

CME: Cardiology

Cardiovascular disease (CVD) accounts for approximately 30% of deaths worldwide, with 80% of this burden in developing countries. The epidemiological transition occurring in sub-Saharan Africa (SSA) has the consequence of economic and social transformation, resulting in dramatic shifts in disease spectrum from communicable diseases and malnutrition to CVD and cancer. South Africa (SA) is faced with the challenge of four colliding epidemics: (i) poor child and maternal health; (ii) high rates of interpersonal violence; (iii) infectious diseases, including HIV/AIDS and tuberculosis; and (iv) non-communicable diseases (NCDs), including CVD. In SA, NCDs are prevalent in both rural and urban areas, most prominently in poor persons living in urban and periurban settings, resulting in increasing pressure on acute and chronic healthcare services. A major driver of this NCD burden is the demographic change in the country, leading to an increase in the proportion of people aged over 60 years despite the negative effect of HIV/AIDS on life expectancy. Contributions to the CVD burden in the country include hypertension, cardiomyopathies, rheumatic valvular heart disease, pericardial disease and coronary artery disease, among others. In this issue of *SAMJ*, the clinical approaches to these common cardiovascular problems are reviewed with the dual aim of empowering the doctors who manage these conditions in primary care settings around the country as well as improving the care of CVD in primary care settings and in emergency departments. This outstanding series of articles represents the collaborative effort of primary health/family physicians and cardiologists from around the country. The authors have synthesised and presented the most current, evidence-based and practical approaches to management of common CVDs. The series will be split over January and February, as the CME articles are now printed in full.

Kangaroo mother care

Our guest editorial^[1] informs of the National Department of Health's use of mobile technology – mHealth – to improve maternal, child and youth health and treatment of HIV patients.

More than 20 million infants are born weighing less than 2 500 g every year – over 96% of them in developing countries – and are at increased risk of early growth retardation, infectious disease, developmental delay and death during infancy and childhood.^[2] Kangaroo mother care (KMC)^[3] is a safe and effective alternative to conventional neonatal care, which is expensive and needs both highly skilled personnel and permanent logistic support.

Feucht *et al.*^[4] report on how the district clinical specialist team, in conjunction with experienced local KMC implementers, embarked on a quality improvement initiative from 2013 to 2015 to facilitate KMC scale-up in the context of the Tshwane district's increase in deliveries, the strain on obstetric and neonatal services at the larger secondary and tertiary hospitals, and neonatal bed shortages in SA.

Taking technology one step further, Chilean 'techies' calling themselves 'Team BabyBe' have designed a bionic mattress for a premature infant in an incubator in the neonatal intensive care unit. The mattress feels like real human skin, and is teamed with a turtle-like sensor worn on the parent's chest to detect his or her heartbeat and breathing patterns. Information from the sensor is sent to a control module that transmits the information to a pneumatic pump in the mattress that makes the mattress move – so that the baby feels the parent's heartbeat and breathing.^[4]

Treating type 2 diabetes mellitus (DM)

Type 2 DM, set to increase by more than 100% over the next decade in SSA and with its prevalence in SA's over-30s having doubled, has

the potential to be as disruptive as the HIV pandemic in lowering life expectancy and reversing previous healthcare gains. Against this background, Wing and Jivan^[5] present a review entitled 'Targeting composite treatment of type 2 diabetes in middle-income countries – walking a tightrope between hyperglycaemia and the dangers of hypoglycaemia'. We well recognise diabetic complications. In SA these are reckoned to account for 78 900 years lost to disability (YLD), 8 000 new cases of blindness, 2 000 new amputations, 7 000 strokes and 5 500 YLD attributable to ischaemic heart disease. According to the WHO Multinational Study of Vascular Disease in Diabetes, half of all deaths in type 2 DM are attributable to cardiovascular disease.

While intensive glucose control reduces the overall risk of diabetes-related sequelae such as diabetic retinopathy, the downside is an increased risk of hypoglycaemia and weight gain. Additionally, the ACCORD study – among others – as outlined in this review has identified the increased mortality linked to intensive glucose control in patients with multiple cardiovascular risk factors. Hypoglycaemia has the potential to prompt episodes of syncope, ventricular tachyarrhythmias and cardiac arrest, induces a procoagulant and prothrombotic state, and, counterintuitively, creates a favourable environment for the development of atherosclerosis. New incretin-based therapies, such as the glucagon-like peptide 1 analogues and the di-peptidyl peptidase-4 inhibitors, carry an overall lower risk of hypoglycaemia than the sulphonylureas and insulin and are favoured agents to minimise the extent of hypoglycaemia while still ensuring that patients reach appropriate glucose control targets.

Importance of screening for porphyria

In 'Severe porphyric neuropathy – importance of screening for porphyria in Guillain-Barré syndrome', Schutte *et al.*^[6] remind us to consider an acute porphyric attack in patients who present with progressive quadriparesis, characterised by weakness and reduced reflexes, and in whose history there has been a recent change in medication. In two patients in this case series, the attack was probably precipitated by antiretroviral medication – one patient was started on highly active antiretroviral therapy before the onset of the symptoms, and the other took antiretroviral medication for post-exposure prophylaxis. The therapy of choice in an acute porphyric attack is haemin, which limits or reverses the toxic effects of haem precursors on the peripheral nerves. The weakness then resolves rapidly. Unfortunately haemin was not readily available in the authors' public sector hospital setting.

Antenatal screening for hepatitis B virus (HBV) in HIV-infected and uninfected pregnant women in Tshwane^[7]

In SA, there is a significantly higher HBV prevalence in HIV-infected as opposed to HIV-uninfected women. The risk of vertical perinatal transmission of HBV to the infant is 10 - 20% in pregnant women who are seropositive for hepatitis B surface antigen (HBsAg) but seronegative for hepatitis e antigen (HBeAg); however, perinatal transmission rises to 90% if a mother is seropositive for both HBsAg and HBeAg. Currently pregnant women are not screened for HBV in the public sector, placing neonates at risk of acquiring HBV infection from exposure to maternal blood and secretions during delivery. In the current national vaccination schedule, HBV vaccination is only started at 6 weeks. The authors call, as Spearman and Sonderup^[8] already have in this journal, for SA to implement a four-dose HBV vaccination schedule with the addition of the birth-dose vaccine within 24 hours of delivery. This would increase costs slightly but be easy to implement; moreover, it would not disrupt the current HBV vaccination schedule.

Fibrinolytic therapy for acute myocardial infarction

Fibrinolytic therapy for acute myocardial infarction (AMI) became standard of care fully three decades ago, the best approach being to administer thrombolytic therapy as soon as possible to all patients without contraindications who present within 12 hours of symptom onset and have ST-segment elevation on the ECG or new-onset left bundle-branch block, unless an alternative reperfusion strategy is planned. Looking at reasons for delays in administering fibrinolytics to patients with AMI at Steve Biko Academic Hospital, Meel and Gonçalves^[9] convey the dismaying news that the majority of patients (67%) presenting to the capital's academic hospital did not receive fibrinolytic therapy at all. Even those who did received it after the 'golden' 60 - 90 minutes when lysis of infarct artery thrombi may achieve reperfusion, thereby reducing infarct size, preserving left ventricular function and improving survival.

A large number of eligible patients arrived at a facility in Pretoria capable of providing fibrinolytic therapy but did not receive any treatment! These missed opportunities will clearly result in excess mortality and morbidity, including heart failure, which would otherwise be preventable.

Migrant health

Climate change, as addressed in last month's editorial and review,^[10,11] is likely to result in the migration of human populations, especially in Africa, affecting disease transmission patterns, burdening healthcare systems and pressurising demand for healthcare services. An editorial^[12] and a research article^[13] touch on issues of migrant health. As the authors of the former point out, 'Migration provides opportunities for health and economic benefits, and has the potential to positively and negatively affect health systems. To maximise positive impact, and mitigate against potential negative consequences, requires attention and engagement of policy-makers from health and other sectors, including public health researchers and health workers.'

It is postulated that a *healthy migrant effect* exists – studies conducted in several parts of the world point to a pattern of better health in migrant groups compared with their compatriots who decide not to emigrate. Looking at the socioeconomic and environmental health situation of international migrants in Johannesburg, Mathee and Naicker^[13] show unexpectedly that, after controlling for socioeconomic status and area of residence, the health of migrants into SA was quite as bad as that of native citizens in respect of chronic diseases, mental ill health, and communicable and acute ill health, with a similar exposure to violence ... probably because intra-African migration may not self-select high levels of health to the same degree as in people migrating from Africa to high-income countries.

Climate change

Returning to the issue of climate change, the COP21 conference is in session as I write, with the aim of achieving an international

consensus on how the world will keep global warming below 2°C. I suggested last month that we should not hold our respective breaths regarding consensus, or the pledge by developed countries to provide USD100 billion annually to developing nations to enable them to seek renewable energy sources.

In this context, India's prime minister Narendra Modi, speaking at COP21, has said that the choices for developing countries are not easy: 'The prosperous still have a strong carbon footprint and the world's billions in countries at the bottom of the development ladder are seeking space to grow.' (Of India's 1.25 billion people, 300 million do not yet have access to energy.) Our own President Zuma drew a distinction between the roles of developed and developing countries, emphasising that the latter were already feeling the effects of global warming, much of the responsibility for which lay with the developed world.^[14] In the midst of the worst drought in SA in decades, half a million people in KwaZulu-Natal are already facing hunger.^[15]

Perhaps, predictably, the pledges made so far will result in global warming of at least 2.7°C, short of the 2°C goal. Moreover, negotiators seem to have given up on the idea that any pledges should be legally binding and there will be no real sanction, other than opprobrium, for those countries that renege on their undertakings in Paris.

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