

RECOMMENDATIONS

JULY 2020 · EVIDENCE-BASED PRACTICE FOR PUBLIC HEALTH EMERGENCY PREPAREDNESS AND RESPONSE

Recommendation 1: Appoint a Public Health Emergency Preparedness and Response (PHEPR) Evidence-Based Guidelines Group

The Centers for Disease Control and Prevention (CDC) should appoint and support an independent group to develop methodologically rigorous and transparent evidence-based guidelines for PHEPR practices on an ongoing basis. This group should take the methodology developed by the committee as a starting point, but should also be charged with its continued development based on the full range of available evidence, incorporating advances in the synthesis of quantitative, qualitative, and experiential evidence. The group should also identify and communicate key PHEPR evidence gaps in annual reports to CDC and Congress to guide future research on the effectiveness of PHEPR practices.

Recommendation 2: Establish Infrastructure to Support Ongoing PHEPR Evidence Reviews

CDC should establish the infrastructure, policies, and procedures needed to ensure a sustained process for conducting and updating evidence reviews and generating evidence-based practice guidelines, in collaboration with other relevant federal agencies. The infrastructure should include an open-access repository for evidence-based PHEPR practices.

Recommendation 3: Develop a National PHEPR Science Framework

To enhance and expand the evidence base for PHEPR practices and translation of the science to the practice community, CDC should work with other relevant funding agencies; state, local, tribal, and territorial public health agencies; academic researchers; professional associations; and other stakeholders to develop a National PHEPR Science Framework so as to ensure resourcing, coordination, monitoring, and execution of public- and private-sector PHEPR research. The National PHEPR Science Framework should do the following:

- Build on and improve coordination, integration, and alignment among existing PHEPR research efforts (e.g., the National Institute of Environmental Health Sciences Disaster Research Response Program), and ensure integration of these efforts with the activities of the PHEPR evidence-based guidelines group proposed in Recommendation 1.
- Recognize and support PHEPR science as a unique academic discipline within the broader public health field to address the substantial need for research and diverse and qualified researchers.
- Create a common, robust, and forward-looking PHEPR research agenda that supports advancement beyond traditional epidemiological research to include research in the fields of social science, implementation science, complex interventions, and quality improvement, as well as intervention, operations, systems, and cost-effectiveness research.
- Support meaningful partnerships between PHEPR practitioners and researchers, and develop strategies to better ensure that PHEPR research is relevant to practice.
- Prioritize sustainable strategies and mechanisms for the translation, dissemination, and implementation of PHEPR research.

Recommendation 4: Ensure Infrastructure and Funding to Support PHEPR Research

CDC, in collaboration with other relevant funding agencies, should ensure adequate and sustained oversight, coordination, and funding to support a National PHEPR Science Framework and to further develop the infrastructure necessary to support more efficient production of and better-quality PHEPR research. Such infrastructure should include

- sustained funding for practice-based and investigator-driven research that allows for the progression from exploratory to effectiveness to scale-up research and encourages researcher diversity;
- support for partnerships (e.g., with academic institutions, hospital systems, and state, local, tribal, and territorial public health agencies) to facilitate collaboration in research on the preparedness, response, and recovery phases of a public health emergency;
- development of a rapid research funding mechanism and interdisciplinary rapid response teams with applied research expertise (similar to CDC's Epidemic Intelligence Service) for deployment to conduct just-in-time studies related to the implementation of PHEPR practices at the time of events; and
- enhanced mechanisms to enable routine, standardized, efficient data collection with minimal disruption to delivery of services (including preapproved, adaptable research and institutional review board protocols and a research arm within the response structure).

Recommendation 5: Improve the Conduct and Reporting of PHEPR Research

CDC, the Office of the Assistant Secretary for Preparedness and Response (ASPR), the National Institutes of Health, the Department of Homeland Security, the National Science Foundation, and other relevant PHEPR research funders should use funding requirements to drive needed improvements in the conduct and reporting of research on the effectiveness and implementation of PHEPR practices. Such efforts should include

- developing guidance on and incorporating into funding decisions the use of appropriate research methods as determined by the level of research (e.g., exploratory, effectiveness, scale-up) and type of research question(s) being addressed, including but not limited to encouraging the use of concurrent comparison groups when feasible and assessment of baseline measures;
- establishing guidelines for evaluations using different designs and evidence streams and concepts from emerging evaluation approaches, such as complex intervention evaluations; and
- developing reporting guidelines, including essential reporting elements (e.g., addressing contextual factors, confounding factors, and negative results), in partnership with professional associations, journal editors, researchers, and methodologists for PHEPR intervention studies.

Recommendation 6: Pursue Efforts to Further a Process of Quality Improvement to Enhance the Quality and Utility of After Action Reports (AARs)

CDC, in collaboration with ASPR and the Federal Emergency Management Agency, should convene an expert panel of relevant federal agencies, SLTT public health agencies, and professional associations to advance a process for quality improvement at the local, regional, state, and national levels to enhance the quality and utility of after action reports and support their use as sources of evidence for evaluating the effectiveness of PHEPR practices. This process should foster a culture of improvement in public health emergency response and include, but not be limited to, discussions aimed at

- raising standards and expectations regarding the quality of information reported in AARs by defining the essential core elements of a PHEPR AAR;
- establishing an independent review panel with a standardized after action reporting process, with the aims of reducing bias and increasing the utility of AARs produced following public health emergency responses;
- establishing and maintaining a national repository of AARs or of reports based on analysis of AARs that is readily accessible to support the dissemination of key findings, lessons learned, and best practices for public health emergency response; and
- exploring the relevant privacy issues and the protection of information in AARs from use in legal proceedings or other punitive actions against practitioners and organizations, as has been done for "peer-review" data in other fields (medicine, aviation, and occupational health).

Recommendation 7: Support Workforce Capacity Development and Technical Assistance Programs for PHEPR Researchers and Practitioners

CDC and ASPR should work with professional and academic organizations that represent multiple disciplines to guide and support the creation of the workforce capacity development and technical assistance programs necessary to ensure the conduct of quality PHEPR research and evaluation and improve the implementation capacity of SLTT public health agencies. Such efforts should include

- developing a research training infrastructure and career development grants—institutional and individual predoctoral, postdoctoral, loan repayment, and career awards—to develop and support researchers in PHEPR in order to address research gaps in the field;
- providing training grants so that PHEPR researcher and practitioner teams can learn how to develop PHEPR practices that are grounded in science and theory and to evaluate the effectiveness and implementation of PHEPR practices using rigorous and appropriate designs;
- providing ongoing technical assistance and peer networking for both PHEPR researchers and practitioners; and
- creating a training and certification program for CDC project officers and state preparedness directors to ensure their familiarity with evidence-based practices and promote consistent creation and evaluation of real-world evidence as captured in after action reports.

Recommendation 8: Ensure the Translation, Dissemination, and Implementation of PHEPR Research to Practice

CDC should use a coordinated implementation science approach to ensure that the evidence-based practice recommendations resulting from the PHEPR evidence-based guidelines group proposed in Recommendation 1 achieve broad reach and become the standard of practice of the target audience. Strategies to this end include

- incorporating evidence-based practices into the *Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health* guidance document;
- building evidence-based practices into the design of and funding decisions for the Public Health Emergency Preparedness Cooperative Agreement program;
- incentivizing and requiring state, local, tribal, and territorial public health agencies to test and evaluate new or adapted practices and embed program evaluations into routine operations to help better understand whether evidence-based practices worked, under what conditions, with what impacts and consequences, and at what cost;
- publishing evidence-based practices in CDC communication platforms (e.g., *Morbidity and Mortality Weekly Report*, blogs) and partnering with public health professional organizations, such as the Association of State and Territorial Health Officials and the National Association of County & City Health Officials (NACCHO), to disseminate evidence-based practices;
- incorporating the requirement of utilizing evidence-based PHEPR practices into such processes as the Public Health Accreditation Board accreditation and such recognition programs as NACCHO's Project Public Health Ready; and
- incorporating implementation science principles, such as the conduct of research to understand core components required for intervention effectiveness, into PHEPR research.

PRACTICE RECOMMENDATIONS

A key element of the committee's task was to conduct systematic reviews of selected PHEPR practices. The following practice recommendations resulted from the committee's four systematic reviews:

- Engaging and training community-based partners (CBPs) serving at-risk populations is recommended as part of SLTT public health agencies' community preparedness efforts so that those CBPs are better able to assist at-risk populations they serve in preparing for and recovering from public health emergencies. Recommended CBP training strategies include
 - the use of materials, curricula, and training formats targeted and/or tailored to the individual CBPs and the at-risk populations they serve; and
 - train-the-trainer approaches that utilize peer or other trusted trainers to train at-risk populations.

CBP engagement and training should be accompanied by targeted monitoring and outcome evaluation or conducted in the context of research when feasible so as to improve the evidence base for engagement and training strategies.

- Inclusion of electronic messaging channels (e.g., email) is recommended as part of SLTT public health agencies' multipronged approach for communicating public health alerts and guidance to technical audiences in preparation for and in response to public health emergencies. The practice should be accompanied by targeted monitoring and evaluation or conducted in the context of research when feasible so as to improve the evidence base for strategies used to communicate public health alerts and guidance to technical audiences.
- Implementation of quarantine by SLTT public health agencies is recommended to reduce disease transmission and associated morbidity and mortality during an outbreak only after consideration of the best available science regarding the characteristics of the disease, the expected balance of benefits and harms, and the feasibility of implementation.

The committee found that despite widespread use and minimal apparent harms, there is insufficient evidence to determine the effectiveness of activating a public health emergency operations center (PHEOC) or of specific PHEOC components at improving response. This does not mean that the practice does not work or should not be implemented, but that more research and monitoring and evaluation around how and in what circumstances a PHEOC should be implemented are warranted before an evidence-based practice recommendation can be made. Activating a PHEOC is a common and standard practice, supported by national and international guidance and based on earlier social science.

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