

Public Health Policy Actions to Address Health Issues Associated with Drought in a Changing Climate

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Introduction

Over the last century, droughts caused more deaths internationally than any other weather-related extreme event, including floods, hurricanes, etc. Droughts in the United States, however, are not generally thought of as public health threats, even though there are known associations between droughts and negative health outcomes. As the progression of climate change continues, more frequent and intense drought events are expected to occur both globally and within the United States, with correspondingly higher rates of resultant health impacts.¹ By raising awareness of drought as a health issue and creating drought preparedness plans now, policymakers, climatologists, and public health professionals can begin to mitigate some of the harmful effects of drought on health.

This article seeks to outline the prevalence of drought in the United States, both present and future, examine the corresponding health impacts, and identify legal and policy strategies to address these concerns. The article will also review our efforts in leading drought and human health workshops across the United States, and review how our work with key stakeholders has reinforced our policy recommendations. The policy discussion will encompass recommendations at federal, state, and local levels, and will further encourage policymakers and other stakeholders to prioritize the creation and development of a drought and health community of practice. By shifting public perception of droughts and drought-related events as public emergencies and engaging legal and policy solutions, states and local communities can be better prepared for drought-associated health impacts, which, in turn, can reduce health risks and save lives.

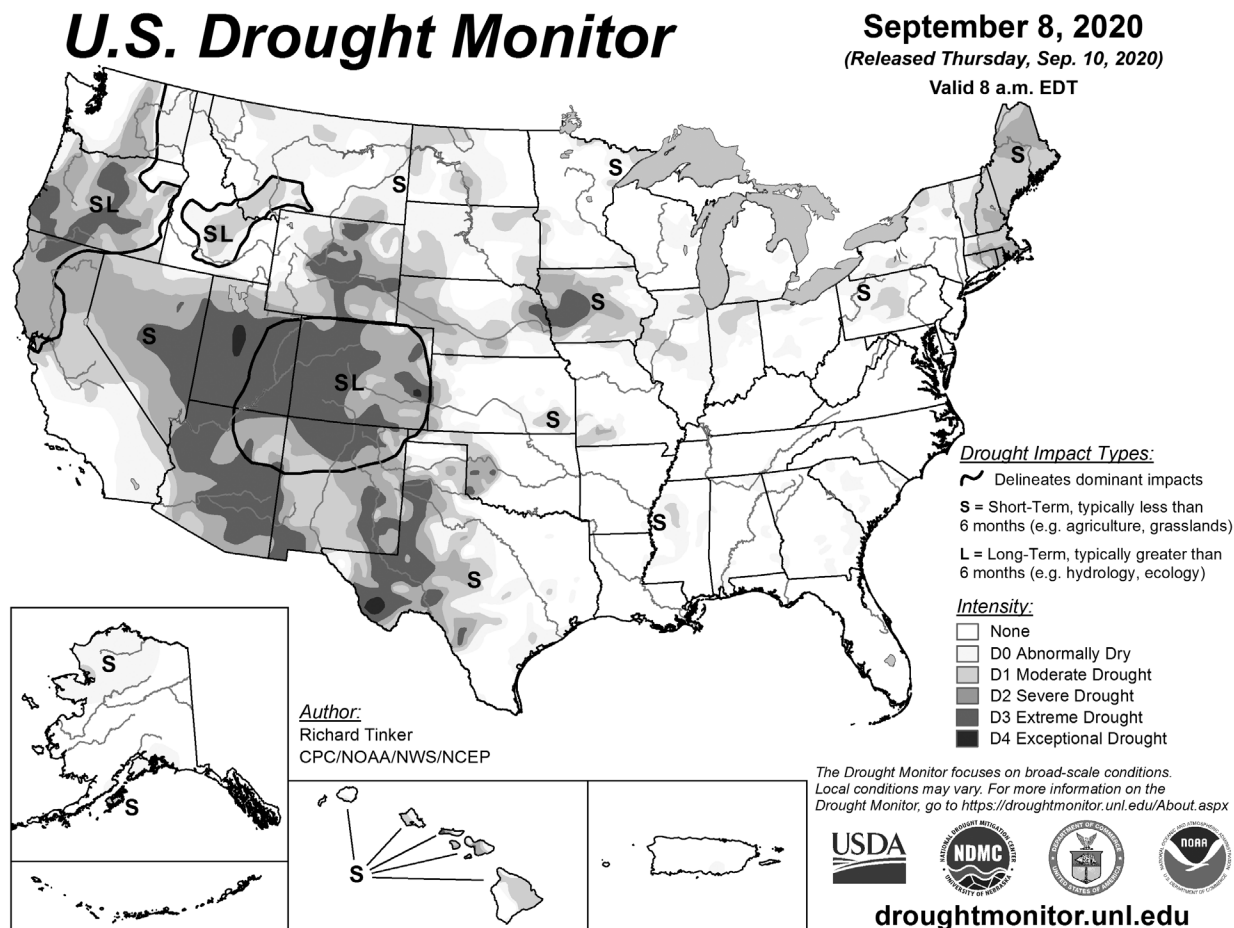
Overview of Drought

Droughts are reoccurring events in many parts of the world, and the frequency and risks are projected to increase with anthropogenic climate change.² The general definition of drought is an extended period of dryness that leads to hydrological imbalances.³ These imbalances can cause severe land degradation, catastrophic agricultural losses, and other economic burdens.⁴ Unlike other natural disasters, drought is a slow evolving phenomenon that lacks a clear start and end date. This can make it difficult to monitor the ways that

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Figure 1

The map represents the location and magnitude of drought across the United States. This is a product of the U.S. Drought Monitor. Products are freely available at droughtmonitor.unl.edu.



drought is disrupting other systems (i.e. public health, water resources, and infrastructure).

Since the 1950s, rising global temperatures and changes in precipitation patterns have increased the frequency and intensity of droughts in certain parts of the world.⁵ These trends are most apparent in the Western and Southwestern parts of the United States.⁶ Mechanisms contributing to drought can manifest in multiple different ways. Reduced water runoff or shifts to earlier peak flow from spring snowpack, which sustain snow-fed rivers, can lead to “snowpack droughts” in the western United States.⁷ Rising temperatures at higher elevations can contribute to these conditions.⁸ Independent of climatic factors, increased freshwater demand from growing populations can also strain water resources and lead to drought conditions.⁹ All of these issues magnify the threat to water availability and can catalyze water insecurity issues.

The U.S. National Oceanic and Atmospheric Administration estimates that droughts in the United States, per event, are the second costliest climate-related disaster.¹⁰ The same report estimates that droughts have resulted in the second highest number of deaths compared to other climate-related disasters. Over the last forty years, twenty-seven drought events have occurred that have each exceeded \$1 billion in damages, with the total costs of these events surpassing \$253 billion.¹¹ Heatwaves associated with these droughts caused over 3,865 deaths.¹²

Historically, one of the more severe examples of the outcome of drought is the Dust Bowl period of the 1930s, which intensified the Great Depression.¹³ At the time, the Dust Bowl cost the U.S. economy approximately \$1 billion, which equates to nearly \$17 billion today.¹⁴ In addition to the economic hardships, individuals and families that lived in the affected area

likely experienced poor air quality due to increased particulate matter and mental stress from loss of work.¹⁵ Health agencies were noted to be overburdened by the migrant populations during this time.¹⁶ The 1988-1989 drought was the most costly drought in U.S. history at \$40 billion (or ~\$80 billion today).¹⁷

By June of 1988, the US Department of Agriculture declared more than half of all U.S. counties as drought disaster areas, and the concurrent heat wave resulted in an estimated 5,000 excess deaths.¹⁸ In 2012, the most extreme and expansive U.S. drought covered 65.5% of the contiguous United States, which included 36 states.¹⁹ More than 123 million U.S. residents were living in moderate or worse drought conditions, and the economic burden on the United States was more than \$30 billion.²⁰ The 2012 drought's associated summer heatwave caused 123 direct deaths, but the estimate of the excess mortality due to heat stress is unknown.²¹ California's recent multiple year historic drought caused billions of dollars of economic damage.²² Although these events highlight some of the more impactful events that have occurred, drought is a common phenomenon in the United States and can occur in any region (Figure 1).

Droughts can produce conditions that are ideal for other disasters, such as dust storms and wildfires. In the Western U.S., wildfire season has shifted and extended, resulting in more acres burned as the climate has changed.²³ In the southwestern U.S., dust storm activity intensified from 1988-2011.²⁴ Although human activity contributes to these events, droughts can cause the underlying environmental change that is needed to produce ideal conditions for these events to occur.

Link Between Drought and Public Health

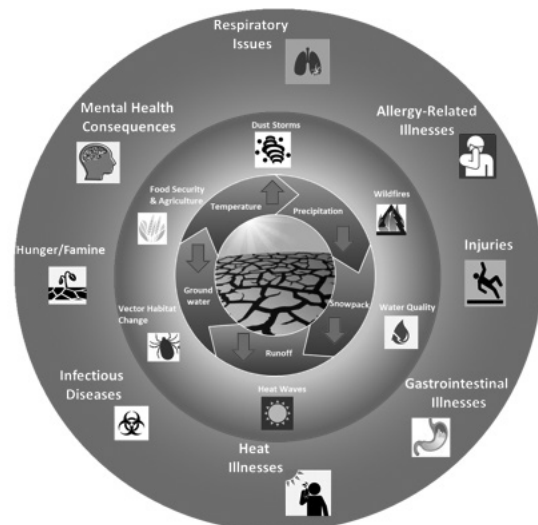
The body of evidence demonstrates that drought is associated with an array of human health effects resulting from changes in the physical environment (Figure 2). Drought has been linked with infectious disease (such as Valley Fever), food insecurity, and stress that leads to adverse mental health effects.²⁵ Premature mortality or cardiovascular disease may be linked to drought-induced reduction in air quality.²⁶ While drought is a broad geographic exposure that impacts a large population, vulnerability may vary based on social determinants of health.

Population subgroups are especially pertinent, as demographic characteristics can increase community susceptibility to drought related hazards.²⁷ Populations that are reliant on agriculture for livelihoods or sustenance are vulnerable to food insecurity, malnutrition, and the accompanying adverse mental health effects when drought causes economic loss.²⁸ Children and the elderly are both vulnerable to various drought-related

health outcomes, such as air- and waterborne diseases.²⁹ Seniors living in care facilities also experience morbidity due to water-related stresses on electricity and HVAC systems.³⁰ Studies have also demonstrated that youths and working age males are vulnerable to adverse mental health effects in rural areas.³¹ Reliance on small or inadequately maintained water systems puts populations at risk of morbidity from exposures in drinking water or exposures resulting from reduced use of limited water resources for hygiene and food washing.³² Lastly, lowered surface water volumes put recreational water users at risk of waterborne disease and injury from swimming or boating accidents.³³ While not confined to rural locations, oftentimes rural populations experience greater burdens from drought compared to populations in non-rural geographies. As illustrated by these examples, the health outcomes from drought can be complex and multiple partners are needed to address these issues. The best way of addressing health outcomes is by reducing the potential impacts of drought. This can come from improved water conservation, more drought resistant crops, and other drought mitigation efforts. It could also come from curbing greenhouse gas emissions that are increasing the frequency and intensity of droughts. Even with these other efforts, it is important to engage public health officials in addressing drought. However, this complexity can make it difficult for public health officials to implement interventions, but education and information sharing provides opportunities for preparedness activities.

Figure 2

Diagram demonstrates the variety of ways that drought can alter human health. (Courtesy of Azar Abadi).



Stakeholder Engagement: Workshops/ Summit

The range of impacts of drought in the United States calls for mitigation and response strategies from a diverse spectrum of stakeholders. The health effects of drought have an especially broad reach, affecting communities across the country and impacting populations both rural and metropolitan. In order to adequately prevent and respond to the many facets of these effects, stakeholders from fields such as public health, climatology, healthcare, and emergency management, representing each region of the country, need to build collaborative networks and coordinate their drought response and prevention efforts.

In 2019, under the auspices of the National Oceanic and Atmospheric Administration (NOAA) National Integrated Drought Information System (NIDIS), we began efforts to create and strengthen partnerships between the various stakeholders involved in drought response. We began our work on this project by holding a National Drought and Health Summit in Atlanta, Georgia on June 17-19, 2019. The Summit brought together local, state, federal, tribal, non-profit, and academic participants for a discussion around the linkages between droughts and human health. In organizing the Summit, we wanted to include a broad range of sectors, with a focus on those whose work may be affected by drought and its health impacts. In addition to discussions of the issues that various stakeholders face when confronted with drought-related events, the Summit sought to provide practical plans of action for public health agencies and organizations to counter the health hazards associated with drought, which, in turn, can reduce negative outcomes and save lives.

Fifty participants attended the Summit and engaged in conversations to share their work currently being done relating to drought and its impact on human health. The Summit featured 32 speakers from a broad range of organizations, who spoke to drought-related topics such as: water quality, air quality, vulnerable populations, infectious diseases, environmental tracking, mortality, the role of public health and healthcare in drought activities, and a report-out on federal drought and health activities with speakers from NOAA, NIDIS, and the Centers for Disease Control and Prevention (CDC). Each of these presentations provided insight into the current state of knowledge for research and preparedness activities that connect to drought. The Summit concluded with a facilitated collaborative discussion to give participants the opportunity to brainstorm next steps and action items to address drought and human health in their various roles. The discussion also demonstrated

areas where additional action or improvements were needed to strengthen the public perception between drought and health and encourage a more efficient and effective response. These action items fell under seven broad categories: Building Collaboration, Communication and Education, Coordination and Implementation, Data and Indicators, International Synergies, Research, and Resources and Support.

One of the benefits of the facilitated discussion was to document the commonalities and trends in responses, demonstrating to participants that while they may approach drought from different occupational perspectives, their concerns and methods for addressing those concerns were quite similar. By bringing together individuals from a diverse set of professional backgrounds, the Summit and the facilitated discussion provided a unique opportunity for public health professionals, climatologists, healthcare professionals, and other drought-related researchers to form connections that may not have otherwise occurred. These connections then led to discussion of how collaboration could occur between groups to further existing research or other drought activities.

After the national summit, we began a series of six regional workshops across the United States. As drought-related events may present differently in certain regions of the country, these regional workshops allowed us to further identify issues and strategies that may be unique to each region. The first workshop was held in St. Paul, Minnesota in November 2019, and the second was held in Tucson, Arizona in February 2020. (The remaining regional workshops have been postponed until 2021 due to the COVID-19 outbreak.) Each of the regional workshops concluded with a facilitated discussion, identical to the one held at the national summit, so that any trends among responses could be identified and analyzed.

Legal and Policy Actions

At both the Summit and the regional workshops, participants mentioned the need for policy solutions that would involve lawmaker engagement and extend beyond the reach of climatologists, academic researchers, or public health practitioners. Taking a policy approach of alleviating the health effects of drought requires a careful examination of which legal and regulatory structures bear on drought preparedness and response. As it stands, drought is a complex, multifaceted issue that is touched by a wide range of federal and state laws and regulations, including water use and supply laws, land use and zoning regulations, and public health laws. Each of these domains addresses a different component of drought, and while they each

have impacts on the health of the community, we have chosen to focus specifically on the public health legal frameworks that may be utilized to address drought. Drought is a disaster, albeit a slow-moving one, and calls for the same tools that are used to address other types of disasters. Under traditional emergency management or disaster response models which underlie disaster-response policies and procedures, there are five primary stages of a disaster risk management: prevention, preparedness, response, recovery, and mitigation.³⁴ Each of the policy recommendations made in this article relate to one or more of those stages. By leveraging existing disaster response policy structures at both the federal and local level and creating a community of practice consisting of indi-

tionally, as drought can heavily impact economic livelihoods, health is often viewed as a secondary concern to more immediate affects such as crop loss. By reframing how drought is considered, policymakers and public health officials can engage policy mechanisms that may often be overlooked. One of the primary examples of such a mechanism is the public health emergency declaration. By declaring drought a public health emergency, additional federal resources and funds could be used to facilitate response efforts by local health departments or emergency management agencies, and to provide training and education to community stakeholders regarding the health impacts of drought. Such funding and education would also broaden awareness of the issues surround-

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viduals from government, public health, healthcare, climatology, and emergency management, awareness of drought as a health concern can be heightened and successful mitigation and response efforts can begin to be implemented.

Emergency Declarations

As previously noted, while the health impacts of drought have been researched extensively, drought does not typically receive the same level of recognition as other public health risks. Therefore, many of the legal tools that are made available to communities affected by a public health emergency are not often utilized in drought circumstances, e.g. emergency funding, emergency public health messaging, etc. The lengthy duration of drought and the slow progression of the resultant health impacts do not instill the same sense of urgency as other disasters, such as hurricanes or floods. This is problematic, because while droughts can be as devastating as other natural disasters in terms of economic and health impacts, the framing of drought as a more passive disaster and the tendency to only retroactively acknowledge the health impacts delays response functions until after the drought has already had its effects on a given community. Addi-

ing drought and health, and could lead to better long-term prevention measures to decrease these impacts before they occur.

In the United States, emergency or disaster declarations can occur at the federal, state, and local level to allow for a more comprehensive response to a given emergency. Each type of declaration confers a different level of authority. For example, federal declarations supersede state level declarations, which correspondingly supersede local declarations. Additionally, each level of declaration includes the ability to waive certain laws, regulations, or ordinances. State declarations can include waivers of state-level laws or regulations, but federal laws or regulations can only be waived if specific federal declarations are in place. The determination of which declaration is applicable to a given event is decided by the size and scope of the disaster, and of the given jurisdiction's ability to respond. Federal declarations are intended to supplement state response when a disaster or emergency overwhelms a state's resources.

Federal declarations can come in multiple forms, including presidential emergency declarations under the National Emergencies Act and presidential disaster declarations under the Stafford Act.³⁵ These kinds

of declarations are most frequently used for acute natural disasters, such as hurricanes, tornadoes, or acts of terrorism. Separate from these declarations are public health emergency declarations, which can only be made by the Secretary of the U.S. Department of Health and Human Services (HHS).³⁶ In addition to other benefits, public health emergency declarations give the HHS Secretary the ability to use the Public Health Emergency Fund to respond to a given crisis.³⁷

Under the Public Health Service Act, the term “public health emergency” is not defined.³⁸ Rather the HHS Secretary is given broad authority to make a declaration if “a disease or disorder presents a public health emergency” or if “a public health emergency, including significant outbreaks of infectious diseases or bioterrorist attacks, otherwise exists.”³⁹ Since this leaves the determination of such an emergency to the discretion of the HHS Secretary, these types of declarations can be used for any number of events or circumstances that may impact public health. Historically, public health emergencies have been declared for acute severe weather incidents, such as hurricanes or tornadoes, and in cases of disease outbreak, such as H1N1 influenza, Zika virus, and COVID-19. On six occasions, all occurring between 2008-2011, the HHS Secretary made public health emergency declarations as a result of heavy floods.⁴⁰ Additionally, in 2018, the HHS Secretary declared a public health emergency for the wildfires occurring in California that year.⁴¹ While wildfires and floods can be cascading effects of drought and therefore could make these declarations drought-related, no such public health declaration has ever been explicitly used for a drought event.⁴² Outside of the public health domain, the Federal Emergency Management Agency (FEMA) has issued 46 disaster declarations for drought since 1965.⁴³ None of these declarations, however, have been expanded to include a corresponding public health emergency declaration. Similar general disaster declarations for drought have occurred at the state level with some regularity, but again, the public health component has not been directly included.

Recent years have seen a call by legal researchers and policymakers to revitalize and adapt existing laws to address the changing landscape of public health and the current crises that stand to affect the broader population.⁴⁴ This reinforces the idea of using public health emergency declarations to address novel situations that nonetheless have major impacts on public health. For example, in 2017 then acting HHS Secretary Eric Hargan issued a public health emergency declaration to reflect the seriousness of the opioid crisis.⁴⁵ This was a relatively nonconventional use of a public health declaration, as the opioid crisis is neither fixed in time nor

location like other more common emergencies, such as severe weather incidents. Additionally, similar to drought or more broadly, climate change, the opioid crisis is a comparatively slow-moving disaster, with its extensive impact on public health only recognized after a relatively lengthy period of time.

Declaring the opioid crisis to be a public health emergency heightened visibility of the issue and brought it to the attention of the broader community, as well as to policymakers.⁴⁶ Framing the opioid crisis as a community-wide problem allowed public health leaders to approach the issue holistically, rather than seeking solutions limited to an individual level.⁴⁷ Importantly, it also rallied the public to support measures taken by public health leaders to alleviate the opioid crisis. For a situation like drought, which has fallen largely under the purview of climatologists and other professionals not in the health field, reframing the situation as a population-wide health crisis could dramatically change the way communities prepare and respond to drought emergencies.

In addition to federal declarations, each state’s governor has the power to make emergency declarations, with 24 states having a specific “public health emergency” declaration designation.⁴⁸ The way that state governments respond to declarations can help inform how the federal government responds to analogous federal declarations. The opioid crisis declarations exemplified this process, as six states made opioid-related emergency declarations prior to the occurrence of the federal declaration.⁴⁹ For example, in Arizona, the state health department used the urgency of the declaration to pass legislation and implement other immediate response measures, while longer term steps were developed to sustain the efforts.⁵⁰ Similar such declarations have occurred for environmental concerns as well. For example, in 2017, the governor of Indiana issued a Declaration of Disaster Emergency for lead exposure due to lead levels in soil.⁵¹ This declaration included provisions for community forums on lead exposure, lead testing clinics, funds for additional staff and resources to educate on lead exposure and testing, as well as mental health training for those affected by lead exposure.⁵² The declaration also included requests for legislative action at the state and federal level, and for planning efforts to address infrastructure improvements to alleviate lead exposure.⁵³ In addressing drought, policymakers can use this same method of creating a multi-tiered approach, with an immediate foundation of response on which to build long-term, sustainable solutions. As the steady progression of climate change increases the frequency of drought events and intensifies the resultant health impacts, any successful mitigation strategies will need

to avoid relying solely on quick-fix approaches, but rather focus on consistent, long term tactics.

There are limitations to using public health emergency declarations. Droughts arise steadily and can persevere for long periods, and thus may outlast the strict time duration often included in a federal or state declaration's statutory language. Also, there are concerns that if public health emergency declarations are used too frequently, the public will become complacent in confronting different emergencies and begin to disregard the warnings of their public health officials.⁵⁴ These concerns are valid, and as such, any public health emergency declarations for drought should be used with discretion. However, even a rare usage of these declarations would serve to raise awareness of drought as a critical public health issue. As demonstrated, public health emergency declarations have already become accepted tools for addressing climate-related events such as wildfires or floods. As the linkages between drought and these cascading events continue to be established, climatologists and public health professionals have the opportunity to heighten public perception of drought events as equally important public health emergencies.

State and Local Responses

While federal and state declarations are important tools for immediate response to drought and for raising national awareness of drought as a public health issue, state and local health departments bear much of the responsibility of implementing and enforcing operational measures to curb public health risks in the community. Federal entities provide policy guidance and agenda-setting with funding. State and local health departments create the actionable plans that more directly impact communities and individuals. Their prioritization of potential risks determines which enforcement measures will receive the most funding and support from federal authorities. In order to include drought in these efforts, environmental and climate events need to be an ingrained part of any public health risk or hazard assessments.

Risk Assessments

In order for drought to become an established part of public health planning efforts, public health authorities must recognize it as a risk or threat to their respective jurisdictions. To achieve this recognition, climatologists and other drought stakeholders must be included in regularly occurring public health risk assessments. Under federal funding requirements, these assessments are already occurring and provide an opportunity for engagement from those currently conducting drought activities.

In the U.S., there are two major federal funding sources relating to public health and healthcare preparedness and response. The Public Health Emergency Preparedness (PHEP) program, administered by the CDC, was created to strengthen state and local public health capabilities for emergency preparedness and response.⁵⁵ The Hospital Preparedness Program (HPP), administered by the Assistant Secretary for Preparedness and Response (ASPR), is a similar cooperative agreement, which focuses on enhancing healthcare capabilities through the creation and development of regional healthcare coalitions.⁵⁶ Both programs function through cooperative agreements with all 50 states, with funds then dispersed by the state health departments to local health departments and healthcare coalitions as sub-awardees of the federal grants.

As a funding requirement, both PHEP and HPP awardees and sub-awardees must participate in a jurisdictional risk assessment at least once every five years.⁵⁷ These jurisdictional risk assessments are typically conducted at the state level, facilitated by either the state health department or a contracted entity, with PHEP or HPP awardees such as local health departments, healthcare coalitions, federally qualified health clinics, and/or tribal representatives, participating to determine the highest priority risks for the state. In addition to this requirement, healthcare coalitions and health departments must conduct annual hazard vulnerability assessments.⁵⁸ Both of these assessments determine and prioritize the threats and hazards that may affect a given jurisdiction, with the results dictating the development of preparedness and response plans, as well as the allocation of funding and effort for exercises and other preparedness activities for the following year.

As these assessments are conducted in every U.S. state and in localities across the country, they provide a unique and reoccurring opportunity to classify drought as a high-priority threat to public health. As much as is practicable, state climatologists and other climate scientists should be included in any state-level assessments to provide education and guidance on the risks and hazards involved in drought and other climate events. While engaging with public health assessments is critical for whole community solutions, involvement in HPP assessments will allow for more comprehensive planning as it relates to healthcare by providing drought education to healthcare providers and addressing potential access to care issues by those most commonly affected by drought, among other measures.

In addition to the existing assessments, local health departments should consider conducting targeted, drought-specific assessments for their communities.

Currently, environmental risk assessments regularly occur within public health to determine the occurrence or severity of risk of exposure to harmful chemicals or toxic materials. With this groundwork of establishing the causal connection between an environmental stressor and health impacts already in place, there is the opportunity to expand the understanding of environmental risks to include drought and climate

By bringing together stakeholders from across disciplines and engaging legal mechanisms already in place, we can reduce the negative health impacts of drought and help ensure better health for our communities.

change as additional types of environmental stressors. Drought assessments should include discussion of water usage and capacity, impact on agriculture and other community industries, food security, impacts on vulnerable populations, and other physical and social impacts of drought.⁵⁹

To enhance their assessments, local health departments should consider utilizing CDC Community Assessments for Public Health Emergency Response (CASPERs). The CASPER is a tool that assists public health professionals in determining their community's ability to prepare for or respond to a given emergency by collecting house-level data regarding community capabilities and needs.⁶⁰ Since the development of the CASPER tool in 2001, CASPERs have been conducted specifically for drought on four occasions — three in California between 2015 and 2016, and once in Oregon in 2017.⁶¹ The CDC developed a toolkit to allow state and local health departments to easily conduct CASPERs in their jurisdiction, with technical assistance available if needed.⁶² Local public health entities who may feel ill-equipped to conduct a drought-specific assessment or those who may not have access to climate scientists and expertise can utilize the CASPER toolkit to guide their efforts.

Participation in PHEP and HPP risk assessments and development of drought-specific assessments — whether through the use of CASPERs or through engagement with climate experts — will strengthen public health professionals' understanding of drought as a community health threat and enhance their preparedness and response capabilities for addressing drought events.

Sector Engagement for Planning and Preparedness

Droughts have wide-ranging impacts and can affect multiple, seemingly disparate groups in unforeseen ways. Therefore, one of the most critical actions climate scientists and public health professionals can take to address the health impacts of drought is to create a drought and health community of practice to leverage and coordinate the contributions of all. This idea of a network of collaborators across sectors, including environmental sciences, health-care, emergency management, public health, and tribal governments, has been brought forward by attendees at each of our drought and health workshops. For too long, drought has been considered a concern primarily for climatologists and other scientists in the field of extreme climate and weather events. However, this is an incomplete approach, as the health impacts of drought are well-established and demonstrate the need for a more holistic approach to preparing for and responding to drought.

This network could create best practice guidance documents to assist local health departments who may not have the resources or access to include climatologists or other climate scientists in their planning efforts. A drought and health community of practice would also have the benefit of being an organized body that could coordinate advocacy efforts and educate legislators on the need for policy change. For example, in 2019, the Pandemic and All-Hazards Preparedness and Advancing Innovation Act (PAHPAIA) of 2018 was signed into law. This law reauthorized many of the provisions of the Pandemic and All-Hazards Preparedness Act (PAHPA) of 2006, and added new components focusing on improving preparedness and response, reaching vulnerable populations, and creating national advisory committees on disasters.⁶³ One of the added provisions of the act was to incorporate preparedness for the public health effects of environmental hazards into the National Security Strategy.⁶⁴ While this represents a success for bringing climate issues, including drought, under the purview of public health concerns, there is room for improvement in the rest of the Act. PAHPAIA includes provisions for three committees: the National Advisory Committee on Children and Disasters, National Advisory Committee on Seniors and Disasters, and the National Advisory Committee on Individuals with Disabilities and Disasters.⁶⁵ The statute mandates that committee membership will include representatives from specific named federal agencies, as well as subject matter experts from

various fields relating to preparedness, vulnerable populations, or disasters.⁶⁶ None of the committees, however, require a representative or expert connected to environmental or climate science. An additional function of a drought and human health community of practice would be to advocate for more of an environmental or climate science expertise on these committees. As children, seniors, and individuals with disabilities represent some of the populations most vulnerable to the harmful health impacts of drought, it would be invaluable to include someone well-versed in the science of drought and climate change in these committees.⁶⁷

Conclusion

Drought, like other climate-related disasters, can cause significant impacts on human health. However, the health effects are often overlooked and marginalized because this disaster does not manifest like many other natural disasters. As the climate continues to change, causing the outcomes of drought to become more intense and frequent, the need to prepare our public health systems is overdue. The best way to secure our public health systems is to implement the public health policy actions needed to respond to drought. These policy actions require a two-pronged approach: short-term, immediate emergency response to drought events, and long-term risk assessment and planning for drought events and their corresponding health effects. While each of these approaches require unique policy strategies and perspectives, preparing for the health impacts of drought will ultimately save lives and decrease the need for acute emergency response. By bringing together stakeholders from across disciplines and engaging legal mechanisms already in place, we can reduce the negative health impacts of drought and help ensure better health for our communities.

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