TO: Centers for Disease Control and Prevention, National Security Agency
FROM: SCUSA 72 Roundtable on Public Health and the Biomedical Revolution
SUBJECT: Bridging the Information Gap Between the Public Health System and the Biotechnological Revolution

Issue

The acceleration of the biotechnology and media sector has outstripped the nation's existing public health infrastructure. In order to promote efficiency within the public health system, it is imperative that our public health policy prioritizes accuracy, security, and transparency regarding the dissemination and receival of medical information.

Relevant National Interests

1. Reduce the power of malicious domestic actors and foreign adversaries to magnify fractures and impede the implementation of public health initiatives.
2. Secure medical supply chains against cyber threats from state and non-state actors.
3. Preserve operational flexibility through the development of public health security.
4. Develop scientific and media literacy to increase resilience against public health misinformation and disinformation campaigns.

Introduction

The WHO cautions that COVID-19 has generated an "infodemic"[1] - a challenge among institutions to respond to changing information infrastructure. Access to diverse sources and narratives can empower informed decision-making, but failures to accurately triage information can lead to adverse public health outcomes. The problem arises when the public lacks scientific and media literacy, and when institutions fail to understand the factors underlying distrust in science and public policy. The decentralization of information requires public health institutions to respond in a way that acknowledges how information both empowers and misleads. Institutions should center public engagement, education, and trust-building reciprocity as a bulwark against contradictory information. Aside from education, concrete steps must be taken to secure public health infrastructure against cyberattacks and vulnerabilities generated by the reverberation of misinformation and disinformation through the political system. Building trust in science and scientific institutions requires securing supply chains, research, intellectual property, and patient data against cyberattacks.

Misinformation and disinformation have created uncertainty and mistrust in the institutions that are intended to advise and protect against public health threats. Developing scientific literacy, cultivating investment in public health objectives, and protecting the integrity of vaccine development, infrastructure, and distribution minimizes the vulnerability of the public health system to malicious actions by foreign and domestic adversaries.

Recommendations

We recommend a dual-stream approach. The first centers on cybersecurity: protecting material and data security. The second focuses on education: improving both scientific and media literacy.

<u>Cybersecurity: Strengthening Security Over Materials and Data</u>

Pillar 1: Bolstering Material Security via Public Health Channels

The Cybersecurity and Infrastructure Security Agency (CISA) should invest in public-private partnerships with vaccine distribution companies to develop robust cybersecurity measures. We propose developing an industry-wide unified endpoint management (UEM) system among pharmaceutical companies, bolstering security standards within logistic track-and-traceability technology, and ensuring industry-wide use of anti-phishing and ransomware technology. The CISA should also work to protect intellectual property and defend distribution chains and medical technologies against intrusion by state and non-state actors.

Pillar 2: Protecting Data Security within the Public Health Sector

We recommend partnering with local/state/tribal governments to offer vaccine appointments over a centralized federal digital platform. In addition, the federal government should formally discourage local/state/tribal governments from using 3rd-party platforms to schedule vaccine appointments. The proposed platform should impose safeguards to prevent vaccine appointment overscheduling. The Federal Trade Commission (FTC) should extend its opt-in public service announcement system regarding digital vaccine scams to funded advertisements on digital, television, and radio platforms. The Center for Disease Control (CDC) should partner with the National COVID Cohort Collaborative to centralize US medical records across hospital systems, and implement a long-term task force dedicated to maintaining aggregate health data to build long-term resilience against future public health crises. Congress should invest funds to develop cybersecurity within hospital systems, specifically within the following domains: IT personnel understaffing, vulnerabilities within medical devices, and phishing/ransomware. The language of HIPAA should be updated to provide direct standards regarding cybersecurity compliance within medical systems.

Education: Improving Scientific and Media Literacy

Pillar 1: Supporting Scientific Literacy and Engagement

Scientific literacy should comprise an understanding of what constitutes scientific evidence, what generates credibility, and how scientific inputs, logistical constraints, risk assessments, and community context affect public health decision-making. K-12 education should emphasize dynamic understanding of scientific thinking and scientific debate. Therefore, testing metrics and curricula should not exclusively focus on reciting content.

The public must understand how science operates, but public health institutions must also understand sociological conditions that inform interpretation of information and response to public health policy. Public health decision-making and communication should integrate diverse forms of expertise, community knowledge, and bidirectional citizen science. Policy should prioritize empowering communities with the scientific tools needed to conduct local advocacy while providing institutions with context-specific information about how science, public health, and social conditions play out in communities. Federal, state, local, and tribal governments should cultivate partnerships with communities and community-oriented organizations fostering learning spaces “on the ground.” Governments should have sufficient autonomy to facilitate dissemination of information through diverse manners and multiple sources while meeting baseline standards of transparency and veracity.

Pillar 2: Media Literacy in K-12 Education

Media literacy includes the ability to fact-check information using primary and supporting sources, and allows the general population to independently distinguish between valid information, misinformation, and disinformation. School curricula especially can support media literacy and spread academic journals, science techniques, and even equipment. The US lags behind many competitors in media literacy,[2] a skill key to trust in good policy and public health.[3] Last Congress’ Digital Citizenship and Media Literacy Act would provide for K-12 media literacy programs by grants from the Secretary of Education. A grant to a state education agency would create and support a media literacy advisory council to aid “local educational agencies in [developing] units of instruction on media literacy,” “identify barriers and opportunities for implementing media literacy,” and “gather data or conduct research to assess the media literacy and digital citizenship competencies of students, teachers, or specialized instructional support personnel.”[4] This bill would be a great step in modernizing students’ understanding of information and related systems.

Bibliography

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CYBERSECURITY SOURCES

How to improve COVID-19 supply chain cybersecurity
Protecting the cold chain: Cyber resilience and our health
The Dysfunctional Vaccine Rollout Is Creating Even More Opportunities for Cybercriminals
Coronavirus Advice for Consumers
The National COVID Cohort Collaborative (N3C): Rationale, design, infrastructure, and deployment
13 Ways to Prevent Data Breaches in Healthcare