

# disease & disability

communicating international development research

## Can leprosy be eliminated by a single global campaign?

**I**n 1991 the World Health Assembly set a target to eliminate leprosy by the year 2000. The disease, which still carries a stigma, damages the skin and nerve endings and leads to ulcers and disability. A major World Health Organisation campaign has provided antibiotics to treat the disease in a number of countries. However a number of new cases have appeared in previously low priority countries.

The London School of Hygiene and Tropical Medicine, together with the Blue Peter Research Centre, Hyderabad, India, looked at the campaign's success. Numbers of patients with leprosy fell from 12 million in 1985 to 0.6 million in 2002. In 2001 the World Health Organisation (WHO) announced that leprosy had been eliminated as a global public health problem as the disease had been reduced to one case per 10,000 people in affected countries. At this level the WHO believed

the disease would no longer be transmitted.

Leprosy, however, has a long incubation period ranging from 2 to 20 years. The bacteria can also survive outside the body for up to 45 days. Patients have plenty of time to unintentionally infect other members of their community before they first notice any symptoms. In countries such as Ethiopia and Indonesia up to five percent of the population carry the bacteria in their nostrils, but with no other signs of the disease.

Much more research needs to be done to understand why the disease continues to be passed on and to discover the best way of treating nerve damage. The study found that the campaign helped to raise the international profile of leprosy and encourage governments and charities to work together to screen thousands of people. However the campaign also led to:

- people believing there were no longer any cases of leprosy
- a decline in funding for leprosy from organisations such as the Bill and Melinda Gates Foundation
- drugs being given to patients on their first visit to a health facility who were then encouraged to treat themselves unsupervised at home.

Leprosy will continue to be a health problem for the foreseeable future. Not only are new cases still occurring but existing patients will

need help with their symptoms for the rest of their lives. In order to tackle the disease the study recommends:

- The routine use of the BCG vaccination as part of the WHO's anti-leprosy strategy. Use of the BCG vaccination in Brazil has successfully helped to protect newborn babies against leprosy.
- Health workers and private doctors receive training in how to recognise and treat leprosy. Early treatment with steroids can lessen the damage to nerve endings.
- Treatment should be offered as supervised monthly doses to ensure patients take the doses regularly and complete the course of treatment.
- Patients with nerve damage are taught how to care for their hands and feet to prevent disability. Patients with deformed feet need special shoes to prevent ulcers.
- Patients who have been stigmatised and discarded by their communities need help in re-entering society.
- The patients are seen five years after treatment to check for relapse.

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## Over diagnosis of malaria in patients admitted to hospital in Tanzania

**M**alaria is a major cause of disease and death in sub-Saharan Africa. Up to half of all admissions to hospitals in sub-Saharan Africa are reported to be due to malaria. However diagnosis in African hospitals is often inaccurate. Is malaria over diagnosed? Are patients receiving the treatment they need?

In the year 2000, 42 percent of hospital diagnoses and 32 percent of hospital deaths in Tanzania were reported to be malaria related. However, there are no good data on the accuracy of these diagnoses or the quality of their treatment.

The London School of Hygiene and Tropical Medicine, together with Kilimanjaro Christian Medical Centre, and the National Institute for Medical Research in Tanzania, carried out a study looking at the diagnosis

of over 4,000 patients admitted with severe malaria to 10 hospitals in north east Tanzania.

The study found that, with the exception of young children living in areas of high malaria transmission, the majority of cases who were diagnosed and treated for severe malaria had no malaria parasites in their blood:

- Overall, less than half of the patients admitted and treated for severe malaria were found to have malaria parasites in their blood.
- Amongst children under the age of five living in areas of high plasmodium falciparum transmission, where malaria is more common, almost 70 percent of those diagnosed with malaria had parasites in their blood.
- However, amongst patients over the age of five, living in areas of low transmission, only 30 percent of those who had been diagnosed with malaria did have parasites in their blood.
- Two-thirds of patients admitted with the clinical signs of severe malaria, but no malaria parasites, received antimalarial drugs but were not treated with antibiotics.
- 11 percent of patients without malaria

parasite in their blood died (slide negative), compared to 7 percent of those with the parasite (slide positive).

Although the study cannot attribute the additional deaths in slide negative cases to inappropriate diagnosis, the findings do suggest that there is a need for:

- more accurate diagnosis of malaria in patients admitted to hospitals in Africa
- more widespread use of syndromic criteria for the treatment of patients admitted to hospital with severe febrile illness to reduce currently high inpatient fatality rates
- a greater focus on the quality of care at primary referral level (i.e. district hospital level) to keep pace with improvements in recognition and referral to hospital of patients with the signs and symptoms of malaria attending primary health care facilities.

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## Fighting blindness Trachoma in Ethiopian children

**T**rachoma is the number one infectious cause of blindness worldwide. Globally it has blinded around six million people and another 150 million people have the disease. Blindness results from repeated episodes of active trachoma, which usually occur in childhood. In some areas of Ethiopia over half of young children have the disease.

Trachoma is linked with poverty as the presence of flies, poor sanitation and a shortage of water in the home all contribute to transmission of the disease. In 1997 the World Health Organisation launched a programme to eliminate trachoma. The programme is based on the SAFE strategy which has four elements – surgery, antibiotics, face washing and environmental sanitation. The Institute of Child Health, London, looked at levels of trachoma in children, aged 3 to 9 years, in 40 communities in Ethiopia in 2002 before the SAFE initiative was due to be launched there.

The study found that 72 percent of children had active trachoma. The number of children with trachoma fell as they grew older but by the age of nine, 20 percent of the children had corneal scarring caused by the disease. Sanitation in many of the homes was poor:

- Only 14 percent had a pit latrine while a quarter of families defecated in the back garden close to the home.
- Almost half of families brought their animals into the home at night.
- 40 percent of families took more than an hour to fetch water for household use; for 10 percent of families it took more than two hours to fetch water.
- The houses surrounded by the most flies were nine times more

likely to have a child suffering from trachoma than the homes with no flies.

- Children with clean hair and faces were less likely to have trachoma, while children with discharge and flies in their eyes were more likely to have the disease.

The number of flies around the home is linked to several factors: the way rubbish is disposed of, how close the defecation site is to the home and how close to the home the cows are kept. The study found that keeping the home and the children clean and disposing of faeces in a hygienic way made a significant difference to the likelihood of the children becoming infected with trachoma.

The study recommends that families are educated on the causes of infection so that they take the following steps:

- Defecation sites need to be moved away from the home.
- Animals need to be moved further away from where the family sleeps.
- Rubbish disposal needs to be improved.

In addition:

- Basic water supply and sanitation need to be improved to help control all infectious diseases.
- In areas with such high levels of disease it may be most effective to give all young children oral antibiotics.
- The SAFE campaign to eliminate trachoma needs to be flexible, to adapt to regional differences.

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## Is water quality or quantity more important for preventing childhood diarrhoea?

**D**iarrhoea kills around 2.2 million children in developing countries each year. Improving the quality of drinking water can help reduce the incidence of diarrhoea. However it may not be the most effective single intervention. Increasing the quantity of water available to households may have a greater impact.

This study was carried out in an area of the southern Punjab, Pakistan, to investigate the association between drinking water quality and the incidence of diarrhoea. The research team was drawn from institutes in the UK, Denmark and Sri Lanka. Studies of this kind are difficult to conduct because people may change their drinking water source and the quality of the water may vary over a period of time.

Over the period of a year weekly assessments were made of the levels of *Escherichia coli* (E coli) bacteria contamination of the water being consumed. The water quality was then compared to the incidence of diarrhoea in children under 5 years old in 200 households.

The study revealed that:

- No association was found between the incidence of disease and the contamination levels of public water sources.
- The number of E coli in domestic water containers was not significantly associated with levels of diarrhoea.
- The risk of diarrhoea was significantly associated with the absence of large water storage facilities irrespective of the quality of the water available.
- Water quality varied throughout the year, particularly in household drinking water storage containers.
- The quality of water in people's houses had little similarity to water quality at source.
- Throughout the study people changed their drinking water sources frequently, depending on temperature, availability, mechanical breakdowns or other factors.

By sampling water quality at frequent intervals the study was able to provide more accurate estimates of the varying levels of contamination. The contamination levels had no significant relationship to the number of cases of diarrhoea in children.

The implications that can be drawn from this study include:

- A policy of disinfection of drinking water supplies to meet World Health Organisation water quality guidelines is unlikely to reduce the incidence of diarrhoea. The guidelines may be restrictive and inappropriate.
- Good quality of water at public sources does not necessarily mean that people are drinking clean water.
- Water users must be guaranteed a minimum level of service.
- It is more important to ensure a supply of at least 100 litres of water per person than to eliminate E coli contamination.

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**Keywords:** leprosy, malaria, over diagnosis, trachoma, children, SAFE strategy, water and sanitation, diarrhoea, water quality

