Guest editorial

Managing children's heart disease: a basic guide to wizardry

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Few things are as worrisome as a sick child, and when that child's malaise seems to spring from a defective heart, most medics pale. Differential cyanosis, mid-diastolic murmur, dextrocardia and ejection click: the legion of terms from the lexicon of cardiogenic symptoms and signs seem to be suffused with an aura of daunting complexity. Only after some people — mumbling incoherently around a flashing echo screen in a darkened room — have probed the patient, or a pontificating highbrow has deciphered those hideous hieroglyphics on long paper strips, may cracks appear to throw some light on the child's true diagnosis. Then you pass your patient on through a series of hoops into the hands of worried anaesthetists asking awkward questions before allowing a coldly competent craftsman to 'correct the defect'.

When, some weeks later, your patient returns, tattooed by the craftsman and perhaps a little less blue, smartly labelled in a cryptic discharge letter as an 'AVSD/Tet post RMBTS' or 'bilateral Glenn', or even more esoterically a 'left isomerism after a DKS with a PPM set at VVIR' the gloom descends once again, like a dementor onto Harry Potter.

However, no special wizard-like magic is required to help these desperate children. In your hands now is a scenario-based hands-on no-nonsense review of childhood cardiac problems that may help and hopefully convince you that the dizzying complexity can readily be dispelled by following a basic approach and using the toolbox of simple clinical skills that all of us possess.

This edition of *CME* is aimed at looking at the common but serious cardiac conditions that befall children, from babies to teenagers, and how to approach and manage them effectively and safely. These articles are not intended to be academic treatises on paediatric cardiology, but rather a series of reminders and pointers on how to make sense of a child's heart disease in various contexts, with a few illustrative pitfalls gleaned from the authors — most gained by bitter experience.

Crucially, the early recognition of a child with heart disease is made at the coalface, teased out in a bustling emergency room from among the many other babies and children with similar presenting complaints. The hard work is done at the point of first contact, where the exact diagnosis is often (and usually) not essential, yet an understanding of the probable pathology and its urgent management may well be critical to the child's survival. We hope that this issue of *CME* will not remain stashed on your bookshelf, but be at hand to sharpen your awareness and recognition of paediatric heart disease and dispel that voodoo aura that is often its unnecessary companion.

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Review on Diarrhoeal Treatment: Focus on New Oral Rehydration and Zinc Supplementation

Each 5ml Smart Zinc Syrup contains 10mg elemental zinc as zinc sulphate

"New WHO Low Osmolarity Formula"

Each 4.2g sachet of Smart ORS to be reconstituted in 200ml of water

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"New WHO Low Osmolarity Formula"

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Diarrhoea remains a leading cause of death among infants and young children, accounting for 18% of child deaths and 13% of all disability-adjusted life-years. In order to achieve the United Nations Millenium Development Goal of reducing child mortality by two-thirds by 2015, greater attention must be given to reducing diarrhoea morbidity and mortality. In May 2004, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) released a joint statement to decrease diarrhoea deaths among the world's most vulnerable children. Two simple and inexpensive changes were recommended: **(i) the switch to a new lower osmolarity formulation for oral rehydration salts (ORS), and (ii) the introduction of zinc as an adjunct therapy.**

Since ORS was adopted by the WHO in 1978 in its fight against the onslaught of diarrhoea, the mortality rate for children suffering from acute diarrhoea has fallen by 1.3 million deaths annually. **The new formulation of ORS with lower osmolarity promises to:**

- **reduce the stool output or stool volume by about 25% when compared to the original WHO-UNICEF ORS solution**
- **reduce vomiting by almost 30%**
- **reduce the need for unscheduled IV therapy by more than 30% and thus the need for hospitalisation reducing the cost of healthcare.**

The inclusion of zinc supplementation in the treatment regime of diarrhoea has been shown to have significant beneficial impact on the clinical course of acute diarrhoea, reducing both severity and duration. Its use **promises to:**

- **reduce duration of diarrhoea episodes by up to 25%**
- **decrease the proportions of episodes lasting more than seven days by about 25%**
- **reduce stool volume by up to 30%.**

Zinc-supplemented children had also shown a 24% lower probability of continuing diarrhoea, as well as a 42% lower rate of treatment failure or death.
In addition to the above, zinc has shown to have a positive impact on the prevalence of dysentery (bloody diarrhoea) if given as an adjunct to antibiotic treatment.

Cost, being an essential factor in implementing the recommended programme, was a major reason for the 2008 Copenhagen Consensus to rally its support. This group, consisting of a number of leading global economists, ranked zinc supplementation as the most cost-effective intervention for advancing human development. Despite the evidence of benefit, there has been little progress on widespread introduction of low osmolarity ORS and zinc for diarrhoea treatment.

In order to accelerate the programme, a Zinc Task Force was formed in 2004. They were a collaboration of Johns Hopkins University, the United Nations agencies, USAID, bilateral organisations and researchers. They aimed to address issues including: (i) diarrhoea treatment policy at country level; (ii) lack of global zinc supply; (iii) financing for initial zinc procurement and start-up activities; (iv) creating demand within countries and (v) needs for operational research, monitoring and evaluation. Although there have been advances in each of these categories, faster implementation is still required to meet the 2015 deadline.

NATIONAL POLICY ADAPTATION

Training was provided at six regional and two national diarrhoea management workshops between 2006 and 2007, and included paediatricians, child-health experts and policy makers from more than 50 countries. Guidelines were published detailing technical information for updating policy and implementation strategies. However, logistical problems like registration and importation of zinc supplements still present the major obstacle to the policy adaptation process.

GLOBAL SUPPLY

Zinc products are now produced by Bangladesh, Egypt, El Salvador, Indonesia, Nepal, Pakistan, the United Republic of Tanzania and India, which may or may not meet international GMP standards. It is critical to increase the number of manufacturers, both locally and internationally, as competition will reduce prices over time, and will also ensure adequate supply.

FINANCING

Although zinc is inexpensive and cost-effective, start-up funds are required as the addition of zinc procurement has to be added to the budget. Suggestions have been made to create a Zinc Procurement Fund (ZPF), which will assist countries with initial procurement at the introduction of zinc.

CREATING DEMAND

All health sectors should be involved in providing ORS and zinc supplementation. The public sector alone will not be effective, and community health workers and the private sector have to be incorporated in its promotion.

CONTINUED RESEARCH

In order to identify the most effective delivery strategies to ensure these treatments reach the poorest of the poor, continued studies have to be conducted. Implementation of new strategies has to be monitored and evaluated, so that current methods can be improved upon.

In conclusion, large-scale programmes in India and Bangladesh have shown that they can decrease unnecessary use of antibiotics, reinvigorate community management of diarrhoea while keeping costs low and treatment acceptable to both children and caregivers, and, most importantly, save lives.

SMART

Reference
Walker CL, Fontaine O, Young MW, Black RE. Bull World Health Organ 2009;87:780-786.