

Global public health and the Millennium Development Goals

How can we prevent 10 million child deaths each year?

Dr. Paul Pronyk

The Earth Institute, Columbia University

 THE MILLENNIUM VILLAGES™ PROJECT

What is public health?

- Definition: “Assuring the conditions in which people can be healthy”

US Institute of Medicine, 1988



What is public health?

- Aim: *“to generate organized community effort ...by applying scientific and technical knowledge to prevent disease and promote health”* US Institute of Medicine, 1988



Measuring the public's health

Epidemiology: The study of the distribution of disease in populations

How can we tell if one community is healthier than another?



Measuring the public's health

Epidemiology: The study of the distribution of disease in populations

How can we tell if one community is healthier than another?

- Life expectancy
- Maternal mortality
 - 1/15 in Africa
 - 1/4000 in industrialized countries
- Infant mortality
- Child mortality

What do they tell us?



What are the MDGs?

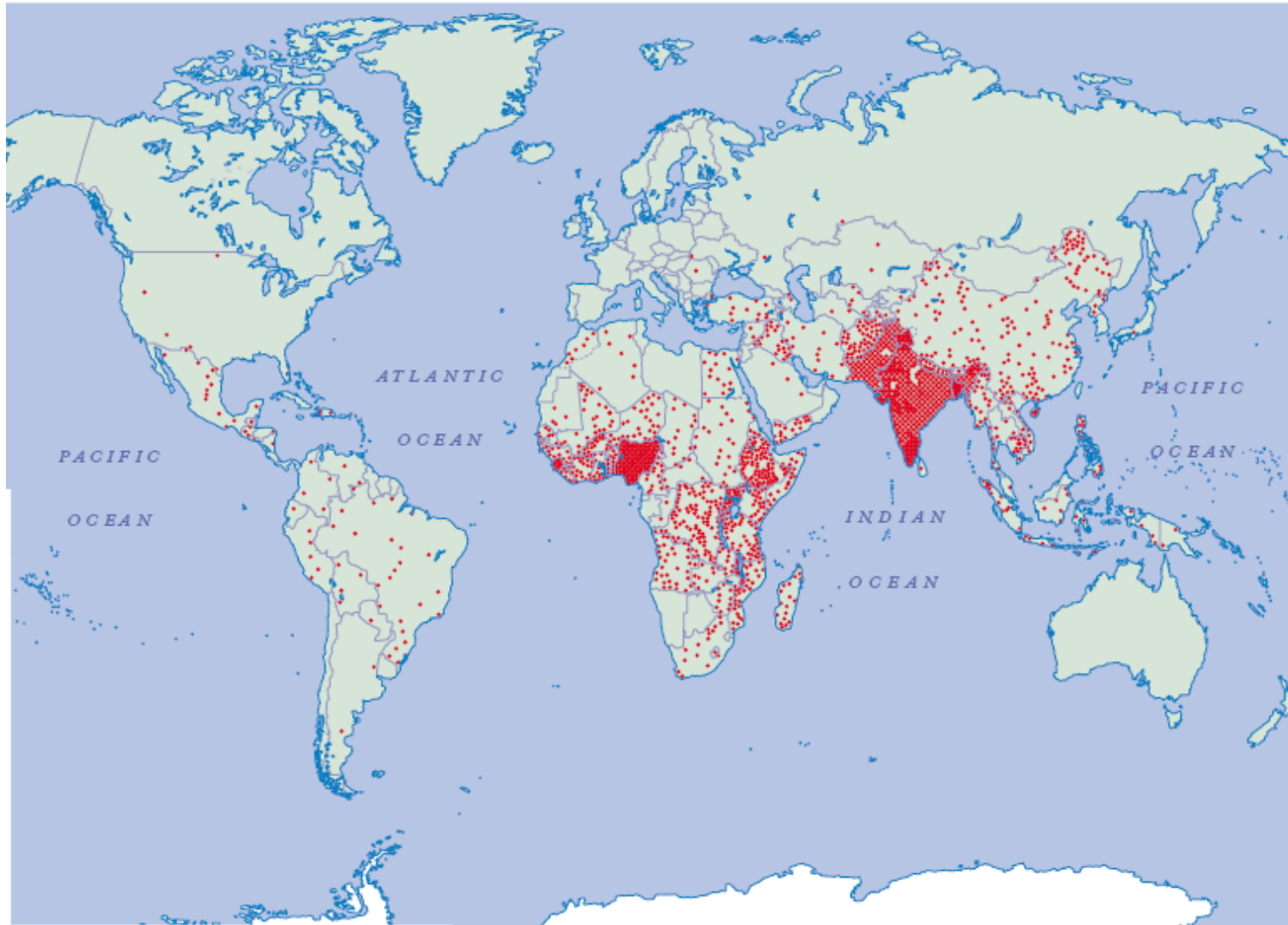


Child Mortality

- Under 5 mortality rate: the probability of a child dying before reaching the age of five
- Good comparative measure of global public health
- Proxy for other MDGs
 - interdependence of MDG targets



10 million child deaths each year

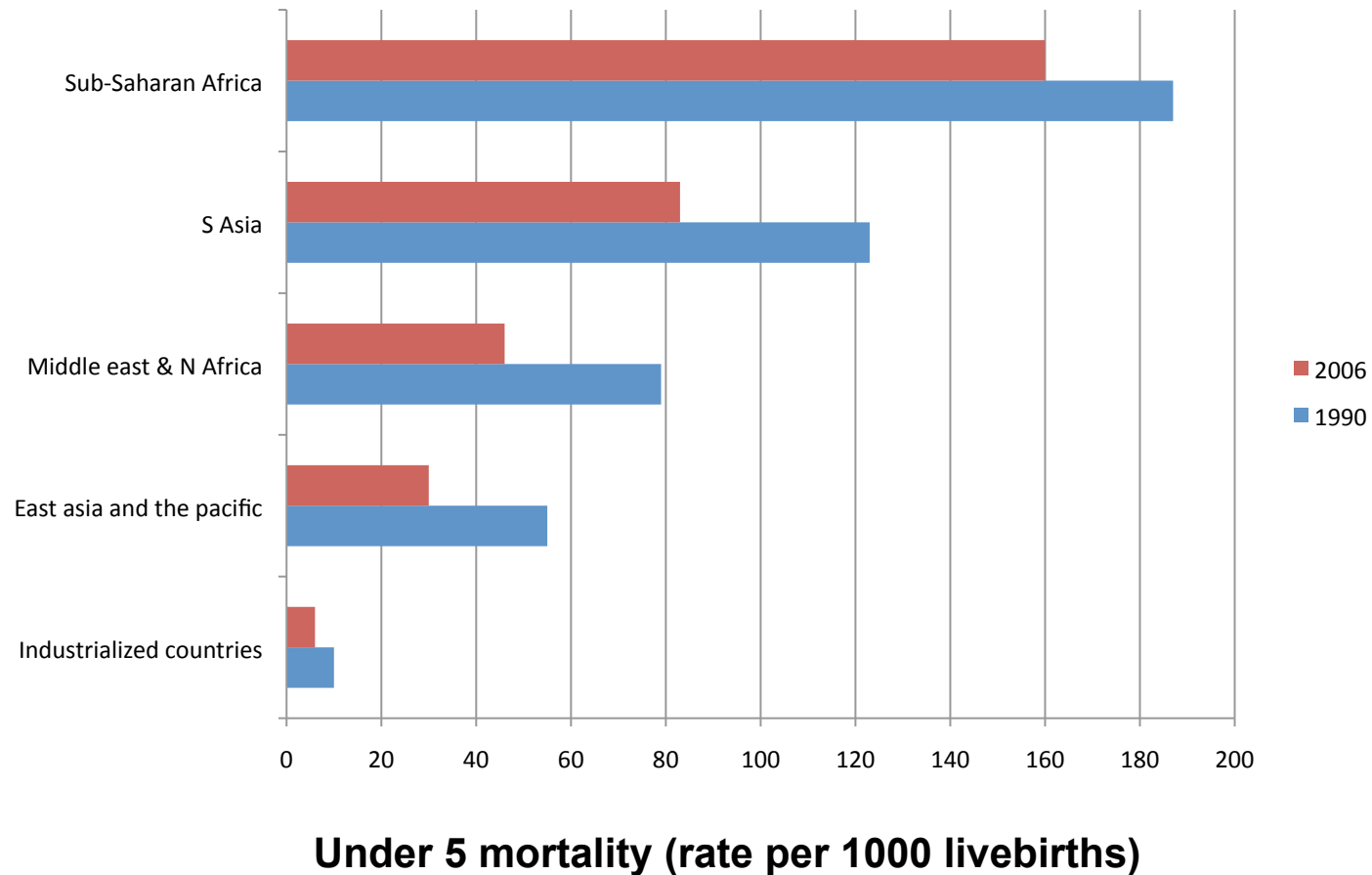


Child deaths worldwide: 1 dot = 5000 deaths

Source: Black, Lancet, 361, 2003

Where do child deaths occur?

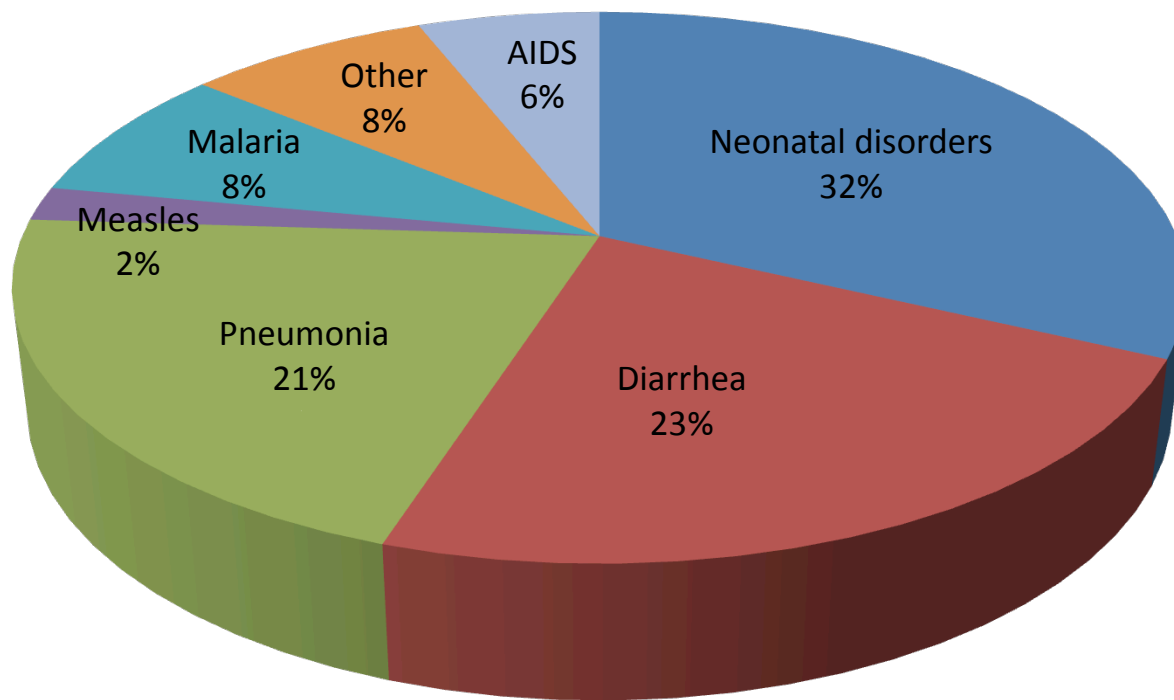
Sub-Saharan Africa 20-x greater than industrialized countries
Nearly 1 in 5 children die before their fifth birthday



Source: UNICEF. State of the World's Children, 2008

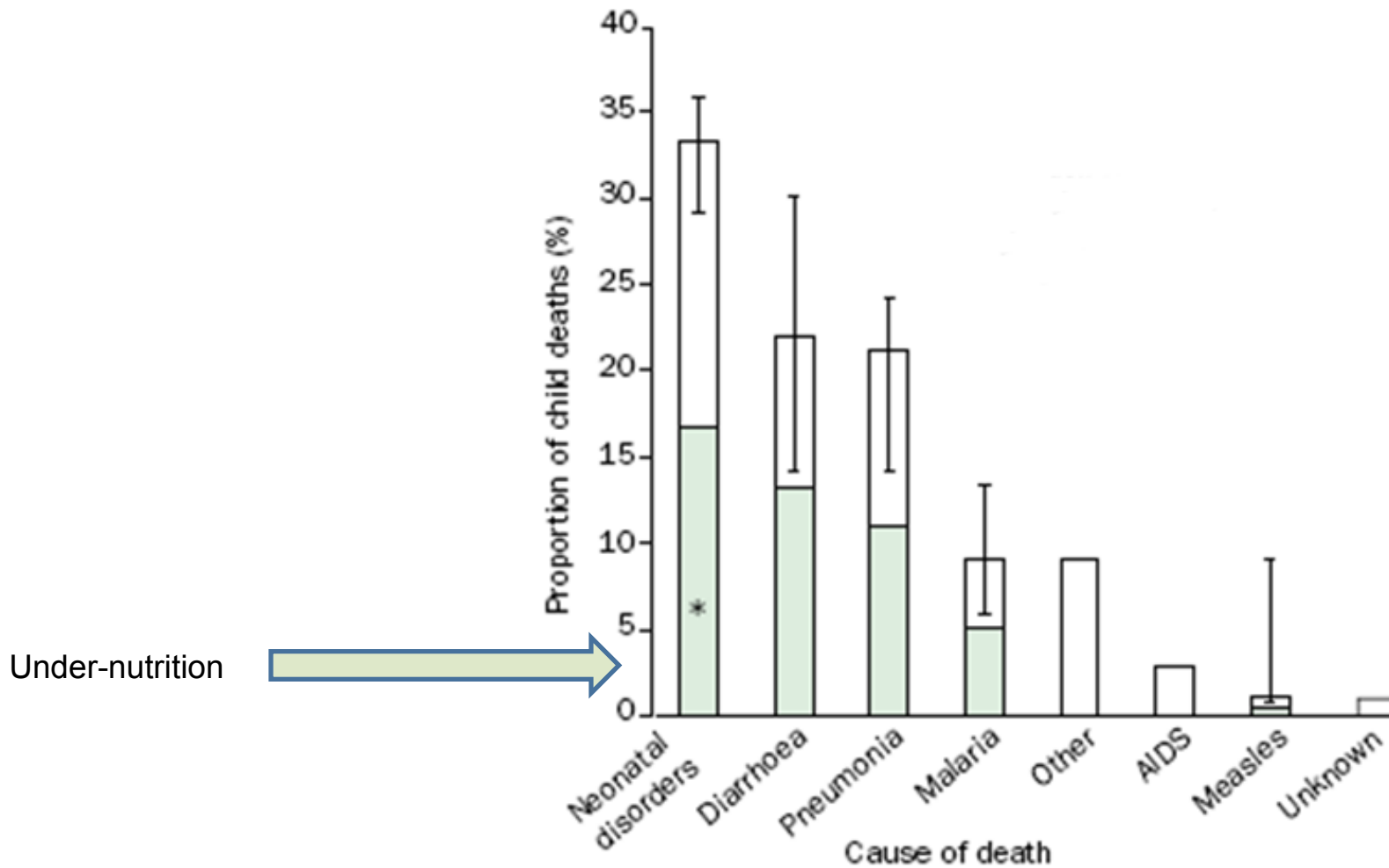
Globally: Why do children die?

Causes of Child Mortality



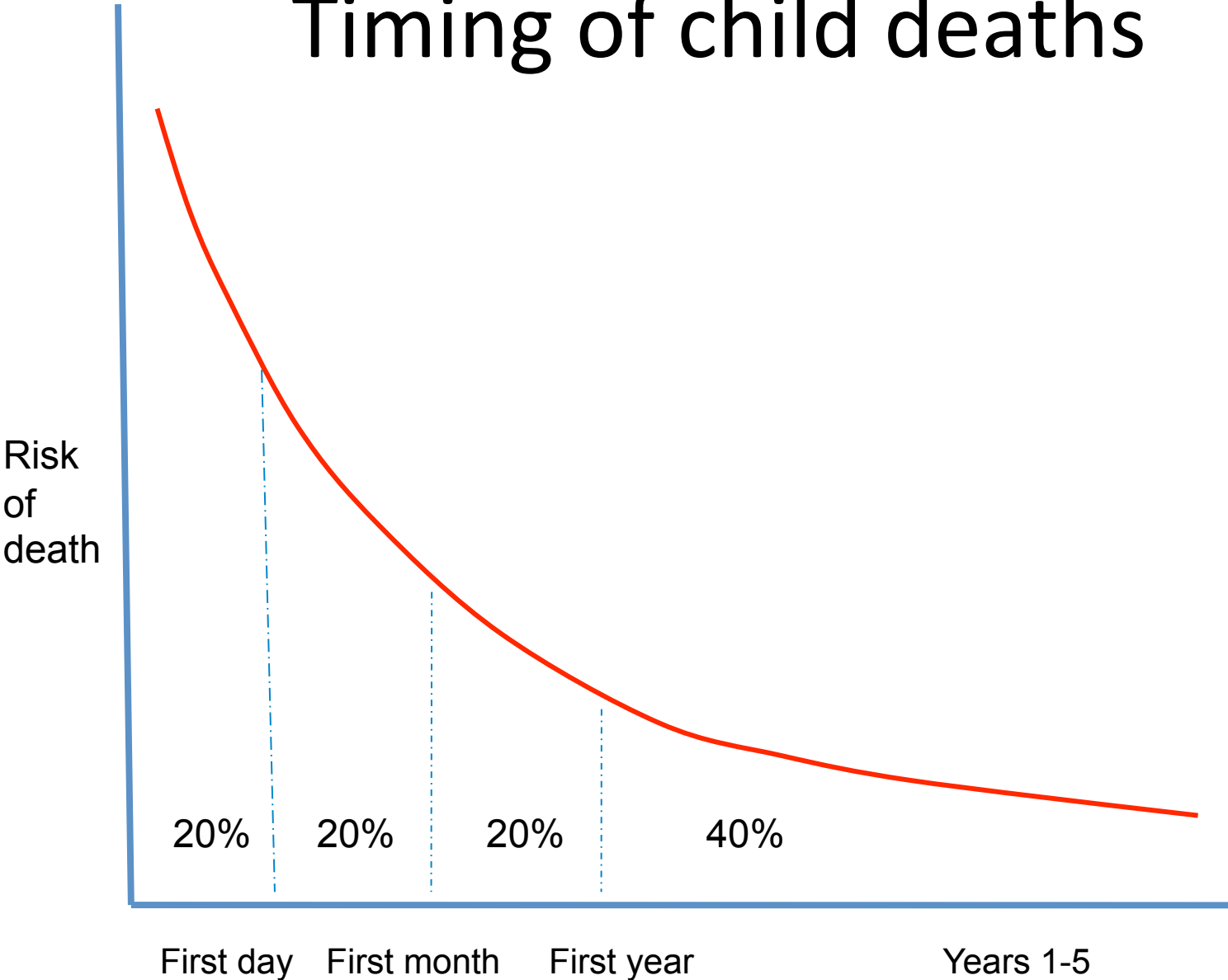
Source: UNICEF, State of the World's Children 2008

Under-nutrition contributes to 50% of child deaths

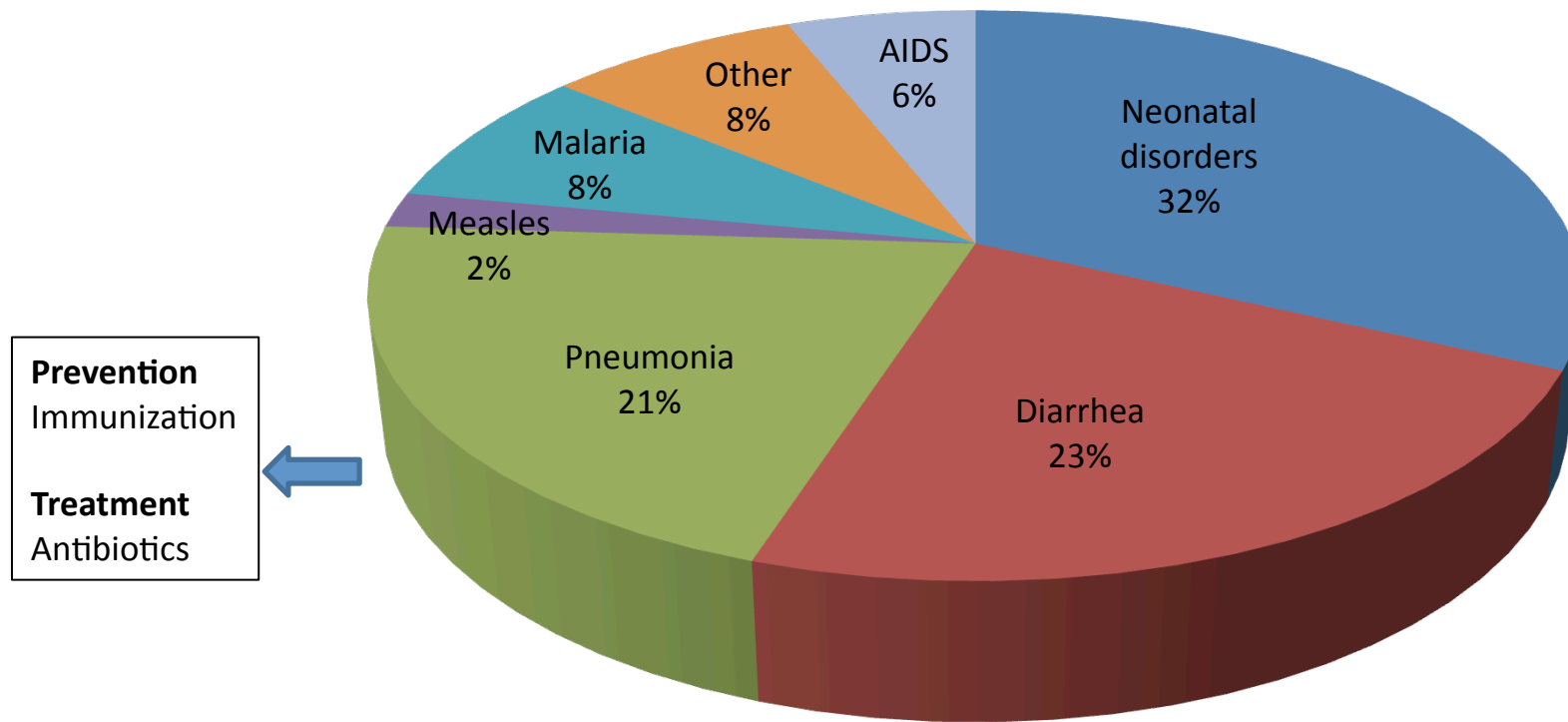


Source: Black Lancet 361, 2003

Timing of child deaths



Getting the basics right

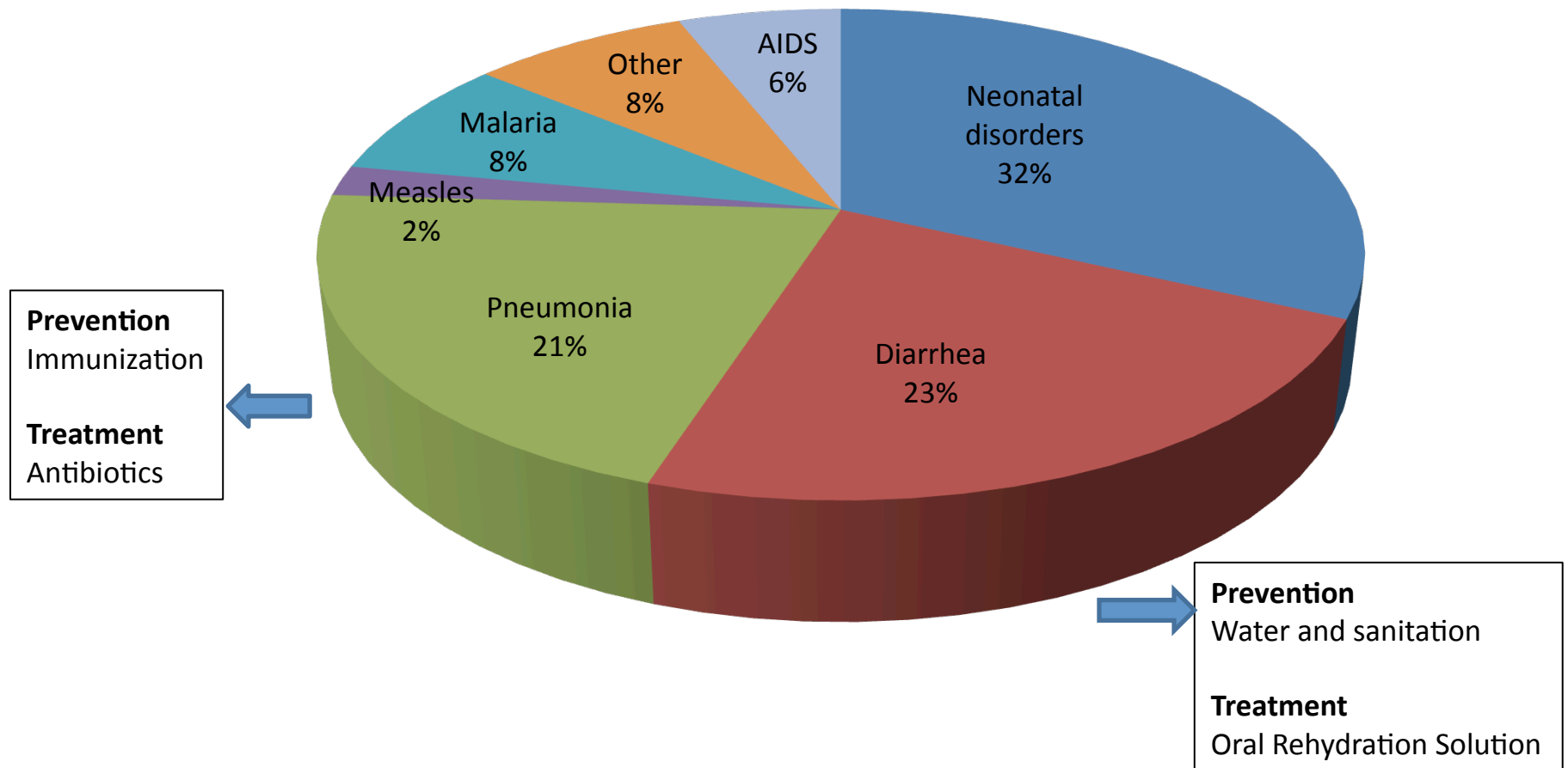


Source: UNICEF, State of the World's Children 2008

Measles immunization



Getting the basics right



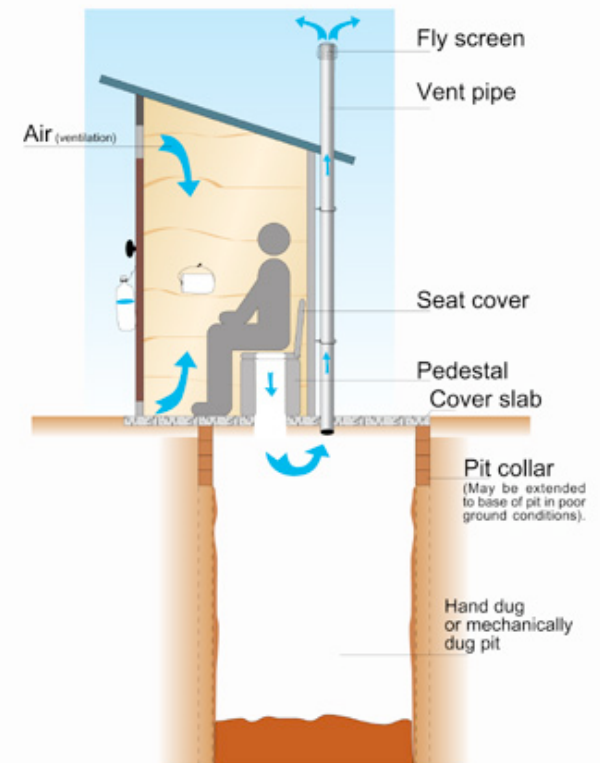
Source: UNICEF, State of the World's Children 2008

Safe water and sanitation

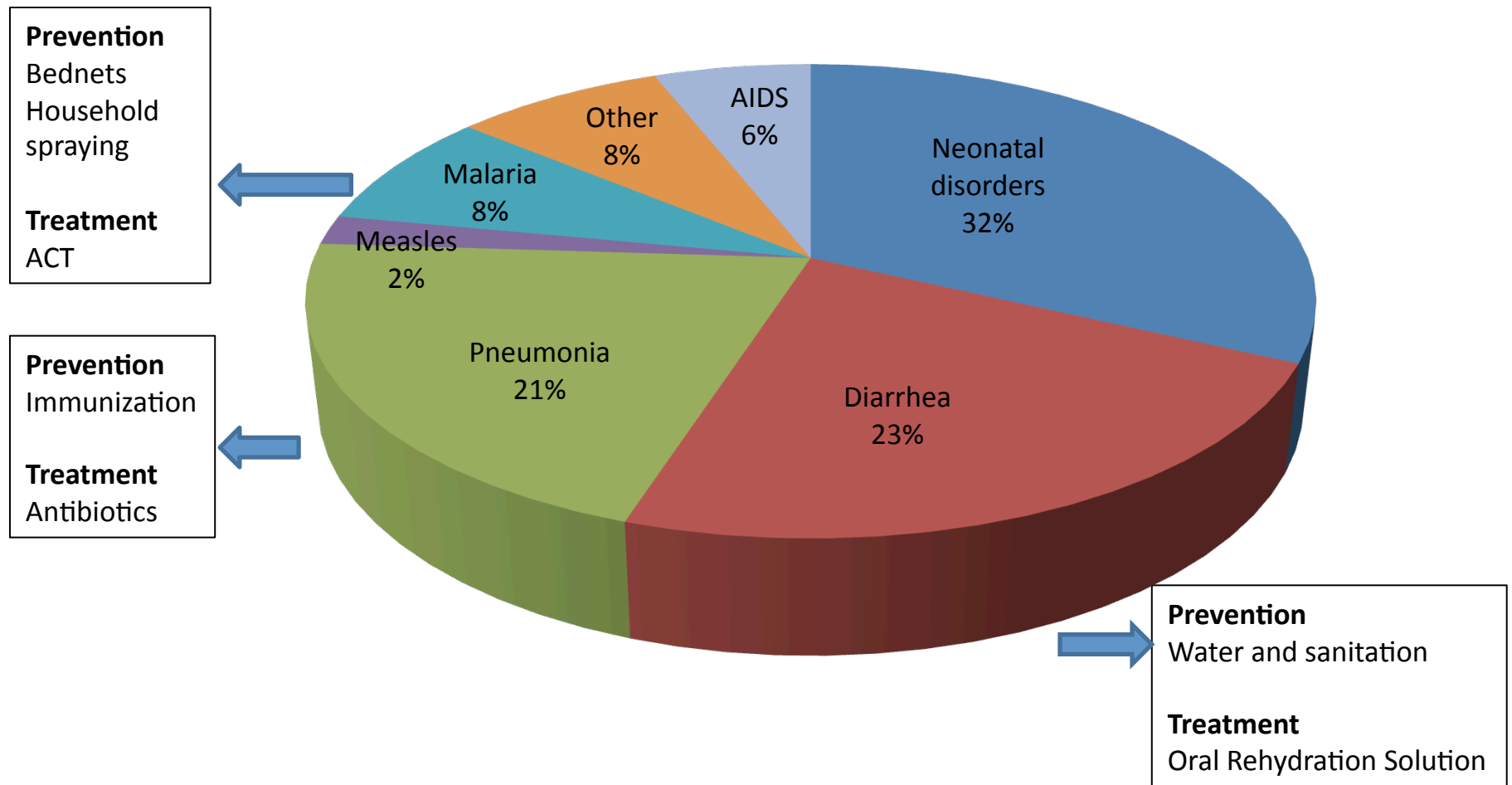


Dry on-plot systems

Ventilated Improved Pit (VIP) toilet



Getting the basics right



Source: UNICEF, State of the World's Children 2008

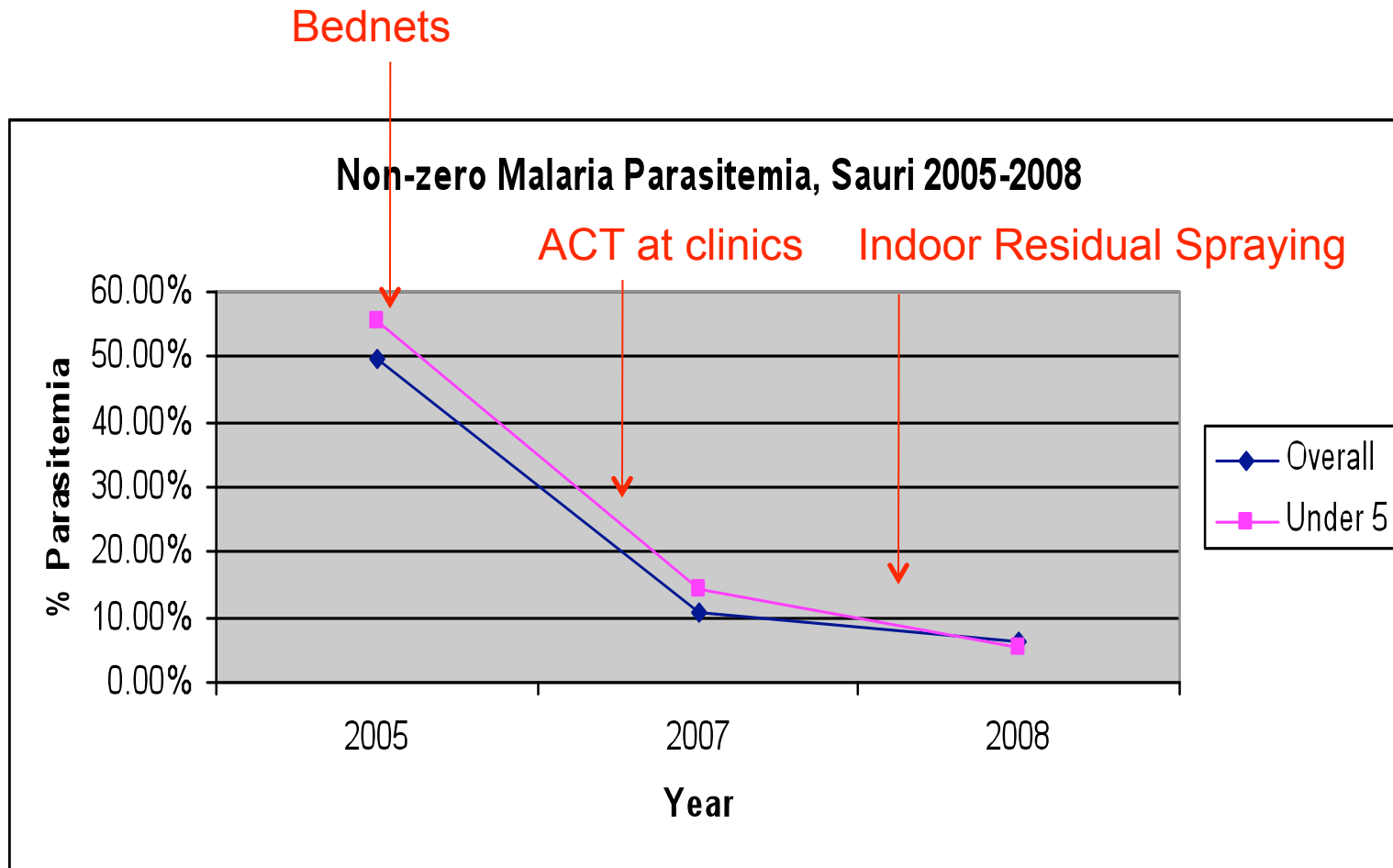
Long lasting insecticide treated bednets

\$10 per net for 5 years of protection for 2 people

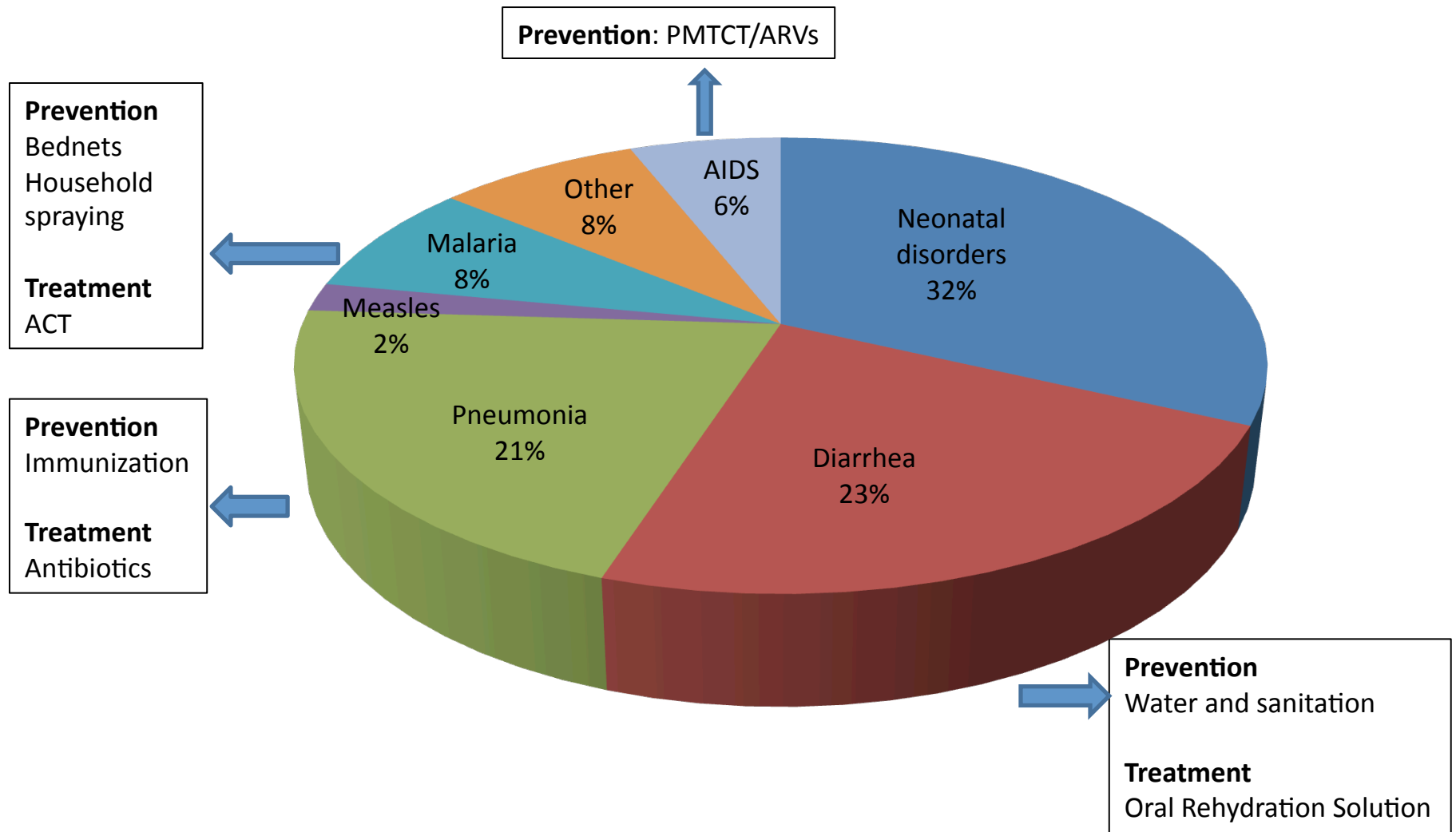
\$1 per person per year



Impact of multiple control strategies on malaria prevalence - Sauri, Western Kenya



Getting the basics right



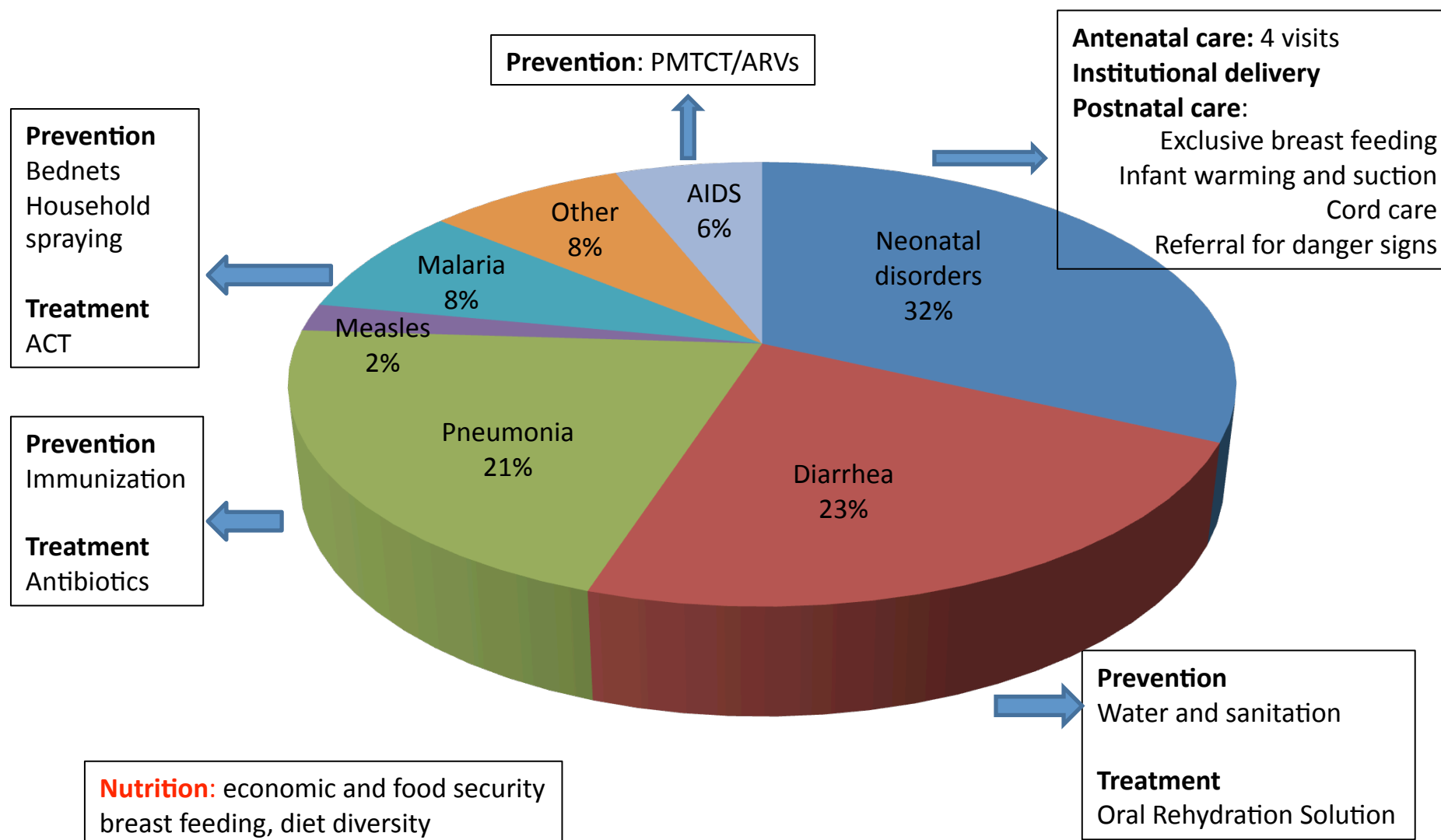
Source: UNICEF, State of the World's Children 2008

Prevention of mother-to-child transmission of HIV

- No intervention: 30% risk
- Industrialized countries: HIV transmission rare:
 - maternal antiretrovirals (ARVs), C-section, formula feeding
- Currently in Africa: only 10% of HIV positive women have any form of ARV during pregnancy
- New evidence: maternal ARVs **alone** throughout pregnancy and breast feeding can reduce transmission to 1-5%



Basic package of care prevents 75% of child deaths



Source: UNICEF, State of the World's Children 2008

Are these gains achievable?

- What does history tell us?