

Focus on CSIR Research in Water Resources

CSIR Natural Resources
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Added water related diarrhoeal burden due to HIV/AIDS

Lack of access to proper water, improved sanitation and hygiene, is the main risk factor attributable to diarrhoeal-related disease in the country. Of the 48 million people in South Africa, approximately 3.3 million people still lack access to potable water, while approximately 15.3 million people live without adequate sanitation (DWAF, 2006). Of the 15.3 million people without basic sanitation, 151 660 people still make use of the bucket system. Diarrhoea is not a life threatening disease. Yet, not only do people suffer from the disease, some 1.3 million children below the age of five die from diarrhoeal disease every year. It is a crisis that kills an estimated 5,000 children each day.

In addition, HIV/AIDS exacerbates the diarrhoeal disease problem. Research shows that 90% of HIV/AIDS patients in Africa suffer from chronic diarrhoea. The added diarrhoeal disease in people with suppressed immune systems and the link between inadequate drinking water quality is yet to be fully

understood. This information is also crucial to understand the extra load of microbial pathogens due to higher diarrhoea rates to treatment facilities, which could mean that we are not capable of treating water to a safe level with the current diarrhoea loads.

Research on HIV/AIDS and the interaction with inadequate water quality is in its infancy and research is urgently needed as to the microorganisms, chemicals, as well as the circumstances responsible for further health problems in immunosuppressed people of all ages. The effect of inadequate drinking water quality on incidence, prevalence and duration of diarrhoea in HIV positive and negative individuals therefore requires urgent attention.

While much effort has been done to record the numbers of people dying from diarrhoeal disease, information on the extent of the numbers of people having diarrhoeal disease is sadly lacking. Information on the magnitude of diarrhoeal disease, what causes the disease and how this disease in populations are changing





is critical for planning and evaluating health policies and programmes.

A novel approach to determining this information has been developed by the Global Burden of Disease study

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carried out by die World Health Organisation which is referred to as the disability-adjusted life year (DALY).

The Disability-adjusted life year approach combines information on death AND disease as a means to summarise population health. This information is critical in the sense that it allows cost-benefit analyses to prioritise future action and proper allocation of scarce resources.

The DALY is the sum of the years a person or persons died before their estimated life expectancy when compared to for example a standard life table (YLL) and the years lived with disease or disability, in other words the time spent in less than perfect health (YLD). See Figure 1 below.

$$DALY = YLL + YLD$$

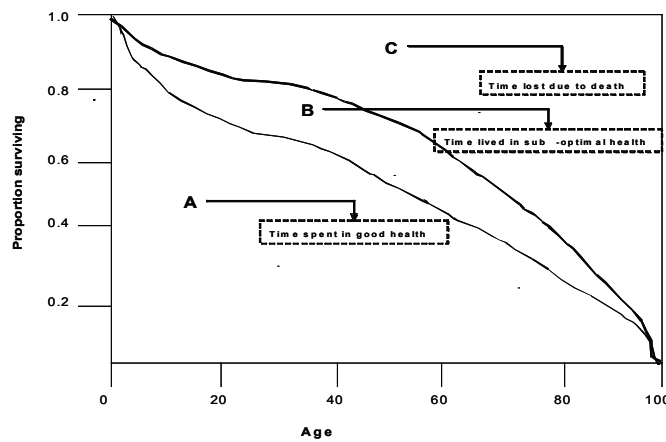


Figure 1: Hypothetical survival curve for a population (Source: WHO, 2001)

The CSIR recently started with a study on the burden of diarrhoeal disease. The study aims to determine the number of people suffering from diarrhoea due to a lack of access to improved water sources. In addition the study will assess the additional burden of diarrhoea due to the HIV/AIDS epidemic. The DALYs gained based on the intervention of water treatment intervention at the point of use will be assessed in both HIV positive and HIV negative communities of all ages to reflect the effectiveness of interventions in vulnerable communities.

We also do not know what diarrhoeal disease costs the country each year. This project would provide the data on which to base such estimates. It is anticipated that the knowledge created during the execution of this project can be used to motivate disease prevention strategies and help to ensure the proper allocation of scarce resources. In addition, it would also help to enhance the quality of life of South Africans, particularly those who are poor and who bear a heavy disease burden.