

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

# Infectious Diseases

Almost everyone has had the experience of coming down with a cold, the flu, or a bad reaction from eating spoiled or contaminated food. These illnesses are examples of infectious diseases. Infectious diseases are caused by different types of germs, including viruses, bacteria, parasites, and fungi. Some of these germs are spread directly by person-to-person contact, or through airborne droplets when an infected person coughs or sneezes. Others are transmitted indirectly via contaminated objects, food and drinking water, insects, the environment, or even infected animals.<sup>1</sup> Infectious diseases cause significant morbidity and mortality in the U.S. and globally. There is also a growing threat of emerging diseases for which we have no cure, as well as diseases which are becoming resistant to currently available treatments.

**TODAY**

Flu is a droplet-borne disease caused by the influenza virus. The 2017-18 flu season resulted in

**48.8 million** infections and **79,400** deaths in the U.S.<sup>2</sup>

In 2017, over **119,000** people had a staph infection in the U.S., resulting in almost

**20,000 deaths**. Caused by the bacteria *Staphylococcus aureus*, staph infections are commonly associated with health care facilities, though they can be acquired in other settings.<sup>4</sup> Staph bacteria can cause a variety of issues, including skin infections, food poisoning, and pneumonia.<sup>5</sup>

Hepatitis C is a blood-borne virus that affects the liver and can lead to chronic liver damage. There are more than

**3 million** people in the U.S. living with hepatitis C.<sup>6</sup>

**COST**

**\$11.2 billion:**

The average annual economic cost of seasonal flu in the U.S.<sup>7</sup>

**\$25-31 billion:**

The estimated medical cost savings if the U.S. could reduce health care-associated infections by 70%.<sup>8</sup>

**\$115 billion:**

The cost to U.S. health care that could be averted by eliminating Hepatitis C over the next decade.<sup>9</sup>

**Strong Majority Say the President and Congress Should Assign a High Priority to Faster Medical Progress**

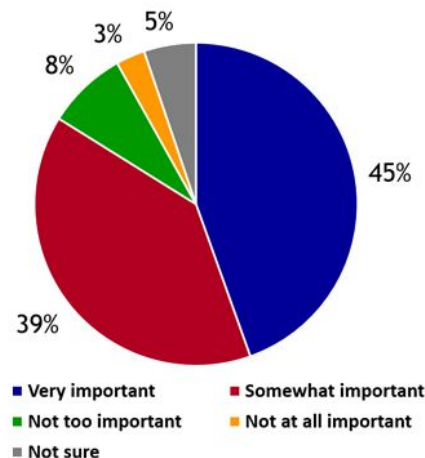
How important is it for the President and Congress to assign a high priority to ensuring faster medical progress?

## Research Delivers Solutions

The flu vaccine, typically manufactured using an egg-based process, **prevents millions of infections each year**.<sup>10</sup> In 2016, the FDA approved a cell-based flu vaccine that allows for a **faster start-up of vaccine production**, which could be useful in the case of a pandemic.<sup>11</sup> Many researchers are also working on the development of a universal flu vaccine that would provide **longer-lasting protection** against a **broader variety of flu viruses**.<sup>12</sup>

Some *Staphylococcus aureus* infections are **resistant to one or more antibiotics**, making them particularly difficult to treat. Researchers are studying how best to detect, prevent, and respond to methicillin-resistant *Staphylococcus aureus*, or MRSA. A 2015 study from the CDC demonstrated that using disinfectant and antibiotic ointment in intensive care units **reduced bloodstream MRSA infections by 37%**.<sup>13, 14</sup>

Prior to 2010, treatment for hepatitis C required regular injections, often had severe side effects, and was only 40-50% effective. Insights on the biology of the hepatitis C virus have led to the development of multiple new drugs that are well-tolerated and highly effective, with cure rates of 95-99%.<sup>15</sup>



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2019

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## Then. Now. Imagine.

### THEN

In 1900, mortality due to infectious diseases was 797 deaths per 100,000 in the United States. The three leading causes of death were pneumonia, tuberculosis, and gastrointestinal illness.<sup>16, 17</sup>

### NOW

The mortality rate from infectious diseases in 2014 was 34 per 100,000.<sup>17</sup> Public sanitation efforts, along with the development of vaccines, antibiotics, and other public health tools, mean far fewer people today are dying from infectious diseases.<sup>2, 17, 18</sup>

### IMAGINE

A world where no one has to die from preventable infectious diseases.

## A Global Perspective

Globally, infectious diseases are a **leading killer of infants and children under 5**.<sup>19</sup>

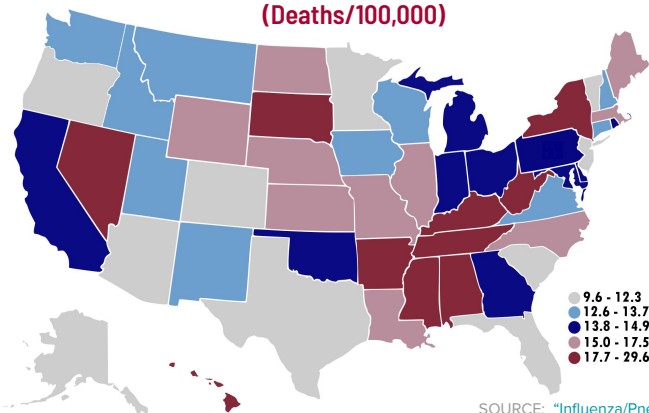
Infectious diseases disproportionately impact low and middle-income countries, and also act to **perpetuate poverty**.<sup>21, 22</sup>

Tuberculosis, HIV/AIDS, and malaria, three of the world's deadliest infectious diseases, accounted for **3 million deaths** in 2017.<sup>20</sup> While global health efforts have been successful in decreasing the burden of these diseases, in all three cases drug resistance poses a major obstacle to continued progress. In 2017, there were an estimated **558,000** new cases of multi-drug resistant tuberculosis.

### Global health is our health.

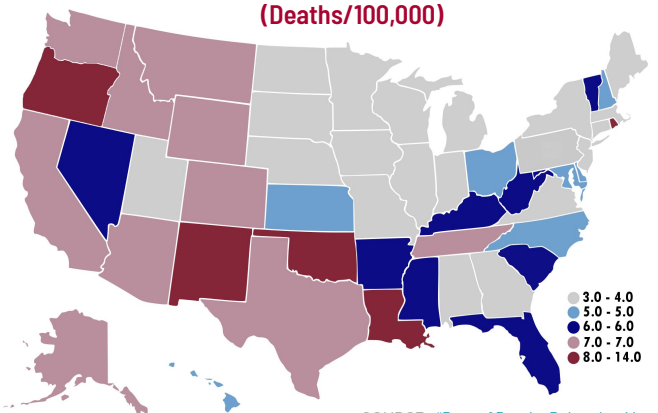
Since the 1970's, about 40 newly emerging infectious diseases have been reported, including Ebola, SARS, avian influenza (bird flu), and Zika.<sup>23</sup> These emerging infections are often highly deadly.<sup>24</sup> Contagious diseases do not respect international boundaries. With increased global travel and connectivity, ongoing and emerging infectious disease threats happening abroad will ultimately impact us here at home.

Mortality from Influenza and Pneumonia, 2017  
(Deaths/100,000)



SOURCE: "Influenza/Pneumonia Mortality by State, National Center for Health Statistics, CDC, 2019"

Mortality from Hepatitis C, 2017  
(Deaths/100,000)



SOURCE: "Rate of Deaths Related to Hepatitis C, 2016". HepVu, Emory University Rollins School of Public Health and Gilead Sciences, Inc.

This factsheet is intended to provide a glimpse into the diverse and complex universe of infectious diseases. Find more information on these diseases [here](#).

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The Albert and Mary Lasker Foundation is a founding partner in this series of fact sheets. [www.laskerfoundation.org](http://www.laskerfoundation.org)

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