

**Arizona Hospital Discharge Data Submission to CDC
NEPHT Network Fellowship**

**Environmental Public Health Tracking
ASTHO Fellowship - Phase II Final Report**

**Submitted by
Matthew Roach, MPH
Climate & Health Program Manager
Office of Environmental Health
Bureau of Epidemiology & Disease Control
Arizona Department of Health Services
150 N. 18th Avenue, Suite 140
Phoenix, Arizona 85007**

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Association of State and Territorial Health Officials (ASTHO)
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Arlington, VA 22202**

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I. Introduction/Background

Project Description

ADHS submitted a proposal for an ASTHO/CDC EPHT fellowship to build ADHS' capacity to collect, format, and submit hospital discharge data to the National Tracking Network. ADHS was accepted to the Fellowship. The proposal described how Arizona would learn to properly format inpatient admissions and emergency department visits for several Nationally Consistent Data and Measures (NCDM). The proposal described a work plan on how Arizona would build capacity for sharing data to the National Tracking Network and how we propose to sustain submission of hospital discharge data for current and future NCDM. The proposed project was written to submit inpatient admission data for carbon monoxide poisoning, asthma, heat stress, and myocardial infarction for the years 2005-2012. As part of the project, ADHS also submitted emergency department data for carbon monoxide poisoning, asthma, and heat stress visits for the years 2005-2012.

The Office of Environmental Health (OEH) within the Arizona Department of Health Services (ADHS) participated in this Fellowship in order to build capacity to respond to and adapt to environmental hazards. Communities from across the state have reached out to ADHS for help in understanding how the environment impacts their health.

ADHS is not a funded grantee for CDC's National Environmental Public Health Tracking (NEPHT) Program. In 2011, ADHS participated in ASTHO's EPHT Peer-to-Peer Fellowship Program. The Fellowship aimed to enhance capacity in non-EPHT grantee states to conduct EPHT-related activities.⁽¹⁾ Through this fellowship, ADHS gained one-on-one mentorship from an EPHT state grantee (California). The ADHS project specifically dealt with heat illness. The project helped fill a data gap in recent heat-related hospital inpatient admissions and emergency department visits. During the Fellowship, staff visited a host site to learn best practices, lessons learned, key tracking techniques, and IT infrastructure. Arizona became part of the national tracking conversation and propelled ADHS to build a peer network across state agencies. As fellowship alumni, OEH disseminated lessons learned through a webinar facilitated by ASTHO.

Benefits/Significance to Arizona and Tracking Network

Submission of Arizona's hospital discharge data to the Tracking Network will help public health officials, university researchers, and Arizona communities be able to explore environmental impacts on health and be able to answer community concerns about the impact of the environment on human health. The project creates an opportunity for the state to provide a more complete picture of environmental health outcomes within Arizona and between other states. The project advances current knowledge and capacity to conduct environmental public health tracking related activities.

II. Methods/Lessons Learned

Phase 1

When the Fellowship opportunity was announced, the ADHS' Climate & Health Program within the Office of Environmental Health took the lead on implementing the project for the Arizona

Department of Health Services. The program already had experience in performing surveillance on heat morbidity and mortality, but had no experience working with EPHT Nationally Consistent Data and Measures. Before pursuing the project, the Fellowship lead secured buy-in from agency management and owners of the hospital discharge data to ensure this work aligned with the strategic plan of the agency. After a discussion between the Arizona Fellowship lead and data steward/hospital discharge data owner on feasibility of the project, the years 2005-2012 were suggested for use in this Fellowship. The project team evaluated feasibility based on length of project period, staffing, and quality of data. All the required parties within the agency to pursue the project signed off on the plan and a proposal was submitted to ASTHO.

This new fellowship project involved sharing emergency department and inpatient admission data and required additional steps to ensure the protection of HIPAA protected data. The Fellowship lead partnered with the hospital discharge data (HDD) data manager to identify the proper rules and regulations regarding the release of Arizona's hospital discharge data to the National Tracking Portal. The Fellowship lead shared information on sample data use agreements developed by other EPHT grantees and indicator data dictionaries with the data steward of the HDD. After several email correspondences and teleconferences, an agreement was set regarding data protection methods. The methods described in the National Environmental Public Health Tracking Network Data Re-release Plan, Version 2.5, June 20, 2008 were accepted as a means to protect the data. After this was resolved, CDC's Environmental Public Health Tracking Branch signed off on a data use agreement for use of Arizona's hospital discharge data. The agreement pertained to both the inpatient and emergency department data for the time period of 2005-2012.

One of the first tasks for the Fellowship involved the development of a Memorandum of Understanding (MOU) between the Arizona Department of Health Services and the Association of State & Territorial Health Officials. An MOU was signed between the parties to perform the duties listed in the Fellowship once terms and conditions were agreed upon by both parties. The agreement between the parties was facilitated by email correspondence and signatures by agency designated business officials reviewing and signing off on the Fellowship.

Through collaboration with ASTHO and CDC, ADHS was given access to several CDC secure access websites, reference documents, and tools; including the NEPHT SharePoint site and the NEPHT- Secure Access Management System Portal. ASTHO and CDC uploaded useful documents for Fellows including sample DUA's (Data Use Agreements), data submission training webinars, indicators, measures, methods, SAS code, and MOU samples.

Throughout the fellowship, Arizona's Fellowship lead and data steward participated on several monthly check-in calls with CDC, ASTHO, and other Fellows. These meetings helped to provide Fellows with needed guidance to move their project forward. Arizona learned about the guidance and tools available on the SharePoint site.

The Fellowship lead already had access to the hospital discharge database for public health surveillance purposes. The hospital discharge database in Arizona contains information on emergency department visits and inpatient admissions for hospitals licensed by ADHS. In order to format the data, the Fellowship lead had to review the guidance documents, tools, and SAS

code provided on the EPHT SharePoint site. Specifically useful were the How-to-Guides and Indicator Templates provided for each indicator. These documents provided the necessary information on what cases to include and exclude in the datasets. Also helpful were the Emergency Department NCDM Tool (ED-NCDM) version 1.0 User Guide, Inpatient NCDM Tool (IP-NCDM) Version 3.0 User Guide and related SAS programs which helped to create an XML file that met the specifications for EPHT hospitalization de-identified data schema. These files were instrumental in the development and formatting of Arizona's heat stress, carbon monoxide poisoning, asthma, and myocardial infarction data. SAS 9.3 was used to analyze the data for the Fellowship.

In order to create metadata, the Fellowship lead reviewed a series of metadata training videos on the CDC SharePoint site. A total of 56 metadata files were needed to describe the data being submitted for the Fellowship. One file was created for each year and type of data (e.g. 2005 heat stress emergency department visits). The CDC's Metadata Creation Tool was used to create each of the metadata files. The metadata files followed EPHTN Tracking Network Profile Version 1.2 and had information on identification, data quality, entity and attribute, distribution, and metadata references. Each metadata file was created within CDC's Secure Access Management System and was validated within the Metadata Creation Tool before being submitted.

Phase 2

During Phase 2, ADHS awaited approval emails for each of the 56 metadata files submitted to CDC. Within a few weeks after submitting the metadata files using the CDC Metadata Creation Tool, CDC sent 56 emails to Arizona identifying that all of the files passed quality assurance. Each metadata report corresponded to one email and included a Metadata Control Number (MCN) to identify each dataset. The large quantity of files sent at once got filtered into junk mail, but the files were easily retrieved and saved.

During Phase 1, ADHS inpatient and emergency department data was formatted to national standards using the SAS programs developed by New York State's EPHT Program. In Phase 2, the data were combined with the MCN to create XML files to upload into the CDC Secure Access Management System. Instructions for using New York State's SAS programs were helpful for the development of the XML file. Arizona was able to combine the MCN with Arizona data with ease. An XML file was created for each year of data and each health outcome being reported to the NEPHT.

Arizona downloaded the latest version of CDC's DIVE Tool from the EPHT SharePoint site to validate Arizona's XML data against the latest schema. The DIVE Tool instructions were very helpful in executing the program. The DIVE Tool helped to identify cases where the Arizona data did not pass the schema. This occurred in a few of the XML files. The data was corrected and ran through the DIVE Tool once again. After doing this process several times, all of the XML files passed the DIVE Tool's standards.

During the week of August 11-15, CDC provided a data submission window for Fellows. Arizona's Fellowship lead gained permission to access to the SAMS EPHT data submission page

prior to the submission window. The Fellowship Lead combined all of the XML files into a zipped file and submitted the data in SAMS. An automatic email response confirming data submission receipt was provided shortly after submitting the data. At the end of August, CDC sent a confirmation email that all of the data submitted passed data validation, and no further effort for corrections was needed.

During the week of August 18-20, CDC and ASTHO invited Fellows to participate in the Tracking Grantee Meeting held in Atlanta, GA. ASTHO provided travel support for the Arizona Fellow to participate in the meeting and learn about the latest Tracking-related emerging topical activities, grantee projects, and future content. Arizona met with other Tracking Fellows and networked with CDC Tracking Staff and grantees. The ADHS GIS Coordinator also attended the meeting. This trip was very valuable to Arizona, because it provided insight and direction on how Arizona can use their existing GIS website to make an EPHT portal. The GIS staff at ADHS and the Fellowship lead in the Office of Environmental Health improved collaboration and understanding of Tracking Data and Portal Development.

III. Conclusion

Summary

Phase 1

In summary, Phase 1 of the project had many successes. An MOU for the project was signed by both parties, a data use agreement was created, inpatient admission/emergency department visit data were acquired and formatted, and metadata was created and submitted. In order to succeed, collaboration between our data steward, agency business officials, ASTHO, and CDC was needed. Documentation, training videos, webinars, and teleconferences helped the Fellowship lead learn the required steps to share Arizona's data with the Tracking Network.

Some of the challenges for the project included finding time to complete the work when competing projects took priority over the fellowship. In addition, after reviewing the requirements of EPHT Metadata, the Fellowship lead learned that information on security protocols and data sharing would need to be addressed. Through collaboration with the data steward and review of metadata files written by grantees, the Fellowship lead resolved the issue during the project. Without this input, completing the necessary fields would have been more difficult to achieve.

Phase 2

Phase 2 of the project had several accomplishments, challenges, and lessons learned. Arizona accomplished creating XML data, validating XML data, and submission of data to CDC through SAMS without any major obstacles. Arizona did not have to use the second data submission window. One of the challenges that occurred in the Project was that the metadata control numbers were being sent to the Fellow's junk mail. One of the lessons learned from this project

is that creating XML files based on the state's data is a short process. The conversion of data only took a few minutes. We also learned that it is a good idea to download the latest DIVE Tool version that has the most up to date XML schema, and it is also a good idea to verify XML files using the DIVE Tool in order to identify if any corrections to the data are needed.

Future Plans

After the data is publicly released on the National Portal, Arizona plans to share the information with Arizona communities, public health staff, and university researchers on the Arizona Department of Health Services' website.

Arizona hopes to also upload the de-identified data and metadata collected for this project on the Arizona Department of Health Services - Community Profiles Dashboard. The website is a GIS website that has tables, charts, maps, and graphs on public health data. The site currently has indicator data on mortality, natality, and demographics by county and smaller geographic areas. (www.azdhs.gov/phs/phstats/profiles/index.php). Currently, there are no data on environmentally related health outcomes on the Community Profiles Dashboard. This project plans to add environmentally related health outcome data to the website.

ADHS has laid the groundwork for collecting emergency department and inpatient data that is nationally consistent on carbon monoxide poisoning, heat stress, myocardial infarction, and asthma. Creating new datasets with updated information will now take minimal effort. New data can be created on an annual basis.

Arizona looks forward to continuing our partnership with ASTHO and CDC on this increasingly important issue.

Recommendations

For states interested in pursuing this process, I would recommend the following:

Phase 1

- Identify if this project is feasible with your hospital discharge data steward before pursuing.
- Review EPHT NCDM early in the process.
- Review EPHT metadata files published on the NEPHT website by grantees early in the process.
- Review Metadata Training Videos developed by CDC and use the CDC's Metadata Creation Tool for submission of Metadata to the Tracking Network.
- Identify if you need a data use agreement at the beginning for your submission of data.

Phase 2

- Use the DIVE Tool to validate the XML data created by your jurisdiction.
- Check your junk mail folder for receipt of Metadata Control Numbers.
- In order to identify if there are any issues with your jurisdiction's data, take advantage of the early data submission window.

- Submit XML data as one zip folder through the SAMS portal.

IV. References/Supporting materials

1. <http://www.astho.org/Programs/Environmental-Health/Tracking-Environmental-Health-Hazards/EPHT-State-to-State-Peer-Fellowship-Program/Fellow-Projects-and-Final-Reports/>