

# GAO Highlights

Highlights of [GAO-24-106759](#), a report to congressional requesters

## Why GAO Did This Study

Researchers estimate that 75 percent of emerging infectious diseases come from nonhuman animals. Virus field research—the collection of virus samples from wildlife and the environment and subsequent virus characterization—allows scientists to monitor viral populations, understand their biology, and obtain information that may help predict, prevent, and respond to future viral outbreaks.

Congressional requesters asked GAO to identify the benefits and risks of virus field research and whether alternative technologies may reduce the need for, or replace, field work. This report describes (1) whether field-based collection of virus samples from wildlife and the environment improves our ability to predict, prevent, or respond to pandemics; (2) risks associated with field-based virus collection, transport, and laboratory characterization to identify viruses with pandemic potential; and (3) technologies, other than field-based researchers' collection of virus samples, that may help predict future outbreaks and pandemics.

GAO conducted a literature review, convened a multiday 12-person subject matter expert meeting, analyzed documents from six agencies engaged in virus field research, and interviewed agency officials and others knowledgeable in the field. GAO identified three policy options that may help enhance the benefits and decrease the risks of virus field research.

USAID provided a written response in which they neither agreed nor disagreed with our findings.

View [GAO-24-106759](#). For more information, contact Karen L. Howard at (202) 512-6888 or [HowardK@gao.gov](mailto:HowardK@gao.gov).

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## VIRUS FIELD RESEARCH

### Policy Options to Help Reduce Risks and Enhance Benefits

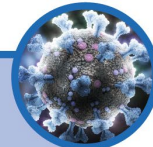
#### What GAO Found

Virus field research shows benefits in responding to outbreaks and some predictive ability. However, identifying specific preventative benefits of such research is challenging in part because determining the impact of the research on prevention outcomes is difficult to establish with certainty. Experts told us that there are multiple examples of prevention measures that have been taken in an effort to stop an outbreak from occurring, in part because of knowledge gained from virus field research.

#### Collection



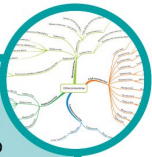
Virus field research aimed at characterizing coronaviruses identified a strain from bats that was further sent for characterization.



#### Characterization



The study of the coronavirus samples collected found that a strain could infect cells and possibly humans by binding to the angiotensin-converting enzyme 2 (ACE2) receptor often found in the lungs.



Source: GAO analysis of published literature (data); Chatchawal/dottedyeti/DC Studio/kseniyaomega/stock.adobe.com (images). | GAO-24-106759

Virus field researchers face a variety of environmental, occupational, and infectious risks while conducting virus field research. In addition, virus field sample collection is subject to varying levels of regulation. As a result, virus federal field research practices vary, with agencies using their own guidelines for exposure and infection reporting.

Alternative approaches can help reduce the risks of virus field research activities, but virus field sample collections are a necessary source of data for technologies such as disease modeling which can help predict potential transmission and outbreaks. There are also technologies and methods that can be used to reduce exposure risks present during these sample collections and contribute to the understanding of diseases and outbreaks. These technologies include satellite sensing and mapping, field drone technology, field inactivation of samples, and field sequencing.

GAO identified three policy options that may help address these challenges. These policy options are not mutually exclusive and represent possible actions that policymakers—who may include Congress, federal agencies, state and local governments, academic and research institutions, industry, and international organizations—could consider taking.

Policy Option	Opportunities	Considerations
<p><b>Policymakers could require researchers to include in federal research proposals a risk assessment that identifies the potential risks and benefits of the research as well as the personnel training to mitigate such risks.</b></p> <p>This policy option could help address the challenge of how to determine the effectiveness of virus field research in preventing pandemics.</p>	<p>Risk assessments could help focus research on high-risk human-animal interfaces where spillover into the population is most likely to occur, to maximize the potential benefit of virus field research.</p> <p>Could help identify opportunities to use other risk reduction approaches, including new technologies.</p>	<p>Standardized approaches for evaluating risks may need to be developed so that assessments are sufficiently consistent between federal agencies, international organizations, and researchers to allow for reliable and usable assessments.</p> <p>Potential benefits may not be directly connected to research (e.g., scientific capacity building) or may not become apparent for a long time.</p>
<p><b>Policymakers could establish a federal working group to develop standardized tracking and reporting guidelines for potential exposures and infections that occur during virus field work.</b></p> <p>This policy option could help address the challenge of varying levels of regulation and reporting requirements between agencies and intramural and extramural research.</p>	<p>Consistent reporting guidelines could help agencies more effectively track potential exposures or infections from virus field research, which may help agencies evaluate risks to researchers and the public.</p> <p>Could allow for better accountability of federal funding and could support further evidence-based policymaking.</p>	<p>Such efforts may involve extensive collaboration, such as between federal agencies or with international stakeholders such as the World Health Organization, to ensure that uniform guidelines are adopted for international field work.</p> <p>It may be difficult to clearly identify the types of exposures and infections that should be reported.</p> <p>Funding recipients and agencies may be hesitant to voluntarily report potential exposures and infections if they thought reports could affect future funding.</p> <p>Agencies and experts may believe that current biosafety and reporting practices are sufficient, so may consider new voluntary guidelines as an additional burden with limited value.</p> <p>It can be difficult to establish a clear linkage between specific field work and an exposure or infection, so it may be difficult to create guidelines that ensure accurate reporting.</p>
<p><b>Policymakers could fund research and development of technologies that may reduce risks of virus field research.</b></p> <p>This policy option could help address the challenge that current technologies cannot replace virus field research sample collection by humans.</p>	<p>Technologies that decrease sample handling and transportation by researchers could reduce the risk of zoonotic spillover.</p>	<p>If the replacement technologies require researchers to spend more time in the field, they may increase the risk of exposure to other diseases or hazards.</p> <p>It may be challenging to determine how much a given technology, among other investments, reduces risk, which may make it difficult to justify sustained investment.</p> <p>Technologies may force tradeoffs between reduced risks of exposure or infection and less data overall, or lower fidelity data.</p>

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