



## Measuring health burden and climate change

**Source:** Ebi KL, Ogden NH, Semenza JC, Woodward A. [Detecting and Attributing Health Burdens to Climate Change](https://www.ncbi.nlm.nih.gov/pubmed/28796635). *Environ Health Perspect*. 2017 Aug 7;125(8):085004. <https://www.ncbi.nlm.nih.gov/pubmed/28796635>

**BACKGROUND:** Detection and attribution of health impacts caused by climate change uses formal methods to determine a) whether the occurrence of adverse health outcomes has changed, and b) the extent to which that change could be attributed to climate change. There have been limited efforts to undertake detection and attribution analyses in health.

**OBJECTIVE:** Our goal was to show a range of approaches for conducting detection and attribution analyses.

**RESULTS:** Case studies for heatwaves, Lyme disease in Canada, and *Vibrio* emergence in northern Europe highlight evidence that climate change is adversely affecting human health. Changes in rates and geographic distribution of adverse health outcomes were detected, and, in each instance, a proportion of the observed changes could, in our judgment, be attributed to changes in weather patterns associated with climate change.

**CONCLUSIONS:** The results of detection and attribution studies can inform evidence-based risk management to reduce current, and plan for future, changes in health risks associated with climate change. Gaining a better understanding of the size, timing, and distribution of the climate change burden of disease and injury requires reliable long-term data sets, more knowledge about the factors that confound and modify the effects of climate on health, and refinement of analytic techniques for detection and attribution. At the same time, significant advances are possible in the absence of complete data and statistical certainty: there is a place for well-informed judgments, based on understanding of underlying processes and matching of patterns of health, climate, and other determinants of human well-being.

## Emerging issues with fungal disease outbreaks

**Source:** Benedict K, Richardson M, Vallabhaneni S, Jackson BR, Chiller T. [Emerging issues, challenges, and changing epidemiology of fungal disease outbreaks](http://dx.doi.org/10.1016/S1473-3099(17)30443-7). *Lancet Infect Dis*. 2017 Jul 31. [http://dx.doi.org/10.1016/S1473-3099\(17\)30443-7](http://dx.doi.org/10.1016/S1473-3099(17)30443-7) [Epub ahead of print].

Several high-profile outbreaks have drawn attention to invasive fungal infections (IFIs) as an increasingly important public health problem. IFI outbreaks are caused by many different fungal pathogens and are associated with numerous settings and sources. In the community, IFI outbreaks often occur among people without predisposing medical conditions and are frequently precipitated by environmental disruption. Health-care-associated IFI outbreaks have been linked to suboptimal hospital environmental conditions, transmission via health-care workers' hands, contaminated medical products, and transplantation of infected organs. Outbreak investigations provide important insights into the epidemiology of IFIs, uncover risk factors for infection, and identify opportunities for preventing similar events in the future. Well recognised challenges with IFI outbreak recognition, response, and prevention include the need for improved rapid diagnostic methods, the absence of routine surveillance for most IFIs, adherence to infection control practices, and health-care provider awareness. Additionally, IFI outbreak investigations have revealed several emerging issues, including new populations at risk because of travel or relocation, occupation, or immunosuppression; fungal pathogens appearing in geographical areas in which they have not been previously recognised; and contaminated compounded medications. This report highlights notable IFI outbreaks in the past decade, with an emphasis on these emerging challenges in the USA.



## How close are we to a Zika vaccine?

**Source:** Thomas SJ. [Zika Virus Vaccines — A Full Field and Looking for the Closers](#). *N Engl J Med* 2017; 376:1883-1886 May 11, 2017. <https://doi.org/10.1056/NEJMcibr1701402>. (summary).

There are no licensed antiviral drugs to prevent or treat Zika virus (ZIKV) infection or disease. Caring for patients with severe ZIKV disease manifestations, especially patients who were exposed in utero, is challenging for all involved. Because of these challenges, the WHO has called for development of a ZIKV vaccine, with an initial focus on protecting women of childbearing age. Two recent reports describing the successful testing of experimental ZIKV vaccines in animal models — one by Pardi et al. and another by Richner et al. — are welcome news. Both groups engineered messenger RNAs (mRNAs) with sequences encoding the ZIKV precursor membrane (prM) glycoprotein and envelope (E) glycoprotein.

Data from studies in animals have now been described for numerous ZIKV vaccine candidates. The candidates produced no acute safety signals, induced ZIKV-specific humoral or cellular immune responses, and conferred at least some protection against live virus challenge. The mRNA vaccine constructs reviewed here offer numerous potential advantages, including ease and cost of manufacturing, applicability across diverse pathogens, and a favorable safety profile. Vaccinology, however, constantly warns against extrapolating conclusions from animal experiments to humans. In the case of ZIKV vaccines, most of the available data have been generated with the use of animals that have had no previous exposure to flaviviruses. Will preexisting immunity to flaviviruses (such as the dengue, yellow fever, West Nile, and Japanese encephalitis viruses) affect the safety or immunogenicity of a ZIKV vaccine? Demonstrating safety in a small number of volunteers appears feasible; demonstrating that vaccine-induced immune responses are associated with clinical efficacy will be a much more formidable task.

Despite the challenges, the pace of ZIKV vaccine research and development has been impressive. However, history has shown that the race for a vaccine typically begins with many contenders at the start, of whom very few finish the race. This observation notwithstanding, the recently published data from Pardi et al. and Richner et al. represent an important step toward the goal of protecting people from ZIKV through active immunization.

## Correction for Can Commun Dis Rep. Supplement 2008;34(S2)

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In the Final Report to Outcomes from the National Consensus Conference for Vaccine-Preventable Diseases in Canada, June 12-14, 2005 – Quebec City, Quebec published in March, 2008, the citation on the inner cover of the PDF had the incorrect year of publication and supplement number.

### Was:

**Suggested citation:** Public Health Agency of Canada. Final Report of Outcomes from the National Consensus Conference for Vaccine-Preventable Diseases in Canada. CCDR 2007;33S3:1-56.

### Correction October 5, 2017:

**Suggested citation:** Public Health Agency of Canada. Final Report of Outcomes from the National Consensus Conference for Vaccine-Preventable Diseases in Canada. CCDR 2008;34S2:1-64.