

Nick Brown , Editor-in-Chief

A QUICKENING OF THE PULSE

It's late October as I'm completing this Atoms. The autumn golds are fading (or falling), dusk arrives early and the East-erlies are building over the Baltic. This change of season is all rather exhilarating and, at the risk clumsy metaphor, finalising this month's running order (full of fresh and challenging papers) evoked the same feeling. Space permits only a few mentions here—I could have chosen many more.

PAEDIATRIC EMERGENCY MEDICINE

We are excited about the launch of a new section, paediatric emergency medicine, convened and coordinated by our editorial colleague Cynthia Mollen from the Children's Hospital Philadelphia. It will feature original research, hypothesis generating ideas and review articles. We kickstart the series with two novel point of care triage studies.

Ketones and dehydration

As we all keenly aware, assessment of dehydration in the absence of an immediate pre-illness weight is near impossible with next to no correlation between standard biochemical measures and degree of intracellular fluid deficit. Dumin and colleagues in Dublin assess another attractive potential marker, serum point-of-care ketones at triage and moderate-to-severe dehydration secondary to acute gastroenteritis on clinical assessment using the Gorelick Scale. *See page 1157*

LAMP

Rapid molecular diagnostic testing, now establishing a foothold and is likely to be a major component of assessment and triage in the future. Ferris and colleagues report on the use of point-of-care loop-mediated isothermal amplification (LAMP) in the diagnosis of meningococcal disease (MD).

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Data from three UK emergency departments (ED) between 2017 and 2019 in which consecutive children attending the ED with features of MD were eligible for inclusion. The meningococcal LAMP test (index test and available within an hour of sampling) was performed on an oropharyngeal swab validity being tested against the reference standard test of confirmation of invasive MD defined as positive *N. meningitidis* culture or PCR result from a sterile site. *See page 1151*

GLOBAL HEALTH

Snakebite

In 2017 snakebite envenoming was reinstated on the WHO list of neglected tropical diseases. With 5 million bites per annum, around 2 million envenomations, 100 000 deaths and many times more left with permanent physical and psychological sequelae, the annual morbidity and mortality is among the highest of the group. Like other NTDs, snakebite is primarily a disease of poverty, climate change (related to deforestation and mining) rendering vulnerable populations even more vulnerable. The vast majority of snakebites occur in Africa (30% in children) Asia and Latin America with India having the highest reported death toll. This is the first of a two part series in which Sophie Pach, Jay Halbert and colleagues describe global snakebite epidemiology, moving on to management in the next instalment. *See page 1135*

Low birth weight and cardiac surgery

Given the 1.3 million incident cases annually and resource limitations, congenital heart disease is now one of the five most common causes of early child death globally, joining the perennials pneumonia and acute gastroenteritis. Cardiac surgery centres have proliferated in low- and middle-income countries (LMICs). There are compelling biological reasons for an association between lower birth weight and poorer outcomes in children with congenital heart disease from greater susceptibility to cardiomyocyte proliferation and left ventricular remodelling and the additional difficulty in operating. Krishna Kumar study and Nama-chivayam's editorial describe mortality data from a large South Indian centre in

two epochs, 2011–2014 and 2015–2018 by birth weight adjusting for severity of defect, findings of importance in surgical provision planning. *See pages 1140 and 1133*

DRUGS AND THERAPEUTICS SECTION

Oral amoxicillin in neonates with suspected sepsis

Sepsis accounts for 23% of all-cause global neonatal mortality across the globe outcomes being adversely affected by delayed care seeking and poor adherence to parenteral antibiotic regimens in low- and middle-income country settings. In many such settings, inpatient admission is not even an option so the need for effective oral treatment (as an adjunct to intramuscular aminoglycosides which themselves can be given on an outpatient basis) is pressing. Amoxicillin is an attractive option, though pharmacokinetic (PK) data in this age group is sparse, despite WHO recommendations for use where inpatient treatment is not feasible. Mir and colleagues enrolled infants with signs of sepsis enrolled in an oral amoxicillin/intramuscular gentamicin treatment arm of a sepsis trial, (Simplified Antibiotic Therapy Trial (SATT)) in Karachi, Pakistan. Pharmacokinetic sampling was performed at 0, 2–3 and 6–8 hours following an index dose of oral amoxicillin. Plasma concentrations were determined by high-performance liquid chromatography/mass spectrometry and values of ≥ 2 mg/L were considered as the effect threshold, given the regional minimal inhibitory concentration (MIC) of resistant *Streptococcus pneumoniae*. Of 44 infants, 6 had positive blood cultures with predominant Gram-positive organisms. Mean amoxicillin levels at 2–3 hours and 6–8 hours were, respectively, 5 and 8 times the MIC following the index dose. Based on these findings, oral amoxicillin has potential as a safe replacement of parenteral ampicillin in newborn sepsis regimens including aminoglycosides, where hospitalisation is not feasible. The practical importance of this finding cannot be overstated. *See page 1208*

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