

International Child Health Group

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Convenor's Reports From Meetings: Improving the Management of Severe Malnutrition

A meeting of the Royal Society of Tropical Medicine and Hygiene organised by Professor Andrew Tomkins at the Centre for International Health and Development on 20th March 2007 brought together some excellent speakers from around the world to address the management of severe malnutrition. Subsequently several speakers at the meeting have had major publications of their presentations (Steve Collins; Treating severe acute malnutrition seriously Arch Dis Child 2007;92:453-61, Andrew Seal: Operational implications of using the 2006 World Health Organisation growth standards in nutrition programmes BMJ 2007;334:733-5).

Steve Collins pointed out that severe malnutrition (defined as MUAC (mid upper arm circumference) <110cm in children aged 6-59 months, weight for height <70% of median or <-3SDs, or with bilateral pitting oedema) affects 20 million children with at least 1 million deaths each year. It may be the commonest reason for admission of children to hospital in countries like Malawi. Yet severe malnutrition was not mentioned in the Lancet Child Survival series as a significant cause of death and its importance is overlooked. The excessively high mortality (up to 40% in the inpatient Nutrition Unit in Lusaka, Zambia) can be substantially reduced by the introduction of the WHO programme for management of severe malnutrition (known as the 10 Steps, see box), particularly

if barriers to early presentation can be removed. Admitting children with severe malnutrition to hospital is expensive, however, and often swamps the availability of hospital facilities. Early case finding coupled with effective clinical protocols means that uncomplicated cases of severe malnutrition who have preserved appetite can be very successfully managed by community-based therapeutic care. The Valid International CTC programme uses Ready to Use Therapeutic Foods produced from locally available foods, along with antibiotic prophylaxis and mineral and vitamin supplements to good effect.

Kath Maitland reported that the high mortality of severe malnutrition occurs largely within the first 3 days and is associated particularly with diarrhoea and dehydration with hyponatraemia and hypokalaemia. She advocated identifying signs of shock such as reduced capillary refill, decreased conscious level and bradycardia; she also questioned whether these children should receive intravenous isotonic solution rather than ReSoMal.

Andrew Seal reported on how the new WHO growth charts will lead to discrepancies between weight for height Z scores and % of median, resulting in an increased prevalence of severe acute malnutrition yet a decrease in the admission of children to emergency feeding programmes. This led on to discus-

The 10 Steps to improve the care of severely malnourished children

Step	STABILISATION		REHABILITATION
	Day 1-2	Day 2-7+	Week 2-6
1. Hypoglycaemia	-----		
2. Hypothermia	-----		
3. Dehydration	-----		
4. Electrolytes	-----	-----	-----
5. Infection	-----	-----	
6. Micronutrients	-----	no iron -----	with iron -----
7. Cautious feeding	-----	-----	
8. Catch up feeding		-----	-----
9. Sensory stimulation	-----	-----	-----
10. Prepare for home care			-----

Reference: *Caring for Severely Malnourished Children*, Ann Ashworth, Ann Burgess.

Available from TALC www.talcuk.org

sion of whether of MUAC <110cm would be a better cut-off to identify children at high risk of death.

The theme of the 10 Steps to Manage Severe Malnutrition was also taken up at the ICHG session at the RCPCH Annual Meeting which concentrated specifically on Step 9, namely "Sensory Stimulation and Emotional Support", as an essential element of rehabilitation. Dr Mary Nyathi from Mpilo Hospital Bulawayo, Zimbabwe assisted by Dr Kathleen Murtagh and Professor Sally Grantham-McGregor talked about how play therapy had been introduced into the Nutrition ward. Ward staff had been trained how to make toys from cheap materials and how to encourage ill malnourished children to play. The positive effect of play therapy was well illustrated by a video that charted children's progress over 3 weeks and led to some remarkable transformations in even the most severely malnourished cases.

Dr Rob Moy

Consultant Paediatrician, Senior Lecturer, Birmingham

Copies of the film are available on DVD

Original video 45 mins £5

Short video 20 mins £5

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Powerpoint presentation £2

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REACTING TO CHANGE: REDEFINING PRIORITIES IN CHILD HEALTH AND NUTRITION IN RAPIDLY CHANGING AFRICA

Are our 'priorities' concerning health and nutrition failing to keep up with the rapid changes taking place in Africa? Setting out merely to modify a few long hallowed 'priorities', we identified some problems with new ones.

Population, urbanisation and effects on food security and food safety

The extraordinary growth rate of Africa's cities exceeds the rate of rural population growth, racing ahead of industrial development and urban infrastructure. Seven cities are predicted to double their 1990 population by 2015. Although population growth is due to natural increase rather than in-migration, influx from rural areas results in uneven gender distribution and increasing poverty^{1,2}. The effects of the HIV pandemic permeate every facet of life. Women are especially vulnerable: although more of them are now wage earners, they are commonly engaged in unskilled unprotected employment.

The prevalence of urban poverty is high (40% c.f. 53% in rural areas). There is unequal access to amenities, with the poor commonly paying more for food and (un-piped) water than the better-off^{1,2}, but poor maintenance of piping systems puts everyone at risk in terms of both total and safe water supply³.

When times are good, the urban diet pattern is characterised by duplication with wheat or rice of traditional staples, and by increasing street purchase of high fat 'fast' foods. Increase in dietary energy density (ED), plus a less active life-style (in terms of jobs and journeys) encourages 'nutrition transition', a harbinger of the diseases of affluence which is more quickly evident in adults than children. Signs of food insecurity in hard times are a fall in the purchase of pulses, dairy, and flesh foods⁵, followed by reverting to cheaper staples, eating cold rather than hot meals, and finally a reduction in the numbers of meals taken each day⁶.

The quality of the weaning diet remains a key issue, but

home-based strategies to raise the nutrient density of traditional complementary feeds (CF) may not be feasible in a shanty town. Firstly, traditional food preparation demands time, water, and fuel, and the porridge or mash is unpalatable when cold. In the 90s the Malawian housewife spent ~1 hour a day fetching water and fuel-wood, ~2 hours cooking, and 1 to >4 hours /day in farm labour⁷. The urban mother engaged in paid work for over 8 hours delegates the care of her toddler, and sees the benefit of 'fast' preparation of small servings of a processed weaning food which can be given while she is absent⁴. As recently as 1998 the high cost of processing, packaging and transport of centrally processed CF was considered to outweigh the advantages of convenience and nutritional balance⁸. The cost of (local) production has now fallen, and with improved micronutrient fortification of a higher ED product processed CF offers distinct advantages for the urban housewife, especially when combined with quality control and responsible social marketing^{9,10}. The distinct nature of the urban household economy requires a new approach to policy and practice on weaning.

Breast Feeding in the Age of HIV

Despite a recent consensus statement on infant feeding¹¹, WHO guidelines remain resolutely 'global'. Admittedly, the guidelines were universally applicable until the risks of mother to child transmission MTCT of HIV during suckling became clear, risks which are especially important in Africa. The modified guidelines^{12,13,14} continue to encourage breastfeeding except when a mother is aware of her HIV-positive status, at which point she should be counselled so as to facilitate her informed choice on method of infant feeding. Guidelines for the HIV positive mother^{13,14} tend to emphasise alternatives to breastfeeding, now termed 'replacement feeds' rather than 'breast milk substitutes'. Despite an emphasis on individual counselling, scant attention is given to the fears and dangers of women in many communities, viz: unawareness or denial of status, fear of

stigmatisation by an atypical practice (e.g. artificial feeding), plus risks due to unsafe water, an impoverished domestic environment and the high cost of any type of breast milk substitute.

We welcomed the demonstration by Coutoudis *et al*¹⁵, that while the cumulative risk of MTCT during 2 years breastfeeding by an HIV-positive mother approximates 15%, the rate of MTCT during the first 6 months (when exclusive BF both meets the baby's nutritional needs and gives maximum immune protection) is unlikely to exceed 5%. When this figure is set against the greater risk of death attributable to artificial feeding, (which in resource-poor communities varies from 2 to 6 fold during the first 6 months) the advantages of artificial feeding, even when free formula is available, seem to dwindle. Furthermore, HIV-positive mothers in Kwazulu Natal who breast fed exclusively for 6 months exhibited a lower risk of MTCT¹⁶. The latter authors regard breastfeeding as a key intervention to reduce mortality and strongly recommend revision of the WHO guidelines. Congruent advice about safe suckling is published on line by the South African based Perinatal Education Trust¹⁷.

Treatment of children with HIV

Ten years ago I learned to appreciate the urgency with which Uganda battled against the pandemic, while accepting those living with HIV as part of the suffering nation. Having left the country before highly active antiretroviral drugs (HAART) became freely available, I have no personal experience of their use. It is obvious that safe management requires on-going monitoring of patients during treatment, despite its considerable cost. A Ugandan colleague computed the annual cost of essential tests for baseline and 6 monthly monitoring (of CD4 profile, full blood count, liver and renal function tests) to approximate \$80 per year in an official laboratory, compared with \$100 in a private laboratory. Even if WHO¹⁸ considers that lack of access to laboratory monitoring should not prevent children from receiving HAART, case fatality might well be incorrectly attributed if resources including audit are sparse. We have not costed blood cultures, radiology, other biochemical tests, or PCR for diagnosis in the infant. The cost of micro-nutrient supplementation is an additional burden. Simply speaking, the total cost of management considerably exceeds the cost of the HAART, placing a financial burden on the health service or the family, and posing an ethical dilemma which resonates with ongoing debates about cancer treatment in UK.

We must not forget the importance of training, sometimes in UK, of African postgraduates, and the need for shared advocacy about important issues. Even if the South African experience with exclusive BF is not replicated in other areas, it suggests the need to revisit the principle of 'one size fits all' guidelines. I hope that the ICHG will lobby for an update of the WHO guidelines for infant feeding in HIV and also plead for donors to recognise that treatment for children with HIV embraces more than the cost of HAART.

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The Ibadan-Swansea Partnership (ISP): An innovative partnership in global health education

The partnership between the College of Medicine, University of Ibadan, Nigeria and the School of Medicine, Swansea University, UK began in 2004. The ISP supports health professionals in resource-poor countries develop computer-based learning modules in priority health topics. It has two major aims:

- to develop eLearning in international health that will be effective in improving health outcomes
- to build capacity in adult education and eLearning

The impetus for the partnership came from a desire to develop health education materials that are directly relevant to health care in poor countries. The problem was well stated by a medical student studying in West Africa: *"Why do we not see our patients in the text books?"* We have tried to develop short, computer-based modules using sound educational principles that present health information familiar to staff working in poor countries in an engaging format.

In the first two years, two paediatricians and a learning technologist from Ibadan were seconded for 3 month periods to Swansea. Funding was provided through Swansea University Fulton Fellowships administered by the Association of Commonwealth Universities, UK. This allowed us to work together to establish a standard approach and develop modules in the global burden of disease, malaria and TB.

The ISP is now able to provide support "remotely" to a limited number of authors in module design, development and technical issues, and also identify expert reviewers in both Swansea and the home country. A doctor from Maiduguri, Nigeria developed a module in HIV/AIDS, and modules in psychiatric and mental state assessment are being developed by a Nigerian psychiatrist currently studying in the USA.

The modules are free and accessible through a website.* All modules begin with clearly-stated learning outcomes. The ability to include clinical images and interactive, formative assessment improves their effectiveness since the learner can track their progress. We use MS PowerPoint and copyright-free material to make them as accessible and adaptable as possible. Initially, the modules were aimed mainly at medical students studying in our two institutions, but more recently, a module on the assessment of the patient with burns is more directly relevant to bedside care.

This year funding for the further development of the ISP is being provided by the Welsh Assembly Government under the "Wales for Africa" initiative. This will allow us to support a junior doctor recently qualified from the medical school in The Gambia and now working at the Royal Victoria Teaching Hospital, Banjul, to develop a module in the assessment and management of the diabetic foot. This is a significant problem in The Gambia where a multidisciplinary team has recently been established. A surgeon from Ibadan will also be developing modules in the initial assessment of the trauma patient and rehabilitation after brain injury.

Burns

1. How to use this module
2. Learning outcomes
3. Anatomy and function of skin
4. Local effects of burn injury
5. Systemic effects of burn injury
6. Assessing the burn surface area
7. Assessing the depth of the burn
8. Classification of burn injury
9. Information Sources
10. End of Module Quiz

Welcome to the burns module!

Burns constitute a major global problem and are a leading cause of trauma deaths in children. Minor burns, if poorly treated, cause devastating complications with lifelong morbidity.

Understanding how burns cause tissue damage and how the skin heals is vitally important in ensuring that the right diagnosis is made and the right treatment given.

For information about the authors of this module, [click here](#)

Typical burns from hot water in a child

As well as further developing our format to make the modules as effective as possible and keeping them up-to-date, the next challenges are to learn more about how they are used and how they may improve health care and, thereby, health outcomes. Any advice or help from ICHG members would be most welcome!

*www.medicine.swan.ac.uk/inthealth.html

Steve Allen; Reader in Paediatrics, Swansea University.