RESEARCH!AMERICA
DISCOVERY. INNOVATION. HEALTH.

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

LASKER FOUNDATION

If you think research is expensive, try disease.

COVID-19

Coronavirus disease 2019 (COVID-19) is a systemic disease caused by SARS-CoV-2, a novel coronavirus.[1] The virus spreads predominately through respiratory droplets or aerosols, produced when a person sneezes, coughs, or talks.[2] Symptoms appear 2-14 days after exposure and include cough, shortness of breath, sore throat, fever, chills, muscle pain, headache, and loss of taste or smell. However, many people with COVID-19 have no symptoms.[3] Adults with certain underlying conditions (cancer, heart conditions, obesity, and others) are at increased risk of severe illness and death from the virus.[4] **Multisystem Inflammatory Syndrome** is a rare but serious complication of COVID-19, especially for children.[5] **"Long COVID,"** or experiencing COVID-19 symptoms for several weeks or months, occurs in 1 in 20 COVID-19 patients.[6] COVID-19 disproportionately affects communities of color. Nationwide, Black people are dying at 1.6 times the rate of white people.[7] While there is currently no cure for COVID-19, scientists are working at record pace to develop COVID-19 treatments and vaccines. COVID-19 vaccination, along with protective measures (hand washing, physical distancing, wearing a mask), are the primary, research-tested ways to protect yourself and your community from getting and spreading COVID-19.[8]

TODAY

As of February 8, 2021, more than

463,000

people have died from COVID-19 in the U.S.[9]

COVID-19 patients with underlying conditions such as heart disease, diabetes, and chronic lung disease are

12 times more

likely to die.[10]

Approximately

20% of

asymptomatic people who test positive for COVID-19 remain symptom- free.[11]

COST

$78,500:

The average cost for hospital care for an uninsured COVID-19 patient in the U.S.[12]

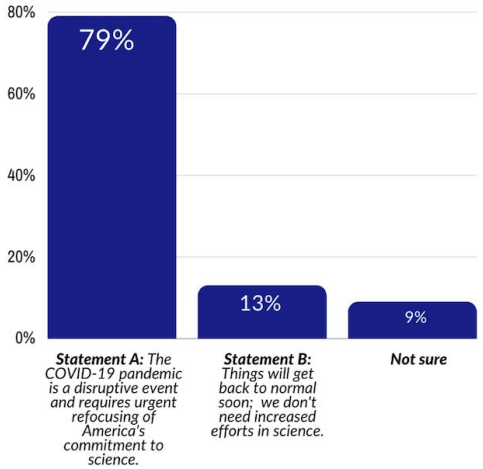
$2.6 trillion:

The estimated additional long-term costs for people who survive COVID-19 but have resulting long-term health damage.[13]

Which statement is closest to your view?

Statement A: The COVID-19 pandemic is a disruptive event and requires urgent refocusing of America's commitment to science.

Statement B: Things will get back to normal soon; we don't need increased efforts in science.



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in August 2020

Research Delivers Solutions

Widespread testing can help mitigate the spread of COVID-19.[14] The gold standard COVID-19 diagnostic is **polymerase chain reaction (PCR)**, a highly sensitive molecular test that can detect coronavirus genetic material using a small sample. **Antigen tests** are cheaper and generally faster; they are particularly useful for identifying those at or near peak infection and work by detecting viral proteins. **Antibody tests** are used to determine if someone was previously infected with COVID-19 — they are not considered diagnostic tests for identifying active infections.[15,16]

Following intensely vetted research, the FDA has approved vaccines, treatments, and therapeutics for emergency use (EUA) for COVID-19. Recently approved mRNA-based vaccines rely on a technology that is new but has been under development for many years. An injection of a small bit of the virus's genetic code prompts a robust, specific immune reaction. [17] **Remdesivir**, the first FDA authorized COVID-19 treatment,[18] is an antiviral medication that can shorten recovery time for hospitalized COVID-19 patients and may reduce the need for respiratory support.[19] Similarly, proning (positioning patients to lie face down) improves oxygenation and can minimize the need for ventilation.[20] Laboratory engineered antibodies, or **monoclonal antibodies (MABs)**, that mimic the immune system's ability to fight infection may help patients with mild to moderate COVID-19 (EUAs have been granted for select MABs).[21,2] Healthcare providers are also utilizing **convalescent plasma** (blood donated from recovered COVID-19 patients that contains disease fighting ABs)[23] and **dexamethasone** (a steroid that reduces inflammation and limits the overreaction of the immune system).[24] An EUA has been granted for convalescent plasma; its use is limited to treating hospitalized COVID-19 patients in the early stages of disease or those who are hospitalized and have impaired humoral immunity.[25, 26] As new data emerges, adjustments will be made to treatment strategies to ensure maximal efficacy.

COVID-19

Then. Now. Imagine.

THEN
At the onset of the pandemic, there were no known methods of preventing or treating COVID-19.

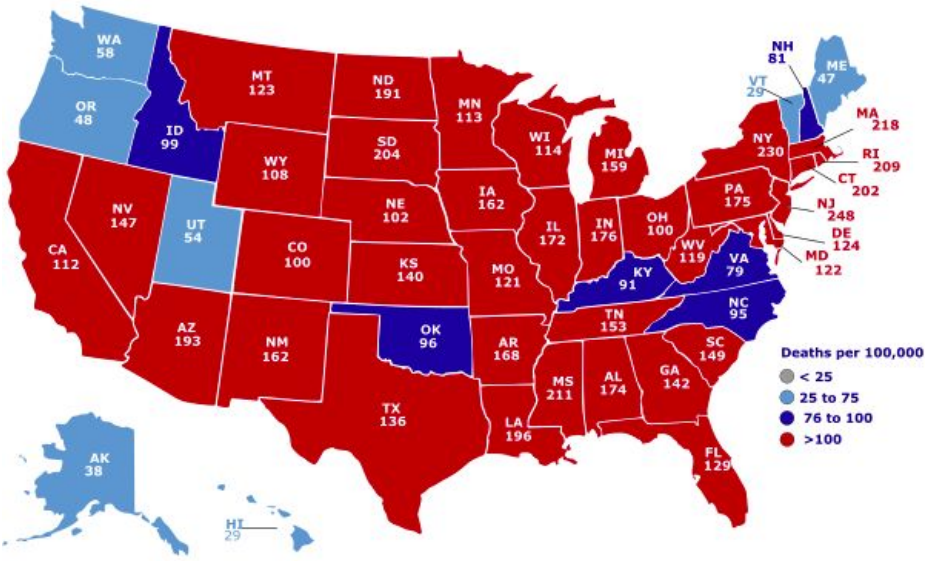
NOW
The FDA has granted emergency use authorization for several treatments and vaccines for COVID-19 and continues to evaluate emerging therapeutics.

IMAGINE
A world without COVID-19.

Sex Differences and COVID-19

Men tend to experience higher mortality rates and more severe symptoms from COVID-19. Women may mount a more adaptive and robust immune response than men, which could confer greater protection against the virus.[27] Men may also be more likely to downplay the high risk of infection and less likely to implement protective measures.[28] Leveraging research to inform intervention strategies is key to quelling COVID-19 gender disparities.

COVID-19 Death Rates per 100,000 people, February 2021



SOURCE: Statista U.S. COVID-19 death rate by state

1. "About COVID-19." CDC.2020
2. "Coronavirus (COVID-19) frequently asked questions". CDC. 2020
3. "Symptoms of Coronavirus." CDC. 2020
4. "People with Certain Medical Conditions". CDC. 2020
5. "Multisystem Inflammatory Disease".CDC.2020
6. "One in 20 people likely to suffer from 'Long COVID', but who are they?. COVID Symptom Study. 2020
7. The COVID-19 Racial Data Tracker. The COVID Tracking Project. 2020
8. "COVID-19 Advice for the Public." WHO. 2020
9. "Coronavirus in the U.S.: Latest Map and Case Count." NY Times. 2020.
10. "Coronavirus Disease 2019 Case Surveillance." CDC.2020
11. "About 80% of asymptomatic people with COVID-19 develop symptoms." Medscape.2020
12. "The average cost of hospital care for COVID-19." Healthcare Finance. 2020
13. "The COVID-19 Pandemic and the $16 Trillion Virus." JAMA.2020
14. "Why COVID-19 testing is the key to getting back to normal." NIH NIA. 2020
15. "Different types of COVID-19 tests explained". UC Davis Health. 2020
16. "Overview of Testing for SARS-CoV-2 (COVID-19). CDC.2020
17. "What's the science on DNA and RNA vaccines?". DW. 2020.
18. "FDA's approval of Veklury (remdesivir) for the treatment of COVID-19—The Science of Safety and Effectiveness." FDA.2020
19. "Final report confirms remdesivir benefits for COVID-19."NIH.2020
20. "What is proning and how may it help COVID-19 Patients". Hackensack Meridian Health. 2020
21. "Coronavirus (COVID-19) Update: FDA Authorizes Monoclonal Antibody for Treatment of COVID-19." FDA. 2020
22. "Coronavirus (COVID-19) Update: FDA Authorizes Monoclonal Antibodies for Treatment of COVID-19." FDA.2020
23. "Convalescent plasma therapy." Mayo Clinic. 2020
24. "Coronavirus Disease (COVID-19): Dexamethasone." WHO.2020
25. "FDA Issues Emergency Use Authorization for Convalescent Plasma as Potential Promising COVID-19 Treatment, Another Achievement in Administration's Fight Against Pandemic." FDA.2020
26. "FDA In Brief: FDA Updates Emergency Use Authorization for COVID-19 Convalescent Plasma to Reflect New Data." FDA. 2021
27. Takahashi et al. "Sex differences in immune responses that underlie COVID-19 disease outcome." *Nature*.2020
28. Okten et al. "Gender differences in preventing the spread of coronavirus." *Behavioral Science and Policy*.2020

Research!America 241 18th St S. Arlington, VA 22202 | 703-739-2577
www.researchamerica.org | info@researchamerica.org

The Albert and Mary Lasker Foundation is a founding partner in this series of fact sheets. www.laskerfoundation.org

R!A2.21