



Climate Change Linked With Increase in Diarrheal Disease

Changes in climate that lead to an increase in temperature and a decrease in precipitation are associated with an increase in diarrheal disease in children in Botswana, a sub-Saharan country with distinct wet and dry seasons (Alexander KA et al. *Int J Environ Res Public Health*. 2013;10[4]:1202-1230).

Because previous studies have indicated that diarrheal disease rates could be altered by changes in climate, US investigators evaluated monthly reports of diarrheal disease among patients in Botswana who visited health facilities between 1974 and 2003 and compared these data with climatic variables such as rainfall, minimum temperature, and vapor pressure during this time period. The incidence of diarrhea peaked in both the wet and dry seasons but unexpectedly was highest in the dry season, with a 20% increase over the yearly mean. The authors hypothesize that the hot, dry conditions may increase the activity and density of flies that transmit diarrhea-causing microorganisms.

These findings suggest that climate change will enhance the challenge of managing diarrheal disease in Botswana and other water-restricted countries where diarrheal disease is prevalent.

Cognitive Effects of Konzo

Konzo, an irreversible neuromotor disorder in children that has been linked to ingestion of bitter cassava root, a staple food in sub-Saharan Africa, also undermines cognitive function, even in those with no physical symptoms of the disease, report researchers from Michigan State University, East Lansing (Boivin MJ et al. *Pediatrics*. 2013;131[4]:e1231-e1239).

Cyanide in bitter cassava root is degraded when properly prepared. But short-

cuts in preparation that are often taken in times of war and famine can cause outbreaks of konzo, which causes gait and movement abnormalities. (Konzo means “tired legs” in the Yaka language.)



Improperly prepared bitter cassava root has been linked to a neuromotor disorder called konzo and also may impair cognitive function.

The researchers administered cognitive tests to children with konzo from the Democratic Republic of the Congo and to children from the same area who did not show signs of the disease but who had elevated levels of cyanide in blood and urine samples. The children with konzo scored lower on memory and problem-solving tests than did those without konzo. However, both groups had problems with memory and visual-spatial processing when compared with a control group of children from communities not affected by the disease.

Tapeworm Infection of the Brain

An evidence-based guideline developed by the American Academy of Neurology to address controversy over the optimal therapy for parenchymal neurocysticercosis, a tapeworm infection of the central nervous system that causes seizures, advises treating patients with a combination of the antiepileptic albendazole plus a corticosteroid (Baird RA et al. *Neurology*. 2013;80[15]:1424-1429).

About 2 million people worldwide have epilepsy caused by infection with

the tapeworm *Taenia solium*, according to the World Health Organization, which considers neurocysticercosis the most preventable form of epilepsy in the world. The infection is prevalent in developing countries of Africa, Asia, and Latin America and is on the rise in developed countries.

In reviewing all available evidence, the researchers concluded that treatment with albendazole to kill the parasite and dexamethasone or prednisolone to reduce inflammation can effectively decrease the number of active lesions on brain imaging studies and reduce the frequency of seizures over time.

Waning Efficacy of Experimental Malaria Vaccine

The efficacy of the malaria vaccine candidate RTS,S/AS01E against episodes of malaria diminishes over time and also varies with exposure to the *Plasmodium falciparum* parasite, according to data from a long-term follow-up of a phase 2 trial of the vaccine in Africa (Olotu A et al. *N Engl J Med*. 2013;368[12]:1111-1120).

After 4 years of follow-up of 320 of 447 children in Kenya who had been vaccinated at 5 to 17 months of age, protection declined each year to almost 0 by year 4. The vaccine efficacy varied with exposure to malaria. In areas of high malaria transmission, protection faded even faster than it did in areas with lower transmission. The authors suggest that children in the areas of higher transmission who were vaccinated may have had less exposure to blood-stage parasites and therefore developed natural immunity more slowly than the control group.

On the positive side, vaccination led to an overall reduction in the number of episodes of clinical malaria: for every 100 children vaccinated, the researchers calculated that 65 cases of malaria were prevented. — M. J. Friedrich