

4. COLLABORATION IN STRENGTHENING TECHNICAL & SCIENTIFIC COLLABORATION WITH MEMBER STATES IN THE WHO-AFRO REGION IN THE DEVELOPMENT OF CAPACITY BUILDING

4.1 Understanding child lead exposure in Gabarone, Botswana: a pilot study

Lead is a ubiquitous heavy metal that has been associated with a number of adverse health effects, especially in children, including anaemia, kidney damage, severe stomach aches, muscle weakness and brain damage. Even low levels of exposure can lead to impaired mental and physical development. Sources of lead include petrol, paint, batteries, candles, coal, crystal glass, cell phones, computers, television sets, ammunition, cabling, protective clothing, pottery, fishing weights and tobacco.

There are currently high levels of concern over children's exposure to lead, through for example, the continued use of lead in petrol and paint. However no studies have considered child lead exposure in Botswana. In response to this, the main objective of this study was to determine child lead exposure in the City of Gabarone, Botswana.

Cross-sectional study design involving 228 children between 1 and 6 years old (mean age = 40 months). Blood samples were drawn on site (crèches and clinics) using the

Lead Care portable system by a medical doctor and nursing assistant over a one week period from 3 to 7 April 2006. The LeadCare system, which using only fingerprick blood sampling and is able to provide blood lead determinations within 3 minutes, represents a significant improvement over the previous system which involved sampling 7 ml venous blood samples, which had to be transported to a laboratory under conditions of refrigeration.

Blood samples were analysed within 24 hours at the University of Botswana. Machines were calibrated and control kit samples tested each day. Approximately 20% of samples were re-analysed for test-retest reliability. A questionnaire assessing demographic, socio-economic and housing conditions was administered to the caregivers of the study children. Data were entered into STATA version 8.

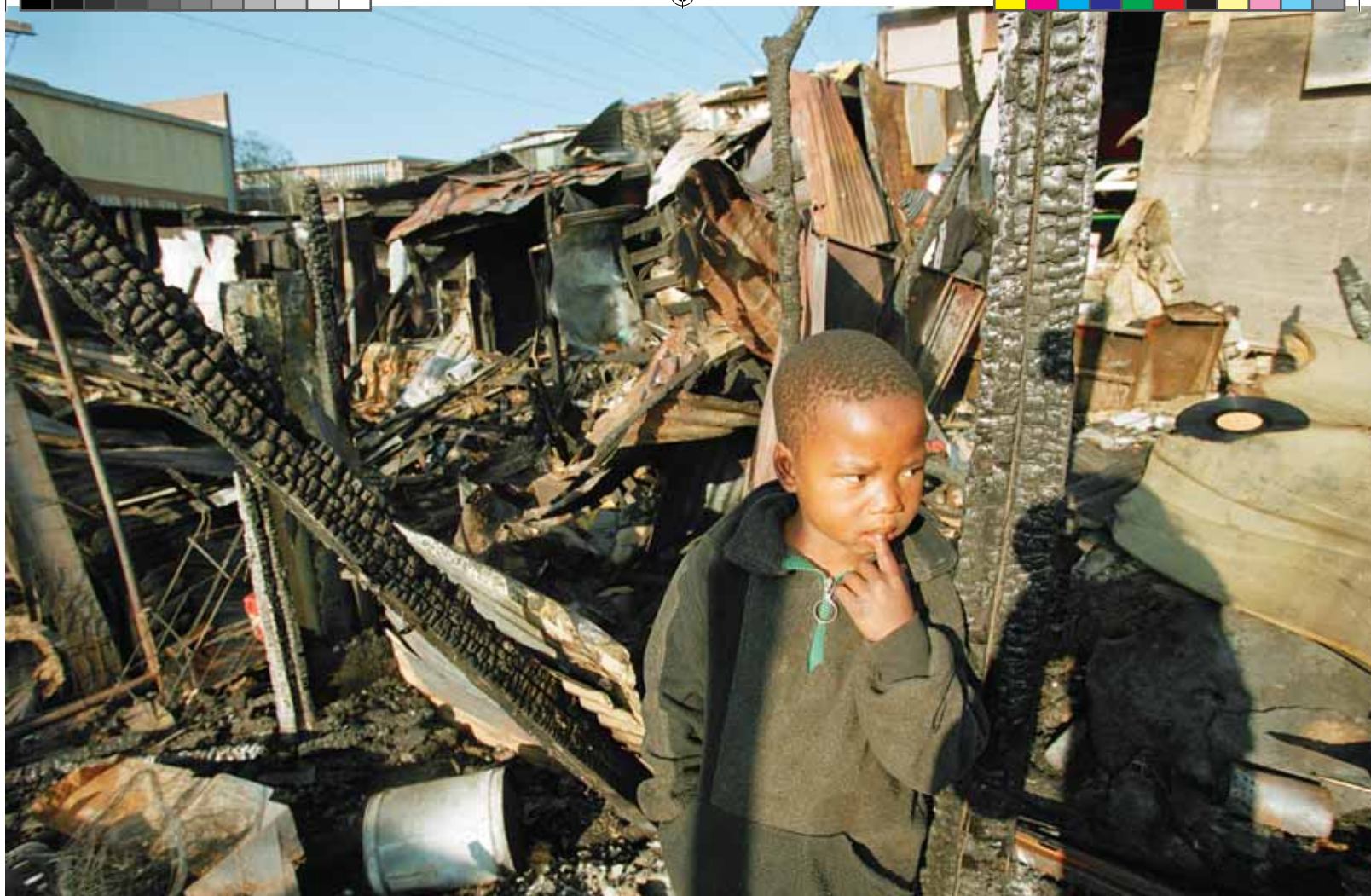
Preliminary results highlight cause for concern. Child blood lead levels ranged from 1.6 to 28.6 micrograms per decilitre of blood ($\mu\text{g}/\text{dl}$) with a mean of 8.8, median of 7.45 and standard deviation of 5.6. Approximately 69% of child blood lead scores fell below the action level of 10 $\mu\text{g}/\text{dl}$. Of concern, however, is the fact that 31% of children had blood lead levels equal to or above 10 $\mu\text{g}/\text{dl}$, while 5% of all study children had levels equal to or above 20 $\mu\text{g}/\text{dl}$. There were no significant differences between girls (mean = 8.4) and boys (mean = 9.3) (Kruskal Wallis test $p = 0.3$); and age ≤ 24 months (mean = 8.4) versus > 25 months (mean = 8.9) (Kruskal-Wallis test $p = 0.5$). Analyses are underway to determine effects of socio economic status, location and selected high risk factors.

This study represents a unique collaboration between Botswana and South Africa in the field of urban health. Representatives of the WHOCCUH played a significant role in the conceptualisation and implementation of the study, and providing the funding for implementation. It is hoped that the results of this pilot study will inform further research and policy in preventing lead poisoning amongst children in Botswana.

Brendon Barnes & Angela Mathee (Medical Research Council of South Africa), Sinola Rajoram (University of the Witwatersrand), Bontle Mbongwe, Sesai Mpuchane & Julia Tshabang (University of Botswana) undertook the study, with technical and administrative support from Rochelle Spadoni and Mirriam Mogotsi (MRC).

* Compared to more costly laboratory procedures, the Lead Care portable system provides results within 3 minutes and can be used on site, making the collection and analysis quicker and less expensive.





4.2 Sharing environment and health information resources

Following surveys that showed unacceptably high blood lead levels in a large proportion of first grade school children, and low levels of awareness of the sources, pathways of exposure and health risks associated with lead, a lead hazard awareness campaign was designed. Posters, fact sheets and fridge magnets were included in the awareness materials designed for the campaign.

The South African Minister of Health, together with the President of the Medical Research Council, launched the campaign on 6 December 2005 at the Little People Pre-Primary school in Riverlea, Johannesburg (see Annexure 4). As part of the day's activities the school principal signed a declaration of commitment to the creation of a lead-free school. The school principal, Ms Adele Mooi, is now playing a key role in raising awareness of lead hazards and encouraging other schools in the region to undertake similar initiatives. The National Department of Health plans to do the same on a broader level.

The lead hazard awareness information materials were made available to other African countries through the WHO-AFRO offices as well as direct distribution. These were warmly received as indicated by the letter from Dr Jenny Pronczuk at the World Health Organization.

4.3 The 3rd Conference of the Public Health Association of South Africa (PHASA)

The 3RD conference of the Public Health Association of South Africa (PHASA) was held on 16TH & 17TH May 2006 at the Eskom Conference Centre in Midrand (Gauteng). Staff of the Centre played key roles in the organization of the conference. Prof Shan Naidoo, who is President of PHASA, was also chairperson of the conference organizing committee, with Drs Roxy Jina and Nisha Naicker played leading roles in the logistical organization of the conference.

The theme of the conference was Making Health Systems Work, while the sub-themes were 'decreasing the burden of disease' and 'increasing equity, effectiveness and efficiency'. The conference was co-hosted by PHASA, the Gauteng Department of Health, the University of the Witwatersrand School of Public Health, the International Epidemiological Association and the Health Systems Trust. The conference brought together professionals working in all disciplines of public health to share research findings pertinent to population health in the southern African Region.

Three hundred and eighty-six delegates from 22 countries, including Nigeria, Zimbabwe, Egypt, Kenya, Tanzania, Botswana, Malawi, the Democratic Republic of Congo, the United Kingdom and Canada attended the conference. Delegates represented academic institutions, research or



ganizations, non-profit organizations and managers and health care providers from the Departments of Health.

Many oral and poster presentations were delivered at the conference by staff and students associated with the Centre, and the Centre also hosted a popular exhibition at the conference, with the theme Healthy Environments for Children. The World Health Organization (HQ) provided packages of materials for distribution at the exhibition stand.

The Centre, in partnership with WHO-HQ, facilitated the participation of two Kenyan delegates at the PHASA conference. The Kenyan delegates delivered presentations related to projects on children's environmental health that were funded by the WHO-Healthy Environments for Children Alliance.

4.4 French Translation of Healthy Cities Manuals

On request from WHO-AFRO, the Centre facilitated the translation of two books on Healthy Cities (previously written by staff of the Centre) into French for distribution to Francophone African countries. The French versions were made available in print form, as well as on interactive CD-ROM, and to the newly established WHO-AFRO offices in Libreville, Gabon.

4.5 The Air Pollution Information Network of Africa (APINA)

Brendon Barnes represented the Centre at two meetings of the Health Working Group of the Air Pollution Information Network of Africa (APINA) – in Harare, Zimbabwe (20-23 February 2006) and Cape Town, South Africa (19-21 September 2006). The meetings were attended by fourteen delegates from Botswana, Malawi, Tanzania, Zimbabwe, Zambia, Mozambique and South Africa.

Mr Barnes was invited as a guest lecturer and both trips were funded by APINA. He delivered presentations on indoor air pollution and health, interventions to reduce child air pollution exposure, methods to determine health impacts, statistical considerations in study designs and the formulation of research questions. Mr. Barnes' involvement in APINA activities has resulted in the possibility of future work and funding for air pollution studies in the sub-region.

4.6 Building Research Capacity (South Africa-Malawi-Norway)

Associated with the PTS project (section 2.4), a proposal has been submitted to the Norwegian Research Council with a view to the formation of a research capacity development partnership involving South Africa (the University of the Witwatersrand and the Medical Research Council), Norway (Tromsø University) and Malawi (the University of Malawi).

If successful, scientists from the three partner institutions will be funded to undertake doctoral degrees over next five years. An amount of approximately R6 million has been requested over a five-year period.

Also under umbrella of pilot PTS project, and in preparation for planned main study, two analytical scientists from the National Institute for Occupational Health will undertake training in Norway during November 2006, in the analytical methods specific to project requirements. The costs of the training will be covered by AMAP and the University of Tromsø.

4.7 Building Environmental Health Capacity in Ethiopia

Professor Andre Swart and Firdu Zawide visited the Debut University, Awassa, from 25 February – 2 March 2006. Debut University was established on the 25 April 2000, by

merging three colleges in southern Ethiopia (the Awassa College of Agriculture, Dilla College of Teacher Education and Health Sciences and the Wondo Genet College of Forestry). The University comprises of the following faculties:

- Faculty of Natural Sciences
- Faculty of Technology
- Faculty of Social Sciences
- Faculty of Health Sciences
- Faculty of Medicine

The purpose of the meeting was twofold, namely to evaluate current training in Environmental Health and to investigate the possibility of future collaboration. The current offering is a four year BSc Environmental Health Sciences, after which graduates practice as Environmental Health Officers in both the public and private sectors.

Amongst the course areas identified for further development are:

- The incorporation of Environmental Epidemiology.
- More attention to Occupational Health and Safety.
- Risk assessment and management methodologies.
- Social capital and poverty alleviation.
- The role of the environmental health practitioner in disaster management.
- Principles of Environmental Impact Assessment, Health Impact Assessment and Social Impact Assessment.
- Emerging global environmental health problems.
- Practical exposures.

A proposal was also submitted to consider the following activities:

- Research collaboration.
- Curriculum development.
- Exchange visits by staff and postgraduate learners.

