Drowning Prevention Pilot: Project Plan

Report prepared for entities within the Ohio Department of Health, Local Health Districts within the state of Ohio, as well as Statewide Licensed Public Swimming Pools.

By

Amanda M. Zabala, MPH
CDC/CSTE Applied Epidemiology Fellow

Mary Clifton, RS, MA
Recreation Program Administrator

Ohio Department of Health
Office of Health Assurance and Licensing
Bureau of Environmental Health and Radiation Protection

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# List of Acronyms

- **CDC**: Centers for Disease Control and Prevention
- **LHD**: Local Health District
- **ODH**: Ohio Department of Health
Executive Summary

Drowning is a leading cause of unintentional injury deaths in children and adults alike. In fact, among children aged 1-4, drowning is the number one cause of unintentional injury death. Comprehensive data from Ohio’s fifteenth annual Child Fatality Review (CFR) Report indicates that from 2009-2013, 60% of fatal drownings occurred among children under age five – 52% of these occurred in swimming pools, compared to 25% in open water. While swimming pools do not necessarily constitute the majority of reported drowning sites for all age groups, an overwhelming percentage (27%) of drowning locations is “unspecified.” People that survive severe drowning incidents can experience long-term disabilities including memory problems, learning deficiencies, and loss of basic physical and cognitive functioning. While nearly all drownings are preventable, detailed information on public swimming pool-related injuries or deaths in Ohio is not regularly collected to inform effective drowning prevention strategies.

The Ohio Department of Health (ODH) initiated a surveillance pilot project to better understand injury and drowning incidents in public pools and to inform data-driven revision of public swimming pool rules. A Public Pool and Spa Injury Incident Report Form was developed based on Model Aquatic Health Code guidelines and other states’ drowning surveillance practices and implemented in a subset of local health districts (LHDs) during the 2015 outdoor swim season. The project will continue in 2016 and will be implemented in at least one LHD per region to ensure representativeness throughout the state.

A project evaluation plan was developed based on the Centers for Disease Control and Prevention (CDC)’s “Updated Guidelines for Evaluating Public Health Surveillance Systems.” Data quality will be assessed through an examination of form completeness and validity of responses. Project data will also be compared to other sources of drowning data to assess how well this system captures true drowning events. A survey will be distributed to pilot-participating LHDs at the close of each outdoor swim season to evaluate the report form and overall system’s usefulness, simplicity, timeliness, and acceptability, and to identify project successes and challenges.

With successful implementation of a drowning surveillance system, it is ODH’s aim that the state of Ohio be able to accrue sufficient data on public swimming pool-related injuries and deaths to inform data-driven revision of Ohio’s public swimming pool rules; initiate statewide drowning prevention initiatives; and ultimately increase awareness of drowning risk among public pool licensors, owners, operators, staff, and patrons.
Description of Drowning in Ohio

Introduction

Drowning is the leading cause of unintentional injury deaths in children ages 1-4 in the state of Ohio, and the second leading cause of unintentional injury deaths in children aged 5-9 and 10-14. In the *Burden of Injury in Ohio: 2000-2010* report, the highest rates of fatal and non-fatal drowning were consistently found among children less than 5 years of age. Looking at the distribution of all deaths resulting from unintentional drowning by location, we find that 17% of them occur in a swimming pool. Among children aged 1-9, this proportion increases to just over 30%. While swimming pools do not constitute the majority of reported location sites, an overwhelming percentage (27%) of drowning locations is “unspecified.”

Further, estimations of “near-drownings” indicate that these events occur 2-20 times more frequently than fatal drownings and can result in severe brain damage. This leads to long-term disabilities such as memory problems, learning deficiencies, and loss of basic physical and cognitive functioning. In 2010 alone, there were 93 drowning deaths, 36 hospitalizations, and 189 drowning-related emergency department visits in Ohio.

Fatal and Non-Fatal Drowning Defined

Prior to 2002, it was customary to use various definitions of drowning to characterize drowning events and outcomes. A systematic review by Papa et al. examined drowning literature published between 1966 and 2002 and demonstrated just how inconsistent the definitions of drowning were. Researchers found 20 different definitions for drowning, 13 different definitions for near-drowning and 13 other related terms. Another 20 inconsistent outcome measures were also identified.

This variability in definitions has made it difficult to assess, analyze, and compare studies or to draw conclusions from surveillance efforts that will influence practice and policy. For research in this area to be clinically and epidemiologically useful, experts at the World Congress on Drowning in 2002 formed a unified definition of drowning injury and outcome:

> Drowning is the **process** of experiencing respiratory impairment from submersion in liquid.

Drowning **outcomes** should classified as: death, morbidity, and no morbidity.

- **Fatal Drowning** = rapid death or death within 24 hours of a drowning incident.
- **Non-Fatal Drowning** = morbidity (e.g., brain damage or lung damage) or no morbidity (i.e., full recovery).

Terms previously used, such as “wet,” “dry,” “active,” “passive,” “silent,” and “secondary” should no longer be applied to describe a drowning victim.

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Statement of Need

Drowning is not just an issue in Ohio, but a national and global problem; drowning prevention is therefore a worldwide challenge. Physicians and other health and health care professionals deal with the consequences of fatal and non-fatal drowning on a daily basis, yet there are relatively few states that have adopted drowning surveillance systems, and even fewer population-based surveillance studies on drowning incidents, risk factors, and outcomes.

In the state of Ohio, there are just under 7500 licensed public pools, but as urban and suburban areas continue to develop, that number grows every year. Census data indicate that children constitute 22.8% of Ohio’s population; 6.0% are under the age of 5. As a group that is consistently more vulnerable to drowning, it is increasingly important to identify risk factors and means for prevention.

Notably, drowning is rarely the result of a single cause, nor is there a single prevention solution. Circumstances can vary widely by age, aquatic setting, and the activity being undertaken prior to drowning. However, specific risk factors cannot be known without local surveillance. Pivotal to any prevention effort is an understanding of where, how, and why drowning occurs within that sequence of events, and what associated factors may affect the outcome.

Local health districts (LHDs) are an ideal audience for drowning surveillance because they regularly interact with the public pools in their jurisdiction via annual licensure and inspection. By targeting these entities, ODH can ensure widespread implementation of a novel surveillance system designed to track public pool-related injuries and deaths. Public swimming pools already record and maintain records of injuries as they happen, as mandated by the Ohio public swimming pools rules; the aim of a surveillance system project, therefore, is simply to promote regular submission of these records from public pools to their LHDs, and from LHDs to ODH.

Rationale for the Project

Effective drowning prevention requires programs and policies that address known risk factors. However, as mentioned, local surveillance is needed first to identify risk factors relevant to specific regions. The state of Ohio does not regularly collect detailed information regarding public swimming pool-related injuries or deaths. In fact, there is no systematic means of tracking drowning incidents in the state. Recognizing the importance of these data, the Ohio Department of Health recognizes that a surveillance system is needed that will not only help us better understand the determinants of pool-related incidents, but enhance our ability to make informed, data-driven decisions during the public swimming pool rule review process.

In a general sense, the three most common drowning risk factors include:

Lack of Swimming Ability: Research has shown that participation in formal swimming lessons can reduce the risk of drowning.

Lack of Barriers: Barriers, such as pool fencing, prevent young children from gaining access to the pool area without caregivers’ awareness.

Lack of Close Supervision: Drowning happens quickly and quietly and can occur anywhere there is water, and even in the presence of lifeguards.
Purpose of the Drowning Prevention Pilot Project

Project Background
For the purposes of this project, we initially identified 13 states that collect information on public pool and spa-related injuries and deaths and administered a survey to 8 of them to better understand how public health agencies benefit from collecting this type of information. We found that all of the responding public health agencies (n = 5) use data collected through their report forms to inform decision making during their pool rule review processes.

The Ohio Public Swimming Pool Rule Review Advisory Committee, consisting of individuals from local health departments, non-profit groups (e.g., YMCA), the Ohio Department of Agriculture, contractors, designers, and operators, agreed that data on public swimming pool-related injuries and deaths is needed to not only aid the pool rule review process, but to also reduce drowning risks and initiate effective drowning prevention initiatives. To do this effectively, the Model Aquatic Health Code (MAHC), a guidance document developed by the Centers for Disease Control and Prevention (CDC) to ensure safer and healthier swimming, recommends that public health officials use a Drowning and Near-Drowning Investigation Tool for investigating drowning events.

After examining other states’ drowning surveillance tools and the MAHC’s sample drowning investigating form, we developed a one-page data collection tool of our own, referred to as the Public Pool and Spa Injury Incident Report Form. With it, the objective is to capture as much information about pool-related incidents as possible and determine the most efficient and effective routes of reporting.

Project Goals
The specific goals of the Drowning Prevention Pilot Project are to:

1) Implement a surveillance system to capture public swimming pool-related injuries and deaths occurring throughout Ohio.
2) Accrue data on public swimming pool-related injuries and deaths that can be used to inform data-driven revision of Ohio’s public swimming pool rules and initiate statewide drowning prevention initiatives.
3) Increase awareness of drowning risk among public pool licensors, owners, operators, staff, and patrons through enhanced surveillance activity.

Project Assumptions
The Drowning Prevention Pilot Project operates under the following assumptions:

1) Drowning is a significant public health problem that necessitates active surveillance.
2) Surveilling fatal and non-fatal drowning incidents is a feasible endeavor, based on other states’ drowning surveillance practices.
3) Local health districts and pools within these jurisdictions will want to participate in a project that enhances the understanding of drowning risk in Ohio public pools.

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Project Implementation

ODH will pilot the Public Pool and Spa Injury Incident Report Form with a subset of city and county local health districts (LHDs) each summer, beginning at the open of the outdoor swim season in 2015.

The Drowning Prevention Pilot Project is housed within the Ohio Department of Health, an organization that is committed to protecting and improving the health of all Ohioans.

Figure 1: Flow Chart – Reporting Pool-Related Injuries & Deaths

This project was initiated at the Ohio Department of Health (ODH) with input from various stakeholders. ODH has developed this project plan to explain how the project is to be implemented at the local and community levels. ODH is prepared to provide guidance and technical assistance to local health districts (LHDs) and public swimming pool facilities for the life of this project.

The flow chart in Figure 1 explains the project’s process and proposed flow of information and reporting.

1) In the event of a pool-related incident, public swimming pool aquatics staff are responsible for completing the report form and submitting it to their appropriate LHD via mail, fax, or email within a designated timeframe:

- **Within 24 hours** of an incident that results in death, resuscitation (including the provision of oxygen), or transfer to a hospital;
- **Within 72 hours** of a pool owner’s/operator’s knowledge of an incident, including the serious injuries listed above, as well as sprains, scrapes, and other less-severe incidents;
- **Every 3 months** during pool operation or at the end of the outdoor swim season for water rescues not resulting in death, resuscitation, or transfer to a hospital.

One form is to be used for each injured person and should be completed in its entirety, to the best of the staff’s ability. Any aquatics staff may complete the form including, but not limited to, lifeguards, pool owners, pool operators, and aquatics supervisors. To comply with federal and state statutes for privacy and confidentiality, personal identifiers are not to be collected on these forms.
2) Local health districts are responsible for examining the forms and sending them back to ODH, again via mail, fax, or email. The mailing and email addresses and fax number are indicated below and can be found at the top of the report form. Pertinent areas of the form that should be checked for accuracy and completion include the facility’s information, a description of the incident (including what happened, when, who was there, and what was done following the incident), and a description of the actual injuries an individual may have sustained. For the purposes of this project, we ask that personal identifiers of those injured be omitted.

Onsite investigation of a facility that incurs an injury, drowning, or suction entrapment resulting in death, resuscitation, or transfer to a hospital is at the discretion of the LHD. However, in the case of these most severe outcomes, ODH would like to have a better understanding of the circumstances surrounding the incident. Follow-up investigations are common practice in other states and are manageable considering the rarity of these incidences. We will be providing a Fatal and Non-Fatal Drowning Investigation Guide as reference should an onsite investigation be warranted.

3) ODH will monitor the media (i.e., news reports) for accounts of fatal and non-fatal drowning incidents in public pools; vital statistics and emergency medical services (EMS) data will also be monitored for fatal and non-fatal drownings, respectively. Data gathered using the project report forms will be collated and compared to other data sources to determine the surveillance system’s overall ability to adequately capture public pool-related incidents.

ODH will use each of these data sources to develop a yearly “lessons learned” and data report that will be disseminated to all project-participating LHDs and other stakeholders. These documents will also be supplied to the Ohio Public Swimming Pool Rule Review Advisory Committee to support data-driven revision of the Public Swimming Pool, Spa, and Special Use Pool Rules, item 3701-31 of the Ohio Administrative Code (OAC).

Local Health Districts (LHDs) may submit completed Public Pool and Spa Injury Incident Report Forms via mail, fax, or email to the following:

Ohio Department of Health
Bureau of Environmental Health and Radiation Protection
246 N. High St., Columbus, OH 43215
Fax: (614) 466-4556
Email: BEH@odh.ohio.gov
# SMART Objectives, Activities & Timeline

**Goal 1:** Implement a surveillance system to capture public swimming pool-related injuries and deaths occurring throughout Ohio.

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>By March 2015, ODH will have established working relationships with major stakeholders</td>
<td>ODH reaches out to all major stakeholders (e.g., non-profit groups, local health districts (LHDs), pool contractors and designers, other state agencies, etc.) with information about the proposed project and request for involvement and input</td>
<td>Q1</td>
</tr>
<tr>
<td>By April 2015, ODH will have created project materials for LHDs and public pool aquatic staff</td>
<td>ODH researches other states’ drowning surveillance policies and practices</td>
<td>Q1</td>
</tr>
<tr>
<td></td>
<td>ODH designs a comprehensive project plan detailing project rationale, goals, objectives, and activities</td>
<td>Q1</td>
</tr>
<tr>
<td></td>
<td>ODH generates a Public Pool and Spa Injury Incident Report Form based on recommendations from other states and the Model Aquatic Health Code (MAHC)</td>
<td>Q1</td>
</tr>
<tr>
<td></td>
<td>ODH develops an instruction manual for report form completion for LHDs and aquatics staff</td>
<td>Q1</td>
</tr>
<tr>
<td></td>
<td>ODH devises a project database to input/store collected data and a codebook for data entry</td>
<td>Q1</td>
</tr>
<tr>
<td>By May 2015, ODH will have recruited at least 20 LHDs for participation in the pilot project</td>
<td>ODH disseminates a mass email to all county and city LHD Health Commissioners and Environmental Health Directors to solicit project buy-in and participation in the pilot project</td>
<td>Q1</td>
</tr>
<tr>
<td>By May 2015, ODH will have trained 100% of pilot-participating LHDs to facilitate the project within their jurisdictions</td>
<td>ODH develops training materials for project-participating LHDs Webinar, In-person trainings</td>
<td>Q1</td>
</tr>
<tr>
<td></td>
<td>ODH delivers training to LHDs via in-person meetings and scheduled webinars</td>
<td>Q2</td>
</tr>
<tr>
<td></td>
<td>ODH provides an open Q&amp;A period in which LHDs may receive technical assistance for project implementation</td>
<td>Q2</td>
</tr>
<tr>
<td>By June 2015, ODH will have initiated use of the report form in 100% of LHDs that agree to participate in the pilot project</td>
<td>ODH provides all LHDs with a pre-formed letter to supply their pools, informing them of the project and to solicit their buy-in</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>ODH ensures that all participating LHDs have at least one (1) copy of the Public Pool and Spa Injury Incident Report Form</td>
<td>Q4</td>
</tr>
<tr>
<td></td>
<td>ODH ensures that all participating LHDs have necessary documentation (i.e., project plan, instruction manual)</td>
<td>Q4</td>
</tr>
</tbody>
</table>
### SMART Objectives, Activities & Timeline

#### Goal 2: Accrue data on public swimming pool-related injuries and deaths that can be used to inform data-driven revision of Ohio’s public swimming pool rules and initiate statewide drowning prevention initiatives.

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
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<tbody>
<tr>
<td>By Sep 2015, each LHD will have received a report of pool-related injury from at least 1 of the pools in their jurisdiction</td>
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<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHDs supply their pools with ODH’s letter template, informing them of the project and to solicit their buy-in</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>LHDs supply their pools with at least one (1) copy of the Public Pool and Spa Injury Incident Report Form</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>LHDs provide project training to the pools within their jurisdictions, explaining use of the report form</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>Pools return completed report forms to their LHDs via mail, fax, or email</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHDs examine completed report forms returned from pools within their jurisdictions</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>LHDs follow up with pools supplying incomplete forms to acquire additional data</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>LHDs return completed report forms to ODH via mail, fax, or email</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>ODH stores completed report forms in a secure location in the office and/or hard drive</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
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<table>
<thead>
<tr>
<th>ACTIVITIES</th>
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</thead>
<tbody>
<tr>
<td>ODH gathers drowning data from up-to-date resources, i.e., Vital Statistics and USA Swimming Foundation</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>ODH gathers drowning data from annually-available resources, i.e., EMS and Child Fatality Review (CFR)</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>ODH performs data linkage of fatal drowning data (not non-fatal drownings), if possible</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
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</table>

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>TIMELINE</th>
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</thead>
<tbody>
<tr>
<td>ODH completes entry of collected report form data into the project database</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>ODH analyzes submitted data for content and compares to data from Vital Statistics, USA Swimming Foundation, EMS, and CFR</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
<tr>
<td>ODH develops a data report for project-participating LHDs and all other major stakeholders</td>
<td>2015 Q1, Q2, Q3, Q4 2016 Q1, Q2, Q3</td>
</tr>
</tbody>
</table>
SMART Objectives, Activities & Timeline

**Goal 3:** Increase awareness of drowning risk among public pool licensors, owners, operators, staff, and patrons through enhanced surveillance.

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>ACTIVITIES</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Feb 2016, ODH will have completed a full surveillance system evaluation to determine overall project effectiveness</td>
<td>ODH analyzes submitted data for quality (i.e., completeness and validity)</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>ODH designs a survey to gather feedback from LHDs on the report form and overall surveillance system</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>ODH disseminates survey to participating LHDs using Survey Monkey</td>
<td>Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4</td>
</tr>
<tr>
<td>By Mar 2016, ODH will have communicated results of the pilot project to all major stakeholders</td>
<td>ODH produces a full evaluation report, including project data and qualitative survey data from LHDs</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>ODH distributes the full evaluation report to all major stakeholders, including participating LHDs</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>ODH develops a PowerPoint presentation of the project and its findings</td>
<td>Q1 Q2 Q3 Q4</td>
</tr>
<tr>
<td></td>
<td>ODH presents the project’s findings at conferences and via webinar</td>
<td>2015</td>
</tr>
<tr>
<td>By May 2016, ODH will have created a safe swimming campaign</td>
<td>ODH develops a 30- and 60-second script for a Public Service Announcement (PSA) regarding safe and healthy swimming</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>ODH disseminates a mass email to pilot-participating LHDs and other non-participating county and city LHDs to recruit for recording of PSA</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>ODH records and airs 30- and 60-second versions of the PSA on television and radio</td>
<td>Q1 Q2 Q3 Q4</td>
</tr>
<tr>
<td></td>
<td>ODH produces and posts new messages regarding healthy and safe pool swimming</td>
<td>2015</td>
</tr>
<tr>
<td>By Sep 2016, ODH will have presented project findings to the Ohio Public Swimming Pool Rule Review Committee to require incident reporting</td>
<td>ODH writes a pool rule requiring that public pools report incidents occurring at their facilities</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>ODH presents the newly-written pool rule at a Public Swimming Pool Rule Review Committee meeting, using project findings for support of the addition</td>
<td>2016</td>
</tr>
<tr>
<td></td>
<td>The Ohio Public Swimming Pool Rule Review Committee votes on the addition and confirms updated rules for the Ohio Revised Code</td>
<td>Q1 Q2 Q3 Q4</td>
</tr>
</tbody>
</table>
Public Pool and Spa Injury Incident Report Form

Below is a copy of the report form to be used in the event of a pool-related incident. Pertinent areas of the form include the facility’s information, an account of the incident, and a description of the actual injuries an individual may have sustained. For the purposes of this project, we ask that personal identifiers of those injured be omitted. Please see the document titled “Instructions for Local Health Districts & Aquatics Staff” for further instruction on how to complete the form.
Project Evaluation Design

Purpose and Objective for Evaluation
Evaluation of this pilot project provides a mechanism to monitor and make recommendations to improve the quality, efficiency, and usefulness of the surveillance system and report form to capture data on injuries and fatal and non-fatal drownings at public pools in Ohio. The objectives of the evaluation are to determine the following:

- Report form coherence and ease of flow
- Acquisition of relevant injury data
- Preferred method(s) of form submission
- Project successes and challenges

Evaluation Design

Evaluation Focus
The focus of the evaluation will be on five surveillance system attributes: Data Quality, Simplicity, Acceptability, Timeliness, and Usefulness. A survey will be distributed to all project-participating LHDs to qualitatively assess the latter four surveillance system attributes.

Data Quality: Reflects the completeness and validity of the data recorded in the surveillance system.

- Examining the percentage of “blank” responses to items on the report forms will be our most straightforward measure of data quality.
- Pertinent areas of the form that will be examined for completion include the facility’s information, details of the pool-related event, and a description of the injuries an individual may have sustained.
- To assure state and federal mandates for privacy and confidentiality of those injured, we will also determine if personal identifiers have been omitted, as requested in the instructions.

Simplicity: Refers to the surveillance system’s structure and ease of operation.

- The survey distributed to LHDs will ask program managers to provide feedback on the flow of the report form, as well as the relative ease of submission from pools and to ODH.
- ODH will assess the time it spends transferring, entering, editing, and storing data from the report forms, along with time spent analyzing and preparing the data for dissemination.
- ODH will also assess the system’s ability to be integrated with data from other systems (e.g., Vital Statistics, Emergency Medical Services (EMS), Ohio Child Fatality Review (CFR), etc.).

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4 Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. MMWR 2001; 50(No. RR-13).
Acceptability: Reflects the willingness of pools and LHDs to participate in the provision of accurate, consistent, complete, and timely data.

- Acceptability of the surveillance system will first be assessed through an examination of the submitted data (i.e., pool and LHD reporting rates, completeness of report forms).
- Acceptability will also be assessed with the survey distributed to project-participating LHDs, including the burden of time needed to collect the data relative to aquatics’ staff available time, the ease reporting, and how this being a voluntary system impacts reporting from public pools.

Timeliness: Reflects the speed between steps in this surveillance system.

- The amount of time it takes a public pool facility to recognize and report an incident to their respective LHD is the ultimate determinant of system timeliness.
- ODH will assess the preferred reporting methods of the pools and LHDs (i.e., mail, fax, or email) to enhance the timeliness of reporting between pools, LHDs, and ODH.

Usefulness: Refers to the surveillance system’s ability to provide estimates of the magnitude of morbidity and mortality related to drowning events, including the identification of risk factors.

- ODH will determine how well the system captures pool-related incidents by comparing project data to drowning data from alternate resources (i.e., Vital Statistics, USA Swimming Foundation, Emergency Medical Services (EMS), and Ohio Child Fatality Review Program (CFR)).
- The survey distributed to LHDs will allow project managers to rate and comment on the relative usefulness of the surveillance system for their local drowning prevention efforts.

<table>
<thead>
<tr>
<th>Data Sources</th>
<th>Rationale</th>
</tr>
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<tbody>
<tr>
<td>Vital Statistics Death Certificates</td>
<td>Mortality records, maintained by the Office of Vital Statistics, are the primary data source for monitoring fatal drownings. Deaths are tabulated by age, race, and gender of decedent, and by cause and location of death.</td>
</tr>
<tr>
<td>USA Swimming Foundation Drowning Tracking System</td>
<td>The USA Swimming Foundation tracks media-reported incidents of fatal drownings using over 12 distinct resources. Data are available by location and other various characteristics and distributed monthly.</td>
</tr>
<tr>
<td>EMS Incident Reporting System (EMSIRS)</td>
<td>EMSIRS was created to collect information on emergency medical care delivery in Ohio. All EMS agencies in the state report to this system, making it one of the only data sources available for tracking non-fatal drownings.</td>
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Discussion of Project Scale-Up & Sustainability

Project Scale-Up
The Drowning Prevention Pilot Project is currently being implemented on a voluntary basis within a subset of the local health districts throughout the state. Scale-up of this project will ultimately depend on its effectiveness as a surveillance system and its acceptability among our local partners. Alternative modes of reporting (e.g., via electronic form and database) will be necessary to facilitate accurate and timely data entry in the event that the project is expanded to encompass each of Ohio’s local health districts and the public pools within these jurisdictions.

Project Sustainability
Sustainability has been defined as the ongoing capacity and resolve to work together to establish, advance, and maintain effective strategies that continuously improve health and quality of life for all. As a voluntary measure at this point, sustainability of this project will require continued commitment from ODH staff; LHD Health Commissioners, Environmental Health Directors, and project managers; as well as pool owners, managers, operators, and other aquatics staff. One entity needs each of the others to adequately collect detailed information on pool-related incidents in Ohio.

Even in the event that language is added to the Ohio Administrative Code’s public swimming pool rules (i.e., the requirement that public pools report pool-related injuries and deaths), enforcement of the rule, and ultimately, continued collection of accurate and timely data will depend on the buy-in of each of the aforementioned stakeholders.

Dissemination Plan
Project staff will develop an annual report which will include collected surveillance data, qualitative and quantitative evaluation data, and lessons learned. This annual report will be shared via email, on the ODH website, and during in-person and web-based meetings with state, local, and community stakeholders, including local health districts and licensed public swimming pool facilities.

An abbreviated, one-page fact sheet will also be developed, summarizing project successes, challenges, and impacts. This fact sheet will be disseminated to all of the aforementioned stakeholders. For legislators, project staff will adapt this fact sheet to include brief bullet points on ways policy-makers can advocate for improved drowning surveillance and drowning prevention initiatives.

Finally, project staff will present the project’s findings at conferences and national meetings, and will utilize findings for journal manuscripts. Given the importance of drowning surveillance and the lack of systems throughout the United States for this endeavor, it will be important to publish what is learned about our approach, the aspects of the project that were successful, and changes to be made to better meet our data needs. Publishing these results will contribute to the fields of epidemiology, injury prevention, and maternal and child health.
## Appendix: Project Logic Model

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>PROCESSES</th>
<th>OUTPUTS</th>
<th>OUTCOMES</th>
<th>IMPACTS</th>
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<tbody>
<tr>
<td><strong>Collaborations</strong>&lt;br&gt;▪ Local Health Districts (LHDs)&lt;br▪ ODH Violence and Injury Prevention Program&lt;br▪ Non-Profit Organizations&lt;br▪ Child Injury Action Group&lt;br▪ Safe Kids Ohio&lt;br▪ State Apartment Associations&lt;br▪ State Condominium &amp; Homeowners Associations</td>
<td><strong>Project Development</strong>&lt;br▪ Quantify and describe impact of fatal and non-fatal drownings in Ohio&lt;br▪ Research other states’ drowning surveillance efforts&lt;br▪ Develop data collection tool&lt;br▪ Develop database for input of project data&lt;br▪ Develop instruction manual for data collection tool</td>
<td><strong>Project Development</strong>&lt;br▪ Fatal and non-fatal drowning statistics aggregated for Ohio, 2010-2015&lt;br▪ Other states’ surveillance efforts analyzed&lt;br▪ Public Pool and Spa Injury Incident Report Form (“form”) developed&lt;br▪ Secure Excel file developed for project data&lt;br▪ Instruction manual developed for the form</td>
<td><strong>Short-Term</strong>&lt;br▪ Completion and submission of forms to LHDs and ODH&lt;br▪ LHDs complete pool investigations in the event of a fatal or non-fatal drowning</td>
<td><strong>Long-Term</strong>&lt;br▪ Ohio’s fatal and non-fatal drowning surveillance data used to develop drowning prevention initiatives for:&lt;br▪ – Public Pools&lt;br▪ – Private Pools&lt;br▪ – Homes&lt;br▪ – Open Water</td>
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