Report

Electronic Health Records: A Source for Environmental Public Health Surveillance

Intended Audience

This primer highlights potential uses for electronic health record data in environmental public health surveillance. The primer provides background information on Meaningful Use, discusses the importance of public health surveillance and how to potentially use existing electronic health record (EHR) data fields in environmental public health surveillance. It also explores the possibility of adding environmental public health related fields or forms into EHRs. This primer represents the first phase of a multi-phased project that will continue to get more detailed as it progresses. Links to sources are found at the end of the document if more information is sought on the topics covered.

Introduction

Adoption of EHRs and health information exchanges (HIEs) is growing, particularly because of federal initiatives such as the Affordable Care Act, Health Information Technology for Economic and Clinical Health (HITECH Act), and Meaningful Use. However, many health agencies lack data use strategies and the informatics workforce needed for implementation. According to findings from a 2011 ASTHO survey, state environmental health programs need to better integrate environmental health and health data (73%) and increase skills or knowledge for HIE activities (86%), and a stronger workforce (86%). Currently, many national efforts are exploring the feasibility and potential integration of environmental health elements into EHRs.

There are national efforts to increase adoption of EHRs and HIEs and expand Meaningful Use (MU) and reporting of environmental health data. In 2015, ASTHO launched the Data Partnerships to Improve Health project, which recognizes the value of engaging national partners and state health agencies in discussions of how best to further environmental health involvement in EHRs, MU, and other national health data exchange efforts. The project's focus is on electronic health data, health data systems, and surveillance systems as they relate to environmental health.

The Data Partnerships to Improve Health project will identify potential public health uses of data fields currently collected by EHRs. In addition, the project will consider how the inclusion of new environmental health data fields in EHRs could improve our understanding of the environmental determinants of health and disease. The Environmental Public Health Tracking Network was developed in 2003 and disseminates data collected in EHRs to public health officials and other researchers. Analysis of the data or research conducted using the data could lead to the discovery of new causal associations between environmental or occupational exposures and disease outcomes. By making these data broadly available, it will help a variety of stakeholders, including the general public, to better understand the environment and its influence on health, and could inform the decisions made by stakeholders from many sectors of government.

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Putting EHR Data to Use in Public Health Surveillance

EHRs represent the availability of national data sources that have the potential to revolutionize public health surveillance.

What is an EHR? An electronic health record (EHR)—sometimes called an electronic medical record (EMR)—allows healthcare providers to record patient information electronically instead of using paper records. However, EHRs are often capable of doing much more than just recording information. The EHR Incentive Program asks providers to use the capabilities of their EHRs to achieve benchmarks that can lead to improved patient care.[1]

EHRs contain individual patient health information, such as:

- Administrative and billing data
- Patient demographics
- Progress notes
- Vital signs
- Medical histories
- Diagnoses
- Medications
- Immunization dates
- Allergies
- Radiology images
- Lab and test results[2]

There are many possible environmental health uses for existing EHR data fields, and a case could be made to add data fields that specifically pertain to environmental and public health.

Background: Meaningful Use

In the 1990s, the Institute of Medicine identified EHRs as a solution "to address the alarming number of medical errors in U.S. hospitals."[3] However, without an incentive to use EHRs, limited progress was made with regard to increasing the use of electronically recording patient records. As part of the American Recovery and Reinvestment Act (ARRA)[a], the Medicare and Medicaid Health Information Technology; Miscellaneous Medicare Provisions established an incentive program for hospitals and providers to become meaningful users of EHRs. Under authority given in ARRA, Centers for Medicare and Medicaid Services (CMS) published a final rule concerning the Meaningful Use (MU) incentive program to expand the use of EHRs.[b] In addition to offering a value based monetary incentive to participate in the MU program, there are also monetary penalties if healthcare providers fail to participate.

[a] Section 2, Division B, Title IV.

[b] To see the original CMS final rule as published in the Federal Register, go to: http://www.gpo.gov/fdsys/pkg/FR-2010-07-28/pdf/2010-17207.pdf

Coinciding with the CMS Final Rule, HHS' Office of the National Coordinator for Health Information Technology (ONC) published a companion rule, the Health Information Technology for Economic and Clinical Health (HITECH) Act, which contains "the standards, specifications, and certification criteria for EHRs that qualify for the meaningful use program."[4] Information technology vendors must now go through a certification process that is overseen by the ONC.

The term Meaningful Use describes the law and associated regulations related to the use and uses of EHRs. According to HHS, "EHR systems structure patient data into codified medical information that can be exchanged and analyzed, allowing software to provide intelligent support for patient care, medical billing, and medical research."[1]

The CMS rulemaking on the MU program began in 2010 and was divided into three implementation stages:

- **Stage 1:** (2011) Encourages the adoption of EHRs with a focus on data capture and sharing (for example, the electronic transfer of prescriptions from a healthcare provider to a pharmacy).
- **Stage 2:** (2014) Addresses advanced clinical processes and the ability to exchange private information in a secure manner.
- **Stage 3:** (2015) Employs the use of EHR technology to submit clinical quality measures (CQM).[1]

Each stage contains core objectives and supporting measures. The idea behind MU is that data capture and sharing leads to improved health outcomes. Among the many program advantages is the fact that physician notes are typed instead of handwritten and records are accessible electronically both at the point of origin, and others who have access to the record.

Objectives	**Measures**
What every eligible professional is required to achieve in order to be able to show that they are **meaningfully using** their EHR.	The minimum requirement to achieve each *objective*. Every objective has an associated *measure*, which the eligible professional must meet or surpass.[1]

Farzad Mostashari, previous National Coordinator of ONC said, "the Meaningful Use [Stage 2 final rules] define a common dataset for all summary of care records, including an impressive array of structured and coded data to be formatted uniformly and sent securely during transitions of care, upon discharge, and to be shared with the patient themselves."[3] The data include patient demographics, diagnostic and procedure codes, medications, and key intra-clinical team communications.[3]

Contained within the definition of MU are several express provisions related to public health.MU is using certified EHR technology to:

- Improve quality, safety, and efficiency and reduce health disparities.
- Engage patients and family.
- Improve care coordination and population and public health.
- Maintain privacy and security of patient health information.

Ultimately, compliance in Meaningful Use will result in:

- Better clinical outcomes.
- Improved population health outcomes.
- Increased transparency and efficiency.
- Empowered individuals.
- More robust research data on health systems.

MU sets specific objectives that healthcare providers must achieve to qualify for CMS Incentive Programs.[5] Essentially, MU requires providers to demonstrate that they are using their EHRs to "positively affect the healthcare of their patients."[1]

Finally, HIEs refer to the act of exchanging information as well as to the entity facilitating the exchange. According to HealthIT.gov, "electronic HIEs allow doctors, nurses, pharmacists, other healthcare providers, and patients to appropriately access and securely share a patient's vital medical information electronically—improving the speed, quality, safety, and cost of patient care."[6]

HIEs allow for EHRs to be shared among healthcare providers, as well as with state and federal public health agencies. Members of HIEs have access to data collected within the membership, making it easy for primary care physicians, for example, to send patient information to a specialist within their HIE. EHR data is also accessed by health agencies who are members of a state HIE and some public health surveillance is already taking place via this route.

Background: Public Health Surveillance

"In public health, we can't do anything without surveillance," says David Satcher, MD, PhD, U.S. Surgeon General, 1998-2002 "That's where public health begins."

Public health surveillance is defined as "the systematic, ongoing collection, management, analysis, and interpretation of data followed by the dissemination of these data to public health programs to stimulate public health action."[7] The ultimate public health action is intervention. Surveillance is required to identify causal or associative relationships between exposure(s) and disease(s) in order to identify opportunities to break or intervene in the causal chain. Thomas Burke, Deputy Assistant Administrator of EPA, once said, "[u]nless you can pull together environmental data and measures of population health, fundamental questions won't be asked and can't be answered."[8]

Replacing handwritten medical records with EHRs not only helps to reduce clinical mistakes, but also creates a huge repository of data for population health surveillance. As data and data sources continue to grow, the collection mechanisms have become more sophisticated. Abstracting, analyzing, and putting that data to use in public health requires professionals who are well trained in information technology, informatics, and statistics. It also requires tremendous effort with regard to data standardization.

Public health surveillance is not only used to investigate potential environmental exposures and disease outbreaks, but it's also used by public health agencies and legislative bodies to prioritize work plans and determine budgetary needs and research purposes.

National Environmental Public Health Tracking ("Tracking" or "Tracking Network")
In response to the need for a nationally consistent repository of environmental exposure data and disease outcomes, CDC created the Environmental Public Health Tracking Network (Tracking Network).[9] Through the network, state and municipal grantees were given requirements and developed platforms for the collection and dissemination of data to a myriad of stakeholders, including the CDC. The tracking network is a web-based query-able database that contains both environmental data (like ozone and particulate matter data) and health outcome data (like asthma, heart attacks, and cancer).

Some of the data domains, like air quality are fed by nationally collected data, while others are comprised of data that is collected at the state level and then electronically transmitted to CDC (for example, elevated blood lead and carbon monoxide poisoning.)

The tracking network provides an existing platform so that data housed in and collected from EHRs can be displayed.

Potential Environmental Public Health Uses for Existing EHR Data Fields
The best opportunity for successfully tapping in to the EHR data source is to identify ways that data fields the currently exist in EHRs could be used in Environmental Public Health surveillance.
. This is already occurring in some areas: for example, in many states, blood lead lab data collected on citizens of the state must be reported to the state public health agency. In some of those states, reporting occurs through the electronic transmission of blood lead lab results. Once collected at the state level, states that participate in CDC's Tracking Network then periodically submit blood lead data electronically to CDC for display on the national tracking portal.

Existing EHR data could be enormously helpful to environmental public health practitioners who are engaged in activities such as: identifying hotspots, redirecting resources, and targeting interventions. The table below highlights some other potential environmental public health uses for data that currently exists within EHRs.

Environmental Public Health Considerations	**Existing EHR fields**
Exposure history	Patients' address exposure history in conjunction with other information such as proximity to known contamination sources.

Housing conditions (For example, pre-1978 construction or low-income housing)	Patients address and address history and clinical diagnosis regarding lead or lab results (blood lead), which could be used to compare with existing blood lead reporting programs (federal and state).
Exposure to tobacco smoke (For example, from personal habit or environmental sources)	Lab tests for cotinine, a metabolite of tobacco, and therefore a biomarker for exposure to tobacco smoke. This data overlaid with tobacco-related disease could inform public health officials of things like the effectiveness of smoking cessation programs (or the need for one).
Disease tracking	Clinical diagnosis and patient address along with census data for a defined geographic area could be used to gain insight into the prevalence of diseases for which there is not a state or federal disease registry (for example, ALS or MS). The capability to track clinical diagnosis would aid in providing timely responses to public concerns about links between environmental issues and disease trends in a specific community.
	Vector-borne diseases could be tracked using patient addresses and diagnostic codes. This data could lead to the identification of intervention opportunities.
	Waterborne illnesses that could be linked to a recreational bodies of water could be used to identify contaminated areas that could then be closed and treated appropriately to remove the environmental hazard.
	Tracing foodborne illnesses back to a restaurant or food product could prevent others from being exposed to the source.
	Trends in diseases known to be associated with specific environmental contaminants could lead public health investigators to a source of environmental pollution not previously identified.
	Dentists could use patient addresses overlaid with maps of municipal water supplies that provide fluoridation to determine if fluoride tablets should be prescribed for their patients.
Body mass index	Patient information could serve as a source to calculate BMI. This information could be used in conjunction with diagnostic codes or maps showing the availability of built environments (i.e., accessibility to walking trails, sidewalks, healthy food sources, etc.)

There are many opportunities for improving surveillance reporting efforts to be more active. Two good examples of more active surveillance are related to CDC's Waterborne Disease Outbreak Reporting System (WDORS). Currently, recreational water illnesses like cryptosporidium, shigella, norovirus, and others are voluntarily reported to CDC's WDORS annually by number of defined outbreaks. Imagine if the diagnostic codes for these diseases could be overlaid with geographic information found in EHRs and these diseases could be monitored as syndromic surveillance? This could lead to investigation and corrective action and ultimately to disease intervention.[10]

The same is true for harmful algal blooms and associated diseases, where voluntary annual reporting of outbreaks to CDC typically occurs after-the-fact. If this information were made more readily available, it could be put to more immediate use. "Better characterization of the occurrence of blooms, bloom-associated environmental conditions, and of human illness associated with exposure to algal blooms is needed to develop evidence-based prevention strategies."[11] These are just two examples related to waterborne disease reporting; but there are many more possibilities related to, for example, asthma and ozone, obesity and built environment, etc.

EHR data use in environmental public health surveillance can help to identify outbreaks and help with intervention efforts. Additionally, EHR data can help to potentially detect sources of environmental exposure, as well as causal associations between environmental hazards and diseases that may not have been discovered previously. If diagnostic data were available by zip code for diseases like amyotrophic lateral sclerosis, multiple sclerosis, or muscular dystrophy, health departments could look at spatial statistics from overlaying prevalence maps with known environmental contaminated sites or known sources of air toxics (for example, permitted sites) to help find previously undetected links. Environmental public health officials will be able to discover new associations between the environment and disease outcomes with more available data.

Finally, EHR data could be used to determine health impacts among communities that have been affected by wildfires, industrial fires, or landfill fires; this would be particularly useful when some of these fires burn for months and even years.

Potential for Additional Environmental Public Health-Related Data Fields to be Included in EHRs

There are ongoing national efforts related to the use of EHR data as well as to the possibility of adding fields to these records.

A good example of one of these is CDC's National Institute for Occupational Safety and Health (NIOSH) and its ongoing effort to add data fields related to occupation within EHRs. "American workers spend more than half their waking hours at work." [12]
Information about where a person works and what type of job they do is not only important to healthcare providers, but it's also important for public health surveillance. If multiple employees come down with the same illness, whether foodborne illness from an onsite cafeteria, or a rare disease from chemical exposure, access to environmental public health data can be the first and most important step towards intervention. Another reason to include occupational parameters in EHRs, including previous work, is that often there can be a latency period between exposure(s) and disease(s). NIOSH could use diagnostic information in conjunction with occupational data collected in EHRs in their Health Hazard

Evaluations for specific occupations and/or workplaces. Including occupational parameters in EHRs can improve patient care, as well as inform population health.

> "Including work information in EHRs also can assist healthcare organizations to improve the health of populations in their care, such as by identifying groups of working patients at risk of certain conditions. EHRs are often used to generate "patient lists" – (e.g., lists of patients with certain health conditions) – in order to identify patients with the greatest need for follow-up or additional care. Generating patient lists by industry or occupation could be very valuable. For example, a healthcare organization could identify all patients working in construction or house painting occupations and use this list to identify workers who might benefit from a blood lead test."[12]

Information about the hazards of particular occupations and job tasks could be linked to EHRs for the benefit of educating health care providers about exposure-disease associations.
When public health officials are investigating a citizen concern regarding potential environmental exposure, they often ask about the source of their drinking water. If it is municipal, health officials' can check the water provider's required monitoring data to determine any known upsets within the water supply system. If the source of drinking water is a private well, additional sampling and investigation is done to try to identify any potential sources of contamination.

Environmental public health data can also help with tracking cancer incidence, although many cancer registries are missing the history of where diagnosed people have lived and the length of time that they lived there. Many registries only use the address at the time of diagnosis, which may be misleading when looking for potential associations to environmental influences.

There is a potential use for structured data capture in this scenario. If the question, "What is your source of drinking water?" appeared in an EHR, and the answer was "private well", the software could trigger additional questions and fields to be completed, like "are you aware of any environmental contamination in your area?"

While it would involve considerable effort to have fields or forms added to EHRs, the table below provides a few example of how additional environmental public health-related fields in EHRs could be used:

Environmental Public Health Considerations	**Existing EHR fields**
Workplace exposure history	If occupational data fields are included, they can help strengthen exposure history by the number of years lived at an address and address history, number of years in a job, and job history.
High risk hobbies	High risk hobbies, such as auto mechanics, firearms use, furniture refinishing, or working with stained glass, jewelry, pottery, and ceramics can increase an individual's exposure level to toxic chemicals in the home. Including fields about recreational and hobby activities would

	help detect changes in practice or resources that result in increased exposure. Recommended fields should include activity, and average time and number of years engaged in activity.
Drinking water: private vs. municipal	Patient addresses can be overlaid with contaminated site maps. For example, known chlorinated hydrocarbon groundwater contamination from dry cleaners could be overlaid with associated clinical diagnoses like liver and kidney disease. Results of clinical diagnoses alone could result in an investigation that finds environmental contamination.
Cancer	If residential history was available in cancer registry data and cluster analysis, it would increase analysis accuracy and provide more factual information to the public.
Health Alert Notifications and / Information for physicians	EHRs can communicate active health alert notifications to treating physicians about heat advisories or known food-borne outbreaks.
Proximity to environmental exposure sources	An individual's residential history would help expose environmental sources of hazardous chemicals, from places like traffic networks, agricultural land use, industrial emissions, and waste sites.

Asking a patient if their illness may be related to an environmental condition could be very informative to both the health care provider, as well as to environmental public health. If the patient believes the environment could be a factor it could trigger both additional questions and electronic transmission to an environmental public health agency. This type of information would be particularly useful to CDC's Agency for Toxic Substances and Disease Registry Public Health Assessments. Practitioners should exercise care when developing questions or forms related to patient perception of their environment. Questions that are more structured about where patients live and work may be more effective; if questions are too broad, patients may blame the environment for any unexplained symptoms or as a substitution for other factors, such as life choices.

The National Academy of Medicine, formerly the Institute of Medicine, conducted two studies related to the report "Recommended Social and Behavioral Domains and Measures for Electronic Health Records," which discusses possibilities for linking EHRs to public health departments, social service agencies, or other relevant non-healthcare organizations.[13] While there may not be much overlap between social and behavioral exposures and environmental health, the Institute of Medicine committee established criteria for developing new domains within EHRs that may be useful in the next phases of this project. A review of the recommendations made from this initiative will be included in Phase 2.

Syndromic Surveillance and EHRs

[14] EHRs can provide new data and opportunities for syndromic surveillance. Syndromic surveillance systems seek to "use existing health data in real-time to provide immediate analysis and feedback to those charged with investigation and follow-up of potential outbreaks." In 2012, through CDC funding, the International Society for Disease Surveillance (ISDS) developed the report "Electronic Syndromic Surveillance Using Hospital Inpatient and Ambulatory Clinical Care EHR Data: Recommendations from the ISDS Meaningful Use Workgroup." The report discusses how the syndromic surveillance objective included in Stage 2 Meaningful Use is an invitation to discover, document, and share information about the broad spectrum of current syndromic surveillance practice beyond long-standing emergency department and urgent care settings. Additionally, the report highlights how syndromic surveillance is also fertile ground for exploring new and innovative ways to expand the practice to new clinical care settings and assist with addressing public health challenges that face us today and in the future.[14]

The ISDS report is based on stakeholder feedback and attempts to "balance current feasibility and resource concerns with community enthusiasm for surveillance innovation with these clinical data."[15]

> "As with all innovations resulting from paradigm shifts, how the opportunities for public health surveillance created by Meaningful Use are used in public health practice should evolve over time. Computing and health information management technologies will advance, lessons will be learned, and the discovery of novel methods will affect [Public Health Agency] readiness for syndromic surveillance using inpatient and ambulatory clinical data. Indeed, the history of syndromic surveillance in the United States is a reflection of this course. Just as emergency department health data were initially sought as a component of bioterrorism preparedness, present day public health priorities will determine the utility of inpatient and ambulatory clinical data. With time and experience, public health will use these newly available data sources for far more than influenza-like illness surveillance and improve public and population health in exciting and unforeseeable ways."[15]

Challenges Associated with Environmental Public Health's Use of EHRs

There are three main categories of challenges associated with EHR data use in environmental public health: (1) legal issues, (2) technical issues, and (3) clinical issues and patient perception issues. The first two are addressed below at a high level of detail. Phase 2 of this project will include additional and more detailed information regarding all three categories of challenges.

Legal Issues: Authority to Use Data from EHRs in Public Health Surveillance

There are legal requirements for collecting and using personal health outcomes in public or population health surveillance. Individual health data is needed to study public health, but patient privacy must be protected. In the clinical setting, patient privacy is paramount. Per the Health Insurance Portability and Accountability Act (HIPAA), patients typically must grant healthcare providers permission to share personal health information. However, HIPAA has created a "public health exception" to patient privacy:

> "The [HIPAA] Privacy Rule specifically allows for disclosures to public health authorities without an authorization. Covered entities may disclose protected health information for these public health activities or purposes: to a public health authority authorized by law to collect or receive information for preventing or controlling disease, injury or disability; or for the conduct of public health surveillance, investigations, and interventions."[17]

Privacy remains a concern when individual health data is collected by public health professionals. Privacy efforts are often addressed through a de-identification processes that relies on statistical rules that allow for a minimum number of cases per geographic area to be published. A challenge for national databases is that each state can have different requirements for de-identification of individual health records.

HIPAA's public health exception exists because of cases like infectious or contagious disease outbreaks, when an individual's health can impact the population.

> "The Privacy Rule specifically allows for disclosures to public health authorities for the following reasons without an authorization: For the purpose of preventing or controlling disease, injury, or disability, including, but not limited to, the reporting of disease, injury, vital events such as birth or death, and the conduct of public health surveillance, public health investigations, and public health interventions."[17]

Additionally, care must be exercised by the environmental public health community when identifying EHR data for use in surveillance. Before public health workers can use data, they must have rationale using it and their request should be well documented prior to accessing and using the data.

> "The claim 'disease' in a domestic setting has the same kind of power as the claim of 'national security' in matters relating to foreign policy. Both claims are very powerful arguments for executive action. Both claims are among those least likely to be questioned by any other branch of government and therefore subject to abuse."[18]

The federal government generally does not have control the type of public health information states collect for use. There are federal funding incentives for states to participate in voluntary environmental public health surveillance programs, like the Environmental Public Health Tracking Network. As a result, most states develop their own compulsory reporting regulations and reportable health condition lists. State lists tend to include data collections that include federal funding incentives. State-mandated legislation now requires every state to report cancer cases to state cancer registries. The data from state registries is then reported to a national database.

The most challenging issues for EHR data use in public health surveillance are the requirements of individual state authorization statutes and state privacy laws. These issues are not new and have been successfully handled through many public health surveillance programs, including BioSense, which was legislated post 9/11 "for the purpose of integrating national public health surveillance systems for early

detection and rapid assessment of potential bioterrorism-related illnesses."[19] BioSense has since been redesigned to take an all-hazards approach.[19]

For any type of public health surveillance, it is important to consider the importance of patient privacy prior to the collection and use of EHR data. There are a number of variables to consider when developing a plan to collect or use EHR data or when developing new EHR data fields for use in public health surveillance. A court in the Third Circuit recommends the following list of issues to consider:

- the type of record requested,
- the information it does or might contain,
- the potential for harm in any subsequent nonconsensual disclosure,
- the injury from disclosure to the relationship in which the record was generated,
- the adequacy of safeguards to prevent unauthorized disclosure,
- the degree of need for access and whether there is an express statutory mandate, articulated public policy, or other recognizable interest in militating toward access.[20]

While it's well understood that there is a public health exception to privacy in cases where there is immediate danger to the public, confidentiality remains extremely important if there is no immediate danger.

Technical Challenges

There are several challenges regarding the technical design of data fields and use of technology to retrieve data. EHR systems can be developed in-house or through a web-based subscription service known as a "Software as a Service" or "SaaS "platform. Both require access to information technology and informatics resources. According to HealthIT.gov, the initial cost of implementing an EHR system ranges from $15,000-$70,000 and the cost of annual maintenance ranges from $4,000-$8,000.[21] In the initial development, as well as afterwards, there will be competition for EHR real estate. The cost of adding additional data fields will be largely dependent on the development of a favorable cost to benefit analysis for specific fields, as well as funding.

Other technical challenges include typographical errors and the entry of incorrect information entered at the databases' point of entry, both of which are difficult to eliminate. An article published in *The Scientist Magazine* about BioSense syndromic surveillance highlights examples of data entry mistakes; in one instance, an allergic reaction to a smallpox vaccine was coded as a case of smallpox and congestive heart failure, prompting an alert for Crimean Hemorrhagic Fever (CCHF).[22]

Standardization and harmonization are especially important when forms are used within an EHR. There may be technical challenges with the design and abstraction of EHR data fields because of different program variables (for example integers vs. characters) and the number of characters per field, making it difficult to pull data from different vendor records.

A web-service-based approach could be an option to harmonize EHR data. Ideally, a system like this would connect a practitioner's EHR software to an information service that could provide things like drinking water service area maps, health alerts, or other environmental health-related data. The information would not become a part of the patient's EHR, but would just be used by the physician who is diagnosing or treating a patient.

ASTHO, through CDC funding, is currently developing the Public Health Community Platform (PHCP), which will be a technology infrastructure based on industry standards with services and applications for interacting with many types of public health and healthcare data. The purpose of the PHCP is to provide a forum for information exchange that aids in improving health outcomes "by providing decision makers with timely, accurate and complete information." The PHCP will serve as a platform for communicating and sharing informatics solutions to today's public health challenges.[23]

Conclusion

Large amounts of information are stored in EHRs, containing valuable data that has the potential for meaningful use in environmental public health. Environmental public health professionals across disciplines must work together to develop a road map and ensure efforts are collaborative. There are challenges to overcome and issues to address, but in collaborative effort there is the strength needed successfully put EHR data to work for the benefit of population health.

Future Steps

ASTHO's Environmental Health Data Partnerships Collaborative, part of Data Partnerships to Improve Health, was developed to guide and advise ASTHO's efforts in building state and territorial health agency capacity to address public health informatics and data systems issues and explore opportunities for the integration of environmental health information with EHRs. The Collaborative is multi-disciplinary in both its membership and function, and is comprised of professionals from a range of specialties dedicated to improving public health, healthcare delivery, and related health informatics and data system needs at the state and territorial level. The intent of this Primer is to encourage conversation and thought to this important topic. The stated goal for each phase of this project is to get into a deeper level of detail. The challenges related to putting EHR data to use for Environmental Public Health surveillance must be clearly defined in order to be overcome. The ultimate goal of this effort is to use surveillance to improve population health as it relates to environmental exposures.

Work Products

Data Partnerships to Improve Health aims to enhance state capacity to access high quality and relevant environmental data and further environmental health involvement in meaningful use (MU) and other national initiatives which impact the integration, implementation, and capacity around environmental health data exchange efforts. This report is part of a multi-year collaborative project that spans over multiple cycles and builds on product deliverables at each phase to achieve long-term goals.

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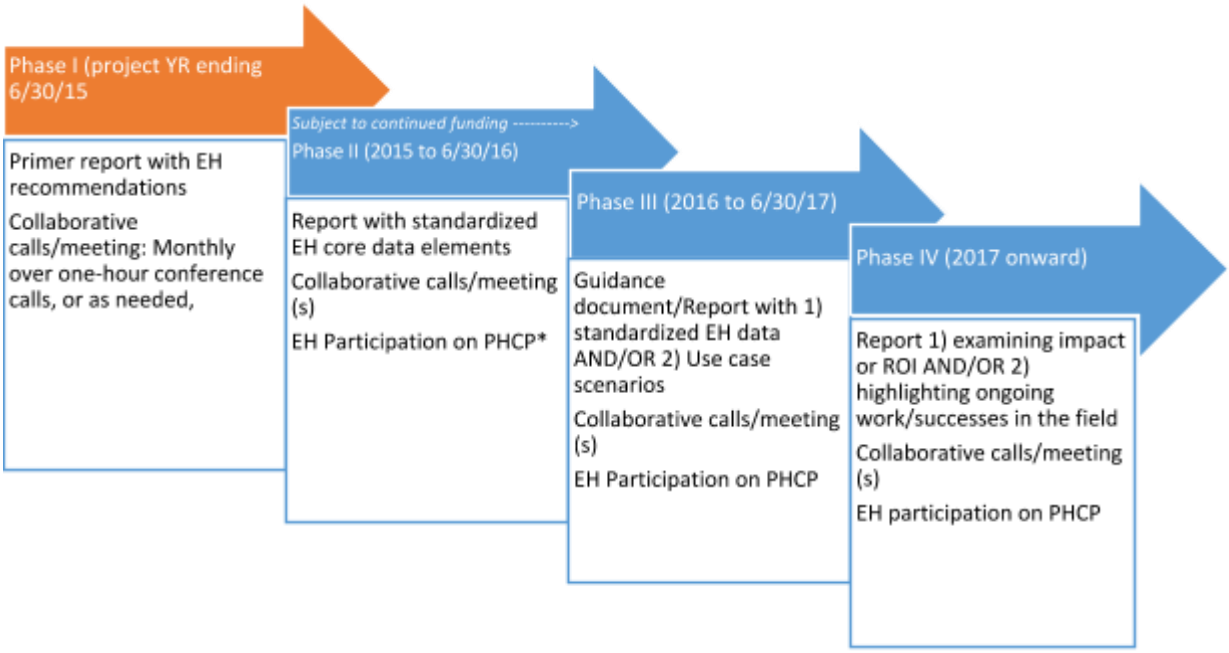
Project Timeline: Phases and Outputs



Current Year
Phase I (project year ending 06/30/2015) – Develop primer report that highlights the need for including environmental and occupational health data in EHRs; collaborative calls and meeting(s); enhanced online data stewards package.

Future Project Cycles (subject to continued funding)
Phase II (2015 to 06/30/2016) – Report environmental public health core data elements in standardized format, if available; collaborative calls and meeting(s); participation on the Public Health Community Platform (PHCP)*, a CDC-funded, ASTHO-led initiative to develop a cloud for common information exchange and the development of innovative and interoperable systems for the public health community.

Phase III (2016 to 06/30/2017) – Develop report with standardized environmental public health data for EHRs or use case scenarios; Collaborative meeting(s); participation in PHCP.

Phase IV (2017 and onward) – Develop report examining the impact or return on investment for incorporating environmental public health information into EHRs or collecting ongoing work and success stories in the field; collaborative calls and meeting(s); participation on PHCP.

Please Note: As tasks become more defined, outputs may be developed earlier in a previous phase or flow into the next.

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