Global Health

Monster 2015-2016 El Niño Event Triggered Infectious Diseases

An intense El Niño event in 2015-2016 fueled outbreaks of chikungunya, hantavirus, Rift Valley fever, cholera, and plague around the world, according to a new report from US investigators. The National Oceanic and Atmospheric Administration ranked this El Niño among the top 3 strongest events in nearly 70 years.

Although it's primarily a tropical phenomenon, the El Niño–Southern Oscillation has far-ranging effects on regional weather conditions. It can trigger extreme changes in rainfall, drought, and temperatures that create favorable ecological conditions for regional disease outbreaks.

The research team analyzed patterns of disease outbreaks during the 2015-2016 El Niño phenomenon and compared them with climate anomalies obtained from satellite data measuring land surface temperature, vegetation, and precipitation. Shifts in rainfall, temperature, and vegetation resulted in both excessive drought and flooding in many regions throughout the world.

Numerous disease outbreaks also occurred: cholera in Tanzania, dengue fever in Brazil and Southeast Asia, and plague and hantavirus in Colorado and New Mexico. It can take 2 to 3 months for diseases to develop following these weather changes. Plague in the western United States and cholera in Tanzania were associated with above-normal rainfall, while dengue in Brazil and Southeast Asia was associated with above-normal land surface temperature.

Experts predict that regional weather anomalies like El Niño and its sister, La Niña, will increase in severity and frequency under current global warming scenarios. Information about the links between El Niño events and human and animal diseases are critical to disease control and prevention. Global satellite-based observation systems monitoring these events can help identify where and when disease outbreaks will occur and can aid in preventing and controlling their spread.

Cancer Goes Undiagnosed in Almost Half the World's Children

Almost half of all children around the world with cancer—the vast majority of whom live in low- and middle-income countries—are not diagnosed or treated, US researchers have reported.

The investigators developed a simulation model of childhood cancer incidence by age group and tumor type in 200 countries and territories. They synthesized data from national cancer registries where they were available, along with data from the World Health Organization's Global Health Observatory and from demographic health surveys and household surveys.

The model estimated that in 2015 there were 397 000 cases of childhood cancer, but only 224 000 cases were diagnosed, leaving about 43% of childhood cancers undiagnosed globally. In most regions of the world, acute lymphoblastic leukemia was the most common cancer.

The numbers of undiagnosed cases varied substantially from region to region. In Africa, South Central Asia, and the Pacific Islands, more than half of all cases were undiagnosed compared with only 3% that weren't diagnosed in North America and Western Europe.

Given population projections, the model estimated that 6.7 million cases of childhood cancer worldwide could arise from 2015 to 2030. If health system performance continues at current levels, 2.9 million cases could be missed. The authors write that efforts are needed to strengthen health systems at every step of the care cascade, including developing cancer registries and health information systems. Models that estimate the total incidence of childhood cancer can help to guide health system planning and inform new policies to improve care for children with cancer.

Antimicrobial Resistance on the Rise in Zoonotic Bacteria in Europe

Experts continue to find zoonotic bacteria with high levels of antimicrobial resistance in humans, animals, and food, according to a new report from the European Food Safety Authority and the European Centre for Disease Prevention and Control.

Their work shows that the antimicrobials used to treat zoonotic diseases, which humans can contract through environmental
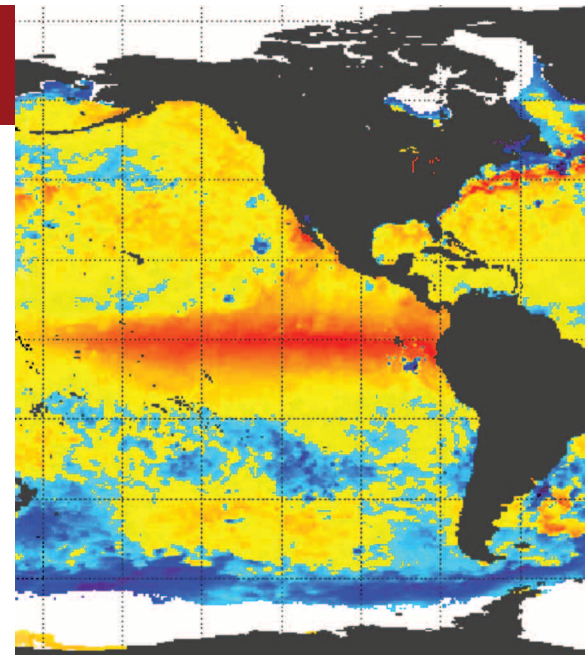
The 2015-2016 El Niño event triggered infectious disease outbreaks across the globe.

exposure to infected animals or by eating contaminated meat, have grown less effective over time.

Investigators analyzed 2016 data from 28 European Union member states on antimicrobial resistance in bacterial isolates of *Salmonella* and *Campylobacter*—the 2 most common foodborne zoonotic bacteria in the European Union—as well as in *Escherichia coli* and methicillin-resistant *Staphylococcus aureus* (MRSA) isolates from animals and food. The agencies have been monitoring antimicrobial resistance in European Union countries since 2013.

The report found very high (greater than 50%) to extremely high (greater than 70%) resistance levels to ciprofloxacin in *Campylobacter jejuni* isolates from humans and animals. Ciprofloxacin resistance ranged from 84.5% in Spain to 98% in Portugal. Resistance levels are so high in some countries that fluoroquinolones can no longer be routinely prescribed to treat *Campylobacter* infection.

About one-third of *Salmonella* isolates from humans were resistant to sulfonamides, ampicillin, or tetracyclines (29.2%), while resistance to third-generation cephalosporins was low. The levels of antimicrobial resistance in the *Salmonella* and *Campylobacter* isolates from poultry meat also were high. **– M.J. Friedrich**

Note: Source references are available online through hyperlinks embedded in the article text.