

## NIEHS Disaster Research Response Program Marks 10-Year Anniversary

**Narrator:** In early January 2010, [one of the most destructive earthquakes in recorded history](#) struck Haiti, [killing more than 200,000 people](#) and devastating the capital, Port-au-Prince. Just a few months later, the Deepwater Horizon oil rig exploded in the Gulf of Mexico, [killing 11 workers and causing the largest marine oil spill in U.S. history](#). The following year, on the other side of the globe, Japan faced its own public health crisis when [an earthquake and tsunami severely damaged the Fukushima Daiichi nuclear power plant](#).

Those tragedies, among others, compelled U.S. officials to [issue a call](#) to health researchers everywhere: To enhance disaster recovery and resilience, we must improve how we conduct research before, during, and after disasters.

For the past decade, the NIEHS and partners have been striving toward that goal. What started as a pilot project has evolved into the Disaster Research Response Program, or DR2 for short. Led by the NIEHS, DR2 provides resources, training, and networking opportunities for the disaster research field.

In this episode, we commemorate DR2's 10<sup>th</sup> anniversary with one of its architects, Dr. Aubrey Miller of the NIEHS. He talks with us about DR2 hallmarks, successes, and goals.

**Aubrey Miller:** The DR2 concept of disaster research response is really a concept of performing the work that we do in public health and public health research and science at NIH and broadly speaking, but doing it in a way that we can apply it to these desperate situations post disaster.

So the DR2 program strives to focus on four major areas. Those four areas are identifying the data gaps when a situation, a disaster occurs, so we can quickly understand and begin to do information gathering in those areas to help communities and others understand. Second part is to build resources and tools and strategies for people to collect the data and perform research studies in the field more effectively, such as survey tools and protocols or that allow them to design and then get to the field and implement those tools and those protocols and studies much more quickly than they could otherwise do. And then another category is to be able to build training and capacity across the country for people to be able to more effectively come together and collect this data and perform needed research studies with communities together and have all parties involved from local and states and federal organizations that could support these activities. And then the last area is making sure that the work for disaster research and data collection is effectively implemented with the national response plans and local response plans and emergency management activities so as not to burden communities, but also, but to collect information and do the studies in a way that's complementary to the community's needs.

**Narrator:** Getting into the field as soon and as safely as possible after an emergency is key to successful disaster research response. Scientists who do this are out to collect what is often called "perishable data."

**Aubrey Miller:** Perishable data is the, is the is the data that happens right after an event occurs, a disaster occurs, and you have to collect it right then because you won't have a chance to get it later. So, exposure data, other types of information, are going to be lost immediately in the days or early weeks following a situation, and unless you're out in the field or prepared to capture it, you you'll miss it. And it's critical to understanding of health impacts and what we can do in the future to prevent bad situation — bad outcomes from happening.

We do a pretty good job in the country of response, in terms of getting out and trying to clean things up and get people to hospitals. But we don't do a very good job of understanding the short and longer term, especially the longer term, health impacts, and we have to be able to do that with communities. Communities are critical to understanding what their needs are, how and how we can better help them address their concerns, both in the short and long term.

And we should be prepared to get them those answers and get them the information they need to make sound decisions for them and their families.

**Narrator:** Before they can collect data from communities experiencing disaster, researchers need approval from a group of experts known as the institutional review board. Typically, the board can take *months* to review a research proposal. But after a disaster, time is of the essence. To expedite the review process, DR2 developed a tool called RAPPID, which stands for Rapid Acquisition of Pre- and Post-Incident Disaster Data. RAPPID includes standardized research protocols that scientists can modify for their specific needs. The idea is that the institutional review board will be able to quickly review a disaster research proposal that uses pre-approved methods.

In 2015, the DR2 team introduced RAPPID and related resources at a workshop in Houston, Texas. During the workshop, participants were asked to plan a research response to a hypothetical hurricane.

**Aubrey Miller:** And we invited the state health officers and and Houston and local county health health folks, as well as the academic centers around Texas, as well as emergency managers — police and fire — and had this conversation about about the situation and the needs and impacts and communities and how they will collect the data and do studies and inform themselves about about that situation to assist the community.

**Narrator:** Although the workshop was just a day-long event, participants forged enduring connections that proved invaluable two years later when Hurricane Harvey struck Texas.

**Aubrey Miller:** Hurricane Harvey actually hit Houston, and those groups came together rapidly. And instead of many months of starting to get into the field and doing work together, they were out in the field and collecting information, working together within two weeks, within days, actually, in some cases. And they worked — our academic universities work closely with the Houston Department of Health and helped provide additional data collection on schools and homes and areas that were important to the to the community and to the health department that they didn't have the resources to collect information on. NIEHS researchers that had been working in communities in and around Houston were quickly able to reconnect with those communities and assess their needs and concerns. Other groups developed a roster that was online that people throughout Houston could sign up and identified interest in being part of studies or having opportunities to work with researchers going forward and worker training programs kicked in. It was a really nice demonstration of work, of the concept of DR2, and training and preparing and using these types of tools and resources actually coming to fruition and seeing it in action, and it continues to be a wonderful example of that.

**Narrator:** Dr. Miller and colleagues have also found that disaster research response training for *one* type of emergency can improve research response to *other* kinds of emergencies. For example, in 2019, the DR2 Program hosted a workshop in Arizona, this time focused on a train derailment scenario. The event was foundational to Arizona's research response to the COVID-19 pandemic.

**Aubrey Miller:** We had a similar kind of workshop,— this was at the University of Arizona in Tucson in 2019 — and we said, okay, if there’s a train derailment and chemicals are released in this community, they designed the this scenario for their community.

But Covid-19 hit not that much longer after that, and those groups came together, and actually, University of Arizona, working with partners, developed one of the fastest responses to Covid-19 and began to implement studies and research. So, they took their learning, which was a focus on a train derailment, and applied it to an infectious disease pandemic in their community months later.

**Narrator:** Perhaps no disaster in recent memory has highlighted fundamental elements of disaster research response more than the pandemic.

**Aubrey Miller:** It’s not just about doing a study and putting it in a journal. But how do you really collect and give that information back to community in a way that it provides them needed information, but they also can be a full partner. So, when we introduce a vaccine, it doesn’t fall on deaf ears if people understand what it’s about, what the health risks and the benefits are to them.

**Narrator:** Early on in the pandemic, the National Institutes of Health recognized a key feature of the DR2 Program — specifically its web portal. The portal includes tools like surveys that scientists can use for data collection, and other resources for researching health impacts after disasters.

**Aubrey Miller:** NIH identified the DR2 resource as a really important resource for all of NIH, and we were asked by several other institutes if our portal of surveys and instruments could be used by NIH to park all the Covid-related surveys and protocols, etcetera, in DR2 to make that available to the research community.

**Narrator:** DR2 also supports a network of NIEHS grant-funded recipients who regularly meet and share resources about disaster research. Known as the DR2 Environmental Health Sciences Network, the group’s goal is to foster a robust community of practice so that, wherever disaster strikes, experts across environmental health disciplines are equipped to respond.

Dr. Miller hopes DR2 concepts like this will catch on globally. To that end, in late spring, the NIEHS co-hosted a DR2 workshop with Japan’s National Institute for Environmental Studies.

**Aubrey Miller:** They called us up essentially, and said, we want to have a DR2 workshop like you guys have been doing in the United States, here in Japan, and we’d like you to participate and partner with us in that, and we’re going to host it in Tokyo and invite other countries to come.

They created a scenario similar to a typhoon hitting Japan, and the type of impacts that you know, we would discuss in a situation here and study, how do we collect information? How do we come together? How do your countries do it? How do you deal with data?

So we have tools and resources in our DR2 website portal that are in languages that other countries can use readily, and we’re happy to translate those tools to other languages to help countries when they have a disaster situation. So, they were all excited about those resources and to continue to build on those from their countries’ perspectives.

**Narrator:** Officials in Spain and other European countries have expressed interest in hosting similar disaster workshops. In addition, the NIEHS has intermittently partnered with Canada on DR2-related projects.

As Dr. Miller sees it, the more nations commit to improving disaster research response, the more resilient communities can become to future emergencies, both natural and human-caused.

**Aubrey Miller:** Especially with climate change challenges increasing the severity and frequency of disasters across the globe, we need to not only just respond and clean things up, but we have to get the information that helps us become better, helps improve preparedness and resiliency of our communities, and helps us help them recover more effectively.