

## 'Smiley' diaries

To understand how water supply may be affecting the occurrence of water-borne disease, episodes of diarrhoea need to be monitored over several weeks or longer. A 'smiley' diary has been developed at University of Bristol that uses pictograms for recording stool characteristics and is effective where reading skills are limited (see Figure 1).

If all of the child's stools are normal on a particular day, the caregiver marks the happy face; every time the child passes a loose or watery stool, one of the sad faces is marked, and if the child passes blood or mucus in his or her stools the special box is marked. A different sheet is used to record diarrhoeal episodes each week.

The sheet produces results that are consistent with the World Health Organisation's definition of diarrhoea, which is of three or more loose or watery stools in a 24-hour period and/or of stools containing blood or mucus.<sup>1</sup>

The diary forms part of a research project, AQUAPOL, which is looking at water contamination between source and final point-of-use in rural households in Kenya, South Africa and Zimbabwe. The project is co-ordinated by the University of Bristol and is funded by the European Union under

the INCO-DEV programme. The study is investigating the linkages between point-of-use water quality and diarrhoea among children aged 12–24 months, as measured using the diary. Adult caregivers (mostly women) were asked to record diarrhoeal episodes among the children over 26 weeks.

At the start of the exercise, a fieldworker explained the diary to the women participating in the study. In Zimbabwe, the project team explained how to fill out the diaries through participatory group exercises with caregivers and fieldworkers. During these exercises, caregivers checked one another's diary entries and discussed any discrepancies. At the end of each week, a fieldworker visited the household to collect the sheets, confirm their content verbally and check for any problems. The sheets were checked over by a project researcher at the end of every month.

By the end of the South African study, diarrhoea among 118 children had been monitored over an average period of 217 days for each child. On average, these children had diarrhoea on 5.6 per cent of these days. The 'smiley' diary is now being used to investigate how the microbiological quality of stored drinking water affects diarrhoea in rural Africa.

## Reference

- 1 Bacqui, A.H., M.E. Black, M. Yunus, A.R. Hogue, H.R. Chowdhury and R.B. Sack (1991) 'Methodological issues in diarrhoeal diseases epidemiology: definition of diarrhoeal episodes'. *International Journal of Epidemiology*, Vol. 20, pp. 1057–63.

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*A pdf copy of the diary form can be downloaded from [www.bristol.ac.uk/aquapol](http://www.bristol.ac.uk/aquapol)*

## Nigeria: the school sanitation crisis

One of the pressing problems facing primary education in Nigeria is the

inadequate provision of sanitation and water facilities in schools. Such facilities should provide not only an environment conducive to teaching and learning in general, but also a basis for teaching hygiene and sanitation practices, and to facilitate the transfer of such learning from school to home and vice versa. Research conducted in primary schools of Bauchi State, Nigeria,<sup>1</sup> found that there were problems from the highest level of educational management to the 'grassroots' level of local community attitudes.

Astonishingly, Nigeria's National Primary Education Commission (NPEC), in its architectural blueprints, at that time included no provision for toilets or water supply. The blueprint specified six work areas requiring temporary partitioning (for use as classrooms or a large hall), an office, a store and a courtyard that could serve as a games area.

The facilities in place in Bauchi State were pitiful. Comprehensive data obtained in 1995 for primary schools in Ningi, Gombe and Misau Local Government Areas (LGAs), covering a total of 249 schools, show a fairly consistent pattern. Overall, only 18 per cent of the schools had latrines and 15 per cent (admittedly in an area of great water shortage) had a water supply on the premises, although 56 per cent had access to some kind of water source, such as a community well, outside the premises. Of the latrines which did exist, many were dilapidated and an ordeal to use. The worst type of scenario, quite common in Bauchi State, was one in which the occupants of the school disposed of faeces in the surrounding 'bush', while also depending on surface sources of water in the dry season. In the absence of latrines, using the 'bush' is inevitable because of the need for privacy. In these circumstances, children were very vulnerable to the debilitating helminth infections as well as dysentery. Yet many local communities, as well as the educational authorities, seemed to be reluctant to take any action.

The findings give cause for concern not only to the various levels of

	Normal stools	Diarrhoea	With blood and/or mucus
Mon	☺	☹ ☹ ☹ ☹ ☹	■
Tues	☺	☹ ☹ ☹ ☹ ☹	■
Weds	☺	☹ ☹ ☹ ☹ ☹	■
Thurs	☺	☹ ☹ ☹ ☹ ☹	■
Fri	☺	☹ ☹ ☹ ☹ ☹	■
Sat	☺	☹ ☹ ☹ ☹ ☹	■
Sun	☺	☹ ☹ ☹ ☹ ☹	■

Figure 1 The smiley diary uses pictograms to record stool characteristics

government in the Nigerian federation, but also to those international agencies which have assisted efforts to improve water supply and sanitation as part of Nigeria's rural community development. The inspiration for the study came partly from the Rusafiya Project, supported by UNDP and the World Bank, which in 1991–3 worked in selected LGAs of northern Nigeria to develop improved, but economical and sustainable, models of water supply and sanitation in rural communities. The provision of latrines in primary schools was one of its priorities and the VIP type, already being promoted by UNICEF, was favoured. Another aspect of the project was a programme called Community Health Involving Children in Schools (CHICS), which sought to promote co-operation between school, home and community for the improvement of hygiene and sanitation in selected LGAs. Yet, in the case of Ningi LGA, the study concludes that the project had not had the intended impact. Wide replication of its models had failed to occur, even though the cost of hand-dug wells and of VIP latrines seemed to be modest.

Some developments over the past five years give grounds for greater hope. The federal agency known as the Universal Basic Education (UBE) Programme, which has replaced NPEC, now includes VIP latrines in its architectural blueprints. It has a policy of constructing 'model' premises in two primary schools of every LGA in the country and these premises include VIP latrines. More importantly, many of the 'self-help' projects, in which local communities, the UBE Programme and the World Bank jointly fund improvements to school resources, frequently include the construction or improvement of sanitation and water facilities. UNICEF also reported in 2003 that they had launched a nation-wide initiative to promote 'child-friendly schools', which has an important component of assisting water supply and environmental sanitation. The approach involves partnerships between the agency, schools and local communities and gives due attention to hygiene education as well as facilities. Environmental health clubs are established, with a view to influencing attitudes in the local community as well as the school.

These efforts seem likely to be more sustained than those of the past, but they have so far reached only a small proportion of primary schools. By 2001, for example, a total of 666 schools (mostly primary) had formed environmental health clubs in response to UNICEF's initiative, but there were more than 49 000 primary schools in the whole country. The dissemination of change on the necessary scale, using scarce resources, calls for a concerted effort by the public authorities and aid donors and for co-ordination between the education, water and health services.

## References

- 1 Margaret Akpomi, (1997) 'Management strategies for improving health and environmental sanitation in Bauchi State primary schools, PhD thesis, University of Jos, Jos.

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## Asia: Rotavirus infection in children

Up to 60 per cent of Asian children hospitalized for diarrhoea are infected with rotavirus – double the previous estimate, according to a study released in Manila on 22 October 2003. Rotavirus is the most common cause of severe diarrhoea in children under five and kills an estimated half-million children worldwide every year, 85 per cent of them in developing countries. The first ever regional surveillance of 16 000 children in 33 hospitals detected rotavirus in 45 per cent of stools. The study was conducted in China, Thailand, Indonesia, Taiwan, South Korea, Malaysia and Vietnam by the Asian Rotavirus Surveillance Network, a collaboration of hospitals in the region, and the US Centers for Disease Control and Prevention (CDC). Dr Roger Glass of the CDC said improved sanitation and hygiene do not appear to deter rotavirus, adding urgency to the development of a safe vaccine.

*Web address:*

[www.cdc.gov/ncidod/diseases/submenus/sub\\_rotavirus.htm](http://www.cdc.gov/ncidod/diseases/submenus/sub_rotavirus.htm)

## Brazil: in need of US\$62 billion for water projects by 2020

Brazil needs to invest around US\$62 billion (€53 billion) in sanitation and

water supply programmes by 2020 to adequately service demand, Brazilian Minister of Cities Olivio Dutra said. According to Dutra, although Brazil has 12 per cent of the world's water resources and 53 per cent of Latin America's, 45 million Brazilians who live in urban and rural areas do not have access to water supplies. While access to proper sanitation has improved, it lagged behind other services such as water, electricity and garbage collection. More Brazilians had telephone lines, refrigerators and television sets in 2002 than access to a proper sewage system, a government study showed.

*UN Wire, 8 Oct 2003,  
www.unwire.org/UNWire/  
20031008/449\_9194.asp*

## Child poverty: more emphasis needed on rural sanitation

A UNICEF-sponsored study<sup>1</sup> on child poverty concludes that considerably more emphasis needs to be placed on improving shelter, sanitation and safe drinking water in rural areas. This can only be achieved by public investment, since providing basic services for the rural poor is not considered 'profitable' by the private sector.

Carried out by the University of Bristol and the London School of Economics, the study was based on a sample of nearly 1.2 million children from 46 developing countries. Children in rural areas were found to be much more likely to be severely deprived than urban children, particularly with regards to water, sanitation and education. Some 516 million children (41 per cent) in rural areas lack access to any form of sanitation facility, compared to 51 million children (9 per cent) in urban areas. While nearly 41 million children (7 per cent) in urban areas are severely water deprived (using unsafe water sources or having to walk more than 15 minutes to collect water), the number in rural areas is 335 million (27 per cent).

## References

- 1 Gordon, D. et al., 'Child poverty in the developing world', Bristol, UK, *Policy Press* vi, 36 p. ISBN 1–86134–559–3. [www.unicef.org/media/files/Child\\_poverty.pdf](http://www.unicef.org/media/files/Child_poverty.pdf)