methods, Arteriograph™ 24 hours (Colson, Hungary), as pulse wave velocity (PWV) and VaSera™ (Fukuda Denshi, Japan) as cardiac-ankle vascular index (CAVI), nominally BP-independent. Standardized Z-scores for birth characteristics (birthweight, head circumference, birth length) adjusted for gestational age were used in gender-specific regression models to examine any associations, after adjusting for current waist circumference, BP and smoking status.

Results: Of the 387 (47% men, mean age 30.3 ± 0.7 years) participants, men compared to women, were less obese (26.3 ± 7 vs 28.6 ± 7 kg/m²; *p* < 0.01), had higher systolic blood pressure (114.8 ± 12.4 vs 108.5 ± 11.9 mmHg, *p* = 0.11), lower PWV (6.4 ± 0.9 vs 6.8 ± 0.8 m/s *p* < 0.01) and higher, CAVI (6.5 ± 0.8 vs 6.2 ± 0.7; *p* < 0.01). In gender-specific multivariate models, there was no association between PWV and any of birth characteristics. There was a significant inverse relationship between birthweight and CAVI in women beta (95%CI) per 1 SD difference = -0.12

(-0.22, -0.03; *p* = 0.01) but not men beta (95%CI) = -0.07 (-0.18, 0.04)). No other birth characteristics were associated with CAVI.

Conclusions: Lower birthweight was associated with higher arterial stiffness measured by CAVI.

O – 33

The spectrum of disease severity, the burden of hospitalizations and associated risk factors in confirmed dengue among persons of all ages: Findings from a population-based longitudinal study from Barbados – one of the English-speaking Caribbean countries

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Objective: To assess the spectrum of dengue severity, its trends and the associated factors.

Methods: This population-based longitudinal study included persons of all ages who presented with suspected dengue and where a confirmatory test was positive. Study period was 2006–2015. Most recent World Health Organization (WHO) criteria were used for suspecting and classifying dengue severity. Disease severity and hospitalization need were the two main outcome of interest.

Results: There were 4344 confirmed dengue, 2939 (67.7%) were ambulatory and 1234 (28.4%) hospitalized cases. Compared to those in the age group 16–60 years, risk of hospitalization was higher among persons > 61 years (RR = 1.8; 95% CI: 1.6 – 2.1; *p* < 0.0001) and those under 16 years (RR = 1.7; 95% CI: 1.5 – 1.9; *p* < 0.0001). Overall, 190 (4.4%), 771 (17.8%) and 3202 (73.7%) of all confirmed dengue were classified as severe. The risk of severe dengue was significantly higher in the > 60 years age group compared to 16–60 years group (RR = 1.97; 95% CI: 1.38 – 2.81; *p* = 0.0001). The risk of hospitalization was similar among those with primary and secondary dengue infection. However, those with primary infection were at a significantly lower risk of severe dengue when compared with those who had secondary infection (RR = 0.46; 95% CI: 0.28 – 0.75; *p* = 0.0015). Among confirmed dengue cases, there were 18 (CFR = 0.4%; 95% CI: 0.3%–0.7%) deaths. A significantly higher risk of death was observed among those > 61 vs age group 16–60 years.

Conclusions: Less than five per cent of all manifest dengue present as severe disease, the risk being highest among elderly persons and those with previous dengue infection. No significant trend in the risk of severe disease or hospitalization from dengue was noted.

O – 34

Promoting equity in diabetes care for African-Caribbean communities in the United Kingdom: The healthy eating and active lifestyles for diabetes (HEAL-D) culturally-tailored diabetes self-management programme

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Objective: To develop a culturally-tailored, evidence-based diabetes self-management programme for The United Kingdom's African and Caribbean communities using participatory methods.

Methods: Community stakeholders were engaged in an intervention development study. Phase 1 involved focus groups with Type 2 diabetes (T2D) patients from African and Caribbean communities, and semi-structured interviews with healthcare professionals and community leaders (eg faith leaders and community health advocates), who work with London African and Caribbean communities. Co-development workshops (Phase 2) brought the stakeholders together to identify the cultural adaptations that were needed within the intervention. In the final materials development stage stakeholders ensured cultural sensitivity of the intervention materials.

Results: The intervention has been designed to meet evidence-based T2D self-management goals. Co-design findings identified group-based delivery, that fostered connectedness and social support, was the most favoured format. The findings highlighted the need to deliver the curriculum through education and behaviour change techniques with a strong focus on participatory activities. The programme consists of seven two-hour sessions of education, behaviour change support and physical activity training, delivered by trained lay educators alongside specialist dietitians and exercise trainers. The sessions will be delivered in community settings and culturally-tailored resources will be provided.

Conclusions: Participatory methods have enabled us to engage key stakeholders in developing a T2D self-management intervention that is tailored to Black-British cultural beliefs, practices and motivations.

O – 35

Schistosomiasis School Survey in St Lucia: April 2017–May 2018

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Objective: To determine the prevalence of *Schistosoma mansoni* infection among school-age children in St Lucia.

Methods: A cross-sectional survey of 63 primary schools, involving children aged 8–11 years was performed. Estimated sample size was 2243 with a response rate of approximately 70%. The survey consisted of a questionnaire, blood and urine samples. Blood was tested by The Centres for Disease Control and Prevention (CDC) using enzyme-linked immunosorbent assay (ELISA) and immunoblot. Urine samples were tested locally and at the University of Georgia, using the point-of-care circulating cathodic antigen test (POC-CCA), as well as at Leiden University Medical Center using the up-converting phosphor technology to detect circulating anodic antigen (UCP-CAA) assay. Informed consent was obtained from parents and assent from students. Ethical approval was obtained locally as well as from PAHO which also funded the study.

Results: Based on preliminary test findings, additional testing was done on two separate groups of students: eight in October, 2017 and nine in May, 2018. While there were some low positives observed in each of the testing methods, all retested samples were negative on the final confirmatory immunoblot blood test at CDC and the more advanced urine test at Leiden University.

Conclusions: Results indicated that none of the students tested had the disease Schistosomiasis or Bilharzia. Therefore, it was concluded that all children tested were negative for *Schistosoma mansoni* infection. However, additional studies were recommended on school-aged children. Further studies among adults and malacological surveys were also recommended.

O – 36

Peripheral arterial disease prevalence and risk factors in the ECHORN Cohort Study

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Objective: To determine the prevalence and risk factors for peripheral arterial disease (PAD) in adults 40 years of age and over in Barbados, Puerto Rico, Trinidad and the US Virgin Islands (USVI).

Methods: A representative population-based sample had their ankle brachial pressure index (ABI) estimated in one

leg by an automated oscillometric device. Associations of demographic and health factors with PAD were explored and multivariable logistic regression was completed for variables with a p -value < 0.2 .

Results: The mean age of 2169 participants was 57.3 years (SD 10.3, range 40–90 years), with 35% male, 35% overweight, 39% obese, 61% having hypertension, 27% having diabetes and 7.3% current smokers. Peripheral arterial disease prevalence was 5.2% (95% CI: 4.2–6.1). Black ethnicity, higher education level, diabetes, heart disease history and increasing systolic blood pressure (BP) were associated with a higher PAD prevalence ($p < 0.05$) in bivariate analyses. Those with diabetes and heart disease had a significantly higher PAD prevalence compared to those without (36.6% vs 26.4%; $p = 0.0177$ and 21.6% vs 11.0%; $p = 0.0007$, respectively).

Multivariable logistic regression adjusting for age, gender, ethnicity, education level, heart disease and systolic BP found that independent predictors for PAD were Black ethnicity (OR 7.44, 95% CI: 1.02–54.23,) not completing high school vs having a university degree (OR 2.19, 95% CI: 1.05–4.57) and having heart disease (OR 2.09, 95% CI: 1.28–3.40).

Conclusions: Peripheral arterial disease is associated with an increased risk of cardiovascular disease and affects Blacks and those of low education level more than others. Unlike other studies diabetes and increasing age were not independent predictors of PAD.

Session 5

O – 37

Epidemiology of phenotypic resistance patterns of *Escherichia coli*, *Klebsiella pneumoniae* and *Staphylococcus aureus*

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Objective: To describe the resistance patterns of key pathogens in the Caribbean.

Methods: The Caribbean Public Health Agency's (CARPHA) laboratory provided automated identification and susceptibility testing on the Vitek 2 Compact, of clinically relevant isolates provided by CARPHA Member States (CMS) laboratories. These were submitted following a call for specific isolates. Results were sent back to the submitting laboratories with discrepancies identified (where possible). Pooled data was utilized for regional reporting.

Results: *Staphylococcus aureus* ($n = 317$) – Inducible clindamycin resistance was 94.4%–100%; μ : 98%. Penicillin resistance was 81%–100%; μ : 87%. Oxacillin resistance was 0%–70%; μ : 37%. Cefoxitin resistance was 34%–100%; μ :

65%. Vancomycin resistance was 0%. Linezolid resistance was 0%. Ciprofloxacin resistance was 0%–63%; μ : 28%, resistance to Levofloxacin was 0%–43%; μ : 17%, Moxifloxacin resistance was 0%–21%; μ : 7%. *Klebsiella pneumoniae* ($n = 284$) – Ertapenem resistance was 0%–3%; μ : 0.4%. Meropenem resistance was 0%–2%; μ : 0.2%. Ceftriaxone resistance was 9%–75%; μ : 32%. Extended Spectrum beta-lactamases were 5%–75%; μ : 32%. Ciprofloxacin resistance was 4.3%–50%; μ : 18%. *Escherichia coli* (279) – Ertapenem resistance was 0%, Meropenem resistance was 0%. Ceftriaxone resistance ranged from 1.9%–66.7%; μ : 16%. Extended Spectrum beta-Lactamases were 0%–66.7%; μ : 17%. Ciprofloxacin resistance ranged from 15.1%–66.7%; μ : 37%.

Conclusions: Antibiotic resistance is widespread in CMS. Continued surveillance, infection control and antimicrobial stewardship is needed to limit spread.

O – 38

Strengthening Guyana's primary healthcare system: Use of participatory methods to prepare for a community-based, task-shifting intervention in the CONgregations Taking ACTION against non-communicable diseases (CONTACT) Study

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Objective: To prepare for an intervention in primary healthcare centres (PHCCs) and (PoWs) by assessing their capacity for implementation; ascertaining (NCD) non-communicable diseases and risk factor prevalence among congregations; and refining the intervention.

Methods: We purposefully selected three PHCCs for participation: a Church, a Hindu temple and a Mosque. Interviews with PHCC staff assessed service delivery; availability of physical resources; perceptions of the intervention and availability to supervise HAs. Interviews with religious leaders ($n = 9$) assessed congregation characteristics, physical resources, existing health programmes and perceptions of the intervention. Interviews with 442 congregants assessed NCD history and risk factors. Investigators met regularly to refine intervention protocols.

Results: Primary healthcare centres staff approved of the intervention, but cited challenges such as heavy workload and frequent shortfalls in common NCD medications. Religious leaders were keen to implement the intervention (only 2 PoWs had ongoing health programmes) and pledged

support. Prevalence of diabetes (19.8%) and hypertension (27.9%) was relatively high in congregants (mean age 46.9 years). The most common NCD risk factors were inadequate fruit and vegetable consumption, use of added salt and high blood cholesterol. The intervention was modified to prepare HAs for voluntary service at PHCCs, blood pressure testing and diabetic foot screening, and health promotion activities focussing on diet and exercise.

Conclusions: A rigorous participatory approach ensured alignment of our NCD intervention with the local socio-cultural and health context.

O – 39

Incidence of group B Strep (*Streptococcus agalactiae*) colonisation among pregnant women attending the Linden Hospital Complex

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Objective: To establish a Group B *Streptococcus* (GBS) screening programme in Guyana and to provide evidence-based guidance exists in order to minimize the the impact GBS infection may play in neonatal infection.

Methods: An investigation of *Streptococcus agalactiae* colonisation of the vagina and anorectal area of women in various trimesters attending the Antenatal Clinic of the Linden Hospital Complex was carried out during a three-month period.

Results: The incidence of GBS among pregnant women who participated in the study was 40%. Examination of the 50 participants showed demonstrated that 14% had vaginal and anorectal colonisation, 12% vaginal colonisation only and 14% anorectal colonisation only. A binomial logistic regression model did not identify maternal age, prior antibiotic use, or the trimester of pregnancy as independent predictors of *Streptococcus agalactiae* isolation.

Conclusions: These results suggest that effective screening and surveillance mechanisms, throughout the various regions of Guyana, may be warranted.

O – 40

Overview of cardiovascular patients admitted at the Academic Hospital Paramaribo between 2014 and 2017 in Suriname with a multi-ethnic population

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Objective: To examine cardiovascular disease (CVD) admitted patient data from the largest hospital in Suriname, as a first step for identifying disparities in gender, age, ethnicity, and cardiovascular co-morbidities.

Methods: A retrospective study was conducted using data from the Department of Medical Registration in the Academic Hospital Paramaribo. All admissions with a primary ICD I00-199 codes between January 1st, 2014 and December 31st, 2017 were included. Patient demographics and CVD data were collected. The analysis of variance and Chi-square tests were used for statistical analysis.

Results: Between 2014 and 2017, CVD admissions increased with a total of 11,349 CVD patients. More men had CVD. The overall mean age is 60 years (women: 61 (\pm 15); men 59 (\pm 13) years). The three biggest ethnic groups with a CVD are Hindustani (46%), Creole (20%) and Javanese (11%). Hypertension (21%) as co-morbidity is the largest followed by diabetes (16%). Hindustani have significantly more ischaemic heart disease, cerebrovascular diseases and other forms of heart disease compared to Javanese and Creole. The percentage of Creole and Maroon people with cerebrovascular diseases within this ethnic group are the highest compared to other ethnic groups (28% and 36%, respectively) and hypertensive diseases are more prevalent in Creole and Maroon compared to Hindustani and Javanese.

Conclusions: More men had CVD with an overall mean age of 60 years. The largest group with CVD morbidity were Hindustani. Common co-morbidities were hypertension and diabetes. These results provide a first glimpse into CVD morbidity and can support the development of prevention strategies.

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Efficacy of levofloxacin loaded niosomes (non-ionic surfactant vesicles) in a model of *Pseudomonas Aeruginosa* infected Sprague Dawley Rats

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Objective: To examine the efficacy of levofloxacin loaded niosomes in treating Sprague Dawley Rats infected with *Pseudomonas aeruginosa* (ATCC 27853).

Methods: Three groups of six animals were infected with a known dose inoculum of *Pseudomonas aeruginosa* via the intraperitoneal (ip) route. At six hours post-infection, animals were treated with drug-free niosomes (control), free

levofloxacin (conventional) and levofloxacin trapped in niosomes (Ip). Blood was collected *via* tail snips on days 0, 1, 3, 5, 7 and 10 for complete blood counts and viable bacterial colony forming units (CFU/ μ L) counts. At day ten the animals were sacrificed and samples from the kidney, liver and spleen were examined for bacterial counts.

Results: All animals in the control group succumbed to the infection; one animal from the conventional group died. All niosome treated animals survived. The mean lymphocyte count ($\times 10^9$) was lower for the niosome (7.258 ± 1.773) *versus* conventional (17.684 ± 10.008) [$p < 0.03$] treated groups at day ten. Neutrophil counts ($\times 10^9$) were lower for the niosome (2.563 ± 1.609) *versus* conventional (6.2 ± 6.548) [$p < 0.02$] treated groups. Though CFUs in the bloodstream were similar for both treatment groups, the niosome treated group showed greater reduction in liver, kidney and spleen CFUs *versus* the conventional group (1.33 ± 2.074) *vs* (5.8 ± 3.74) [$p < 0.043$], (1.5 ± 2.35) *vs* (9.6 ± 8.65) [$p < 0.038$] and (3.8 ± 4.71) *vs* (25.6 ± 14.66) [$p < 0.007$], respectively.

Conclusions: This initial work has shown promise, but further work using niosomes as a drug delivery system to treat intracellular infections, in intact animals is recommended.

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Supporting the improvement of data availability for cancer control and prevention in the Caribbean

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Objective: To assess the International Agency for Research on Cancer (IARC) Caribbean Cancer Registry Hub impact on improving in-country and regional capacity to increase the availability, quality and use of data to inform cancer control planning in Caribbean countries.

Methods: Within the framework of the Global Initiative for Cancer Registry Development (GICR), led by the (IARC), the Caribbean Public Health Agency (CARPHA) and key partners developed and implemented the IARC Caribbean Cancer Registry Hub. The Hub became operational in 2015 and provides training and technical support, conducts research and promotes regional networks.

Results: The Hub conducted four training workshops, assessed the quality of datasets in two registries, developed three GICR trainers, conducted research, completed five site visits and disseminated standard operating procedures. Work is ongoing to support developing and strengthening cancer registries in three countries and the establishment

of a shared virtual registry for the Organization of Eastern Caribbean States. A website was launched and advocacy conducted to engage high-level political stakeholders. The registry in Martinique has joined as an IARC GICR Collaborating Centre.

Conclusions: Research findings underscore the need for high-quality cancer incidence data for planning, programme implementation and evaluation within the region. Through the work of the Hub, Caribbean countries are better equipped to strengthen cancer surveillance to inform cancer prevention and control.

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An evaluation of a chromogenic medium for the identification of methicillin resistant *Staphylococcus aureus* in clinical specimens

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Objective: To evaluate the screening ability of the chromogenic medium, HardyCHROM™ methicillin resistant *staphylococcus aureus* (MRSA), for the identification of MRSA from clinical specimens at 24 hours and 48 hours of incubation.

Methods: One hundred *staphylococcus aureus* isolates were obtained from 162 non-repetitive clinical specimens that included: urine; ear, wound and vaginal swabs; blood cultures and pus aspirates. Stool specimens were excluded due to the possible interference of commensals. Suspected isolates were confirmed using MSA and coagulase. Two methods were compared for the detection of MRSA: (1) The Reference method – Kirby-Bauer disk diffusion method with a 30 (μ g) ceftoxitin disk on MHA and (2) The Test method – observation of HardyCHROM™ MRSA after 24 and 48 hours. A zone diameter of = 21 mm was MRSA, while = 22 mm was MSSA. Pink to magenta colonies on HardyCHROM™ MRSA were interpreted as MRSA. No growth after 48 hours was documented as methicillin susceptible *staphylococcus aureus*.

Results: The clinical specimens were mainly pus aspirates (36%) and blood cultures (27%). After 24 hours, the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of HardyCHROM™ MRSA were 96.9%, 5.6%, 64.6% and 50.0%, respectively. At 48 hours, the sensitivity, specificity, PPV and NPV of HardyCHROM™ MRSA were 96.9%, 0%, 63.3% and 0%, respectively. Using McNemar's test, to compare the two tests, a significant difference (p -value < 0.05) was found at 24 hours and 48 hours incubation.

Conclusions: We conclude that because of the high sensitivity of HardyCHROM™ MRSA, this medium would be effective in the preliminary identification of patients with an MRSA infection or persons carrying MRSA.

O – 44

African Americans, Afro-Caribbeans and Africans: Different cancer patterns in populations of African descent in the United States of America

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Objective: To quantify cancer patterns in populations of African descent in the United States of America (USA).

Methods: We computed cancer mortality rates for African Americans, Afro-Caribbean's and Africans residents of four states in the USA: California, Florida, Minnesota and New York for 2012–2017 and compared them using age-adjusted mortality ratios obtained from Poisson regression models to efficiently control for confounding by age. In addition, we studied differences between subgroups of Afro-Caribbean's and Africans.

Results: We analysed 62 363 cancer deaths among African Americans, 11 018 among Afro-Caribbeans and 1411 Africans. Africans had the lowest all sites combined cancer mortality rates of all three groups. The overall risk of death from cancer was 92% higher in African American men (95% CI: 1.73–2.14) and 59% higher in women (95% CI: 1.97–2.17) compared to the reference category, Africans. Afro-Caribbean men showed 14% higher (95% CI: 1.02–1.27) mortality than Africans, while among women no differences were observed.

Conclusions: Race alone is not a determinant of cancer mortality. The largest intraracial difference was observed for lung cancer, followed by colorectal and breast cancer all higher among African Americans. There was little heterogeneity in cancer patterns among Afro-Caribbean groups (between Haitians, Jamaicans and other West Indians) but remarkably different patterns between West (high prostate cancer rates, similar to African Americans) and East Africans (high liver cancer in both genders). Further scrutiny into these differences can provide important links to understand the epidemiology of cancer.

O – 45

Risk-taking sexual behaviours among young adults – findings from the HIV/STI related Knowledge, Attitudes, Beliefs and Sexual Practices Survey among adults aged 15 to 49 years in Barbados

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Objective: To identify the sexual behaviours among young adults that exposed them to the risks associated with human immunodeficiency viruses/ sexually transmitted infections (HIV/STIs) and identify their risk-reduction practices and the health-seeking behaviours towards HIV.

Methods: This was a population-based cross-sectional survey in 2014. A sample of this population was taken from among person's ages 15–49 years. The survey questionnaire was developed from Family Health International's "Guidelines for Repeated Behavioural Surveys in Populations at Risk of HIV."

Results: Overall, 892 (98.0%) described themselves as heterosexual, 12 (1.4%) as bisexual and five (0.6%) as homosexual. Among females, 2.9% had their first intercourse by 12 years, 40.8% by 16 years and 66.8% by 18 years. Equivalent percentages for adolescent boys were: 1.6% by 12 years, 53.1% by 16 years and 74.6% by 18 years. Among those who were sexually active in the last twelve months, 98.0% had a sexual partner and of these 80.6% had one sexual partner. Of the 408 sexually active men seven (1.8%) reported ever having a male sexual partners. The survey revealed that 37.0% and 16.8% of respondents used condoms the last time they had intercourse with their regular and non-regular partners, respectively. In terms of the frequency of HIV testing, 40.1% had an HIV test within the last 12 months. Of these persons, 97.5% found out their test results.

Conclusions: Young age at sexual debut coupled with multiple sexual partners and inconsistent condom use are all potential drivers of new HIV-infection in this population.

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The occurrence of chronic sorrow and coping strategies employed by adult oncology patients in Western Jamaica

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Objective: To explore the occurrence of chronic sorrow and describe the coping strategies used by patients diagnosed with cancer.

Methods: A qualitative phenomenological study was conducted among eight adult patients diagnosed with cancer for a period of one to five years and attending an Oncology Clinic in Jamaica. Purposive sampling was used to select participants for a focus group discussion. Informed consent was obtained. Discussion was audio-taped then transcribed verbatim. The transcript was manually coded, and read iteratively to identify common themes and sub-themes. Themes were connected, inter-relationships identified and narrative constructed.

Results: Eight adult persons diagnosed with cancer and receiving treatment at the Oncology Clinic participated in

the focus group discussion. Their initial reactions on being diagnosed were denial, feelings of sadness or depression followed by feelings of resignation or acceptance. The chronicity of the illness, negative shift in the equilibrium of life and financial challenges caused major stress which contributed to chronic sorrow. Strong spiritual belief was the major common element expressed that helped persons to cope. Physically active and volunteerism were other coping mechanisms that emerged. Participants with greater family and financial supports expressed greater ability to cope with the illness than those with poor family or financial support. Professional psychological and emotional therapy was lacking.

Conclusions: Cancer causes emotional strain, stress and subsequently, chronic sorrow. Spiritual and psychological support act as bed-rock for the mental well-being and coping ability of patients diagnosed with cancer and therefore, should form an integral part of the management plan for the patient.

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Low birthweight in human immunodeficiency virus-exposed uninfected infants in Georgetown, Guyana

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Objective: To examine the association between maternal human immunodeficiency virus (HIV) status and other maternal factors and low birthweight (LBW) among HIV-exposed uninfected (HIV-EU) infants in Georgetown, Guyana.

Methods: This case-control study was performed with a retrospective cohort of HIV-EU infants who attended the Dorothy Bailey Health Centre between June 2015 and December 2017. A total of 129 HIV-EU cases were selected and 131 HIV-unexposed (HIV-U) controls were selected from the Sophia Health Centre in a 1:1 ratio using consecutive sampling. Cases and controls were matched by year of birth. Crude and adjusted logistic regression models were used to assess the association between maternal HIV-positive status, and other maternal and child variables and LBW, while controlling for potential confounders.

Results: The overall prevalence of LBW infants was 9.6%, 10.8% among HIV-EU infants and 8.6% among HIV-U infants. Multivariable regression models revealed higher odds of LBW among HIV-EU infants born to mothers with unsuppressed HIV-1 plasma viral load (PVL) = 1000 IU/mL (adjusted OR: 3.2; 95% CI:1.40–42.51) and underweight mothers with third- trimester weight < 50 kg (adjusted OR: 11.8; 95% CI: 1.51–32.8) compared to mothers with suppressed HIV-1 PVL < 1000 IU/mL and mothers with weight = 50 kg, respectively. However, there was no

statistically significant association between maternal HIV status, adequate prenatal care, gestational age and LBW.

Conclusions: Human immunodeficiency virus-exposed uninfected infants born to mothers with unsuppressed HIV-1 PVLs and underweight mothers had higher odds of being LBW. Long-term prospective studies are warranted to determine the implications of these findings on infant growth and development.

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A qualitative study exploring the impact of Type 1 diabetes on Barbadian adolescents aged 10 to 19 years

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Objective: To explore the illness experience of Barbadian adolescents, aged 10–19 years, living with Type 1 diabetes (T1D).

Methods: This was a multi-method phenomenological qualitative study. Nine adolescents (male = 6; female = 3) were purposefully sampled from the Barbados Diabetes Association and trained in the ethical use of PhotoVoice for three weeks youths submitted photographs with accompanying narratives reflecting ‘what diabetes meant to them’. Each week was stratified by a theme: daily life, challenges/barriers and facilitators and at the end, photographs were discussed in gender-stratified groups using a semi-structured interview protocol. Inductive thematic analysis was used to elucidate themes which were validated in a final group session. Reflexivity was *via* continuous memoing.

Results: The primary facilitators was ‘friendships’ and family was a co-facilitator, but also a major source of frustration for adolescents due to contrasting views on management. ‘Health-care Providers’, ‘School and Educational Facilitators’ were major barriers to adherence due to lack of support, poor communication and discounting of opinions. Other themes unearthed *via* photos were ‘Feeling Alone’ and ‘Body Awareness’, which exposed bullying and stigmatization as challenges to disease management during discussions. The study also determined gender differences in the level of peer support and body image perception.

Conclusions: Adolescents desire greater autonomy especially as self-efficacy improves. High parental involvement may trigger conflict, maladaptive behaviours or non-adherence to regimen. Improving the competency and emotional sensitivity of the public (including health-care practitioners) through education and training may help normalize their condition and/or mitigate negative psychosocial effects *via* deconstruction of social and institutional barriers.

O – 49

The association of lean body mass and muscle strength with co-morbidities in elderly urban Jamaicans

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Objective: To test the hypothesis that co-morbidities are associated with lower indices of lean body mass (LBM) and muscle strength in elderly Jamaicans.

Methods: The study was non-randomized with non-probabilistic sampling of free living participants. Lean body mass and fat mass (FM) were measured using dual-energy X-ray absorptiometry (DEXA) and deuterium dilution with saliva collection. Appendicular lean mass (ALM) was calculated from DEXA. Muscle strength was assessed by measuring handgrip using a dynamometer. Depression was assessed using the Yesavage Geriatric Depression Scale questionnaire. Fasting blood glucose was measured from finger prick using Accu-Chek blood glucose meter and blood pressure was measured using EDAN vital sign monitor.

Results: Participants were 56 females and 54 males, aged 60 to 90 years. Muscle strength, of lean body mass index and fat mass index (LBMI and FMI) did not show any significant association with fasting blood glucose and blood pressure, but LBMI was positively associated with body mass index and % FM. Four per cent of persons with diabetes and 10% of persons with hypertension had low handgrip strength and 8% of persons with diabetes and 10% of persons with hypertension had low appendicular lean mass index (ALMI). Obese persons having low handgrip and ALMI were 7% and 10%, respectively. None of the participants with low handgrip or ALMI was assessed as being depressed. Handgrip was not significantly associated with any co-morbidity.

Conclusions: The findings indicate association of LBM with obesity, but there was no other significant association of LBM and muscle strength with co-morbidities assessed as hypertension, fasting glucose and obesity in elderly urban Jamaicans.

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Taking on the challenge: The role of toxic elements/heavy metal exposure in chronic kidney disease

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Objective: To report on toxic elements/heavy metal exposure trends and investigate relationships with renal indices in end-stage renal kidney disease (ESRD) patients residing in Jamaica.

Methods: Whole blood samples of 41 haemodialysis (HD) patients were measured for various elements including: Vanadium (V), Chromium (Cr), Iron (Fe), Cobalt (Co), Copper (Cu), Zinc (Zn), Selenium (Se), Strontium (Sr), Arsenic (As), Barium (Ba), Cadmium (Cd), Mercury (Hg) and Lead (Pb), before and after haemodialysis. Twenty-two non-chronic kidney disease subjects were included in analysis to provide baseline comparisons for element analysis and kidney status. Element analysis was conducted using inductively coupled plasma mass spectrometry.

Results: Non-essential elements such as Cd, Pb, Hg, As and Sr were significantly higher while essential elements Fe and Zn levels were significantly lower in ESRD patients ($p < 0.001$). Estimate glomerular filtration rate (eGFR) correlated positively to Fe and Zn ($p < 0.05$). Serum creatinine showed inverse relationships with Cr, Fe and Zn ($p < 0.05$). Post-dialysis samples showed significant decreases in As while Sr increased after dialysis. Age correlated positively with Pb/Fe and Sr/Ca ratios (0.350, $p < 0.001$; 0.505, $p < 0.001$, respectively).

Conclusions: Poor kidney function causes retention of toxic elements which may potentially exacerbate metabolic disturbances associated with kidney disease progression. Additionally, dialytic procedures may instigate further trace element derangements and should be monitored as a potential source of exposure.

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Sources and concentrations of mercury and methylmercury in pregnant women from Suriname: Implications for public health

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Objective: To determine concentrations of total mercury (THg) and methylmercury (meHg) in biological samples from pregnant women in Suriname.

Methods: Hair, blood and urine samples were collected from pregnant women participating in a large-scale bio-monitoring and maternal/child health programme in Suriname. A total of 75 women participated in this project ($n = 20$ from Paramaribo, $n = 20$ from Nickerie, $n = 35$ from the interior). Concentrations of THg and meHg were determined in hair and blood samples. Concentrations of THg were determined in urine samples. Total mercury and meHg

were measured by mass and cold vapor atomic fluorescence spectrophotometry.

Results: Concentrations of THg in urine were modestly correlated with those in hair (Spearman's $r = 0.64$) and blood ($r = 0.70$). Concentrations of THg in hair and blood were highly correlated ($r = 0.83$). Total mercury and meHg concentrations were highly correlated in hair ($r = 0.97$) and blood (0.99). Geometric mean (GSD) THg concentrations in hair ($\mu\text{g/g}$) were 0.56 (2.58) in Paramaribo, 0.64 (2.70) in Nickerie and 5.00 (2.22) in the interior and in blood ($\mu\text{g/L}$) were 3.00 (2.34) in Paramaribo, 1.93 (1.74) in Nickerie and 15.73 (2.20) in the interior.

Conclusions: Pregnant women in the interior of Suriname have high levels of THg in blood and hair, similar to previous hair analyses in women and children. Furthermore, the results reported here find that = 85% of the THg in hair and blood is meHg indicating that the primary source of exposure is most likely from dietary consumption of contaminated fish. Paediatric neurodevelopmental assessments of their children are underway.

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Impact of Hurricane Maria on environmental determinants of health in Dominica

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Objective: To assess the impact of Hurricane Maria on environmental determinants of health.

Methods: As part of research for CARPHA's State of Public Health Report 2017–18 on climate and health, a case study of Dominica was undertaken. The research protocol was reviewed and approved by the Dominica Ministry of Health and an Oversight Committee of Regional and International experts. Key informants ($n = 22$) were interviewed in Dominica. Documents and statistics were collected. Analysis was guided by a framework linking environmental determinants, health system building blocks and health outcomes.

Results: Hurricane damage rendered more than half of health facilities non-functional. There was a 43% reduction in beds available at the hospital. Housing damage was 38% of all hurricane costs, creating loss of access to utilities and personal security. Delays in the removal of 1.5 million m^2 of debris resulted from centralisation of disposal vehicles and road damage. Above-ground water and power lines, wastewater treatment facilities, sewerage systems, agriculture and food supply were widely damaged. Immediate action included: implementation of a Water, Sanitation and Hygiene (WASH) strategy with international partners; recording environmental pollution and inspection of food establishments. Longer-term strategies include: re-building

infrastructure to climate resilient standards, decentralisation and community involvement in solid waste management. Surveillance data reveal an increase in gastroenteritis cases but not in fever or vector-borne disease cases following Hurricane Maria.

Conclusions: Disaster preparedness, response and recovery should include management systems for environmental determinants, which affect health systems, mental health, non-communicable diseases and communicable diseases.

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Using public health surveillance data to assess health impacts of severe weather events in Caribbean countries

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Objective: To assess the potential of using public health surveillance data to assess health impact of severe weather events.

Methods: Health outcomes for countries where Hurricanes Irma and Maria made landfall in 2017 while at Category 4 or 5 strength on the Saffir-Simpson scale were compared with other Caribbean countries and previous years, using weekly syndromic surveillance reports on gastroenteritis, fever and numbers of confirmed cases of Dengue, Chikungunya and Zika. For Dominica, comparisons were made between health outcomes in 2015 (Tropical Storm Erika), 2017 (Hurricane Maria) and six-year averages.

Results: Gastroenteritis cases, but not fever cases, increased more rapidly in countries struck by the hurricanes at Category 4 or 5 strength than in those that were not. Total confirmed cases of Chikungunya, Dengue and Zika were lower in both sets of countries in 2017 than in the 2014–16 period. Within two weeks of both Tropical Storm Erika and Hurricane Maria in Dominica the number of gastroenteritis cases increased then exceeded the six-year average until the end of the year.

Conclusions: In 2017, Category 4 or 5 hurricanes led to additional health impact in reported gastroenteritis, but not in fevers or mosquito-borne diseases. Data are consistent with mosquito-borne diseases being in an inter-epidemic period. Commonality of weather conditions in the tropical wet season and regional public health action may help explain lack of differences in most health outcomes. Simple statistical comparisons and graphic representations of health with weather data can orient action to address climate and health links.

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An evaluation of regional cardiovascular disease and cancer research needs using conference abstracts

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Objective: To evaluate cardiovascular disease and cancer research needs using abstracts from the Caribbean Public Health Agency (CARPHA) Conference.

Methods: Data were extracted from CARPHA Conference abstracts published in the West Indian Medical Journal (WIMJ) from 2006 to 2018 using the PICO (population, intervention/exposure, comparison and outcome) model. Additionally, first author institutional affiliation and geographic location, project title, countries involved, sample size, study design and use of specialized testing / biomarkers were also collected. Data was analysed using STATA version 14.

Results: Of the 1512 abstracts published, 728 were poster presentations and the remainder (784) oral presentations. Research on cancer and cardiovascular disease comprised approximately 15% of all abstract published over the period of review. The majority of the cardiovascular disease studies were cross-sectional or surveys (46%), with very few laboratory based studies (< 2%) and no intervention studies / clinical trials. For cancer research 30% were cross-sectional studies / audits, 11% were case control studies, 5% lab based and there were no clinical trials. Almost a quarter of the cardiovascular disease / cancer abstracts originated from Trinidad and Tobago (26%), with Jamaica and Barbados contributing 17% and 18%, respectively.

Conclusions: These findings highlight the need for greater volume, quality and range of research in cardiovascular disease and cancer in the Caribbean given their significant contribution to morbidity and mortality. A Caribbean Regional Centre of Research Excellence could support capacity development to facilitate this process.

O – 55

Promoting healthy school food environments in Jeddah, Saudi Arabia: An adolescent led canteen intervention appeals care providers

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Objective: To co-develop with pupils and care providers a school-based intervention to promote healthy diets in Jeddah.

Methods: Two schools were selected with average academic performance. Phase 1 assessed the preparedness for intervention. Surveys assessed the capacity of schools for implementation, and pupils’ health behaviours (n = 200). Six concept mapping workshops with pupils (n = 19), and with teachers, food suppliers and Ministry of Education/Health staff (n = 15) identified perceived important and feasible changes. Phase 2 developed the content and mode of delivery of a canteen intervention using five intervention modelling workshops with a reference panel (10 pupils, 11 care providers), and a two-day non-controlled pilot with two randomly selected classes from each school (n = 116; 60: 13–15 years, 56: 16–18 years).

Results: School foods were nutritionally poor. Teachers and the Ministry of Education were supportive of pupil-led changes. Less than 10% of pupils reported five portions of fruit and vegetable intake/day and > 60% reported daily fizzy drink intake. Pupils’ food preferences, including toasted sandwiches, fruits and vegetables, and had lower total energy, fat, sugar and salt content than current canteen foods. Pupils reported higher levels of satisfaction post intervention than pre intervention ($p < 0.05$) with the canteen menu, but felt that provision should cater for those with special health needs and prices should be capped to < 63p/item.

Conclusions: A rigorous participatory approach informed a feasible canteen intervention to be tested in a feasibility trial, with the support of the Ministry of Education/Health. The co-design framework may have value to improve school nutrition standards in other settings.

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Fruit and vegetable consumption and mental health across adolescence: Evidence from a diverse urban British cohort study

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Objective: To investigate the longitudinal association between fruit and vegetable consumption (FV) and mental health across adolescence in the British multi-ethnic Deter-

minants of Adolescents (now young Adult) Social well-being and Health (DASH) cohort study.

Methods: A longitudinal study of 4683 adolescents living in London at age 11–13 years and followed up at 14–16 years. Fruit consumption was measured using validated questions on the number of portions consumed daily. Mental health was measured by the Strengths and Difficulties Questionnaire as mean Total Difficulties Score (TDS) and by classification as a ‘probable clinical case’ (TDS >17). Social measures included ethnicity, parenting and socio-economic circumstances. Multi-level modelling was used to investigate the association between FV and mental health throughout adolescence.

Results: Low FV was common among adolescents, with approximately 60–70% of adolescents reporting < 5 portions/day and 20–30% reporting < 1 portion/day. In late adolescence, most ethnic minority groups reported lower FV than their White peers. In fully adjusted models, < 1 portion/day remained a significant correlate with mean TDS (Coef: 0.55, 0.29–0.81, $p < 0.001$) and TDS > 17 (Odds Ratio: 1.43, 1.11–1.85, $p = 0.007$). Gender- or ethnic-specific effects were not observed. Low parental care partly attenuated the association between FV and mental health.

Conclusions: Low FV is a longitudinal correlate of poor mental health across adolescence. A focus on FV in parenting interventions could yield interrelated benefits across developmental outcomes given its importance to both physical and socioemotional health.

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The impact of the ketogenic diet on the quality of life among cancer patients attending an outpatient clinic in the Caribbean: A randomized controlled trial

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Objective: To determine the impact of the ketogenic diet (KD) and ketoadaptation on the quality of life among outpatient cancer patients.

Methods: A randomized single-blinded control trial was used to assess the impact of the KD on quality of life over a 16-week period. The study population consisted of forty Stage 2 and 3 cancer patients attending an outpatient cancer treatment clinic. Patients were equally randomized to either the ketogenic dietary (KD; $n = 20$) or standard dietary regiment (STD; $n = 20$). The KD group were provided KD meals using a seven day cyclic menu over the study period while the STD group consumed their usual diet. Biochemical, anthropometric, physiologic and quality of life data was collected during four follow-up periods. Multivariable

linear regression was used to identify factors influencing improved quality of life.

Results: The ketogenic diet showed substantial increase in urinary ketones over the study period for the KD group and was significantly higher as compared to the STD group. Factors found to be significant predictors of improving quality of life were an increase in urinary ketones ($\beta = -3.175$, 95% CI: -5.723, -0.626, $p = 0.015$), being male ($\beta = -6.161$, 95% CI: -9.971, -2.352, $p = 0.002$) and higher mental health scores ($\beta = 0.449$, 95% CI: 0.111, 0.787, $p = 0.009$). Age, gender and disease state seemed to affect the time taken to keto-adapt.

Conclusions: The KD may be suitable as a complementary or alternative treatment for Stage 2 and 3 cancer patients in targeting an improvement in the quality of life, nutritional and psychosocial status. Additional population-based studies are needed to examine this phenomena in greater detail.

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Fish consumption patterns among pregnant women in the CCREOH cohort and fatty acid profiles in select freshwater and marine species of fish in Suriname

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Objective: To determine fish consumption patterns in pregnant women and fatty acid profiles in select species of freshwater and marine fish in Suriname.

Methods: Fish preference and intake was quantified by surveying pregnant women in the Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH). Eight fish species reported to be among the most preferred and heavily consumed were selected for fatty acid analysis (*Callichthys callichthys*, *Cichla ocellaris*, *Hoplias aimara*, *Plagioscion squamosissimus*, *Serrasalmus rhombus*, *Cynoscion acoupa*, *Cynoscion virescens* and *Nebris microps*).

Fish identified to species were bought from markets in Suriname or collected from waterways in the interior. Muscle samples were shipped to University of Texas Marine

Science Institute for fatty acid analysis by total lipid extraction, methylation and analysis using gas chromatography. Analysis of variance was run on SPSS version 23.

Results: The majority 96.6% (767/794) of participants reported consuming fish. There was significant variability among fish species in arachidonic acid (AA), eicosapentaenoic acid (EPA), docosahexaenoic acid, sum of saturated fatty acids, omega-6s and omega-3s. Freshwater species had significantly higher levels of linoleic acid (2.0 vs 0.2 mg/g), alpha-linoleic acid (0.4 vs 0.1 mg/g), AA (3.0 vs 1.5 mg/g), omega 6s (6.5 vs 2.3 mg/g) and significantly lower levels of EPA (0.8 vs 1.9 mg/g) compared to marine species.

Conclusions: Fatty acid profiles varied across fish species. Eicosapentaenoic acid and docosahexaenoic acid, considered important for paediatric and adult, were lower in freshwater fish than marine species. Despite higher mercury content, freshwater species are a good source of these nutrients.

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Investigating fat content health allusions based on food processing methods: A Caribbean on-campus meals analysis

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Objective: To investigate the commonly held view of fried foods being less healthy than differently processed foods; by chemically analysing and statistically comparing the fat content of popular on-campus meals at a Caribbean university.

Methods: Most frequent meal purchase data were obtained from foodservices. The Soxhlet fat extraction method and standard formula, were used to determine fat quantity in duplicate samples of three replicates per popular meal. One-way ANOVA *post hoc* and Tukey's Honest Significant Difference (HSD) tests were used to statistically compare means.

Results: Three local Caribbean meals and four internationally known fast foods, were the most popular meals identified. Six were analysed. Day-to-day fat content varied significantly ($p < 0.05$) for Veggie Pizza (SD = 3.55), Chicken Roti (SD = 1.48) and Kentucky Fried Chicken [KFC] (SD = 3.22). Per dry meal weight, fat content was highest for KFC (45 g) and the lowest was for Subway Teriyaki Chicken Sandwich (12 g). Per 100 g test sample, fat content of KFC (28.29 g) was significantly higher than all meals ($p < 0.001$), except the baked local Cheese Pastry (27.30 g, 95% CI for mean difference = -8.408 to 6.435, $p = 0.997$); There were no significant fat content differences between the griddle-fried Roti and Subway Sandwich or the Pepperoni and Veggie Pizzas.

Conclusions: Baked meals do not always contain less fat than fried meals; neither are they always healthier. Ongoing chemical food analyses can engender consistent use of standardized recipes and operating procedures in foodservice facilities; generate more reliable information on nutrient content of meals; influence more healthful meal choices by consumers; and pave the way for meaningful nutrition-related health policies.

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A participatory evaluation of a school feeding programme intervention applying a Theory of Change approach: A case of St Kitts and Nevis

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Objective: The Caribbean Community is grappling with growing burdens of non-communicable diseases, overweight and child obesity. It is recognized that effective policy responses require integration across multiple sectors, including health, education and agriculture. However, success to date with such coordinated responses has been limited. We describe a "Farm to Fork" (F2F) multi-sectoral research intervention into the school feeding programme in St Kitts. We hypothesized that this participatory evaluation would enhance stakeholder engagement, shared understanding and provide a basis for more effective and integrated policy responses.

Methods: Data were collected from a one-day F2F workshop attended by 37 purposively sampled multi-sectoral stakeholders, 18 key informant interviews and one focused group discussion with smallholder farmers ($n = 8$).

Results: While workshop participants agreed with the "Theory of Change" (TOC) underlying the F2F school feeding model, they identified seven "gaps" (categorized by themes) in the TOC that, were not addressed namely: consumer education and health promotion; market development and food pricing; public policy and advocacy; parental and community engagement and social networking; strengthening governance in domestic food production; and conflicting stakeholder interests.

Conclusions: Informed by system dynamics thinking and using a TOC approach, stakeholders were able to develop a common understanding on the importance of a food system approach and participate in crafting system-based responses to the growing problem of unhealthy diets, among school children. Proposed interventions suggest that effective approaches require fostering locally-driven innovation that leverages community resources and assets, to empower

stakeholders, build community capacity and improve cross-sectoral collaboration.

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Measurement of plasma volume in childhood severe acute malnutrition: A comparison of two methods of calculation using Evan's blue technique

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Objective: To compare two methods of calculating plasma volume using the Evan's Blue Dye (EBD) technique in children with severe acute malnutrition (SAM) at three phases of rehabilitation.

Methods: Thirty-four children (19 males) who were hospitalized at the Tropical Metabolism Research unit, CAIHR for treatment of SAM (11 Marasmic, 23 Oedematous) were given a 1 mL bolus dose of EBD at a predetermined mean concentration of 2.5 mg/mL and 1 mL blood samples were taken at 10, 20, 40 and 60 minutes post-dose for the EBD measurements. The concentration of EBD in plasma was measured using a spectrophotometer at 620 nm, and calculations for plasma volume done by the semi-log extrapolation (SLE) and the mean method (MM). A Bland-Altman analysis was performed using linear mixed method regression model approach to determine the level of agreement between plasma volumes computed by SLE and MM.

Results: The plasma volume computed by SLE method was consistently lower than plasma volume computed by MM across study periods as well as by diagnosis, with estimates by SLE being 81% of plasma volume estimates by MM with a 95% confidence interval of 79–85%. There was no significant difference in plasma volume measurements by diagnosis.

Conclusions: Plasma volume can be accurately determined using the EBD technique in children with SAM, with an expected agreement of 81% between the SLE and the MM.

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Burden of hospitalizations and mortality from acute severe asthma among children in Barbados, 2013–2016

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Objective: In this audit we report on the burden of hospitalization from acute severe asthma and other acute respiratory illnesses in children in this country. Additionally, we describe the epidemiology of hospitalization from asthma and other acute respiratory diseases in this population.

Methods: This study is a prospective clinical audit of children (Age < 16 years) admitted to The Queen Elizabeth Hospital with acute respiratory distress syndrome (ARDs) including those where the primary discharge diagnosis was anti-endomysial antibodies (AEA) and those where the primary discharge diagnosis was acute respiratory infection. The audit was undertaken from the year 2013 through 2016. A preplanned analysis of data from review of medical records was used to characterize all children requiring admission for ARD at this hospital.

Results: During the four years study period there were 2084 hospitalization among children where one of the discharge diagnosis was asthma or one of the other acute respiratory infections. There were a total of 5419 hospital admissions among children over the same time period. Hospitalization from asthma and acute respiratory infections accounted for 38.5% (95% CI: 37.2, 39.8). Acute asthma was one of the diagnosis in 1411 hospital discharges accounting for 67.8% (95% CI: 65.6, 69.7) of all hospitalizations from acute respiratory diseases and 26.0% (95% CI: 24.9, 27.2) of all medical hospitalizations among children. The mean annual hospitalization rate from asthma was 6.8 per 1000 under 16 year population. Proportion of hospitalization from asthma that was not associated with respiratory infections children in the age group 0 to < 4 years, 4 to < 8 years, 8 to < 12 years and 12 to < 16 years was 27.6%, 33.3%, 26.2% and 12.9%, respectively. Males accounted for 61.0% of all hospitalization from asthma. Hospitalization from asthma increased from 332 in 2013 to 401 in 2016 and this amounted to an 20.8% increase. There were two deaths from asthma over the study period which gives a case fatality rate of 0.14%.

Conclusions: The burden of hospitalization from acute severe asthma among children in this country is much higher than those reported from other countries. There is an increasing trends in the hospitalization from acute severe asthma among children in this population.

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Body size of adolescents: Perceptions of mother and child

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Objective: To determine in a group of adolescents: (1) their perception and satisfaction with their body size and the desire to lose weight; (2) mothers perception of their adolescent child's body size (3) perception of ideal body size.

Methods: A cross-sectional survey of a convenience sample of non-overweight (< 85th percentile) and overweight (> 85th percentile) adolescents accompanied by their mothers at two primary care clinics in Barbados was done. Adolescents

were categorized by body mass index and the pair completed a questionnaire.

Results: One hundred and sixty-four 'adolescent child-mother' pairs participated (97% response rate). Mean adolescent age was 15 (IQR 14–16) years. For non-overweight children 96.3% mothers and 92.7% children accurately perceived the weight category, whereas for overweight adolescents, only 68.8% mothers and 67.1% of adolescents made an accurate assessment, ($p < 0.001$). Non-overweight children were more likely than overweight children to be satisfied with their body size (80.4 vs 13.3%, $p < 0.001$). Only 8.8% non-overweight children compared to 58.3% overweight children expressed dissatisfaction, ($p < 0.001$). Children who perceived themselves.

Conclusions: Adolescents who think they are 'fat' are dissatisfied with their size and try to lose weight. However, 1/3 of overweight or obese adolescents and their mothers think they are normal weight, hence, lack motivation to lose weight. Most consider smaller body size as ideal. Weight loss interventions need to take patient and parent perception into consideration.

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The association of early life factors with bone mass in Jamaican adolescent children

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Objective: To explore the relationship among early life factors (*ie* maternal weight, height and body mass index (BMI), birthweight and birth length) and bone mass parameters (bone mineral content and bone mineral density) in Jamaican adolescent children.

Methods: One hundred and eighty-six healthy Jamaica adolescents, 16 to 19 years of age were recruited from a birth cohort. Their maternal anthropometric data during pregnancy and birth anthropometric data were available for analysis. Weight and height were measured. Bone mineral content (BMC) and bone mineral density (BMD) were measured using a whole body bone density scanning, also called dual-energy X-ray absorptiometry (DXA) scan. Pubertal stage was also recorded. Multiple linear regression analyses were performed.

Results: Maternal weight, height and BMI were positively associated with child's BMC and BMD adjusting for the children's age and gender. When child's current height was further added to these regression models, maternal weight

and BMI remained positively associated with child's BMC and BMD but maternal height was no longer associated with child's BMC and BMD. Birthweight was positively associated with BMC at age 18 years when adjusted for age and gender. When child's current height was added to this model, this association disappeared. Adjustment for pubertal stage in all models did not significantly change these associations. **Conclusions:** Larger and taller mothers and larger size at birth, captured by anthropometry, were positively related to bone mineral content in the adolescent period suggesting that nutrition during pregnancy contributes to intrauterine skeletal mineralization and subsequent bone development.

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Knowledge, attitude and practices of registered nurses towards pain management of sickle cell anaemia patients at Georgetown Public Hospital, Guyana

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Objective: To assess the knowledge level, attitudes and practices of registered nurses at Georgetown Public Hospital and to influence policy change and develop guidelines on nursing management of pain in patients with sickle cell. What is the knowledge and attitude of registered nurses at Georgetown Public Hospital and their influence on practices employed in management of sickle cell patients in pain?

Methods: Quantitative cross-sectional survey was done using non-probability sampling. Sixty-seven registered nurses from Male and Female Medical Wards and Emergency Department of Georgetown Public Hospital were given self-administered structured questionnaire with demographic, knowledge, attitude and practice sections focussing on Jean Watson's Theory.

Results: Seventy-five per cent of respondents had excellent scores in knowledge, with none below average. Fifty-nine per cent not knowing the time for peak effect of morphine was revealed. Seventy-five per cent respondents agreed that the most likely reason sickle cell anaemia patients request increased doses of opioid is because of addiction. Sixty-nine per cent agreed that sickle cell anaemia patients make frequent visits to the hospital due to opioid dependence. Sixty-nine per cent agreed that sickle cell anaemia patients make frequent visits to the hospital due to opioid dependence. General caring practices of respondents were average 46%. Bad caring practices were 22%.

Conclusions: While the respondents were knowledgeable on pain management of sickle cell anaemia patients in pain, the attitude and practices of respondents were not reflective of their knowledge which may be affecting practice, particularly in medication administration and holistic caring practices.

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Can public health interventions be applied to prevent the purchase of alcohol by minors in Trinidad and Tobago? A systematic review of the existing evidence

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Objective: This paper sought to systematically review the existing evidence on preventing minors purchasing alcohol so as to guide policy makers in developing interventions for Trinidad and Tobago.

Methods: Quantitative studies with both experimental and quasi-experimental designs applying interventions aimed at reducing the purchase of alcohol by minors were selected. Studies were selected from three databases: Medline, Embase and PubMed. The Cochrane principles of critical appraisal were used to assess the quality of the studies. A narrative synthesis of the data extracted was conducted.

Results: Seven studies met the eligibility criteria. The studies applied multiple methods and were from varying policy contexts. The enforcement-focussed interventions aimed at reducing purchasing of alcohol by minors showed to be effective immediately post application but reduced over-time. Training of managers and staff of off-premise and on-premise alcohol establishments also did not have any additional effect on reducing the sale of alcohol to minors.

Conclusions: The systematic review provided evidence for the use of enforcement-focussed interventions and “rewards/commendations” and “reminders/citations”. It also highlighted the role of context in considering and designing interventions.

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Management, co-morbidities and outcome of malnourished children at Georgetown Public Hospital Corporation

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Objective: To determine the prevalence of malnutrition in paediatric patients admitted to the paediatrics services over a two-year period; to assess the hospital management of these patients; and to determine the outcomes (discharge, death, prolonged admission) and the possible factors that may contribute to death.

Methods: A retrospective cohort of all patients admitted to the Paediatric medical ward or Inetnsive Care Unit that were 12.5 years with an admitting diagnosis of malnutrition from January 2015 to July 2017. Data extracted included demographics, severity of malnutrition, management and patient outcomes. A poor prognostic outcome was defined as death. Univariate and multivariate logistic regression analyses *via* SPSS were used to determine independent risk factors for poor prognostic outcome.

Results: Seventy-seven patients met the inclusion criteria. Malnutrition was the definitive diagnosis in 49.4% of these cases. A total of 19.5% of the children were diagnosed with severe malnutrition. Of the children admitted, 14.3% had a poor prognostic outcome, and 87.5% of these children were diagnosed with severe malnutrition and were ≥ 7 weeks old. Univariate logistic regression analysis identified severe malnutrition ($p < 0.05$) and previous admission for malnutrition ($p < 0.05$) as possible risk factors for poor prognosis. However, in the multivariate model, neither of these factors was deemed to be an independent risk factor for poor prognostic outcome.

Conclusions: This study identified that both a previous admission for malnutrition and a diagnosis of severe malnutrition were significantly associated with poor prognosis. The findings also suggest that there was insufficient compliance with the established hospital protocol.