

Health Implications of Climate Change on Sub-Saharan Africa (with reference to the 2008 cholera outbreak in Zimbabwe)

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Introduction

Since the 1970s, data has been collected showing that climate change is reshaping our world. Our excessive carbon dioxide production is causing a shift in climates and weather is becoming more 'aggressive' with extremes becoming more frequent. Developing countries appear to be suffering more than their wealthier neighbours.¹ The WHO estimates that global warming is causing 150,000 mortalities annually and the loss of 5.5million DALYs (Disability Adjusted Life Years); the majority of which are in the developing world.²

Extremes of temperature and precipitation are being reported more frequently in many parts of the world both of which pose a risk to human safety.² Prolonged high temperatures cause drought and famine, while torrential rainfall causes devastating floods. River flooding, tropical cyclones and severe thunderstorms are becoming more common with serious implications for the infrastructure of many countries.¹ Climate change is also predicted to have an effect on vector borne diseases such as dengue fever, with spread into new areas predicted.³ Changes in ultraviolet sunlight exposure will also have effects on human health.

Lessons from 2008 cholera outbreak in Zimbabwe

Cholera (*Vibrio Cholerae*) is transmitted faecal-orally and is frequently due to drinking water from a contaminated source. Also a weakened immune system is more likely to make infection symptomatic. Both of these factors are present in Sub-Saharan Africa due to irregular rainfall and poor nutrition. Cholera causes 100,000-200,000 deaths worldwide annually; most deaths occur in children. Adequate rehydration is the most effective treatment.

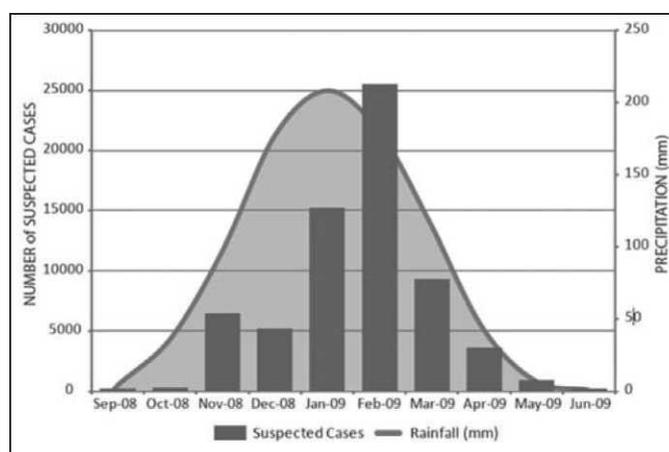


Fig 2
New suspected cholera cases per month an mm of precipitation – (HIU US)³

Zimbabwe's health has varied over the past 20 years with a life expectancy from birth of only 45 years in 2000. Zimbabwe has had cholera outbreaks in the past but in 2008 a very severe outbreak occurred.

The outbreak lasted 7 months and claimed 4,276 lives. The rainy season, coinciding with Christmas holidays, caused population movements encouraging the spread of infection with 98,000 cases reported during the outbreak; which is likely to be an underestimate. The incidence of cholera fell sharply when the rainy season subsided in January/February (60% drop from February to March). The relationship between rainfall and the spread of cholera in 2008 is shown below.⁴

Rainfall studies in Zimbabwe have shown some changes over time. The main changes are in the areas that already receive the largest amounts of precipitation. Most increases have been reported within those regions already experiencing 80 and 90th percentiles of rainfall. This implies that regions that experience the highest precipitation are experiencing an increasing amount of rainfall. Results from other regions show that they are becoming drier. It is broadly accepted that annual rainfall will change in Zimbabwe in the future but results at present are not statistically significant.

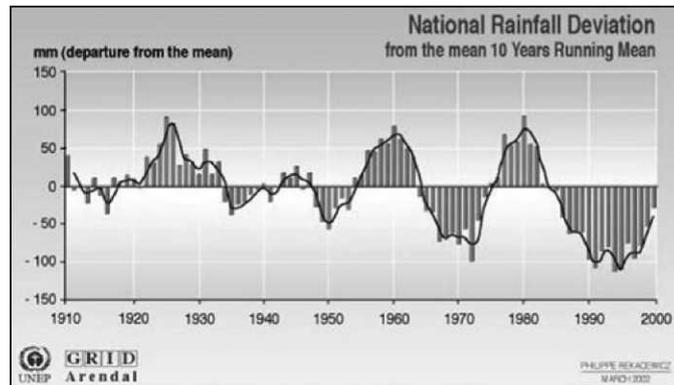


Fig. 3
Deviation from the mean from 1910 - 2000 (millimetres of rainfall) -
(UNEP/GRID Arendal)⁷

Conclusion

Disease patterns are predicted to alter as global climate change becomes more apparent. Prosperous countries are likely to cope well with the adjustment but developing countries will manage less well. Changes in rainfall and precipitation will pose new challenges to global health which will have to be overcome. More aggressive weather and increasing international travel will make future outbreaks more difficult to control. Our emergency response to disease outbreaks must be rapid and decisive. For this to be planned effectively we will need to follow carefully climate changes for clues about where new outbreaks may occur.

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