

group, 95% CI 2.78–3.02), but significantly more preterm babies were found in the sample group (23% versus 9%,  $p < 0.0001$ ). Admitted BBAs had significantly lower average weights than those not admitted (2.19 versus 2.96 kg,  $p < 0.0001$ ). No significant differences were found when maternal age, parity, co morbidities and distance from the hospital were compared. There were significantly more unbooked mothers in the sample group (23% versus 6.7%,  $p < 0.0001$ ), and only 54.4% of mothers of the admitted BBAs had booked antenatally, compared to 78.89% of mothers whose babies were discharged. Admission and complication rates were similar between the groups, but the average length of stay was seven days longer in admitted BBAs compared to admitted controls.

**Conclusions:** Prevalence of BBAs is comparable to other developing countries, and is associated with poor antenatal attendance, prematurity, delay in presentation to hospital and lengthier hospital stays. These factors have implications on prehospital care of newborns and access to maternal and child health care in general.

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### The hi-map scan: The use of emergency ultrasound to evaluate haemodynamically unstable patients in the emergency setting

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**Introduction:** The HI-MAP (Heart, IVC, Morrison's pouch, Aorta, Pneumothorax) scan is a focussed bedside ultrasound examination designed to assess the hydration status of patients by quick assessment of cardiac contractility, inferior vena cava collapsibility during inspiration, the aorta and the presence of free fluid in the abdomen or chest. In the Emergency Centre (EC) this non-invasive tool can assist in early accurate diagnosis of critically ill patients. The aim of this study is to demonstrate the use of the HI-MAP scan in a tertiary EC in KZN to assist in diagnosis and determine hydration status in critically ill patients.

**Methods:** This is a cross sectional retrospective descriptive study of HI-MAP scans performed on critically ill patients admitted to the EC from January 2010 until October 2011. The scans were performed by level 2 emergency ultrasound trained doctors. Provisional diagnosis using clinical skills and history was documented on admission. The HI-MAP scan was performed and final diagnosis documented in the database, based on clinical findings as well as ultrasound findings. Diagnosis was categorized into fluid overload, cardiogenic and hypovolaemic shock.

**Results:** A total of 133 patients were included. When provisional compared to final diagnosis after HI-MAP, 87(66%) patients had the same diagnosis confirmed by ultrasound. Forty six (34%) patients had different diagnosis after HI-MAP was performed. In fluid overloaded patients 95% had either poor contractility or Inferior vena cava collapsibility index (IVC-CI) of less than 25%. In hypovolaemic patients 96% had either hyperdynamic cardiac contractility or IVC-CI of less than 50%.

**Conclusion:** HI-MAP scan is a good non-invasive tool for assessing volume status in critically ill patients and can be used to categorize patients into fluid overload, cardiogenic shock or hypovolaemic shock. Cardiac contractility and IVC-CI are the two most sensitive components of this scan.

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### Antihypertensive medications and diastolic dysfunction progression in an African American population

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**Background:** Although different classes and combinations of antihypertensive agents have demonstrated effectiveness in management of hypertension, the choice of drugs in African American patients is often different. To purpose of this study is to determine whether there is an association between class of antihypertensive medication and diastolic dysfunction progression in an African American population.

**Methods:** A retrospective cohort study of African American patients with echocardiograms demonstrating diastolic dysfunction from an echocardiogram database for an academic medical centre. The main outcome measures were change in diastolic function grade as a function of time and associated risk factors. Twelve risk factors evaluated were considered in the analysis: age, body mass index (BMI), Diabetes Mellitus, tobacco use, use of Beta Blockers, Angiotensin Converting Enzymes (ACE) inhibitors, Angiotensin Receptor Blockers, Calcium Channel Blockers, diuretics, left ventricular hypertrophy, and left atrial size.

**Results:** During the 6-year retrospective cohort study period, there were 96 patients in the database with 2 or more echocardiograms demonstrating diastolic dysfunction; representing 302 echocardiograms. The mean time between echocardiograms was 2.6 years. The mean age was 64.2 ( $\pm 10.1$ ) with 78 % female and a mean BMI 31.2 ( $\pm 7.4$ ). The majority of subjects had Grade I diastolic dysfunction at the initial examination ( $N = 87$  (90.6%)). Approximately 22.9% ( $n = 22$ ) of the study cohort demonstrated diastolic dysfunction progression. In univariate risk factor analysis, age was the only risk factor associated with progression, as younger patients were more likely to progress ( $p < 0.05$ ). In multivariate analysis use of calcium channel blockers was protective against diastolic dysfunction progression ( $p < 0.05$ ), with CCB users having an odds ratio of 0.28 (0.09, 0.90) relative to non-users.

**Conclusions:** Our study showed use of Calcium channel blockers to have a protective effect against progression of diastolic dysfunction in this African American cohort. Identifying factors that can mediate disease progression is particularly important for hypertensive African Americans, who have significantly higher rates of developing disease complications such as diastolic heart failure.

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### Clinical presentation, diagnostic evaluation, treatment and diagnoses of febrile children presenting to the emergency department at Muhimbili national hospital in Dar es Salaam, Tanzania

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**Introduction:** While there are many guidelines for the ED evaluation of febrile children, these are largely derived and validated in high-resource settings. There is limited literature documenting recommended or actual management in resource-limited settings. We

describe the presentation, diagnostic evaluation, treatment, and ED diagnoses of febrile children under 5 years old presenting to an urban emergency department in Dar es Salaam.

**Methods:** This was a prospective observational study of children under 5 with fever or reported fever at Muhimbili National Hospital (MNH) ED. Treating physicians prospectively completed a standardized data form.

**Results:** We enrolled 105 children, median age 14 months, with 80% > 6 months, and 64% male. Presenting symptoms included poor feeding (47.6%) vomiting (42.9%), cough (34.3), difficulty breathing (28.6%), and diarrhoea (22.9%). 78% had vital sign abnormalities and 82% had abnormal physical examination. Among those undergoing point-of care testing, 11/105 tested (10.5%) had hypoglycaemia, 9/103 (8.7 %) were malaria positive, 17/30 (56.7%) had positive urine dipstick testing, and 5/26 tested (19.2%) were HIV positive. Laboratory-based tests included CBC and chemistry (each performed in 95.2%), VBG (56.2%), CSF (5.7%), blood culture (5.7%), urine culture (10.5%), CSF culture (1.9%), and CXR of chest (25.7%) and abdomen (3.8%). Interventions included antibiotics (70%), antimalarial (12%), IV fluids (54%), and antipyretics (41%). Top ED diagnoses included malaria (24.3%), pneumonia (15.2%), septicemia (9.5%), urinary tract infections (7.6%), acute watery diarrhoea with dehydration (6.7%), meningitis (4.8%), anaemia (4.8%), skin and soft tissue infections (4.8%), bowel obstructions (3.8%), and pulmonary tuberculosis, sickle cell disease, and hepatitis (2.9% each). Laboratory-based tests were often abnormal; culture results were often unavailable;

**Conclusion:** A wide range of presentations and management were documented. There was a high rate of positive diagnostic test results. Malaria and pneumonia were top diagnoses, but a wide range of infections were diagnosed.

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#### **Management of full term pregnant patient with paroxysmal hypertension due to incidental pheochromocytoma**

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**Introduction:** The incidence of pheochromocytoma in pregnancy is rare, less than 0.2 per 10,000 pregnancies. The classic triad of pheochromocytoma is headaches, palpitations, and excessive sweating, but it is not so common in the pregnant state. Uncontrolled catecholamine release in patients can result in malignant hypertension, cerebrovascular accidents, and myocardial infarctions. It is difficult to differentiate and manage the hypertension with that of preeclampsia and any other causes during pregnancy.

**Case Description:** A 25-year-old, full-term pregnant woman diagnosed with pre-eclampsia was referred to our tertiary care hospital with severe resistant hypertension. Her blood pressure remained labile despite the usual medications, which led to the suspicion of an underlying endocrinological problem. Further biochemical and radiological investigations confirmed the diagnosis of pheochromocytoma. The patient was invasively monitored and treated with alpha blockade, beta blocker, and vasodilators in ICU. On the fifth day, she went into spontaneous labour with confirmed rupture of the membranes. The labour was augmented with intravenous oxytocin 2U in 500 ml solution of Ringer's lactate. A nitro-glycerine basal infusion was started

and titrated to control BP during labour to keep the blood pressure below 160/90 mmHg. An injection of Phentolamine drip and beta blocker esmolol was kept ready, to control the wide fluctuation of blood pressure. She delivered a live, healthy, male infant weighing 2.5 Kg. She was kept in the ICU for 72 h with epidural patient-controlled analgesia (EPCA). The patient was not keen for a resection of the adrenal tumour immediately after delivery. She was discharged with medical management, with a further plan for surgery in due course. With a multidisciplinary team approach (gynaecologist, anaesthesiologist, endocrinologist, and surgeon), proper planning, and adequate preoperative medical management; pheochromocytoma in pregnancy can be managed successfully.

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#### **Mass casualty acute pepper spray inhalation – Respiratory severity effect**

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**Introduction:** Pepper spray use has gained momentum within the arena of law enforcements, self-defence and chemical weaponry-assisted crime since 1992. The active ingredient although available in local produce stores, pepper spray is considered a weapon and therefore of restricted use in many regions, including The Bahamas; where its use as chemical weapon in crime was recently experienced. This was the first pepper spray related mass casualty encountered by the emergency departments. Respiration difficulty was the most common complaint which was perceived as the most injurious of the presenting complaints.

**Objective:** In light controversies regarding the severity of respiratory status of post-acute exposure, the objective of this case study was to assess the severity of respiratory complaints presenting as a result of acute pepper spray inhalation during a mass casualty in The Bahamas in light of controversies in the literature

**Designs and Methods:** A descriptive case series study was undertaken to assess the severity of respiratory complaints presenting as a result of the acute pepper spray inhalation exposure, noting patients' demographics and severity of presenting respiratory complaints as assessed via examination findings, disposition and follow-up review results.

**Results:** Twenty persons reported exposure, 17 acute cases were transported to the ER and 4 having not experienced any complaints, contacted the ER by phone for instructions. All patients were women between the ages of 27–59 years old. Of the many presenting complaints, difficulty breathing was experienced by all acute cases, but only two patients required admission for < 24 h and stay was uneventful. All cases remained asymptomatic without residual complaints upon follow-up.

**Conclusion:** While the respiratory complaint was perceived as being the most detrimental of all presenting complaints, there was an overall non-threatening outcome in all patients. The presenting respiratory complaints were mostly subjective with benign outcome. Although various risk factors associated with severity increase of respiratory status, were present in a few of the index cases patients, their affect was negligible with a resultant benign outcome.

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