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Investigation of the number of acute cardiac events admitted to the Queen Elizabeth Hospital, Barbados, 2003–2007

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Objective: To estimate the number of events of acute myocardial infarction (AMI) and cardiac arrest admitted to the main public hospital in Barbados from 2003–2007, in order to furnish expected numbers to guide the new national acute myocardial infarction surveillance system.

Design and Methods: Retrospective data were obtained from record cards held at the Queen Elizabeth Hospital (QEH) Records Department. Cardiac events were defined according to the International Statistical Classification of Diseases and Health Related Problems, Tenth Revision (ICD-10) codes I21 (AMI) and I46 (cardiac arrest). Descriptive statistics and time series analysis were conducted by age, gender, duration of hospital stay, incidence and mortality rates.

Results: There were 633 AMI and 186 cardiac arrests admitted to the QEH during the period 2003–2007, for a combined annual incidence of 47 per 100 000 in 2003 increasing to 68 per 100 000 in 2007. Incidence rates over the study were 65 and 57 per 100 000/year for men and women, respectively. Incidence rates increased with age for both genders, with age at onset in women (mean 71 years) on average seven years later than in men. In-hospital case fatality for combined events was 44% (30% for AMI and 91% for cardiac arrest). Duration of hospital stay rose from a mean of 9 days in 2003 to 13 in 2007.

Conclusion: The 45% increase in incidence rates between 2003 and 2007 indicates a rising trend in cardiac events in Barbados while the high AMI-related case fatality is a cause for concern.

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Implementing therapeutic lifestyle modifications to reduce the burden of chronic disease among University staff

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Objectives: To conduct a randomized controlled intervention of lifestyle modifications among individuals with a high burden of metabolic syndrome (MS) components.

Design and Methods: A 6-month intervention was designed and implemented to detect a 20% reduction in MS components with 90% confidence. Those ($n = 148$) with ≥ 2 MS components were randomly assigned to intervention or control. Intervention comprised individual diet counselling, close monitoring and monthly lifestyle workshops. Control received printed material on healthy eating and lifestyle modification. Repeated measures ANOVA was used to determine significant effects of the intervention relative to changes in the control group.

Results: At 6 months, there were decreases in BMI and waist circumference in both groups, but the decreases among the intervention group were significantly greater than those of the control group (0.81 versus 0.14 kg/m² for BMI, $p = 0.001$; 5.44 versus 2.66 cm for waist circumference, $p = 0.005$). Although improvements were observed in biochemical measures and blood pressure, these changes were not significantly different between intervention and control groups. The overall increase in fruit and vegetable consumption was not significantly different between both groups, although daily consumption of ≥ 5 servings increased by 14.6% among the intervention compared to 4.3% among control. Changes in physical activity were not statistically significant.

Conclusions: This 6-month intervention of diet and lifestyle changes resulted in significant and positive changes in selected MS components and risk factors; however, the challenge that remains is in the institutionalization of this programme in a sustainable and effective manner.

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The socio-economic determinants of obesity in adults in The Bahamas

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Objective: To determine the socio-economic determinants of obesity in adults in The Bahamas.

Design and Methods: A subpopulation of adults 21 to 60 years old was analysed for socio-economic differences in obesity levels. Data from the 2001 Bahamas Living Conditions Survey, a nationwide comprehensive household survey which included anthropometric measurements was used. Bivariate and binary logistic regression methods for complex samples were employed.

Results: Overall obesity prevalence was 32% (38% female, 25% male, $p \leq 0.0001$). An inverse relationship with education appeared to be the strongest predictor for all persons (OR = 0.78, CI 0.67, 0.90; $p < .0001$). This relationship was also evident among females (OR = 0.71, CI 0.59, 0.85; $p < 0.0001$) while a positive relationship existed by economic level among males (OR= 1.23, CI 1.07, 1.41; $p = 0.005$). There was greater expenditure on the starchy vegetables food group among obese adults ($p = 0.049$). Household expenditure on other food groups, the urban residence and female headed households showed no significant associations with obesity.

Conclusions: In line with international trends, obesity rates are high in The Bahamas, and especially affect females of lower socio-economic status. Public policy that targets this group is necessary to address this health concern.

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Breastfeeding challenges in preterm infants compared to full term infants at the University Hospital of the West Indies

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Objective: To compare breastfeeding challenges and practices of preterm and full term infants at the University Hospital of the West Indies (UHWI).

Design and Methods: A prospective cohort study explored factors that influenced breastfeeding practices after discharge from hospital of mothers of 57 preterm and 125 full term infants during the period August 1, 2008 to February 28, 2009. A questionnaire to investigate breastfeeding was administered to both groups.

Results: There were significant differences in birth weight, head circumference and length between full term and preterm infants ($p < 0.001$). Parents of preterm infants were significantly older; however, there was no difference in socio-economic status between groups. The rate for exclusive breastfeeding up to six weeks postpartum was 41.2% for preterm infants compared to 62.6% for full term infants. For the remaining mothers who supplemented breastfeeding during this period, the mean duration of exclusive breastfeeding for preterm infants was 1.95 ± 1.7 weeks compared to 2.92 ± 1.5 weeks for full term infants ($p = 0.020$). The existence of a stable relationship and gestational age were significantly associated with the duration of exclusive breastfeeding up to six weeks postpartum. Also, significantly more mothers of preterm infants reported experiencing problems with breastfeeding ($p = 0.001$).

Conclusion: Mothers of preterm infants experienced more challenges and discontinued exclusive breastfeeding earlier than mothers of full term infants. It is important that intervention programmes be established to provide support and education of breastfeeding techniques. This might lead to longer periods of exclusive breastfeeding.

O – 5

The effects of chronic intakes of a high sucrose diet on insulin signalling genes in cardiac tissue from insulin resistant rats

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Objective: To determine the effects of chronic intakes of a high sucrose diet on insulin signalling genes in cardiac tissue from insulin resistant rats.

Design and Methods: Two groups ($n = 8$) of randomly selected male Sprague-Dawley rats (150–200 g) were fed *ad libitum*; the sucrose fed (SF) group received 32% sucrose in their drinking water for 30 weeks after which the hearts were excised and RNA isolated for qRT-PCR microarray analysis.

Results: Energy intake of the SF rats and blood glucose at 30 weeks were similar to controls. Insulin levels were significantly higher ($p < 0.05$) in SF from 18 weeks with impaired glucose tolerance. Plasma triglycerides were higher ($p < 0.05$) in SF from 6 weeks. Insulin signalling genes that were down-regulated (magnitude) included: glucokinase (-3.80), hexokinase 2 (-2.32), sterol regulatory element binding transcription factor 1 (-2.28), low density lipoprotein receptor (-3.48), phosphoinositide-3-kinase regulatory subunit 1 (alpha) (-1.72), insulin receptor (-1.97), glycerol-3-phosphate dehydrogenase 1 (soluble) (-3.07),

phosphoinositide-3-kinase regulatory subunit 2 (beta) (-3.30), nitric oxide synthase 2 inducible (-3.42), protein kinase C gamma (-2.55), insulin-like growth factor 1 receptor (-2.84), insulin receptor substrate 1 (-2.10), insulin-like growth factor 2 (-2.30) docking protein 2 (-2.70), solute carrier family 2 (facilitated glucose transporter) member 1 (-2.02) and mitogen activated protein kinase 1 (-18.18). Genes that were unregulated included: phosphatidylinositol 3-kinase, catalytic alpha polypeptide (3.07), peroxisome proliferator-activated receptor gamma (2.22) and resistin (4.19).

Conclusions: Gene expression along the insulin signalling pathway in insulin resistant rat heart is altered following chronic consumption of a high sucrose diet.

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Dichloro-diphenyl-trichloroethane and pyrethroid resistance in strains of *Aedes aegypti* in Trinidad and Tobago

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Objective: To investigate the status of dichloro-diphenyl-trichloroethane (DDT) and Pyrethoid (PY) resistance strains of *Aedes aegypti* in Trinidad and Tobago and the underlying biochemical mechanisms.

Design and Methods: Nine strains of *Aedes aegypti* larvae were assayed to DDT, deltamethrin and permethrin using a time-mortality based bioassay. Mortality data were subjected to probit analyses and the lethal times for 50% and 90% mortality were estimated. Resistance Ratio (RR) and Resistance Threshold (RT) were calculated relative to the CAREC reference strain. Assays were performed to determine the activities of nonspecific esterases (α - and β -), mixed function oxidases (MFO) and glutathione-S-transferases (GST).

Results: The diagnostic dosages determined using the CAREC strain were 100 ug/100 ml, 1 ug/100 ml and 20 ug/100 ml for DDT, deltamethrin and permethrin, respectively. Most strains recorded high RRs to DDT, three to deltamethrin and one to permethrin. The established RT for DDT, deltamethrin and permethrin were 120, 75 and 30 minutes, respectively. All field strains were resistant to DDT (< 80% mortality), two strains were incipiently resistant to deltamethrin and three to permethrin (80–98% mortality). Biochemical assays revealed altered or incipiently altered activities (> 15%) of α -esterase and MFO enzymes in all strains. Unaltered β -esterase and GST activities were seen in five and two strains, respectively (<15%).

Conclusions: There is an association between the altered activities of the nonspecific esterases (α - and β -), MFO and GST enzymes and the manifestation of DDT and PY resistance strains of *Ae aegypti* in Trinidad and Tobago. The presence of DDT resistance suggests that greater emphasis should be placed on environmental sanitation for *Ae aegypti* control.

Chronic Diseases

Chairpersons: *S Persaud, I Potter*

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Cardiovascular disease risk factor trends among youth in Turks and Caicos

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Objective: To determine cardiovascular disease (CVD) risk factor trends among youth in Turks and Caicos (TCI).
Design and Methods: A cross-sectional survey compared CVD risk factor trends in anthropometry, blood pressure [BP], fasting blood glucose and cholesterol between two cohorts of youth ($n = 656$) aged 11–18 years entering Public High Schools (Fall 2009 [$n = 327$]; Fall 2008 [$n = 329$]). Inter-cohort, inter-island and inter-gender comparisons of continuous (*eg*, BMI and cholesterol) and categorical variables (*eg*, obesity and cholesterol status) were conducted using one-way ANOVA and chi-squared analyses, respectively.

Results: Overall, participants' mean age was 12.76 ± 1.06 years; 251 (38.5%) were at-risk (16.4%) or overweight (22.1%). These indices did not differ significantly between cohorts ($p = 0.757$). Physically active participants ($n = 541$) had significantly lower mean body weights ($p = 0.002$) and BMIs ($p = 0.001$), consumed more water (5.36 ± 3.79 versus 4.30 ± 2.69 servings; $p = 0.04$) and were equally distributed between genders. Approximately 7% had cholesterol levels > 200 mg; 18% had systolic blood pressure (SBP) > 120 mmHg; 9% had diastolic blood pressure (DBP) > 80 mmHg; and 16.0% and 13.4% consumed ≥ 1 serving of fruits and vegetables, respectively, each day.

Conclusion: Overweight, physical inactivity, unhealthy dietary practices and dyslipidaemia are of public health concern with regard to youth CVD risk. Additional school-centred, research and intervention are imperative to promote healthy lifestyles and potentially reduce future chronic disease burden and healthcare costs in TCI.

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Arterial stiffness as an integrated index of cardiovascular risk in South Asian and age-matched African-Caribbean men

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Background: Arterial stiffness (as aortic pulse wave velocity (aPWV)) reliably predicts cardiovascular (CVS) events. Our hypothesis is that intervening on aPWV may be more efficient and effective than on traditional risk factors alone. For given blood pressure/levels (BP), those with 'stiffer' large arteries develop more CVS events, whose rates vary between Caribbean South Asian- and African-origin people.

Objective: To compare indices of arterial stiffness, brachial and central BP in samples of such men.

Patients and Methods: 51 South Asian (SA) and 63 Afro-Caribbean (AfC) men aged 40–80 years were sampled from the UK European Male Ageing Study. Measurements included BP by Omron (last 2 of 3, averaged), aPWV, augmentation index (AIx) and central BP by validated 'Arteriograph'.

Results: Mean (\pm SD) aPWV and aortic AIx were higher among SA ($n = 51$, age: 56 ± 11 yr) than in AfC ($n = 63$, 52 ± 10 yr) at 8.0 ± 1.3 vs. 7.5 ± 1.5 m/s ($p = 0.04$) and 33 ± 13 vs. $26 \pm 13\%$ ($p < 0.01$), respectively, despite lower brachial BP (124/78 vs. 130/81 mmHg) and similar central systolic BP (126 vs. 127 mmHg). In multivariate analysis, age, HDL cholesterol and SBP were the main associations of PWV, displacing ethnicity and diabetes status.

Conclusions: SA men had higher aortic PWV and AIx than Afro-Caribbeans, despite lower SBP, independent of other risk factors (except HDL). The ethnic effect is less important than the physiological one – for given BPs, some people are 'stiffer' than others, which may account for greater SA CVS risk. Arterial stiffness indices seem to describe total CVS risk better than individual risk factors.

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Emergence of ethnic differences in blood pressure in adolescence: The determinants of adolescent social well-being and health study

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Objective: Blood pressure (BP) tracks from childhood to adulthood. We examined ethnic differences in changes in BP between early and late adolescence in UK school-children.

Methods and Population: Longitudinal, standardised measures of BP, height, weight, leg length, smoking and socio-economic circumstances were made among London schoolchildren of defined ethnic origin as White British (n = 692), Black Caribbean (670), Black African (772), Indian (384) and Pakistani and Bangladeshi (402) at 11–13 years of age and 14–16 years. Predicted age/ethnic-group specific mean BP, adjusted for anthropometry and social exposures, were derived using mixed models.

Results: Among boys aged 12 years, overweight ranged from 17% (Pakistani) to 19% (Caribbeans), with 5.3 – 10.5% obese, without differences (adjusted) in systolic BP (sBP) by ethnicity (range 107.7 – 109.3 mmHg). Greater sBP increase among Africans than Whites led to higher sBP at 14–16 years (+2.9 mmHg), with more Caribbeans still obese (9.6% vs 4.8 – 6.9%).

Among girls, aged 11–13 years, 28% Caribbeans and 15.5–25% others were overweight, falling to 12.7 – 22% at 14–16 years of age. Ethnic differences in mean sBP were not significant at any age. Systolic Blood pressure hardly changed with age among White girls but increased among Caribbeans and Africans. Ethnic differences in diastolic BP were more marked than for sBP. Body mass index, height and leg length were independent predictors of BP, with few ethnic specific effects. Socio-economic disadvantage had a disproportionate effect on BP for girls in minority groups.

Conclusions: Ethnic divergences in BP become clear in adolescence, particularly striking for boys. These signal the need for early preventive efforts to avoid or limit cardiovascular disease in later life.

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Diabetes Mellitus: Common myths and misconceptions in the Trinidadian population

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Objective: To identify critical knowledge deficiencies, misleading cultural beliefs and to determine how socio-demographics influence knowledge about diabetes mellitus (DM) among Type 2 diabetics in Trinidad.

Methods: A cross-sectional study, conducted at four chronic-disease public health clinics in Trinidad (November 2006 – January 2007) identified 317 Type 2 diabetics. Questionnaires were administered to assess knowledge of DM (aetiology, symptoms, management and complications) and to collect socio-demographic and specific clinical data.

Results: Mean age of participants was 59.0 years; 69.4% were females; 67.8% were East Indian and 59.6% possessed primary education only. Mean duration of DM was 9.9 years and 80.4% attended all clinic appointments. Participants scored lowest in the area of aetiology (mean score – 62%) but better on knowledge of complications (mean score – 89%). Several misconceptions that would undermine glycaemic control were detected. Knowledge scores did not vary among health facilities but varied directly with level of education with higher knowledge scores associated with tertiary or vocational education and with having a spouse. Scores were negatively correlated with age.

Conclusion: The prevalence of diabetes as well as its associated morbidity, mortality and economic burden continue to increase. Achieving health literacy is exigent and traditional, one-on-one education, is impractical due to inadequate resources. This necessitates finding cost-effective, adjunctive methods that reach groups *eg*, mass education. Such educational programmes should focus on identified areas or concepts that have a high probability of being misunderstood by diabetics. Primary prevention should also be emphasized to the general population.

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Plasma adiponectin levels are related to obesity, inflammation, blood lipids and insulin in Type 2 diabetic and non-diabetic Trinidadians

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Objective: To examine the extent to which plasma adiponectin levels are related to obesity, inflammation, blood lipids and insulin resistance in Type 2 diabetic (T2DM) and non-diabetic Trinidadians.

Design and Methods: This was a cross-sectional study of persons with T2DM attending primary and tertiary healthcare settings in central Trinidad who were matched with non-diabetic controls for age, gender and ethnicity. Along with clinical history and anthropometry, adiponectin, TNF- α , IL-6, CRP, lipid profile, glucose and insulin were measured in fasting blood samples and insulin resistance (HOMA-IR) was calculated.

Results: Compared to controls (n = 140), diabetics (n = 126) had significantly higher ($p < 0.05$) glucose, insulin, HOMA-IR, triglycerides (TAG), VLDL and systolic blood pressure, but significantly ($p < 0.05$) lower HDL and adiponectin levels. Obese individuals had lower ($p < 0.05$) adiponectin regardless of diabetic status. There were significant gender differences in HDL, LDL and TAG. In controls adiponectin correlated ($p < 0.05$) with triglycerides ($r = -0.280$), IL-6 ($r = -0.216$), HOMA-IR ($r = -0.373$) and HDL ($r = 0.355$). When adjusted for confounders the relationship between adiponectin and HDL ($r = 0.288$), and TNF- α ($r = -0.355$) remained significant ($p < 0.05$). Among T2DM, adiponectin was inversely related to BMI ($r = -0.294$; $p < 0.05$). When adjusted for age, blood pressure, BMI and lipids, adiponectin was inversely related to HOMA-IR ($r = -0.330$; $p < 0.05$).

Conclusion: Adiponectin decreases with increasing adiposity and insulin resistance. Adiponectin and TNF- α appear to be related to differences in the insulin mediated glucose disposal.

O – 12

Association of the ectonucleotide pyrophosphatase/phosphodiesterase 1 (ENPP1) gene with Type 2 diabetes risk in Afro-Caribbean men from Tobago

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Objective: The gene encoding ectonucleotide pyrophosphatase/phosphodiesterase 1 enzyme (ENPP1) which down-regulates insulin signalling by inhibiting insulin-receptor tyrosine kinase activity, is encoded by the ENPP1 gene. The objective was to evaluate ENPP1 variants for association with Type 2 diabetes mellitus (T2DM) in a high risk Afro-Caribbean population from Tobago.

Design and Methods: Thirty-seven single nucleotide polymorphisms (SNPs) based on pair-wise tagging ($r^2 \geq 0.8$) were successfully genotyped in 272 unrelated cases with T2DM based on the criteria of fasting serum glucose levels ≥ 126 mg/dl and 954 unrelated controls without a known diabetes diagnosis.

Results: Of the 37 SNPs, 1 was inconsistent with Hardy Weinberg Equilibrium (HWE) proportions ($p \leq 0.01$) in the controls. Two SNPs (5.3%) located in the downstream region of ENPP1 showed nominal evidence of association with an increased risk for T2DM adjusted for age- and BMI; rs6569759: (OR 1.87, 95% CI 1.13, 3.09, $p = 0.015$ recessive model) and rs9373000: (OR 1.41 95% CI 1.04, 1.90, $p = 0.025$ dominant model; OR 1.30 95% CI 1.06, 1.60, $p = 0.011$ additive).

Conclusions: This study was the first to comprehensively evaluate ENPP1 variants for association in an Afro-Caribbean population with T2DM and suggests that variants in intron 1 and the downstream region of the ENPP1 gene may contribute to diabetes susceptibility in Afro-Caribbean men from Tobago.

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Measuring the burden of cancer in the Turks and Caicos Islands

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Objectives: To determine the incidence, prevalence and mortality rate from various cancers among the Turks and Caicos Islands (TCI) 'Belonger' population between 1998 and 2008. Also, to ascertain whether there is an unusually high incidence of cancer and the proportion of individuals with advanced cancer at initial diagnosis.

Design and Method: A retrospective chart audit of all cancer diagnoses in TCI 'Belongings' over a ten-year (1998–2008) period was conducted. In this descriptive study, cancer cases and deaths were classified using ICD 10. Descriptive and other summary statistics, including aged adjusted incidence rates were calculated.

Results: A total of 127 cancer cases (64 males and 63 females) with a mean age 59.4 ± 16.4 years comprised the

study population. There was an annual increase in both incidence and prevalence of cancers of all sites. The mean annual percentage increase in incidence was 33.7 %. A majority (56.7%) of the cancers were diagnosed at the advanced stage. A total of 37 cancer deaths occurred during the study period.

Conclusion: The incidence of cancer in the TCI was lower than in other Caribbean countries; however, the annual rate

of increase in the incidence of screenable cancers and the significant proportion of cancers that were diagnosed at advanced stages are of concern. The implementation of structured cancer screening and control programmes, coupled with the establishment of cancer registries and improvement in health information systems are necessary to reduce the burden of cancer in the TCI.

Health Services

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Identifying breast cancer screening barriers among Barbadian women

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Objective: This qualitative study examined beliefs about mammography among Barbadian women, in order to identify barriers to breast cancer screening for this population.

Design and Methods: One-hundred and ten participants were recruited from a primary healthcare facility and a self-referring breast cancer-screening programme run by a local charity. Interviews were conducted from 12 focus groups stratified by previous mammogram status (yes *versus* no) and age-group (40–49, 50–59, 60–69 and 70+ years). Qualitative analyses were carried out using QSR NVivo 8.

Results: For all age-groups, fear, lack of/erroneous health information and cost were identified as the main overall barriers to breast cancer screening. However, specific beliefs/fears varied by age-group (*eg* younger women feared losing a romantic relationship after diagnosis while older women believed that the mammography machine causes breast cancer). The taboo societal perception of breast cancer was also identified as a major barrier to screening.

Conclusions: Three main categories of breast cancer screening barriers among Barbadian women were identified, although within categories, differences were observed between age-groups. If screening is to be increased in this population, health messages should be tailored for each category and age-group, providing accurate information to dispel myths and provide support.

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Management of diabetes and hypertension in health centres in Antigua and Barbuda: Results of a chart audit

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Objective: To evaluate the quality of care of patients attending health centres in Antigua and Barbuda with a diagnosis of hypertension or diabetes.

Design and Methods: A cross-sectional chart audit of diabetic and hypertensive patients attending primary care facilities was conducted in seven health districts of Antigua and Barbuda. Patients were selected using systematic random sampling and data on the quality of care were extracted from medical records. Quality of care was based on recommended best practices as indicated in the two recently revised CHRC Clinical Guidelines for the Management of Diabetes and Hypertension in Primary Care in the Caribbean.

Results: Of the 377 patients sampled, 161 (43%) had a primary diagnosis of diabetes and 216 (57%) hypertension. Only 27.2% (95% CI, 13.6%, 41.0%) of the diabetic patients had their blood sugar under control (HbA1c < 6.5%). Of the hypertensive patients, 36.6% (95% CI, 30.1%, 43.0%) had their blood pressure under control (< 140/90). Almost all the indicators of best practice were measured less often than recommended. For example, HbA1c was investigated, on average, once every three years in diabetic patients instead of every 3–6 months. One exception was that blood pressure was usually measured at each visit in hypertensive patients.

Conclusion: Most patients with diabetes and hypertension attending health centres in Antigua and Barbuda did not have their condition under control. Since many of the best practices outlined in the revised CHRC clinical guidelines were not carried out at the recommended levels, it is expected that the introduction and proper use of these protocols will make a positive difference.

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Diabetes and hypertension guidelines and the Barbadian primary healthcare practitioner: Knowledge, attitudes, practices and barriers

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Objectives: To evaluate the knowledge, attitudes, practices and barriers faced by primary care practitioners in Barbados concerning the recommendations of available diabetes and hypertension guidelines.

Design and Methods: Focus groups using a moderator's manual were conducted at all 8 public sector polyclinics and 5 sessions were held for private practitioners.

Results: Polyclinic sessions were attended by 63 persons (17 physicians, 34 nurses, 3 dieticians, 3 podiatrists, 5 pharmacists and 1 other) and private sector sessions by 20 persons (12 physicians, 1 nurse, 3 dieticians, 2 podiatrists and 2 pharmacists).

Practitioners generally thought that they gave a good quality of care. Commonwealth Caribbean Medical Research Council 1995 diabetes and 1998 hypertension guidelines, and the Ministry of Health 2004 diabetes protocol had been seen by 38%, 32% and 78% respectively of polyclinic practitioners, 67%, 83%, and 33% of private physicians and 25%, 0% and 38% of non-physician private practitioners. Practitioners thought that guidelines should be circulated widely, promoted with repeated educational sessions and kept short.

Reasons for less than ideal outcome included patient factors such as denial, lack of money to eat correctly, exercise and buy monitoring equipment; confusion over medication doses, not valuing free medication, belief in alternative medicine and being unable to change habits. System barriers included unavailability or cost of blood investigations, clinic equipment and medication; and lack of human resources in polyclinics. Patients faced cultural barriers and difficulty getting time off from work to attend clinic.

Conclusions: Guidelines need to be promoted repeatedly and implemented with strategies to overcome barriers.

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Assessment of treatment goals attained by patients according to CHRC/PAHO guidelines for diabetes management in primary care centres in North Trinidad

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Objective: To assess treatment goals attained by patients according to CHRC/PAHO guidelines for diabetes management in primary care centres in North Trinidad.

Design and Methods: A cross-sectional survey of 225 patients with diabetes was done in five primary care centres. Data collected included age, gender, ethnic groups, religious background, educational level and duration, diabetes type and duration since diagnosis, hypertension status, current blood pressure, level of physical activity and current medications. Last documented serum cholesterol and HbA1c within the past year were obtained from patient charts. Anthropometric measurements including weight, height, waist and hip circumferences were done.

Results: 49.3% of patients achieved the target total cholesterol of less than 200mg/dL while 56.6% had an HbA1C level of less than 6.5%. Only 47.7% attained a blood pressure target of $\leq 130/80$ mmHg while 25.2% had Body Mass Index (BMI) of less than 25 kg/m². For waist circumference measurements, 40.8% of males and 2.1% of females were within recommended limits. Only 13.5% had ≥ 20 minutes of at least moderate exercise daily. No patient met all 6 recommended target values.

Conclusions: There is poor achievement of treatment goals as dictated by best practice diabetes guidelines. Results from this study may serve to inform strategy revisions aimed at more widespread achievement of control targets in this population.

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The attitudes of medical practitioners towards patients with mental illness in Barbados

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Objective: To assess attitudes of stigmatization among medical practitioners in Barbados and to determine whether there are differences between psychiatrists and practitioners in other disciplines.

Design and Methods: The Attitudes to Mental Illness Questionnaire was distributed to 365 registered medical practitioners in Barbados with email contacts using SurveyMonkey.com and paper questionnaires. Nonparametric tests were used to assess differences in attitudes between psychiatrists and other medical practitioners and to make comparisons in other subgroups.

Results: The survey was completed by 43.3% of the target population. Of the medical practitioners who completed the survey (n = 158), only 144 identified their area of specialty: Seven per cent practiced in the area of psychiatry, 33.5% were general practice/family medicine practitioners, 28.5% practised in medical specialties and 22.2% practised in surgical specialties. The attitudes of medical practitioners were predominantly negative towards substance use disorders and schizophrenia, and neutral towards the hypothetical patient with depression and self-harm. There was no difference in the attitudes of psychiatrists when compared to those of practitioners in other disciplines.

Conclusions: Medical practitioners, including psychiatrists, in Barbados have predominantly negative attitudes towards schizophrenia and substance use disorders. Education and anti-stigma campaigns are needed to address attitudinal change among practitioners especially psychiatrists, in the interest of optimal patient care.

O – 19

Domestic violence in Curaçao and its health consequences

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Objective: To assess the prevalence of domestic violence on Curacao and its health consequences.

Design and Methods: Eight-hundred and sixteen respondents participated in the study. A mixed mode approach was used: respondents could choose to fill in the questionnaire by themselves, or to have an interviewer read the questions to them and fill in their responses. The questionnaire contained closed questions about experiences with specific forms of psychological, physical and sexual domestic violence and questions about health complaints and medical consumption.

Results: Fifty three per cent of the respondents have experienced some form of domestic violence at some point in their life: 34% psychological violence, 31% physical violence and 11% sexual violence. Victims of domestic violence had more health complaints and more medical consumption in the past year.

Conclusions: Domestic violence is prevalent in Curaçao. Domestic violence experiences are associated with more health complaints and more medical consumption.

HIV/AIDS/STI

Chairpersons: B Camara, G Avery

O – 20

The prevalence of other sexually transmitted infections in confirmed HIV cases at a referral clinic in Jamaica

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Objective: The study determined the prevalence of non-ulcerative and ulcerative sexually transmitted infections (STIs) and their association with sexual risky behaviour in a sample of HIV seropositive men and women.

Design and Methods: This study was conducted at the Comprehensive Health Centre in Jamaica, an STI referral centre. The sample comprised 138 men and 132 women age 15–49 years. Average age was 29.5 years. The study was retrospective, from 2000 to 2002 and sample collection was randomized. The sexual behaviours of the subjects were assessed from the case records.

Results: In the 270 HIV-diagnosed cases examined, the prevalence of STIs was 85.2% with an average of four STIs per patient. There was a total occurrence of 744 STIs with nongonococcal urethritis (19.4%), gonorrhoea (17.2%), candidiasis (13.4%), trichomonas (12.4%), genital ulcer (10.4%) and syphilis (7.3%) which was the most common in HIV-infected men and women. The presence of STI was associated with continued practice of risky sexual behaviour. The age group of those most implicated was the 30–34-year; 73.1% of the HIV-infected patients had multiple sexual partners with only 16.4% reporting frequent condom use.

Conclusion: The study demonstrates that there is a high prevalence of non-ulcerative and to a lesser extent ulcerative STIs in HIV-infected patients in Jamaica. The findings support the need for implementation of effective diagnosis and treatment strategies coupled with education about safe-sex practices in HIV prevention and STI control programmes.

O – 21

Adherence to antiretroviral therapy among people accessing services from non-governmental HIV support organizations in three Caribbean countries

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Objective: To identify factors associated with anti-retroviral therapy (ART) adherence in order to guide the development of strategies to improve adherence.

Design and Methods: A cross-sectional survey was conducted with people living with HIV (PLHIV) who receive services from non-governmental organisations affiliated to the Caribbean Regional Network of People Living with HIV/AIDS (CRN+) in Antigua and Barbuda, Grenada and Trinidad and Tobago. PLHIV from CRN+ traced potential participants, administered informed consent procedures and carried out structured interviews. The main outcome measure was 95% to 100% adherence over the past 7 days. Logistic regression was conducted to identify associations with demographic characteristics, psychological status, health and support service use, sexual behaviour and substance abuse.

Results: Of 394 respondents, 69.5% were currently taking ART. Of these, 70.1% took 95% to 100% of their prescribed pills. One in twenty took more pills than prescribed, all of whom were prescribed fewer or equal to the median pill number. Factors independently associated with adherence were use of a counselling service (OR 3.27; 95% CI 1.59, 6.74) revelation of HIV status without consent (OR 2.28; 95% CI), alcohol consumption (OR 0.45; 95% CI 0.22, 0.92) and side effects (OR 0.30; 95% CI 0.14, 0.65). Resistance to ART was reported by 6% of users.

Conclusions: Improvements in ART adherence may be achieved by counselling, focussed attention to alcohol users and developing drugs with reduced side effects. Such measures are critical to maintain PLHIV quality of life gains and prevent the proliferation of drug resistant HIV strains.

O – 22

Harm reduction and pregnancy outcomes in heterosexual HIV discordant couples in Tobago

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Objective: To assess the impact of the Prevention for Positive programme on heterosexual discordant HIV couples in treatment and care at the Tobago Health Promotion Clinic (THPC) from 2004–2009.

Design and Methods: The charts of all of the thirty-one discordant couples who were part of the prevention for positives programme from 2004–2009 were received and appropriate data were extracted. Selected couples were interviewed to capture relevant data that were not in their medical records.

Results: There were 31 discordant couples; the index partner was male in 12 and female in 19. There was one case of male to female HIV transmission and no female to male transmission. There were 11 pregnancies (8 accidental and three planned), 'one miscarriage', one infant death at term and no vertical transmissions. Three of the couples in which the female was positive had two or more pregnancies. There were 3 pregnancies in the 7 couples who participated in the "timed sexual intercourse" programme.

Conclusions: The need for children and the intent to conceive increases the risk of HIV transmission among discordant couples. Accidental or unplanned pregnancies are common in this group.

O – 23

Demographics, clinical profile and outcome among the HIV-infected persons hospitalized in the HAART era in Barbados

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Objective: To describe the demographic and clinical profile, reasons for hospitalization and its outcome for adult HIV-infected inpatients in the era of highly active antiretroviral therapy (HAART) in Barbados.

Methods: This report is based on a retrospective audit of the admission records for persons admitted to the Queen Elizabeth Hospital during the period July 2008 to June 2009. The case notes of all the adult admissions where one of the discharge diagnoses was HIV infection were reviewed. Data including the patients' demographics, date of diagnosis of HIV infection, treatment and the follow-up details, outcome of the current admission and the final diagnosis at the time of discharge or death were extracted.

Results: Over the period, HIV infection accounted for 2.9% of the 154 adult admissions to the medical wards. One-hundred and three (67%) admissions were in persons known to be HIV-infected prior to the current admission; diagnosis of HIV infection was made for the first time in 51(33%) cases. Overall, opportunistic infection was the commonest (47%) discharge diagnosis, followed by serious bacterial infections and HIV nephropathy. Poor adherence to HAART or no HAART was associated with death ($p = 0.001$).

Conclusions: A significant proportion of patients admitted with HIV infection were the newly diagnosed and severely immunosuppressed. Opportunistic infection continues to be the commonest discharge diagnosis. Poor adherence to HAART or not being on HAART due to poor follow-up after diagnosis was associated with higher risk for death.

Nutrition

Chairpersons: AA Jackson, J St John

O – 24

A baseline survey of knowledge attitudes practices and beliefs of nutrition and healthy lifestyles among primary school children in Trinidad and Tobago

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Objectives: To determine the prevalence of lifestyle and nutrition-related knowledge, attitudes and healthy behaviour among primary school children in Trinidad and Tobago.

Design and Methods: The questionnaire was pilot tested, validated and administered in a cross-sectional survey-design to children in 8 primary schools in Trinidad and Tobago. Children and parents gave informed consent.

Results: Equal numbers (400; 43.3% males) were from standards 2–4. Most (92.4%) identified a healthy person; 93% considered themselves healthy; 42.2% had heard of food groups. One-third (39.3%) brought lunch and 58.6% liked lunch served at school. Fast foods were eaten once/week by 88.2%. Many (60.2%) did not know if the foods they ate were healthy. Most (96.5%) thought that physical activity benefitted health (50%–80%) and school (65%); 96% enjoyed PE which was weekly (84.0%) but in 21.4% there was no teacher. After school, 30% engaged in planned activity. At home activities included playing (49.6%), internet (28.6%), TV (64.9%) and video games (49.1%). Of those who watched TV every day (62%), 78.5% watched ≥ 3 shows daily. Students believed it was important to eat healthy foods, be physically active and be healthy: 88.5%, 77.8% and 91.2% respectively. Overall, 45.6% to 63.9% believed that they could make healthy choices and 86.7%, 68.1% and 67.6% felt safe at school, in a park and in the neighbourhood, respectively. Overall 87.1% of all students felt happy.

Conclusions: There is a good level of lifestyle and nutrition-related knowledge, attitudes and healthy behaviour

among primary school children, which could serve as the basis for promoting healthy lifestyles.

O – 25

Anaemia in school children in the Turks and Caicos Islands: The tale of two cohorts

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Objective: To examine the anaemia status and trends among adolescents in Turks and Caicos (TCI).

Design and Methods: A cross-sectional survey compared haemoglobin levels of two cohorts of students ($n = 483$; girls = 253, aged 11–18 years entering public high schools (Fall 2008; 2009). Inter-cohort, island, nationality and gender comparisons of mean haemoglobin and anaemia status (haemoglobin < 12.0 g/dL) were conducted using one-way ANOVA and Chi-squared analyses, respectively. Comparisons were also made with TCI children similarly assessed in 1974.

Results: Participants' mean age was 12.69 ± 0.97 years. More than half (60.2%) were TCI nationals and resided in $TCI \geq 5$ years. The mean haemoglobin level was 12.81 ± 0.96 g/dL with boys (13.02 ± 0.97 g/dL) significantly higher ($p < 0.001$) than girls (12.62 ± 0.90 g/dL). These indicators were similar for both cohorts. No participant had $Hb < 10.0$ g/dL. However, overall degree of anaemia ($Hb < 12/dL$) differed between cohorts (81 [16.8%] overall; [Cohort 1 = 20.4% and Cohort 2 = 12.1%]) with more girls, especially non-TCI nationals, (52 [20.5%]) than boys (29 [12.6%], $p = 0.02$).

Conclusion: Current finding of no haemoglobin level < 10.0 g/dL compared to 16% in 1974 represents a marked improvement. The improving trend continues with Cohort 2 (12.1%) compared to Cohort1 (20.4%) being mildly anaemic. This could support the 1984 national dietary survey's assertion that sub-optimal iron intakes contributed to anaemia in vulnerable groups. This survey highlights the need for targeted intervention and additional research to further reduce anaemia in TCI.

O – 26

Development of a quantitative food frequency questionnaire for assessing food and nutrient intakes to study relationships between diet and chronic disease burden in Trinidad

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Objective: To generate a food list and prepare a draft quantitative food frequency questionnaire (QFFQ) to study diet-disease associations in Trinidad.

Design and Methods: Trained interviewers obtained 24-hour recalls from randomly selected university staff and purposely selected individuals of varying socio-economic status; the sample was similar to the general population in terms of gender, ethnicity, marital status, employment status and religion.

Results: A total of 324 persons were interviewed (response rate 92%); 48% male; average age of 43 years. Self-reported morbidity included hypertension in men (20%) and heart disease in women (30%); hypercholesterolaemia in 22% of men and 30% of women. Supplements were used by ~33% of respondents. Full cream milk (64%) was the most frequently consumed food item, followed by plain rice. Wheat products were eaten by ~33% of respondents; raw salad was the most commonly consumed vegetable followed by lettuce and tomatoes. More than 50% consumed sweetened fruit drinks and 28% carbonated soft drinks. Fruit or vegetable was consumed by 23% but when fruit juices were removed this fell to 17%; 24.4% ate no fruits and 21% had no vegetables; 5.5% had neither. A total of 439 food items were captured by the 24-hour recall which, after applying exclusion criteria and grouping, resulted in 146 food items being categorized into 11 groups for the draft QFFQ.

Conclusions: The data obtained and the draft QFFQ could now facilitate meaningful assessment of the dietary intakes of the Trinidadian population.

O – 27

Vitamin D deficiency and its relationship to adiposity and metabolic risk factors among older African-Caribbean men

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Objective: To determine the prevalence of total vitamin D (25(OH)D) deficiency and the possible relationship of vitamin D to adiposity and metabolic risk factors for chronic and inflammatory diseases in Afro-Caribbean men in Tobago.

Design and Methods: Anthropometry, dual-energy X-ray absorptiometry (DXA) body composition, fasting serum glucose and insulin and mass spectrometry serum 25 (OH) D2 and 25 (OH) D3 were measured in a randomly selected subset of 424 African-Caribbean male participants, aged > 65 years, in the large population-based Tobago Health Study. Standard procedures were followed to collect, store and ship the blood samples to the Mayo Clinic to measure 25 (OH) D2 (derived from ergocalciferol) and 25 (OH) D3 (derived from cholecalciferol) using mass spectrometry. Blood levels of 25 (OH) D2 and 25 (OH) D3 were quantified, reported individually and summed to provide total 25 (OH) D.

Results: The mean serum 25 (OH) D was 35.1 ng/ml (SD = 8.9). Deficiency (25 (OH) D < 20 ng/mL) was present in only 2.8% and insufficiency (< 30 ng/mL) in 24% of men. Total 25 (OH) D was negatively correlated with BMI ($r = -0.15$), DXA total fat mass ($r = -0.14$), trunk fat mass ($r = -0.13$) and with DXA total lean mass independent of age or height (all $p < 0.01$) but positively correlated with leg fat ($r = 0.11$; $p < 0.05$). Additionally, 25 (OH) D was negatively correlated with fasting insulin ($r = -0.11$; $p < 0.05$) and homeostatic model assessment (HOMA) insulin resistance index ($r = -0.12$; $p < 0.05$) but not with fasting glucose levels.

Conclusions: Vitamin D deficiency is very uncommon in this population. Future longitudinal studies are needed to delineate the possible protective effects of high vitamin D levels on obesity, insulin resistance and other associated diseases.

Clinical Studies

Chairpersons: S Ramsewak, St C Thomas

O – 28

Characterization of the asthmatic population of St Vincent and the Grenadines: Asthma severity levels and atopic sensitization

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Objective: To investigate the relationship of aeroallergens, age and wheezing incidence (1986 and 2002) with diagnosis and persistence of asthma into adulthood in St Vincent and the Grenadines (SVG).

Design and Methods: Asthma was diagnosed in 525 participants recruited from the asthma clinic. Severity levels were assigned according to the National Heart and Lung Blood Institute Guidelines. Participants were separated into three age groups [≤ 6 years ($n = 176$), 7–18 years ($n = 164$) and ≥ 19 years ($n = 185$)] and skin testing to allergens (dust mite, cat, dog, cockroach, pollens and mold) was performed on 171 participants. The age of asthma onset was also solicited.

Results: Persistent asthma was diagnosed in 235 participants (44.8%) and increased with age ($p < 0.0001$). Atopy was identified in 121/171 (70.8%) participants and was significantly higher in persistent asthma patients ($p = 0.0036$). A significant association was seen between atopy and age group ($p = 0.0003$) in participants with intermittent asthma but not in persistent asthma. The most common allergen among atopic participants was house dust mite (93.4%), followed by cockroach (47.9%). Adult participants reporting the onset of asthma in adulthood were less atopic than those whose asthma developed in childhood (age ≤ 18 years, $p = 0.045$).

Conclusions: The predominance of atopic asthma in SVG implicates a role for atopy in the four-fold, sudden rise in asthma cases. The characteristics of asthma in SVG are similar to those reported in developed countries.

O – 29

Measuring microalbuminuria in sickle cell disease: Spot albumin/creatinine ratio versus 24-hour urine protein assay

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Objective: Albuminuria has emerged as a risk marker for cardiovascular and renal disease progression. Albuminuria can be measured in several ways: 1) in a spot morning urine sample as urinary albumin: creatinine (ACR) ratio (mg/mmol) and 2) in a 24-hour urine collection as urinary albumin (UAE) excretion (mg/24 hours). The performance of ACR in predicting UAE in sickle cell disease is unclear. We therefore tested the diagnostic performance of ACR, measured in a spot morning urine sample as well as in 2-hour timed collections, in predicting urinary albumin excretion (microalbuminuria $\text{UAE} \geq 30$ mg and ≤ 300 mg).

Design and Methods: Thirty subjects 17 males and 13 females with sickle cell disease (24 homozygous S (HbSS), 4 heterozygous C (HbSC), 2 Sickle Cell β^0 -Thalassaemia ($\text{S}\beta^0$)) patients provided early morning spot urines as well as two- and four-hour timed collections and a subsequent 24-hour urine collection. Albumin and urinary creatinine concentrations were measured.

Results: The mean (\pm sd) systolic pressure, mean diastolic pressure and body mass index of the sample were 108 ± 11 mmHg, 64 ± 7 mmHg, 20.4 ± 2.9 kg/m² respectively. The areas under the Receiver Operating Characteristic (ROC) curves for microalbuminuria were 0.91 ± 0.085 for ACR and 0.97 ± 0.027 for urine albumin concentration in spot urine samples. Corresponding areas for microalbuminuria in 2-hour timed samples were 0.93 ± 0.06 and 0.99 ± 0.02 , respectively.

Conclusions: The diagnostic performance of ACR in a spot morning urine sample and a two-hour timed urine collection in predicting microalbuminuria in subsequent 24-hour urine collections is very good.

O – 30

Renal function is associated with arterial stiffness in the African Caribbean population of Tobago

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Objectives: To test the hypothesis that an increased serum creatinine concentration and a decreased estimated glomerular filtration rate (eGFR) may be related to increased arterial stiffness measured by pulse wave velocity at the level of the peripheral arteries in this community-based sample of African ancestry population.

Design and Methods: Serum creatinine and brachial ankle pulse wave velocity (baPWV) were measured using standard protocols on 7 large, multi-generation pedigrees (average family size: 50; range: 19 to 96; nearly 3500 relative pairs) comprising a total of 402 participants, aged 18 to 103 years (male: 42.1 ± 16.9 (SD) years; female: 42.6 ± 17.3 (SD) years). Estimated GFR was calculated using the four-variable Modification of Diet in Renal Disease Study equation for standardized serum creatinine. Multivariate regression models were built for males and females separately to determine significant predictors of baPWV.

Results: The average baPWV was 1438.2 ± 319.7 (cm/s) in men and 1412.9 ± 404.1 (cm/s) in women. BaPWV increased with age. Separate multiple regression analyses were conducted with serum creatinine or eGFR as explanatory variables. Among Tobago men, serum creatinine and eGFR were independently associated with baPWV adjusted for age, systolic blood pressure and triglyceride ($\beta = -0.18, 0.20; p = 0.04, 0.006$ respectively). Significant associations were also found among women, adjusting for age and systolic blood pressure ($\beta = 0.15, -0.13; p < 0.002, 0.003$, respectively).

Conclusion: The data suggest that reduced kidney function, indicated by either increased serum creatinine level or decreased eGFR, was an independent predictor for arterial stiffness in this Afro-Caribbean population.

O – 31

The occurrence of left ventricular hypertrophy in normotensive individuals in a community setting in North-East Trinidad

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Objective: To determine the occurrence of left ventricular hypertrophy (LVH) in normotensive individuals in a community setting in North-east Trinidad.

Design and Methods: We recruited 209 participants and screened them for hypertension, and also administered 12-Lead ECGs. The diagnosis of LVH was based on the Sokolow-Lyon and Cornell criteria. A randomly selected group of 15 participants also underwent confirmatory echocardiograms.

Results: Using the Sokolow-Lyon ECG criteria, the proportion of normotensive persons with LVH was 10.5% (95% CI, 10.1, 10.9). Based on the Cornell ECG criteria the proportion with LVH was 5.26% (95% CI 4.98, 5.54). According to the American Society of Echocardiography (ASE.) criteria, the proportion with LVH was 2.9% (95% CI, 2.77–3.23) and based on the WHO guidelines this proportion was lower at 1.5% (95% CI 0.1.34, 1.66).

Conclusion: The estimated prevalence of Left Ventricular Hypertrophy by echocardiography in normotensive Trinidadians was similar to that found in other international studies.

O – 32

TRAQ-D (Trinidad Risk Assessment Questionnaire for Type 2 diabetes mellitus): A cheap, reliable, non-invasive screening tool for diabetes

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Objective: To design a reliable, valid and culturally appropriate risk questionnaire and determine its effectiveness as a tool for the early detection of Type 2 diabetes mellitus in Trinidad.

Design and Methods: A questionnaire was designed with known risk factors for diabetes containing 21 closed-ended questions. After administration to 456 patients, a series of logistic regressions were performed to extract the most significant variables ($p < 0.05$). Thereafter, these factors were scored using their odds ratios and a tool, the Trinidad Risk Assessment Questionnaire for Type 2 Diabetes Mellitus (TRAQ-D) was created. The tool was administered to 232 patients. The scoring system was revised by further logistic regressions using combined data from both phases. A cut-off score was then determined with suitable specificity/sensitivity ratios. Lastly, TRAQ-D was compared to BMI and age independently, using receiver operating characteristic (ROC) curves.

Results: TRAQ-D includes 7 variables: age, gender, BMI, family history of diabetes, ethnicity, smoking and waist

circumference. A score of 17 or greater was used as the criterion for further testing (specificity: 90.7%, sensitivity: 61.4%). Compared to BMI and age, the area under the ROC curve for TRAQ-D was significantly higher (0.884). **Conclusion:** TRAQ-D is the only currently available non-invasive screening tool for Type 2 diabetes mellitus that has been created and tested on the Trinidad population. In a developing nation such as Trinidad and Tobago, TRAQ-D could play an important role. It is cheap, reliable and should be an ideal clinical guide to decide if a patient needs any further screening tests.

O – 33

Penile cancer in Jamaicans managed at The University Hospital of the West Indies

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Objectives: To determine the prevalence and clinicopathological correlates of penile cancer and clinical outcomes of a sample of Jamaicans managed at the University Hospital of the West Indies (UHWI).

Design and Methods: Demographic, diagnostic, treatment and outcome data were abstracted from records of all patients diagnosed with penile cancer at UHWI from 1998 – 2008 and compared with a UHWI report of 1959.

Results: Twenty-two (84.6%) of the 26 patients diagnosed formed the current series. Most (21 [95.5%]) had squamous cell carcinoma. The mean (\pm SD) age was 68.0 \pm 13.0 years. Most, 19 (86%) were uncircumcised; mean tumour size was 5.7 \pm 2.6 cm; mean duration between recognition of lesion and presentation to hospital was 7 \pm 8.2 months. Most lesions involved the glans (82%); however in 36%, the lesions involved the entire penis. Most lesions were associated with clinically regional disease (73 %;) and 52% were at an advanced pathological stage on presentation. The following surgical procedures were performed in 68% of patients: partial penectomy (50%), total penectomy (14%) and circumcision (4%). The Case Fatality Rate was 38% with a median post-surgery survival of 38 person-months. The major predictor of death in this series was increasing age (HR=1.06, 95% CI 0.99 to 1.1, $p = 0.079$). There was an increase in age and clinical stage of presentation in the current series when compared to the 1959 report. Half (50%) presented with clinically localized disease in the 1959 report compared to 27% in the current report. However, no significant difference in survival was found (31% vs. 38%), respectively.

Conclusions: Penile cancer is an uncommon cancer which is usually diagnosed at an advanced stage in Jamaicans. Overall survival is poor and advanced age is a major predictor of death.

O – 34

The prevalence of geriatric depression in the District Hospitals of Barbados

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Objectives: To determine the prevalence of depression in the institutionalised elders residing in state-run facilities in Barbados; assess the usefulness of the Geriatric Depression Scale (GDS-15) as a screening tool for depression and the degree to which depression is under-recognised by staff.

Design and Methods: A total of 395 elderly residents (> 65 years old) of the 2 largest facilities with institutionalized elders in Barbados, The Geriatric and St Philip District Hospitals, were screened using the Folstein Mini-Mental State Exam (MMSE). Persons whose scores were ≤ 14 were excluded from further participation. Each of the remaining 98 (24.8%) participants was assessed for depression using both the GDS-15 and a clinical interview based on Diagnostic and Statistical Manual (DSM-IV-TR) criteria (the gold standard) administered in random order. Additional sociodemographic, health history and diagnosis of depression information were collected from patient records.

Results: Participants mean age was 79.0 (\pm 6.8) years. The MMSE mean score was 20 \pm 4. The prevalence of a major depressive episode was 9.2% (95% CI 3.5, 14.9). Three (33.3%) of the 9 (9.2% of sample) identified with major depressive episodes were also identified by hospital staff. The prevalence of significant depressive symptoms (GDS-15 score > 5) was 17.3% (95% CI 9.9, 24.8). The internal consistency/reliability of the GDS-15, assessed using the Cronbach's alpha coefficient, was 0.89, with an optimal cut-point of 9, sensitivity 1.00 and specificity 1.00.

Conclusion: The GDS-15 is an adequate depression screening tool for institutionalized elders in Barbados and could be beneficial as a routine screening tool for depression.

Molecular detection and epidemiology of extended-spectrum beta-lactamase genes prevalent in clinical isolates of *Klebsiella pneumoniae* and *Escherichia coli* from Trinidad and Tobago

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Objective: To describe the molecular detection and epidemiology of extended-spectrum beta-lactamase (ESBL) subtypes prevalent in clinical isolates of *K pneumoniae* and *E coli* in Trinidad and Tobago.

Design and Methods: Over 36 months, isolates of *E coli* and *K pneumoniae* from clinical specimens of patients processed at a regional tertiary hospital in Trinidad were identified using standard microbiological methods. MicroScan System (Siemens, USA) was used to determine minimum inhibitory concentration (MIC) values while E-

test (AB Biodisk, Sweden) assays phenotypically confirmed ESBL production. *K pneumoniae* (n = 65) and *E coli* (n = 25) isolates confirmed as ESBL producers were further subjected to multiplex PCR and pulsed-field gel electrophoresis (PFGE) tests to determine the ESBL subtypes and clonal relatedness.

Results: Female patients (67.8%) and urine samples (65%) yielded most ESBL isolates; with over 90% recovered from the hospital's medicine and surgery facilities. All ESBL isolates including all *K pneumoniae* producing ESBLs were 100% susceptible to carbapenems and amikacin antimicrobials. PCR detected 100% *bla*_{TEM} genes, 4.1% *bla*_{SHV} and 37.5% *bla*_{CTX-M} genes among *E coli* isolates. Similarly, 84.3% *bla*_{TEM}, 34.5% *bla*_{SHV} and 58.8% *bla*_{CTX-M} genes were detected in *K pneumoniae*. Pulsed-field gel electrophoresis results showed diverse and unrelated clones.

Conclusions: This is the first report of molecular characterization and epidemiology of ESBL subtypes in *E coli* and *K pneumoniae* isolates in the country. The CTX-M, mainly phylogenetically group 1 type was most predominant. Most ESBL isolates were still susceptible to carbapenems and aminoglycosides and their spread appears to be polyclonal and clonally unrelated.

Communicable Disease

Chairpersons: R Phillips, SC Rawlins

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Origins of sylvatic yellow fever virus outbreaks in Trinidad

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Objective: To determine whether the 2008/9 sylvatic outbreak of yellow fever virus (YFV) and previous epizootics in Trinidad resulted from *in-situ* evolution or importation of virus from the South American mainland.

Design and Methods: The BEAST v1.5.2 software package was used to perform Bayesian phylogeographic analysis of the prM/E region of 104 YFV from the Americas, including five viruses isolated during the 2008/9 epizootic and eight isolates from the South American mainland isolated within the last decade. Using this approach, we inferred the geographic locations of hypothetical ancestors of sampled viruses (with posterior probabilities), estimated evolutionary rates for YFV in the Americas and dates of divergence for individual clades.

Results: The mean substitution rate for YFV in the Americas was estimated at 3.74×10^{-4} substitutions per site per year; 95% highest probability density (HPD) = $2.55 - 4.92 \times 10^{-4}$. The most recent common ancestor for viruses from the 2008/9 epizootic was estimated to have arisen 4.2 years ago (95% HPD 0.4 – 9.0) and to have existed within Trinidad (posterior probability 94%) as did the progenitor of the 1995 Trinidad epizootic. The data also suggest *in situ* evolution between the 1979 and 1988/89 Trinidad epizootics, however there is also evidence of virus move-

ment between the mainland and Trinidad prior to 1979 and between 1989 and 1995.

Conclusion: The 2008/9, 1995, 1988/9 and 1979 YFV epizootics in Trinidad arose from viral ancestors that existed within Trinidad (enzootic maintenance) but there is also occasional viral movement between Trinidad and the South American mainland.

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Dengue seroprevalence among American Red Cross blood donors in Puerto Rico, 2006

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Objective: To determine the seroprevalence of dengue in healthy adult blood donors in Puerto Rico.

Design and Methods: An anti-dengue IgG ELISA was performed on a random sample of 300 blood donations collected by the American Red Cross from February 1 to March 31, 2006. All positive specimens were then stratified according to their optical density (OD), such that specimens with an $OD \geq 1.0$ were defined as high-positives, those with an $OD \geq 0.5$ and ≤ 0.99 were medium-positives and those with an $OD \geq 0.15$ and ≤ 0.49 were low-positives. Randomly selected specimens were subsequently tested by a microneutralization assay to determine the serotypes of previous dengue infections.

Results: Most (84%) blood donors were male and the mean age was 44.6 years (18–80 years). The IgG seroprevalence rate (95% CI) was 92% (89% – 95%). Ninety-two (31%) specimens were tested using the microneutralization assay. Reactivity to all four dengue (DENV) serotypes was observed in the microneutralization assay and the serotype was identified in 32 specimens. Of all these specimens, the most common serotypes were DENV-3 and DENV-2.

Conclusions: The seroprevalence of dengue in adult blood donors was high. Supplementary serological testing of donated blood can potentially provide information on the silent circulation or introduction of DENV serotypes.

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***Aedes aegypti* in Jamaica, West Indies: container productivity profiles to inform control strategies**

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Objective: To determine the main breeding habitats and the daily adult productivity levels of *Ae aegypti* in Jamaica so that better adaptation strategies can be developed to prevent dengue outbreaks.

Design and Methods: House to house mosquito inspections were conducted in three parishes, St Catherine, Portland and St Ann, Jamaica, during both the wet and dry seasons. The number of immatures collected from each container was recorded on standard forms and samples taken to the Ministry of Health laboratory for identification using standard taxonomic keys.

Results: From a total of 8855 containers inspected from Portland (4,728), St Ann (2639) and St Catherine (1488), 19.2%, 6.7% and 27.2% were positive for *Ae aegypti* breeding respectively. During this study the containers used by *Ae aegypti* were different at each study site but the primary breeding site of *Ae. aegypti* was always water drums which accounted for over 58% breeding during the dry season and over 61% during the wet season. The mosquito productivity results showed 1.51, 1.29 and 0.66 adult female mosquitoes per person in Portland, St Ann and St Catherine during the dry season and 1.12, 0.23 and 1.04 female mosquitoes per person in Portland, St Ann and St Catherine, respectively, in the wet season.

Conclusion: Vector control units in Jamaica now know the containers which produce large numbers of *Ae aegypti* mosquitoes. With this knowledge, all containers can be ranked according to productivity levels and targeted on a sustained basis to reduce adult production; thereby reducing the risk of dengue transmission.

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Organophosphate resistance in strains of *Aedes aegypti* mosquitoes in Trinidad

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Objective: To assess resistance to organophosphates in Trinidadian strains of *Aedes aegypti*

Design and Methods: Late 3rd to early 4th stage *Aedes aegypti* larvae of the F2-F4 generations, collected from eight sites in Trinidad, were assayed against temephos, malathion and fenthion, using a time-mortality based bioassay. Data were subjected to probit analyses and the lethal time for 50 and 90% mortality of larvae with 95% CIs was estimated for each mosquito strain and insecticide. Resistance Ratio (RR) was calculated in relation to the CAREC reference strain. Strains were categorized as – low RR < 5; medium-fold RR 5–10; high RR > 10. Strains were categorized as resistant, incipiently resistant or susceptible based on their Resistance Threshold (RT) – the time for 98–100% mortality in the CAREC strain.

Results: The diagnostic dosages determined using the CAREC strain were 200ug/100ml for temephos and malathion and 100 ug/100ml for fenthion. Varying degrees of resistance were seen to temephos; four strains showed high RRs, three low and one medium-fold. Resistance to malathion was low and a high RR was seen in the San Fernando strain only. Except for the Haleland Park strain, which was more susceptible to fenthion than the CAREC strain (RR < 1), all strains showed low resistance. The established RT was 120 mins for temephos and malathion and 60 mins for fenthion. All strains were resistant to temephos, while two strains were incipiently resistant to malathion and fenthion.

Conclusions: Trinidadian larval *Ae aegypti* populations are resistant to organophosphate insecticides. Source reduction through environmental sanitation, rather than reliance on insecticide, should be emphasized.

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Leptospirosis in humans, dogs, livestock and rodents in Trinidad and production of a new vaccine for use in dogs

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Objectives: (i) To determine the prevalence of leptospirosis in human and animal populations in Trinidad and the serovars present, (ii) to characterize *Leptospira* isolates by genotype, virulence, pathogenicity and antimicrobial resistance and (iii) to develop an effective vaccine for canine leptospirosis.

Methods: Two-thousand-eight-hundred and thirty-four serum samples from livestock, dogs, rodents and humans were serologically tested using microscopic agglutination test (MAT) and enzyme-linked immunosorbent assay (ELISA). Blood, kidney and urine samples from dogs and rodents were cultured for leptospirosis and isolates serotyped using rabbit antisera and monoclonal antibodies. Leptospire were molecularly characterized using multi-locus sequence typing (MLST) and real-time PCR for the LipL32 and DNA Gyrase B virulence genes. Virulence and lethal dose (LD₅₀) of selected isolates were determined in a hamster model and the most virulent were used to prepare killed vaccines that were compared to commercially available vaccines in a hamster model.

Results: For apparently healthy humans (n = 1174), 3.2% were seropositive for *Leptospira* spp. Seroprevalences in animals were: stray dogs (13.5%), rodents (16.5%), cattle (21.5%), sheep (5.0%), pigs (5.0%) and goats (3.3%). The predominant serogroup was Icterohaemorrhagiae. The *Leptospira* isolation rate for suspected canine leptospirosis, stray dogs and rodents were 18.0% (9/50), 3.4% (7/207) and 25.6% (54/211) ($p < 0.05; \chi^2$). The serovars identified amongst 70 *Leptospira* isolated were Copenhageni (65.7%), Mankarso (10.0%) and Icterohaemorrhagiae (1.4%). Thirteen serologically inconclusive isolates were identified as species *L. interrogans*, *L. santarosai* and *L. kirschneri* using MLST.

Killed vaccines produced from isolates from a canine leptospirosis case and an apparently healthy rodent were protective in a hamster model and have potential for future development.

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Survival of *Campylobacters* on cutting boards and ready-to-eat foods: the possible role of cross-contamination in the transmission of *Campylobacter* enteritis in Barbados

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Objective: The aim of this study was to investigate the survival of local poultry-derived *Campylobacter* strains on artificially-inoculated cutting boards and ready-to-eat foods.

Design and Methods: The persistence of three *Campylobacter* strains derived from poultry on plastic, granite and wooden cutting boards was assessed. Boards were inoculated with a standard suspension of campylobacter cells in peptone-saline diluents. At 0, 30, 60, 90 and 120 min post-inoculation, surviving cells were recovered and enumerated using standard plating procedures. The survival of one strain each of *C. jejuni* (Chi 133) and *C. coli* (Chi 19) was also assessed on fresh produce stored at refrigeration temperature (6°C). The produce (melon, carrot, cabbage, lettuce and cucumber) was inoculated with $\sim 10^5$ - 10^7 colony-forming units/gram of the strain and incubated at 6°C for up to 72 hours. Surviving campylobacters were enumerated at 24 hours intervals.

Results: The strains examined in this study persisted for significantly longer periods (up to 120 min) on plastic and granite cutting boards than on the wooden board (< 30 min) ($p < 0.001$). There was a significant difference in death rate between strains on all surfaces ($p < 0.05$). Both strains were able to survive on the ready-to-eat foods for at least 48 hours.

Conclusions: Local poultry-derived *Campylobacter* strains can survive on granite and plastic cutting boards and on ready-to-eat foods for relatively long periods. Further investigations into the role of cross-contamination in the transmission of *Campylobacter* enteritis in Barbados are warranted.

Closing Session

Chairpersons: A Cumberbatch, L Pinto-Pereira

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Wound healing potential of the skin of the common grape (*Vitis Vinifera*) variant, Cabernet sauvignon

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Objective: To examine the wound healing activity of Grape *V. vinifera* using excision wound model in rats.

Design and Methods: We investigated grape skin powder for its wound healing activity using an excision wound model in rats. Animals were randomly divided into three groups of six (n = 6) each. The test group animals were treated topically with the grape skin powder (100 mg/kg body weight). The controls were treated with petroleum jelly. The standard group animals were treated with mupirocin ointment (100 mg/kg body weight). Wound healing was assessed by the rate of wound contraction, period of epithelialization and hydroxyproline content.

Results: On day 13, there was 100% reduction in the wound area in the grape skin powder treated animals, compared with control (82 %) and the standard (93%, $p < 0.001$). Treated animals showed significant decrease in the epithelialization period (11.33 ± 0.33) compared with controls (15.66 ± 0.42) and the standard (13.66 ± 0.42), ($p < 0.001$). The hydroxyproline content of treated animals was higher (45.25 ± 7.64) when compared with controls (22.34 ± 4.80) and the standard (36.04 ± 4.69 , $p < 0.05$). Histological analysis showed more collagen deposition and less macrophages in the treated animals when compared with the controls.

Conclusion: These experimental findings of increased rate of wound contraction, hydroxyproline content and decrease in epithelialization time in the treated animals support the proposition of potential use of grape skin powder in the management of wound healing.

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Dental health knowledge and attitudes of primary school teachers toward developing dental health education

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Objective: To assess the dental health knowledge of primary school teachers, their attitudes toward the prevention of dental diseases and to identify any barriers to the implementation of oral health promotion programmes in schools.

Design and Method: A cross-sectional survey of 246 primary school teachers using a self-administered questionnaire to assess teachers' knowledge of the causes and prevention of dental decay and their attitudes towards oral health and barriers to the implementation of dental health education programmes

Results: School teachers were generally very well informed about the causes and prevention of dental decay (83% knew of the caries preventive effect of fluoride). Knowledge of the appropriate management of serious dental trauma was very poor. Participants however seemed to have greater awareness of the appropriate management for less serious dental injuries – with 85% choosing to immediately send a child with a broken tooth to a dentist. The majority of teachers (97%) demonstrated positive attitudes towards dental health and its incorporation into the school curriculum. Teachers' attitudes to their own involvement in school based dental health education were also positive. Lack of training (70%) and resources (77%) and time (47%) within the curriculum were identified as major barriers to the implementation of dental health education programmes in primary schools.

Conclusion: Developing teacher-training programmes that include oral health knowledge could enable primary school teachers to play a significant part in oral health promotion for young children in Trinidad.

The association of academic streaming to depressive symptoms in adolescents across three Caribbean countries

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Objective: This paper examines the association between academic streaming and depressive symptoms among fourth form students in Jamaica, St Kitts and Nevis and St Vincent and the Grenadines.

Methods: A total of 1738 students enrolled in the fourth form in Jamaica (n = 278), St Kitts and Nevis (n = 744) and St Vincent (n = 716) were surveyed. Students completed the Beck Depression Inventory II (BDI-II) and a demographic data sheet as part of a larger study.

Results: A two stage regression analysis indicated that there were statistically significant differences in BDI-II depression scores by academic stream, gender, social class and country of residence, as well as an interaction of gender and country. Students assigned to a higher academic stream, male students, and students whose mothers had a post-secondary school education reported significantly lower BDI-II depression scores. Jamaican students reported significantly higher BDI-II scores than students attending high schools in St Kitts and Nevis. Finally, male students in Jamaica reported significantly higher BDI-II scores than male students in St. Kitts and Nevis and St. Vincent and the Grenadines.

Conclusions: Academic streaming is associated with depressive symptoms in each of the three Caribbean nations examined, with levels of depressive symptoms differentially manifested across the islands of Jamaica, St Vincent and the Grenadines, and St Kitts and Nevis. In addition, gender, as well as social class, are associated with depressive symptoms in each of the three Caribbean islands.

Medical student training at a University Hospital in Jamaica: A survey of patient awareness and attitudes

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Objective: To evaluate patient awareness that medical students may be involved in their care, and their willingness to participate in research and teaching activities.

Design and Methods: All consecutive patients admitted to the University Hospital of the West Indies (UHWI) between May 1, 2006 and May 29, 2006 who required elective or emergency surgical procedures were prospectively identified. These patients were interviewed using a standardised, pre-tested questionnaire about their knowledge and willingness to have medical students participate in the delivery of their care.

Results: There were 83 (39.5%) males and 127 (60.5%) females interviewed. The patients were unaware of the grade of the medical professional performing their interview/examination at admission in 157 (74.8%) cases or the grade of medical professional performing their operations in 101 (48.1%) cases. Only 14 (6.7%) patients were specifically asked to allow medical students to be present during their clinical care. When specifically asked, one patient declined. Had they been asked, 196 (93.3%) patients would have voluntarily allowed medical student involvement. Only 90 (42.9%) patients were made aware that they were admitted to an academic centre with research interests. Six (6.7%) patients declined to participate in research projects and 84 (93.3%) patients would have been willing to participate in teaching or research projects.

Conclusions: As medical educators, we are responsible to adhere to ethical and legal guidelines when we interact with patients. It is apparent that there is urgent need for policy development at the UHWI to guide clinicians and students on their interactions with patients.

Poster Abstracts

P – 1

Pandemic H1N1 influenza and dengue fever: A case report

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This is the case history of a 28-year old male who presented with symptoms of arthralgia, myalgia, headaches, non-productive cough, diarrhoea and fever over a one-week period. Three days after onset of symptoms, he presented to an Emergency Department where a Pan-bio Dengue Duo Cassette rapid test was positive for Dengue IgM and IgG and he was subsequently discharged. On day six, he was admitted to hospital complaining of dyspnoea with bilateral infiltrates in the chest radiograph. Broad spectrum antibiotics were commenced. The patient tested negative for H1N1 using the SD Biotec Rapid Kit but was started on oseltamivir while awaiting further results. Within 24 hours, he was admitted to the intensive care unit where he was intubated and mechanically ventilated. The patient's oxygen requirements continued to rise and he developed the acute respiratory distress syndrome. Demise occurred on day 12 after onset of symptoms. Following this, results for tracheal aspirate using RT-PCR confirmed Pandemic H1N1 but Dengue ELISA was negative for Dengue IgM. The initial clinical features of this patient are similar to syndromes due to both Dengue and H1N1 infection. Further, both Dengue and H1N1 maybe associated with infiltrates on the chest radiograph. The causes of a false positive Dengue rapid antibody test have been previously thought to be infection due to other arboviruses which are unlikely in Trinidad and Tobago at present. This case suggests that the rapid antibody test for Dengue maybe unreliable in the context of this H1N1 pandemic.

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Hantavirus infection among children hospitalized for febrile illness in Barbados

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Objectives: To investigate the epidemiology of Hanta virus infection in children requiring hospitalization and study the presenting features, clinical course and the outcome among them

Methods: A retrospective audit was conducted of all children hospitalized in the paediatric ward at the Queen Elizabeth Hospital from January 2007 to September 2009 with confirmed Hanta virus infection. Confirmation of Hanta virus infection was based on a single positive test for the IgM antibodies in the patient's serum at the time of admission.

Results: Forty-four children with febrile illness tested positive for Hanta virus infection; 23 males and 21 females. Seventeen (41%) were in the 0–4-year age group, sixteen (39%) were 5–9 years old and seven were in the 10–14-year age group. The majority of cases were from St Michael (14), Christ church (7) and St George (5). Respiratory symptoms and signs were the presenting feature in nine persons (24%) while ten (26%) had gastrointestinal symptoms and signs. Total WBC count ranged from 2000 to 31000/ml; twelve persons had counts higher than 12000/ml while seven had counts less than 6000/ml. Twenty-two per cent (8/28) had platelet counts less than 150 000/ml. Median duration of hospitalization was 3 days and there were no deaths.

Conclusions: Hanta virus infection in children is not uncommon, presents with febrile illness and respiratory or gastrointestinal symptoms which are self-limiting and brief. No mortality was noted in this series.

P – 3

Acute gastroenteritis among children in Barbados that required hospitalization: epidemiological, clinical and microbiological characteristics

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Background: Acute gastroenteritis is a common cause of morbidity and mortality in children and is caused by a variety of viruses, bacteria and parasites. The relative importance of the various aetio-pathogens is widely reported, but there remains a paucity of similar data for this important public health problem in the English-speaking Caribbean.

Objectives: (1) to determine the prevalence of selected bacterial and viral enteropathogens in children hospitalized with acute gastroenteritis and (2) to characterize the clinical course and outcomes among these children.

Methods: This report is based on a retrospective audit of all children aged less than 15 years of age with acute gastroenteritis admitted by the University firm of the Paediatrics department at the Queen Elizabeth Hospital. Stool samples were analysed for bacterial pathogens and Rotavirus. Demographics and clinical outcomes were extracted from the admission records.

Results: There were 571 cases hospitalized for acute gastroenteritis (AGE), which accounted for 11% of all medical hospitalizations among children. Of the total admissions for AGE, 201 (35.2%) cases were admitted by the University firm and stool culture results were recorded for 133 (66%) cases. Four-fifths of affected children were less than 5 years of age. Non-typhoidal Salmonella species was the most commonly isolated enteropathogen accounting for 21% of all cases. Rotavirus was identified as an aetiological agent in 11% of tested stool samples. The median duration of hospitalization was 2 days (range 1 day to 9 days) and there were no deaths.

Conclusions: Acute gastroenteritis was the second commonest diagnosis among hospitalized children; non-typhoidal salmonella being the principal aetiopathogen followed by Rotavirus.

P – 4

Utilizing phase contrast microscopy as a screening tool for urinary tract infections – A pilot study

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Objective: To determine whether phase contrast microscopy of uncentrifuged urine specimens could accurately identify and predict bacteriuria.

Design and Methods: A prospective study was conducted at the Clinical Microbiology Laboratory of the Eric Williams Medical Sciences Complex, Trinidad and Tobago. Fifty-two urine samples were examined via phase contrast microscopy at the time of culture. Uncentrifuged, unstained urine samples were examined using an Olympus BH2 microscope enabled with phase contrast at 400x magnification mounted on a Hawksley Neabauler counting chamber. Samples were classified either positive or negative or Indeterminate based on their level of bacteriuria. Microscopy results were compared with that obtained on urine culture. The two indeterminate specimens were excluded from this analysis.

Results

	Culture +ve > 10 ⁵	Culture –ve < 10 ⁵	Total
Microscopy +ve	11	1	12
Microscopy –ve	2	36	38
Total	13	37	50

Phase contrast microscopy afforded immediate interpretation in 50/52 (96.2%) of samples studied. When compared to urine culture as the gold standard, phase contrast microscopy had a sensitivity of 84.6%, specificity of 97.3%, positive predictive value of 91.7% and negative predictive value of 94.7%.

Conclusion: Phase contrast microscopy provided immediate interpretation in almost all of the urine samples examined.

P – 5

Spectrum of microbes and patterns of antimicrobial prescription in the neonatal intensive care units of Trinidad – a prospective observational study

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Objectives: To evaluate the prescribing patterns of antimicrobials and the spectrum of microbes in the Neonatal Intensive Care Units (NICU) at the three public hospitals in Trinidad.

Design and Methods: A prospective cohort study was conducted at the NICUs at the three major public hospitals over a three-month period during 2008. Demographic data

and clinical data such as prescribed antimicrobials, route of administration, culture and sensitivity reports, leukocyte count, length of hospital stay and outcome of patients were recorded from patient-charts.

Results: Three hundred and fifty-three patients were studied of which 203 (57.5%) were males. Mean birth weight was 2.96 ± 0.94 (SD) kg. Admission diagnoses included meconium stained liquor, preterm, respiratory distress, sepsis, maternal pyrexia, neonatal seizures, neonatal jaundice, infant of diabetic mother and low APGAR score. Length of stay ranged from 1 to 76 days, (median 4, IQR 1-8). The mean leukocyte count was $15.7 \pm 8.5 \times 10^3$ per μL . Overall, 645 culture specimens were sent to the microbiology laboratory; umbilical swab (27.6%), throat swab (27.0%) and blood (16.4%) being the most common specimens. Forty-eight per cent showed no bacterial growth. Sixteen different antimicrobials were prescribed. Ampicillin and gentamicin (85.8 %) were the most commonly prescribed first line antibiotic. Second line antibiotic of choice was co-amoxiclav and cefotaxime 4.5%. The overall mortality rate was 7.6%.

Conclusion: Approximately one-half of the specimens showed bacterial growth. Ampicillin and gentamicin were the most commonly prescribed antimicrobials.

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Comparative antimicrobial activity of two new mutacins

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Objectives: To compare the *in vitro* activity of mutacins D-123.1 and F-59.1 against different bacteria, including antibiotic-resistant strains, in order to evaluate their application potential.

Design and Methods: We determined the antibacterial activity spectrum of purified F-59.1 and the minimal inhibitory and bactericidal concentrations of F-59.1 and D-123.1 against target bacteria.

Results: Most bacteria were inhibited by the purified mutacins. Mutacin F-59.1 shows a relatively wide activity spectrum. Mutacin D-123.1 shows low minimum inhibitory concentrations (MICs) (0.25-4 $\mu\text{g/ml}$) against human pathogens while F-59.1 has higher MICs (3.2–12.8 $\mu\text{g/ml}$) mainly against food-borne pathogens.

Conclusion: The effectiveness of mutacins D-123.1 and F-59.1 against human and food-borne pathogens is demonstrated. Mutacin D-123.1 shows potential as a new antibiotic while F-59.1 shows promising application in food products.

P – 7

Use of biochemical assays to detect and assess resistance strains of *Aedes aegypti* mosquitoes in Trinidad

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Objective: To define the biochemical pathways involved in insecticide metabolism in *Aedes aegypti* strains from Trinidad and their possible contribution to insecticide resistance.

Design and Methods: Biochemical assays were performed on eight larval *Ae aegypti* strains to determine the activities of nonspecific esterases (α - and β -), PNPA-esterases, mixed function oxidases (MFO), glutathione-S-transferases (GST) and acetylcholinesterase (AChE). Enzyme profiles of each strain were compared with those of the CAREC reference susceptible strain by Kruskal-Wallis and Dunn's multiple comparison tests ($p < 0.05$). The percentage of each strain with enzyme activities above that of the CAREC 99th percentile was calculated. Activities were classified as unaltered (< 15), incipiently altered (15–50%) or altered ($> 50\%$).

Results: The median activity levels for all enzymes varied significantly ($p < 0.05$). The Curepe strain had incipiently altered levels of α -esterase while the other seven strains had altered activity with five of them registering 100%. Two strains each showed altered and incipiently altered activity of β - esterase. The majority of strains had altered activity of MFO enzymes but only the St Clair strain showed altered activity of GST. PNPA-esterases activity was unaltered in all strains and only the Haleland Park strain showed altered remaining AChE activity in the presence of propoxur.

Conclusions: With the exception of PNPA-esterases, elevated levels of enzymes suggest that biochemical resistance may be an important contributor to insecticide resistance in Trinidadian populations of *Ae aegypti*. Biochemical monitoring should be an ongoing activity as part of routine surveillance.

P – 8

Seroprevalence of dengue antibodies among 12–18 year-old students in four secondary schools in Trinidad

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Objectives: To build a dengue seroprevalence database for circulating dengue viruses among the secondary school population. This will contribute to evidence-based information to be used in designing a more effective and efficient dengue prevention and control programme.

Design and Methods: Approximately 150 students, ages 12–18 years in each of four geographically pre-determined, but randomly selected secondary schools in Trinidad were selected by stratified random sampling. A finger prick was administered by a trained person, subsequent to which a drop of blood (100 microlitres) was placed on a PanBio ICT Rapid Test Card for Dengue. The ICT Cards were then read and the results recorded. Each ICT card was then re-read by a second person for agreement on the result.

Results: Two hundred and ninety (48.5%) were positive by PanBio ICT rapid test. There was no difference by gender or area of residence but rates were lower among persons of African origin ($p = 0.036$). Additionally, seroprevalence rate increased with age (Spearman's r value = 0.667; 1-tail $p = 0.051$).

Conclusion: A seroprevalence rate of 48.5% is substantial and has implications for public health as there is increased risk for Dengue haemorrhagic fever (DHF) and Dengue Shock Syndrome (DSS). Prevention and control efforts should be targeted from a position of integrated management to include re-tooling of current policies, health education, environmental sanitation, source reduction and vector control. Additionally, the concerns of climate change must be considered in any dengue management strategy. The findings open new doors for further investigation and quantification.

P – 9

A KAP survey of some Trinidadian households with respect to leptospirosis, garbage disposal, rats and rodent control

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Objective: To identify the level of awareness of 352 Trinidadians regarding leptospirosis and to examine the

attitudes and practices regarding garbage disposal through the use of a Knowledge, Attitude and Practices (KAP) survey.

Design and Methods: A KAP survey was designed with the main domains identified as leptospirosis, garbage disposal and rats and rodent control. The survey was administered to 800 households from randomly selected areas from the 14 regional corporations in Trinidad. Data from the surveys of 352 households were analysed and results were presented.

Results: Two hundred and twenty one (63%) of the 352 KAP participants had heard of leptospirosis before, while 37% ($n = 131$) did not. Of these 221 people, 126 (57%) did not know of any signs/symptoms of the disease, and only 20% ($n = 43$) knew that they could contract the disease *via* rat urine, while only 10% ($n = 22$) knew that it was specifically *via* direct contact with rat urine. Over 68% believed that leptospirosis was a disease that could kill humans. In homes, 61.6% ($n = 217$) of people had seen rats/mice before but only 32% ($n = 70$) of these still currently had rats/mice in their homes.

Conclusions: More needs to be done to educate Trinidadians about leptospirosis and its risk factors.

P – 10

Impact of road networks on the distribution of cases of dengue fever cases in Trinidad, West Indies

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Objective: To investigate the impact of road networks on the distribution of cases of dengue fever in Trinidad.

Design and Methods: Confirmed cases of Dengue Haemorrhagic Fever (DHF) for 1998 were collected and spatially located using a Geographic Information System (GIS) road map of Trinidad. A digital geographic layer representing these cases was created and the distances from these cases to the nearest classified road category (5 classifications based on a functional utility system) was examined. The road layer was then decomposed into five subsets, each representing one of five assigned road classifications. The distance from each spatially located DHF case to the nearest road in each of the 5 road subsets was then calculated and placed into bins depending on their distance value. A threshold representing the maximum number of bins was determined by examination of each of the five layers' distance histogram. ANOVA and t-tests were used to determine significance relationships between DHF cases and distances from the different roads.

Results: A positive correlation was found between road networks and DHF cases. More specifically, results

showed that dengue cases are more associated with close proximity to minor motorways, especially 3rd and 4th road classifications than with major motorways, 1st and 2nd roads classifications.

Conclusions: Minor motorways seem to provide conducive conditions for *Aedes aegypti* dispersal, suitable habitats and blood meals required for completion of their gonotrophic cycles. It is recommended that health authorities take these findings into consideration when planning and implementing strategies for the eradication of *Aedes aegypti* in Trinidad.

P – 11

Patient mortality pattern in a paediatric intensive care unit

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Objective: This study was intended to generate baseline mortality data and determine focus areas to improve quality of care.

Design and Methods: Retrospective review of the charts of all patients admitted to the Paediatric Intensive Care Unit (PICU) at the Queen Elizabeth Hospital (QEH) in Barbados was conducted between 2004 and 2008. Data collected included age, gender, diagnoses, length of stay (LOS), date of admission, mechanical ventilation and outcome of patients.

Results: The number of admissions increased from 90 to 162 during the five-year period. The median age of patients was four years. The mean length of stay (LOS) was 5.8 days. Crude mortality declined from 17% in 2005 to 6% in 2008 ($p = 0.09$). No significant difference in age was found between survivors and non-survivors. The most common disease categories (80%) were respiratory, central nervous system, cardiovascular, blood disorders and miscellaneous. Seven per cent of the admissions had unconfirmed diagnoses. The age and LOS differences between confirmed and unconfirmed diagnoses were not statistically significant. Patients with unconfirmed diagnoses were four times more likely to die compared to those with a confirmed diagnosis (OR=3.6; 95% CI: 1.7, 7.4). Patients on a mechanical ventilator were significantly more likely to die than those who were not placed on a ventilator (OR=44; 95% CI: 21, 91).

Conclusions: Quality improvement of PICU should focus on having a confirmed diagnosis as well as improved care for patients on mechanical ventilatory support.

P – 12

Epidemiology of infections in infants less than 12 months of age – the Curaçao experience

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Background: Bacterial infections frequently occur in febrile infants. No information was available about the incidence of serious bacterial infections in infants in our hospital. The aim was to investigate the incidence of infections in young infants less than 12 months of age, in relation to age and laboratory parameters.

Design and Methods: This was a retrospective cohort study in a paediatric referral hospital; Clinical and laboratory data of patients below 12 months of age, admitted with fever or history of persistent fever were reviewed between January 2007 and December 2007.

Results: Sixty-three patients were selected for the study. Bacterial infections were found in 11 of them (17%) mostly occurring as urinary tract infections (eight out of 11, 73%), with *E coli* as the predominant pathogen in four. Of all children with bacterial infections, 64% was less than three months of age. Viral cultures were occasionally performed and showed positive results in three patients. Median level of C-reactive protein (range) was 69 (0-230) mg/L in patients with positive cultures and 5 (0-240) mg/L in patients without positive cultures.

Conclusions: Serious bacterial infections occur predominantly in infants below three months of age, mostly as urinary tract infections. Levels of infection parameters may vary widely in patients even in the absence of a proven bacterial pathogen. Complete sepsis work-up including urine culture is warranted in febrile infants.

P – 13

Factors associated with low apgar scores (below 7) at 5 minutes, in term infants born at Georgetown Public Hospital Corporation during 2007 and 2008

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Objectives: To determine the prevalence of Apgar scores below 7 at 5 minutes in term infants, the associated risk factors and the neonatal mortality rate among this group at Georgetown Public Hospital Corporation over the period 2007 and 2008.

Design and Methods: A case control study was conducted among all registered births during the period of January 1, 2007 to December 31, 2008. Cases were all term infants with low Apgar score (less than seven) at 5 minutes while the controls were those with normal Apgar scores delivered immediately after. The infant and maternal obstetric records were reviewed and data were extracted using a standard questionnaire and analysed using Epi Info.

Results: The prevalence of low Apgar scores at 5 minutes irrespective of maturity was found to be 1.9%. The neonatal mortality rate among the cases was 8.1% compared to 0.9% among the control group. Male gender, multiparity, gestational age of 37 weeks, non-vertex presentation, Caesarian section and pregnancy induced hypertension were found to be major contributing factors that impacted negatively on the Apgar score.

Conclusions: The prevalence of low apgar scores and mortality among term infants with low Apgar score at five minutes found in this study was lower than reported in other settings.

P – 14

Pregnancy outcomes among normotensive and patients with pregnancy induced hypertensive at Georgetown Public Hospital Corporation

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Objective: To determine the difference in the pregnancy outcomes for mothers and neonates of normotensive and pregnancy induced hypertensive (PIH) patients.

Design and Method: A retrospective cohort study was conducted among all 187 patients with PIH and an equal number of normotensive women who delivered in 2008.

Results: A greater proportion of women with PIH were delivered via Caesarean section (CS) compared to the normotensive women (36.4% vs. 11, 8%). Of the 68 PIH patients undergoing CS, 12% experienced complications while none of the normotensive women experienced any complications following CS. Over 70% of PIH patients stayed more than 2–7 days before delivery as compared to 52.9% of normotensive patients. None of the normotensive patients stayed beyond 8 days as compared with 9.6% PIH patients. Twelve per cent of neonates born to normotensive women experienced complication(s) after birth compared to 26.6% of the neonates of PIH women. Neonates born to women with PIH were more likely to experience complications compared to those born to

normotensive women (7.1% versus 4.9%). Forty per cent of the women with PIH had pre-term birth compared to 30% of those who were normotensive. A greater proportion (5.1% more) of neonates born to PIH women spent more than one week in hospital.

Conclusion: This study demonstrates that women with PIH and their neonates are at significantly higher risk of having more adverse outcomes in comparison with women with normotensive pregnancies.

P – 15

An investigation of the outcomes of incomplete abortions at Georgetown Public Hospital Corporation

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Objectives: To determine the most common outcomes of patients with incomplete abortion and to ascertain the factors contributing to blood transfusions among these patients.

Design and Methods: A prospective study was conducted on all women who were admitted to Georgetown Public Hospital Corporation (GPHC) with incomplete abortion during the period of August 31, 2009 to October 31, 2009. Data regarding the demographical and clinical characteristics of each patient were collected from interviews and medical charts.

Results: Data from a total of 135 patients were analysed. Approximately 81% of the patients had no complications. Of the remainder, 8.8% received blood transfusion(s), and 7.7% developed post-abortal infection while 2.2% had both. Post-abortal complications and more specifically need for blood transfusions were commonest among the Amerindians (46.2%), single women (26.3%) and women who had induced abortions (23.5%). Women who were more educated (11.1%), attaining secondary/tertiary education had fewer complications than those who had only a primary level education (23.9%). Neither patient's age, history of previous abortion and the gestational age were associated with increased risk of women developing complications.

Conclusion: Of the patients who were admitted at the GPHC for the management of incomplete abortions, 18.5% developed one or more complications. Those at increased risk of complications included Amerindians, single women, those who had an induced abortion and delayed seeking treatment.

P – 16

Caesarean sections and the associated maternal morbid conditions in Trinidad and Tobago: 2003 to 2008

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Objective: To determine the prevalence of Caesarean sections and the associated maternal morbidity conditions in Trinidad and Tobago for the period 2003 to 2008.

Method: Data on Caesarean deliveries were obtained from the Medical Records department of one hospital in Trinidad and Tobago for the period 2003 to 2008. Data from three other hospitals could not be accessed. There is no reason to believe that the prevalence and morbid conditions differ significantly between this hospital and any of the three from which data could not be obtained.

Results: The prevalence of Caesarean sections ranged from 17.5% to 23.3% over the 5-year period. The age group with the highest number of deliveries *via* Caesarean section was 25–34 years. The highest percentage of emergency cases occurred in mothers 18 – 25 years and the highest percentage of elective cases occurred in mothers 35 years and over (73.9% *versus* 43.5%; $p = 0.001$). The mean length of stay in the hospital for elective and emergency Caesarean sections were six and eight days respectively ($p = 0.004$). Pre-eclampsia accounted for most of the maternal morbidity conditions.

Conclusion: The percentage of Caesarean deliveries is higher than the range of 10% to 15% recommended by the World Health Organization (WHO). The leading maternal morbidity condition was pre-eclampsia. Measures should be taken to reduce the rate and also minimize the occurrence of the morbid conditions.

P – 17

Non-obstetric lower genital tract injuries

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Objective: To categorize non-obstetric genital tract injuries (NOGTIs) treated at the University Hospital of the West Indies (UHWI) over a ten-year period (1999–2008) and possible use of data in forensic medicine.

Methods: A retrospective chart audit of NOGTIs was conducted to categorize patient injuries.

Results: A total of 47 (0.4%) female admissions were for NOGTI and were categorized as follows: non-coital 9

(19.1%), rape/assault 10 (21.3%) and consensual injuries 26 (55.3%). Most patients with non-coital and assault-related injuries were nulliparous 7/9 (77.8%) while those with consensual injuries were less likely to be nulliparous 16/26 (61.5%). The age profiles of the groups were non-coital (mean age 12.0 ± 6.8 years, median = 10, range 8–26); consensual (mean age 21.3 ± 5.6 ; median = 20.0, range 14–32) and rape/assault (mean age 35.0 ± 25.1 ; median age 24.5, range 14–81) years. Most non-coital, assault and consensual injuries/lacerations were to the vulva 6 (66.7%), vagina 8 (80.0%) and posterior fornix 22 (84.6%), respectively. Most non-coital NOGTIs were impalement and straddle-type injuries in children 7 (77.8%). The majority of consensual NOGTIs required suturing of lacerations 24 (92.3%); and 11(42.3%) consensual injuries were related to new partner and/or coital debut. None of the patients died as a result of their injuries.

Conclusion: Most NOGTIs were due to consensual intercourse which was more likely to cause posterior fornix lacerations; sexual assault was more likely to cause a vaginal laceration; while non-coital injuries were more likely to occur on the vulva without injury to the posterior fornix.

P – 18

Substance use in pregnancy at the Mt Hope Women's Hospital in Trinidad and Tobago

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Objective: To determine the prevalence of tobacco, alcohol, marijuana and cocaine use among mothers delivering at the Mt Hope Women's Hospital.

Design and Methods: All mothers delivering at the Mt Hope Maternity Hospital between March 1, 2008 and May 1, 2009 were invited to participate. A questionnaire was administered to elicit reported use of alcohol, tobacco, marijuana and cocaine. A meconium sample was collected from each newborn and analysed for the presence of cocaine and marijuana metabolites using Immunalysis direct ELISA Kits.

Results: Of 839 mothers who enrolled in the study, 760 (91%) completed the questionnaire and 631 (75%) had meconium analyzed. Maternal age ranged from 14 to 41 years. Fourteen per cent ($n = 106$) of respondents admitted to some form of substance use: 52 alcohol, 52 tobacco and two marijuana. None admitted to cocaine use but four meconium samples were found to be positive for cocaine and 14 for marijuana.

Conclusion: The prevalence of maternal reporting of tobacco use was the same as for alcohol use (7%) and there

was underreporting of use of marijuana (two *versus* 14 found on analysis) and cocaine (none *versus* four on analysis). Meconium analysis for cocaine and marijuana should be done when there is a suspicion of drug use by the mother.

P – 19

Abuse and mental disorders among women at walk-in clinics in Trinidad

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Objective: To determine the prevalence of emotional and/or physical abuse by their partners and its association with mental disorders among female patients at walk-in clinics in Trinidad.

Methods: Female participants from 16 randomly selected public health centres, previously stratified to represent all administrative regions and urban and rural settings, who were 18 years or older, were surveyed during May to August 2007 using the Woman Abuse Screening Test (WAST) and Primary Care Evaluation of Mental Disorders (PRIME-MD) questionnaires.

Results: Four hundred and thirty-two women responded, 49.5% were aged 18–49 years; 37% were married, 25% single; 44.7% were Indo- and 35% Afro-Trinidadians; 89.4% had achieved education up to age 14 years only. There were 30.3% employed and 3.0% reported incomes more than USD 800.00 per month. Forty per cent (173) of all respondents were positive for emotional and/or physical abuse according to the WAST scale. Chi-square analysis suggested associations ($p < 0.05$) between abuse and age, employment status, current relationship, the desire to cut down on alcohol intake, the presence of depression, suicidal ideation, post-traumatic stress disorder and somatization. Logistic regression showed that statistically significant ($p < 0.05$) predictors of woman abuse were age less than 49 years wanting to cut down on alcohol use and being in a relationship.

Conclusion: Among women of primarily lower socio-economic status who attend walk-in clinics in Trinidad, abuse, as measured by the WAST scale, is high.

P – 20

Psychosocial screening of adolescent inpatients at the Queen Elizabeth Hospital: A clinical audit

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Objectives: To determine the frequency of psychosocial screening documentation in the medical records of adolescent inpatients and whether any further action was taken on identified health risks.

Design and Methods: There were retrospective review of the medical records of 367 consecutive adolescent inpatients. The HEADSS psychosocial screening instrument was used and the outcome measures were documentation of screening for each of the HEADSS domains and bio-physical parameters. Screening was classified into four levels of adequacy. Medical records were also examined for the identification of health-risk factors and any appropriate further management.

Results: Medical records of 367 patients were analysed (197 males and 170 females). Psychosocial screening was absent in 12 records, inadequate in 301, adequate in 38 and complete in 14 records. Females were more likely to be adequately screened than males ($p < 0.001$) and adequacy of screening improved with increasing age of patients ($p < 0.001$).

Sixty per cent (60%) of the patients with mental health issues and 43.8% of those admitted for violent or assault-related issues were adequately screened. In comparison, 6.6% of patients with chronic medical conditions and 10.7% of patients who were otherwise healthy and admitted for acute illness were adequately screened.

Conclusion: The results demonstrate low rates of risk screening of adolescent inpatients. A proposed improvement strategy includes the development of simple and effective preformatted screening tools which may optimize the process.

P – 21

Depression screening of patients in the family medicine outpatient clinics at Princess Margaret Hospital, Nassau, Bahamas

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Objective: To determine the prevalence of depression in a primary care setting and examine the predictors associated with depression.

Design and Methods: This was a cross-sectional study of a convenience sample of adult patients aged 18–86 years attending the Family Medicine Clinic and General Practice Clinic at The Princess Margaret Hospital, Nassau, Bahamas. A modified self-administered patient health questionnaire (PHQ-9) was used to detect depression.

Results: The sample included 372 persons (66 men and 206 women) with a mean age of 48.2 years. The prevalence of depression was 5.1%. Chi-squared analyses revealed statistically significant associations with depression for gender and education. Associations with depression were also observed for respondents with sickle cell disease, seizures, HIV and pain syndromes. Logistic regression analyses revealed females as being over 4 times more likely to be depressed compared with males. Patients with depression were more likely to be noncompliant with prescribed medications than those without depression.

Conclusions: About one of every twenty family medicine patients was found to have significant depression with the likelihood being increased in females. There were associations between depression and education, compliance with medications as well as a few specific co-morbidities.

P – 22

Prevalence of dementia in persons attending Social Welfare Services in Trinidad and Tobago: preliminary findings

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Objective: To determine the prevalence of dementia in persons utilizing Social Welfare Services in Trinidad and Tobago.

Design and Methods: A cross-sectional, one-phase survey of 138 persons attending a Social Welfare Divisions Office was undertaken. The protocol included the administration of a questionnaire to collect demographic and clinical information. The Community Screening Instrument for Dementia (CSI ‘D’) was used to determine caseness by generating a measure of global function. This dementia diagnostic algorithm has been prevalidated in 25 Latin American Asian, and African centres.

Results: Participants’ mean age was 66.5 ± 7.82 years; 74 (53.6%), of the participants were male; 70 (50.7%) were of East Indian descent, 45 (32.6%) African descent and 21 (15.2%) mixed. Less than one-third of participants had a post-primary school education, 37 (26.8%). A history of hypertension and diabetes was reported by 24 (17.3%) and 27 (19.6%) participants, respectively. When the CSI ‘D’

algorithm was applied, 48 (34.8%) were identified as probable cases. Using a logistic regression model, dementia was significantly associated with increased age, ($p = 0.006$) and self-reported hypertension, ($p = 0.014$). Gender, ethnicity and education were not significantly associated with the prevalence of dementia in this sample.

Conclusion: The findings of this study suggest that the prevalence of dementia is associated with advancing age and a self-reported diagnosis of hypertension but not with gender, ethnicity and education among persons accessing Social Welfare Services in Trinidad and Tobago.

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Myasthenia gravis in adults in South Trinidad

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Objective: To determine the prevalence of and to characterize Myasthenia Gravis (MG) in adults in South Trinidad.

Design and Methods: A cross-sectional study was conducted from October 2007 to October 2009. Persons receiving treatment for MG at the Medicine Department, San Fernando General Hospital and the neurology practice of one of the authors in South Trinidad were identified and interviewed.

Results: There were 36 prevalent cases. The female to male ratio was 1.6:1. The estimated minimum point prevalence was 96 per million adult population. A higher prevalence was found among Africans compared to East-Indians (178 vs. 68 per million; $p = 0.003$). The mean age of prevalent patients was 50.5 (males: 49.5; females: 51.2) while mean age of onset was 35 years (females: 34.4; males: 35.8). Ocular and extremity muscle weakness were the most common initial symptoms. Familial MG was found in 11.4% of the cases. Autoimmune conditions co-existed in nine persons and seven of these had thyroid disease. One case was positive for muscle specific tyrosine kinase (MuSK) antibody. Treatment involved pyridostigmine and/or immunosuppressants for all patients except two cases in remission. Six patients had thymectomy; three had plasmapheresis; 42.9% developed generalized MG and sixty per cent indicated that MG affected their social and/or professional lives.

Conclusions: Many features of adult MG in South Trinidad are similar to international reports. Additional research is required to determine the reason for the significantly higher prevalence of MG in Africans compared to East-Indians.

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The predictive value of urinary VMA testing in the diagnosis of phaeochromocytoma at the University Hospital of the West Indies

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Objective: To investigate the predictive value of urinary vanillylmandelic acid (VMA) testing in the diagnosis of phaeochromocytoma and to describe the features associated with phaeochromocytoma at the University Hospital of the West Indies (UHWI).

Design and Methods: Results of urinary VMA tests performed at UHWI from January 2003 to June 2009 were reviewed. There were 551 VMA tests during the study period and 138 tests in 83 patients met the defined cut-off point for elevated VMA (*ie* $\geq 35 \mu\text{mol}/24$ hours). The study patients were categorized into 2 groups: (i) 'surgical' (these 5 patients underwent adrenalectomy) and (ii) 'non-surgical', consisting of the remaining 78 patients. Forty-four medical charts (out of 83) were reviewed and data collected using a standardized questionnaire.

Results: In the non-surgical group ($n = 39$), the median age was 36 years (range 9–70) and the median VMA was $38 \mu\text{mol}/24$ hour (range 27–146); 85% of these patients had none or only one symptom typical of phaeochromocytoma. In the surgical group ($n = 5$), phaeochromocytoma was confirmed histologically in three patients, all of whom had several symptoms typical of catecholamine excess. The median VMA was $65 \mu\text{mol}/24$ hour (range 38–130). Urinary VMA testing had a specificity of 76%, positive predictive value (PPV) of 5% and sensitivity of 100%.

Conclusions: VMA testing at UHWI has poor PPV. The results contrast with the conventional notion that VMA testing is poorly sensitive but quite specific. Using assays with lower false-positive rates (*eg* plasma or urinary metanephrines) and/or establishing higher urinary VMA cut-offs may represent more cost-effective approaches to the diagnosis of phaeochromocytoma.

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Compliance with intramuscular penicillin prophylaxis in children with sickle cell disease in Jamaica

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Objective: To determine the compliance rate with intramuscular (IM) penicillin prophylaxis in a cohort of patients with sickle cell disease diagnosed by newborn screening.

Design and Methods: A convenience sample of children, four years and under, followed at the Sickle Cell Unit in Jamaica was obtained over a four month period. Good compliance was deemed if patients received at least 10 injections over the preceding 12 months. Children on IM prophylaxis for less than a 12-month period were deemed to be compliant if they received 80% of injections since commencing prophylaxis.

Results: Data were available for 85 (HB SS 79; male 46) of the 106 eligible patients attending the clinic during the period of observation. Seventy-eight (91.8%) children were on IM prophylaxis. Sixty-nine (88.5%) of the children on IM prophylaxis were compliant.

Conclusions: The incidence rate of invasive pneumococcal disease in our setting has been shown to be lower than in other comparable settings and may reflect the high compliance (88.5%) with IM penicillin prophylaxis seen in this study. IM penicillin prophylaxis, despite commonly perceived challenges, is a practical option which contributes to better patient compliance.

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Vascular access operations for renal replacement therapy: Preliminary results of a vascular access service in Jamaica

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Objectives: To examine the rate of arteriovenous fistula (AVF) creation to facilitate dialysis access in patients with End Stage Renal Disease (ESRD) at the University Hospital of the West Indies (UHWI).

Design and Methods: A retrospective study of all patients who had permanent dialysis access established at UHWI (January 1, 2002 to December 31, 2006) was performed.

Results: A total of 41 AVFs were performed. However, the study sample comprised those with complete records 32 (78.0%); mean age 42.3 ± 15.3 years (median = 43.0; range 18–66 years). The ARV access types established were as follows: distal radio-cephalic 27 (84.4%), brachio-cephalic 3 (9.4%) and proximal radio-cephalic 2 (6.2%). AVFs were performed for 4 (12.5%) incident and 28 (87.5%) prevalent dialysis patients. The mean delay between initiation of dialysis and AVF creation was 21.2 ± 15.3 months (median = 10.0; range 1–94 months).

Primary and secondary failures from thromboses were experienced by 8 (25.0%) and 7 (29.2%) patients, respectively. The mean primary patency period was 723.9 ± 422 days (median = 678; range 199-1314 days); 1 (4.2%) patient had a thrombectomy to prolong AVF function and resulted in secondary patency for 439 days. Cumulative patency was 62.5%, 33.3%, 25% and 4.2% for years 1–4, respectively.

Conclusions: AVF creation for patients with ESRD at UHWI was achieved with acceptable morbidity and patency rates but exceeds target goals set by the National Kidney Foundation Disease Outcome Quality Initiative (NKF/DOQI). Improvement in postoperative surveillance could increase early detection of failing accesses thereby allowing for timely intervention to further improve patency rates

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Relationship between energy and protein intake among dialysis patients in Trinidad and Tobago

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Objective: To determine the macronutrient (protein) and energy status of patients with End Stage Renal Disease (ESRD) on dialysis in Trinidad and Tobago.

Design and methods: A cross-sectional design was used to measure the dietary energy and protein intakes of 199 dialysis patients, age ≥ 18 years who had been on maintenance dialysis for at least 8 weeks, from 12 haemodialysis centres in Trinidad and Tobago. Dialysis patients with metastatic malignancy and HIV were ineligible to participate. Participants were selected using a multi-stage cluster sample approach.

Results: The data collected revealed that the mean protein and energy intakes were 69.1 ± 39.0 g/day and $1\ 547.0 \pm 375.6$ kcals/day, respectively. The majority of study participants (147 [74%]) had an inadequate ($< 80\%$ of requirement) energy intake. A total of 108 (54%) participants consumed adequate (80% – 110% of requirement) or high ($> 110\%$ of requirement) amounts of protein. However, only 43 (40%) of these participants also recorded an adequate or high energy intake. Overall, among dialysis patients in Trinidad and Tobago, approximately one fifth (43 [22%]) of patients consumed adequate amounts of both protein and energy.

Conclusions: These findings suggest that there is a need to better manage the dietary intakes in order to improve case management of dialysis patients in Trinidad and Tobago.

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Creating dialysis accesses in a developing Caribbean nation: A cost-benefit analysis

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Objectives: It has been suggested that vascular access operations should only be done in high volume centres to ensure good outcomes. Vascular access operations have been routinely performed in the Cayman Islands since 2005. However, with an estimated population of 40 000 persons, only a small number of patients require vascular access in any given interval. We performed a cost-benefit analysis of this practice.

Design and Methods: All patients who had vascular access operations over a four-year period were retrospectively identified. Two patient groups were defined: patients in the local group had operations by surgeons in the Cayman Islands; those in the offshore group were transferred off island and had operations overseas. We compared cumulative cost, morbidity, patency and failure rates.

Results: There were 14 patients in the local group and 22 in the offshore group. The mean cost of access creation was 6.9 times greater in the offshore group (US\$26883.36 versus \$3913.33; $p < 0.001$). The likelihood for grafts to be used was significantly greater in the offshore group ($p = 0.04$). When therapeutic outcomes were compared, there were no differences in primary failures, secondary failures, primary patency, secondary patency or overall access specific morbidity.

Conclusions: In this setting, vascular access creation exceeds all the goals set by the National Kidney Foundation/Dialysis Outcomes Quality Initiative (NKF/DOQI) and the Fistula First initiative. Compared with overseas centres, this is being achieved at a significantly lower cost, with a greater likelihood for native fistula utilization and similar therapeutic outcomes.

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An analysis of cranial computed tomography findings in patients suffering head Trauma in Trinidad

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Objective: To assess the Cranial Computed Tomography (CT) findings in patients presenting with head trauma to the Eric Williams Medical Sciences Complex, Trinidad.

Design and Methods: We conducted a retrospective review of radiology reports from 119 patients suffering head trauma (HT) during the period July 2008 to June 2009.

Results: The mean age at presentation was 27.0 years and the overall male: female ratio was approximately 2:1. A normal cranial CT was seen in 46.3% of cases (56 persons). The commonest abnormalities were intracranial haemorrhage and fractures. Parenchymal haematomas were found in 9% of patients, while epidural, subarachnoid and subdural haematomas were found in 1.7%, 4.2% and 3.4% of cases, respectively. Fractures were present in 18% of all cases and the majority (83%) involved the cranial vault. Thirty-seven per cent of fractures were depressed and 68% linear (the remaining 32% were comminuted). Forty-seven per cent of fractures were associated with intracranial haemorrhage, while scalp injuries were the most common extra-cranial finding (18%).

Conclusion: These findings emphasize the importance of cranial CT examinations in the management of head trauma, as there was evidence of intracranial injury in approximately 50% of patients in this study while 27% sustained fractures and/or intracranial haemorrhage.

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The experience of the University Hospital of the West Indies with complicated civilian head injury from machete assaults

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Objectives: To document the injury profile in a series of patients with cranial injuries from machete wounds.

Design and Methods: Between January 1998 and January 2008, demographic and clinical data were retrospectively collected from the medical records of all patients treated at the University Hospital of the West Indies with complicated head injuries from machete wounds. These were defined as any patient with at least one of the following clinical or radiologic features in addition to a head wound caused by a machete: a recorded Glasgow Coma Score (GCS) < 8; compound skull fractures; protruding brain matter, cerebrospinal fluid leaks, intracranial bleeding, parenchymal contusions, lacerations and/or oedema.

Results: Of the 40 patients with complex injuries to the cranium, there was a 4:1 male preponderance with a mean age of 32.5+/-13.7 years. The injuries included open skull

fractures in all 40 (100%), depressed skull fractures in 20 (50%), CSF leaks in 4 (10%), protruding brain matter in 4 (10%), cerebral contusions in 3 (7.5%) and extra cranial injuries in 16 (40%) cases. There were 37 (92%) patients requiring operative intervention which included elevation of depressed fractures in 20 (54.1%), dural repair in 10 (27.0%) and intracranial debridement in 7 (18.9%) cases. There were three deaths (7.5%) and seizures were recorded in 5 (12.5%) cases with no reports of infectious morbidity. Eighty per cent had a normal Glasgow outcome score on discharge.

Conclusions: A satisfactory outcome in patients with complicated machete head trauma is possible with aggressive management.

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Ocular injuries from automobile external mirror damage

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Objective: This retrospective review was undertaken to increase awareness of the risk of serious ocular injury posed by damage to external rear view mirrors from road traffic accidents.

Design and Methods: Data were collected for a 10-year period from January 1996 to December 2005 in patients with ocular injuries caused by damage to an automobile external rear view mirror.

Results: Thirty-three patients aged 20 to 84 years met the study criteria, 26 males (78.8%) and seven females (21.2%). Seven patients had minor injuries, four with lid lacerations and three with corneal abrasions. Of the other 26 patients, 13 presented with corneoscleral lacerations, 10 presented with corneal lacerations and three with scleral lacerations. Excluding the four patients with lid lacerations, initial visual acuity (VA) in six patients showed none to minimal impairment, moderate impairment in four and severe impairment in the remaining 19 cases. Outcome VA in 14 patients showed no impairment, moderate impairment in three cases and severe impairment in 12 patients.

Conclusions: This study shows that these injuries can result in permanent blindness, with the most severe improving the least, adding a special urgency to prevention and to early diagnosis to reduce the risk of significant infection.

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Motorcycle helmet laws in Jamaica: An observational study of non-compliant accident victims

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Objective: Despite mandatory motorcycle helmet laws in Jamaica since 1999, compliance remains poor. We carried out a study of non-compliant motorcycle accident victims in order to define a high-risk population to target for educational campaigns.

Design and Methods: Demographic and clinical data were collected from all motorcycle accident victims treated at the University Hospital of the West Indies between January 1, 1999 and January 1, 2007. Pedestrians and automobile passengers involved in collisions with motorcycles were excluded. The demographics of the sub-population of non-compliant patients are described.

Results: There were 270 motorcycle accident victims, of which 136 (50.4%) were un-helmeted. The majority of non-compliant patients were between 20 and 39 years of age. As patient age increased beyond the third decade, there was a trend toward increased compliance. There were 11 non-compliant females at a mean age of 27 ± 8.4 years (range 16–42, median 26) and 125 non-compliant males, mean age 32.2 ± 10.9 years (range 7–63, median 30). There was more non-compliance in females (84.6%, 11/13 *versus* 48.6%, 125/257) compared with males and in pillion passengers (88.5%, 23/26 *versus* 46%, 112/244) compared with drivers. Since 1999, there has been a downward trend in the prevalence of non-compliance with helmet laws.

Conclusions: Compliance with mandatory motorcycle helmet use on Jamaica's motorways remains unacceptably low. Persons in the second and third decades, women and pillion passengers comprise high-risk groups that deserve special attention in public health campaigns. Legislators may need to revise appropriate penalties for non-compliance and motorcycle license issuance protocols.

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Extremity injuries from motorcycle road traffic accidents: the experience from a tertiary referral hospital in Jamaica

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Objectives: There is little data available on the prevalence of extremity injuries from motorcycle accidents in Jamaica. A study to evaluate the injury profiles from motorcycle accidents in a tertiary referral hospital was conducted.

Design and Methods: Between January 1, 2000 and January 1, 2007, demographic and clinical data on all motorcycle accident victims admitted to the University Hospital of the West Indies with extremity injuries were collected in a prospective database. The data were analysed using the SPSS version 12.0.

Results: Of 270 motorcycle accident victims, there were 257 (95.2%) males. The extremity injuries were: soft tissue trauma 270 (100%), limb fractures 198 (73.4%), vascular 9 (3.3%), nerve (0), and muscle 65 (24.1%). Associated injuries involved the head 143 (53.0%), abdomen 38 (14.1%) and thoracic viscera 71 (26.3%). The mean injury severity score was 9.0 (SD 9.4, median 8, mode 4). There were 195 patients needing surgical intervention in the form of orthopaedic operations (94) and neurosurgical operations (43), abdominal operations (49) and vascular operations (14). The mean duration of hospitalization was 10 days (SD 11.2; range 0–115; median 6, mode 3). There were 12 (4.4%) deaths, 9 (75%) due to traumatic brain injuries. Fatal injuries were commoner in males (11) and un-helmeted patients (10).

Conclusions: Motorcycle accident victims place an additional burden on emergency surgical services. Educational intervention strategies and legislative policies are needed to minimize the impact of these preventable injuries on the limited resources of the health services.

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The comparative effectiveness of percutaneous coronary interventions and coronary artery bypass graft surgery in Trinidad

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Objectives: To explore clinical and survival outcomes following percutaneous coronary intervention (PCI) or coronary-artery bypass graft (CABG).

Design and Methods: Retrospective review of records of patients who underwent CABG (Eric Willams Medical Sciences Complex) or PCI (Westshore Medical Facility).

Results: The sample size for the 280 patients who had undergone CABG were compared with 106 patients who had undergone PCI. Among patients who had undergone

PCI, 44.3% had a history of diabetes, 69% were hypertensive and 84% had dyslipidaemia, compared to 61% with diabetes, 81% who were hypertensive and 90% who had dyslipidaemia, among those who had undergone CABG. Of PCI and CABG patients 56.6% and 76.8% respectively survived free from stable angina whereas 84% of PCI patients and 85.4% of CABG patients did not experience unstable angina post procedure. Very few patients (0% of PCI patients and 0.5% of CABG patients) underwent revascularization ($p = 0.526$).

Conclusion: There was no significant difference between either PCI or CABG with respect to the clinical endpoints measured (angina-free survival, survival rate and repeat revascularization).

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Does ethnicity influence the outcome of coronary artery bypass grafting surgery? A five-year study in Trinidad and Tobago

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Objectives: To assess coronary artery bypass graft (CABG) outcomes in Trinidad and Tobago using the EuroSCORE scoring system and to determine if demographic and clinical factors influence the outcome.

Design and Methods: A retrospective review was undertaken of case notes of patients who underwent CABG during the period 2003 to 2008 under the care of Caribbean Heart Care. Data collected included age, gender, smoking status, co-morbidities, chronic pulmonary disease, extra-cardiac arteriopathy, neurological disease, previous cardiac surgery, serum creatinine, active endocarditis, critical preoperative state and mode of surgery. Predicted mortality was calculated using the EuroSCORE; the model was calibrated using Hosmer-Lemeshow analysis, the discriminant function was analysed using the Receiver Operating Characteristic (ROC) Curve.

Results: A total of 1082 patients who underwent CABG were studied; 75.6% of the patients were of Asian Indian ethnicity and 86% of patients underwent off-pump CABG. The overall mean EuroSCORE was 2.87 ± 2.1 (SD). Perioperative predicted mortality rate was 2.3% while the observed mortality was 1.2% for an overall standardized mortality ratio (SMR) of 0.52. Hosmer-Lemeshow analysis showed that the system calibrated well to our case mix (HL value: 6.87; df: 8; $p = 0.551$). The EuroSCORE discriminated outcomes well as shown by the area under the ROC Curve (0.78). Age and ethnicity did not influence outcomes.

Conclusions: Patients undergoing CABG surgery in Trinidad and Tobago have outcomes comparable to those of more developed countries and demographic factors were not important.

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Evaluating cardiovascular risk factors in asymptomatic individuals in a Trinidadian community

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Objectives: The objective of this study was to evaluate cardiovascular risk factors in asymptomatic individuals.

Design and Methods: We used a cross-sectional design and enrolled 151 participants. A questionnaire was designed and pre-tested and then used to collect data on relevant cardiovascular risk factors.

Results: We found 6.6% of participants had a cardiovascular disease risk (QRisk) score > 20 ; 15% were current smokers and 50.7% consumed alcoholic beverages. A large number of participants consumed a western style diet only, 51.6% were not engaged in physical activity and only 48% consumed fruits on a regular basis.

Conclusions: This study therefore provides evidence that asymptomatic individuals may have identifiable cardiovascular risk factors and may in turn benefit from risk analyses to guide prevention strategies.

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The timing of stroke presentation at the University Hospital of the West Indies

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Objectives: Thrombolytic therapy has been proven to be beneficial in select patients with ischaemic stroke. Early diagnosis is paramount because there is a narrow therapeutic window for these patients to benefit from thrombolytics. We sought to evaluate the timing of stroke presentations at the University Hospital of the West Indies (UHWI).

Design and Methods: A retrospective audit of all consecutive patients who had emergent computed tomographic (CT) scans for suspected ischaemic stroke at the UHWI was performed over a six-month period between February 2006 and July 2006. Data were extracted from the hospital records and analysed using SPSS version 12.

Results: There were 331 patients evaluated with brain CT for a clinically suspected stroke during the study period. The average age was 64.5 years \pm SD 19.9 (range: 3–98 years) with a slight female preponderance (58% versus 42%). Complete time documentation and CT scans were present in 171 patients with ischaemic strokes. There was considerable pre-hospital delay with 63% of patients presenting more than 12 hours after the onset of symptoms. There were also long in-hospital delays. Only 52% of patients were assessed by a physician within an hour of presentation to hospital and only 55% of patients had CT scans completed within three hours of a physician's request.

Conclusions: Thrombolysis is not routinely performed for ischaemic strokes at the institution largely due to delays in stroke management. Sensitization of physicians and the general public to symptoms and signs of this disease is urgently needed to improve stroke management.

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The antihypertensive effects of Hibiscus Sabdriffa (preliminary findings)

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Objectives: To determine if Hibiscus Sabdriffa (Sorrel) extract causes a reduction in elevated blood pressures in Trinidadians suffering from essential hypertension.

Design and Methods: Stage 1 and Early Stage 2 essential hypertensive patients were randomized into two groups. The experimental group received Sorrel extract plus prinox 2.5 mg daily and enalapril 10 mg twice daily. The control group received aprinox 2.5 mg daily, enalapril 10 mg and a placebo twice daily. Blood pressures levels were measured and recorded twice weekly for four weeks prior to and during the study. The calculated sample size was 156 (78 in each group) but these preliminary analyses were conducted on 54 patients – 24 in the experimental and 30 in the control group.

Results: After four weeks of treatment, there was a decrease in the mean systolic blood pressure (SBP) in the experimental group of 18.8 ± 2.9 mmHg ($p < 0.0001$) and in diastolic blood pressure (DBP) of 12.3 ± 2.2 mmHg ($p < 0.0001$). Similarly, in the control group, there was a decrease in the mean SBP of 14.9 ± 2.5 mmHg ($p <$

0.0001) and the mean DBP of 9.8 ± 1.4 mmHg ($p < 0.0001$). However, there was no significant difference in the fall in blood pressure between the two groups ($p = 0.3099$ and $p = 0.3196$ for SBP and DBP respectively).

Conclusion: These preliminary findings indicate that the consumption of the Sorrel extract did not result in any additional decrease in blood pressure. The enrolment and study of the additional patients will determine if Sorrel has a significant effect on the lowering of blood pressure in the study population.

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A preliminary report on periodontal disease and diabetes in Trinidad

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Objective: To describe the periodontal disease status of patients with Diabetes Mellitus in Trinidad.

Design and Methods: Patients attending a diabetic out-patient clinic in a general hospital were invited to undergo oral examinations. Information on socio-demographics, medical and dental histories was collected by in-person interview. The Basic Periodontal Examination (BPE) was used to assess patients' periodontal disease status. Data were analysed using SPSS version 16.0.

Results: A total of 72 (72%) of the 100 patients attending the facility participated in the study. Participants had a mean age 55.7 years and 39 (54.2%) were female. The majority of participants were Indo-Trinidadian (48 [66.7%]) while 16 (22.2%) were Afro-Trinidadian. The majority of participants (44, (61.1%)) had not accessed dental services within the past year and more than half of participants (41, 56.9%) reported that they only accessed dental services when in pain. Approximately one-third (23, 31.9%) wore dentures and slightly more (29, 40.3%) had plaque detectable with the use of a probe. Also, 11(15.3%) reported a history of cigarette smoking. The majority of participants 45(67.2%) who had BPEs administered were found to have advanced (26, 38.8%) or moderate (19, 28.4%) periodontal disease. The severity of periodontal disease was directly correlated with advanced age ($p < 0.05$).

Conclusion: The periodontal disease status of this sample of diabetic patients suggests the need for closer collaboration between medical and dental practitioners. Regular oral examinations, during which preventive advice and scaling services are provided, should form part of the routine dental management of diabetic patients in Trinidad.

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A retrospective cohort study to assess the incidence of various outcomes arising within a two - year period, for patients with major diabetic lower limb amputations done at the Georgetown Public Hospital Corporation

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Objective: To determine the outcomes among diabetic patients who had major lower limb amputations at the Georgetown Public Hospital Corporation (GPHC).

Design and Methods: A retrospective cohort study was carried out among all patients who had major diabetes related lower extremity amputations at the GPHC to determine their outcomes within a two-year period. Diabetics who had major lower extremity amputations from September 1, 2006 to August 31, 2007, or their relatives, were contacted. The required data were collected using a standardised questionnaire and analysed using Epi Info version 3.5.1.

Results: During the study period, 75 persons had major amputations at GPHC; complete records were obtained for 39 persons and 37 were traced. Of those with complete records, 7 persons (17.9%) died within one-month of the surgery, 16 (43.2%) persons died within the two-year period post amputation and two persons (5.4%) had subsequent amputation. Fifteen persons had at least one follow-up problem which included haemorrhage, failure of the wound to heal, wound infection and sepsis. Only 4 persons were provided with prosthesis and 15 were using a wheel chair.

Conclusion: The majority of patients who undergo diabetic-related major lower limb amputation at the GPHC die within two years.

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Identification of Diabetes in children from a mass urine screening

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Objective: To assess the prevalence of diabetes in school children from a mass screening programme in Trinidad.

Design and Methods: The total school population was surveyed for childhood asymptomatic glucosuria. Students were instructed to collect an early morning sample of urine at home and bring it to school for testing using a

urine strip device. Students with positive results in the first examination underwent a repeat test. Those who had consecutive positive urine samples were then evaluated by an oral glucose tolerance test at the hospital.

Results: Sixty-six thousand four hundred and three (33%) students from 419 (65%) schools were screened. Twenty one students were discovered to have persistent glucosuria. Of the twenty one students, 15 had glucose tolerance tests done which resulted in 5 being confirmed as having newly diagnosed diabetes: one boy aged 12 years with Type 1 diabetes and 4 females (aged 6–15 years) with Type 2 diabetes. Five students (4 females and 1 male) were diagnosed as being pre-diabetic. The four female adolescents were overweight (weight > 85th percentile) and all affected students had *acanthosis nigricans* – a cutaneous marker of insulin resistance.

Conclusion: These mass screening data suggest that childhood diabetes of all types can be identified via glucosuria. Prevention of diabetes in childhood is likely to be more cost effective than treating the complications that accrue from lack of diagnosis.

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Parent perceptions of paediatric oncology services at the Eric Williams Medical Sciences Complex, Trinidad and Tobago

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Objective: To assess the perceptions of parents of children with cancer to determine the level of satisfaction with the paediatric oncology services at the Eric Williams Medical Sciences Complex (EWMSC).

Design and Methods: Parents of children with cancer were surveyed during the period October, 12–27, 2009 as part of a wider needs assessment project using a questionnaire designed to obtain information on their perception of medical, physical and psychosocial resources during the family encounter at the EWMSC.

Results: Overall, parents expressed a high level of satisfaction with the quality of delivery of medical and pharmaceutical services which were at no direct cost to the patient. Issues of concern included a lack of a clinic appointment system, inadequate patient care assistance on the ward for very young patients and the housing of non-oncology patients in the Oncology Specialty Unit. Apart from their child's illness, fear of job and income loss was a major stressor to parents.

Conclusion: Medical needs of patients were perceived to be well met but there was need to address psychosocial, physical and educational needs of parents.

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Ethnic patterns of prostate cancer in the Southwest Region of Trinidad and Tobago

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Objective: The Trinidad and Tobago population has a unique distribution of similar proportions of Africans and East Indians. Consequently, we sought to compare the patterns of prostate cancer between these two groups over a seven-year period.

Design and Methods: The clinical records of 471 patients who underwent treatment for prostate cancer at our institution from September 2002 to August 2009 were reviewed. The data were analyzed using prostate cancer related variables: age, ethnicity, digital rectal examination (DRE) findings, serum prostate-specific antigen (PSA) values and Gleason's scores. Comparative analyses of the two ethnic groups – African Trinidadians and East Indian Trinidadians were undertaken.

Results: A total of 471 men underwent treatment for prostate cancer of whom 65% were African Trinidadians, 21% East Indian Trinidadians and 14% were of other ethnic groups. The mean age was 69.6 years (range 45–92 year) and mean PSA was 66.95 ng/mL. Twenty per cent of patients were classified as low risk and 54% high risk, by PSA values. However, Gleason's scores demonstrated 38% and 29% low risk and high risk disease respectively. The prevalence rate of prostate cancer in Africans was at least 254 per 100 000 and East Indians at least 39 per 100 000. There was no significant difference in the age or risk category at presentation between the ethnic groups.

Conclusion: Prostate cancer in Trinidad and Tobago is more prevalent among men of African ancestry than in those of East Indian origin.

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Prostate specific antigen, a marker of mortality in patients with prostatic cancer: the Trinidad experience

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Objectives: To describe the epidemiological patterns of prostate cancer patients in South Trinidad for 2002, 2003 and 2005 and to conduct a survival analysis.

Design and Method: A retrospective cohort study was done using records at the Urology Ward at San Fernando General Hospital.

Results: A total of 1156 patients were screened and 148 were used for survival analysis; 79% were 60.5–80.5 years, 8.8% < 60.5 years and 12.2% > 80.5 years. Afro-Trinidadians accounted for > 60% of the sample and had an incidence of prostate cancer that was > 3 times higher than Indo-Trinidadians and 4 times that of men of mixed ethnicity. African ethnicity, age > 60 years and Gleason score > 7 were all associated with an increased risk of mortality, but these were not significant ($p > 0.05$). Patients with PSA > 100 ng/ml had an increased risk of mortality ($p < 0.05$). In 2005, survival was lower than 2002 and 2003. This could be explained by the Cox Regression Analysis which shows PSA to be a major variable that predicts survival of prostate cancer. In 2005, there was a higher percentage of patients diagnosed with a PSA > 100 when compared to 2002 and 2003.

Conclusion: The survival rate for patients diagnosed with prostate cancer in the year 2005 was lower than 2002 and 2003. Prostate specific antigen was a major variable predicting survival.

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Investigating the correlation between pulse conduction velocity and finger near infrared photoplethysmography parameters in Trinidad

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Objective: To investigate the correlation between the pulse conduction velocity (PCV) from the heart to the finger tip and the ratio of the rise time *versus* the fall time (Tr/Tf) of the pulse volume waveform in the micro-circulation of the finger, among healthy and vascular-damaged Trinidadians over 30 years of age.

Design and Methods: Participants were selected using a cohort method and consisted of healthy and vascular-damaged persons. All underwent anthropometric measurements, a three-lead electrocardiogram and photoplethysmogram of the right index and middle fingers.

Results: All data collected were analysed from 74 subjects aged > 30 years. No significant linear correlation was found between Tr/Tf and PCV in the healthy subjects ($p = 0.196$). The estimated marginal mean of PCV was higher in vascular damaged patients than the healthy patients but the difference was not significant ($p = 0.225$). The estimated marginal mean of Tr/Tf was significantly higher in

the vascular-damaged patients than the healthy subjects ($p = 0.038$).

Conclusion: The blood flow in the macrovasculature is not responsible for the pulse volume waveform measured in the microvasculature. Pathological changes in vascular-damaged patients contribute to a time delay in blood flow to the microvasculature.

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Hepatoprotective activity of *leonotis nepetifolia* (lamiaceae) against acetaminophen-induced toxicity in swiss albino mice

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Objective: To assess the hepatoprotective potential of *Leonotis nepetifolia* extracts as pre- and post-treatments in an animal model of hepatic damage.

Design and Methods: Methanol and aqueous extracts of dried leaves of *L. nepetifolia* were used in Swiss albino mice. A toxic non-lethal dose of acetaminophen was used to induce hepatic damage. Pre-treatment involved the administration of crude extracts (250 – 1000 mg/kg) on three consecutive days prior to dosing with toxic non-lethal acetaminophen (550 mg/kg). Post-treatment involved the administration of extracts (250 – 1000 mg/kg) one hour following dosing with toxic acetaminophen. Animals were sacrificed 24 hours following acetaminophen dosing and blood and liver sections were collected for liver enzyme assays and histology respectively.

Results: Methanol and aqueous extracts of *L. nepetifolia* produced significant hepatoprotective effects at both pre- and post-treatments with marked reductions in the acetaminophen-induced increase in serum alanine amino transferase (ALT) and aspartate amino transferase (AST) levels, $p < 0.05$. At most doses, pre- and post-treatment significantly abrogated the acetaminophen-induced necrotic lesions in hepatic tissue as observed by histological assessment. However, the protection was diminished at higher extract doses which may suggest probable hepatotoxic activity at these doses.

Conclusion: *Leonotis nepetifolia* provides protection against drug-induced hepatic damage in this animal model as both pre- and post-treatment. These findings suggest the probable utility of *L. nepetifolia* as prophylaxis and therapeutic interventions in drug-induced hepatotoxicity. Further studies are warranted to identify the putative compounds responsible for this protective effect and to determine the precise mechanism of action.

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An *in vitro* skin model to study the effect of mesenchymal stem cells in wound healing and epidermal regeneration

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Objective: To assess whether Mesenchymal stem cells (MSCs) can contribute towards chronic wound healing using an *in vitro* skin model.

Design and Methods: Keratinocytes were cultured on de-epidermalised dermis (DED) and populated with fibroblasts or MSCs at an air-liquid interface to induce epidermal differentiation. General histology was performed and immunostaining carried out on the resulting skin equivalents to examine the expression of protein markers for epidermal differentiation (keratin 10 (K10) and hyperproliferation (K6), proliferation (proliferating cell nuclear antigen PCNA) and extracellular matrix (ECM) components (collagen type IV).

Results: Keratinocyte-fibroblast skin model and keratinocyte-MSC skin model both displayed an epidermal phenotype similar to epidermis *in vivo*. Positive expression of proliferation, differentiation and ECM protein markers was observed.

Conclusions: This study highlights the potential use of MSCs in bioengineered tissue for the treatment of chronic wounds.

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Distance learning and eLearning resources for training healthcare providers in Trinidad and Tobago

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Objective: To assess the availability, accessibility, and utilization of distance learning (DL) and eLearning resources in the healthcare system of Trinidad and Tobago.

Design and Methods: Data were collected between February and June, 2009 using questionnaires, focus group sessions and on-site observations.

Results: Ninety-one interviews of several healthcare provider categories, six focus groups involving 80 participants and site visits at seven locations were conducted. There was excitement and interest in DL technology and training opportunities. Focus group discussions uncovered relatively limited active participation in DL courses. Each Regional Health Authority (RHA) had a computer laboratory with relatively new equipment and high speed DSL internet which were available for eLearning. While healthcare providers expressed interest in DL and some infrastructure already exists to facilitate it, there was not yet a strategy for harnessing DL resources for maximum benefit. The Trinidad and Tobago Health Training Centre (TTHTC) at the San Fernando General Hospital and UWI Telehealth, Eric Williams Medical Sciences Complex had videoconferencing facilities but this modality has not yet been fully utilized as a tool for training.

Conclusion: The Trinidad and Tobago Health Training Centre can assist the RHAs to identify appropriate strategy for developing and implementing DL and eLearning courses to maximize the return on their training dollars.

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Lessons learned in scaling-up and integrating HIV testing in a primary healthcare facility: The counselling testing and intervention (CTI) programme

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Objective: The World Health Organization (WHO) has recommended that HIV testing and counselling be offered as part of routine medical healthcare to increase access to early treatment, care and support of persons with HIV. We reviewed and evaluated a model for scaling-up and integrating HIV testing in a primary health-care facility.

Design and Methods: The Counselling, Testing and Intervention (CTI) model was developed as part of an overall wellness programme. The model combines elements of the traditional voluntary counselling and testing (which focusses on the client-initiated approach to testing) and the more current Provider-Initiated Testing and Counselling (PITC). A community HIV education component supported the CTI programme.

Results: In the first 24 months (November 2007 – October 2009), 1574 tests were conducted compared with a total of 332 tests for the preceding 24-month period. This represented an increase of over 400%. Testing rates also in-

creased steadily throughout the first 2 years of the CTI programme.

Conclusions: HIV testing can be successfully integrated in primary healthcare and can be scaled-up through intensive programme planning. Important components for the successful uptake of voluntary HIV testing include research, training, community education/sensitization and confidential processes.

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The effect of school-based sexual education on adolescent sexual choices

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Objectives: To assess the sexual and reproductive health (SRH) knowledge, skills and choices of adolescents in selected schools and compare participants' knowledge with their choices in order to determine how effective sexual education is in promoting healthy sexual choices.

Design and Methods: The research was conducted in four public schools in Region 4, Guyana. The design was quantitative, cross-sectional and non-experimental. Structured questionnaires were administered to a stratified random sample of 100 participants, using level (form) within the schools as the stratifying variable. Participants included adolescents 12–18 years old from forms 1–5. Data were analyzed using Epi Info 3.2.2.

Results: Nine-three per cent of participants were exposed to sexual education and 88.2% cited school as a source of this education. The majority of participants knew of HIV while only 18.3% knew of chlamydia and 5.4% knew of trichomoniasis. Thirty-five per cent of participants thought having sex is cool and 26% had oral, anal or vaginal sex.

Conclusions: While the study could not establish a causal relationship between sex education and choices, it highlights adolescents' need for better SRH information and skills.

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Through the eyes of children – engaging youth in a creative supportive environment for health: A photovoice strategy

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Objective: To conduct a pilot participatory needs assessment, using Photovoice as a method of engaging young people in critical dialogue about their perceptions of issues affecting their health.

Design and Methods: Nine senior high school students from three public schools in Port-of-Spain, Trinidad and Tobago, were identified by the Ministry of Education to participate in a three-day training session in the Photovoice technique/ethics, writing narratives, critical reflection and dialogue. Trained graduate students facilitated the process. The high school students were then given disposable cameras and asked to photograph their school environment and document their thoughts on what they had photographed. These were collated and presented to a stakeholder meeting on school policy.

Results: Eight themes about being healthy emerged. The most recurring themes were: quality of the food served at schools, need for safe, clean and well-maintained school facilities and role modelling by teachers, parents and community. Recommendations to address the concerns identified were discussed by participants.

Conclusion: Conducting needs assessment which concentrates on the voices and needs of those young people affected can be a first step in creating successful and cost-efficient programmes and interventions specifically suited to this group. A needs assessment using Photovoice should be a technique considered by school staff, government leaders, health professionals and non-government organization.

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Nutritional composition of commonly consumed composite dishes in Trinidad

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Objective: To provide the calculated nutritional composition of composite dishes commonly consumed in Trinidad and so to enable dietary intake to be derived from a Quantitative Food Frequency Questionnaire (QFFQ) developed specifically for this population, in order to determine association between diet and chronic disease.

Design and Methods: Multiple samples of each composite dish identified from the QFFQ were collected in the

homes of 53 participants from urban and rural areas in Trinidad under the supervision of trained personnel. The ingredients and the final weight of the cooked dish were recorded. The nutritional composition of each weighed recipe was calculated by entering the weight of the individual ingredients and the final cooked weight. An average recipe was calculated per 100 g from all samples of each composite dish using the US Department of Agriculture National Nutrient Database.

Results: A total of 279 weighed recipes were collected for 75 composite dishes: 25 vegetable dishes, 17 meat dishes, eight seafood dishes, 20 starchy foods/desserts/miscellaneous and five drinks. The average nutritional composition (energy and 32 macro- and micronutrients) per 100 grams of each dish was calculated.

Conclusions: For the first time, the nutritional composition data are provided for 75 commonly consumed food and drink items in Trinidad. Such data are essential for assessing nutrient intake and determining associations between diet and risk of chronic disease in this population.

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Intergenerational support, living arrangements and self-rated health: Exploring the situation of older women in Trinidad and Tobago

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Objective: To explore the relationship which older women in Trinidad and Tobago experienced with their children, noting the self-rated health situation of these older women, their living arrangements and the social and economic support that they reported that they received from their children.

Design and Methods: Data for this paper come from a study which was conducted in Trinidad and Tobago in 2006. A survey was conducted in North, Central and South Trinidad and Tobago. In total, 200 women aged 60 years or older were interviewed. Fifty interviews were done in each of the four sectors of the country which are mentioned above. The data gathering instrument was a 51-item questionnaire.

Results: The study found that the women in the study shared their own homes with their children and only 10% lived in the homes of offspring and other relatives. With regard to health, almost 10% reported “very good health” and 4% reported “bad health”. The self-reported health status did not seem to vary whether or not these women lived alone ($p = 0.456$). The study noted that financial support was received from children and other relatives but 39.1% were dissatisfied with the financial support which was available from their children.

Conclusions: The data revealed that only 18.5% of these women lived alone but many shared their homes with children and 23.4% were sufficiently self-reliant to report “no need” for financial assistance from their children.

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The Faculty of Medical Sciences, St Augustine and its contribution to Human Resource Development in the Caribbean

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Objective: To present a longitudinal study of the number of graduates from 1994 to 2008 and to highlight the number of doctors, dentists, veterinarians, pharmacists and

nurses in the region and beyond who have graduated from the programmes of the Faculty of Medical Sciences (FMS), UWI, St Augustine.

Rationale: The FMS, St Augustine, plays an important role in producing qualified health personnel. The study is a unique compilation of graduates from the FMS, St Augustine, from its inception in 1994 up to 2008. No other compilation of this type exists for other faculties.

Methods: Data were obtained by harvesting the names of graduates from the graduation booklets and by cross-checking administration records of the Faculty’s Office.

Results: The study shows that fifteen of the sixteen contributing Caribbean territories have had graduates from the FMS, St. Augustine, with Anguilla being the one exception. Other graduates have come from beyond the region, including 16 developed and developing nations.

Conclusion: The FMS, St Augustine, serves a key role in providing health professionals for the region.