

Development of a Statewide, Publicly Accessible Drug Overdose Surveillance and Information System

In response to Rhode Island's overdose epidemic, we developed a collaborative, statewide online "dashboard" to provide the public with timely overdose surveillance data. The Web site—www.PreventOverdoseRI.org (PORI)—offers user-friendly data visualizations, plain language education, and interactive resource maps.

Development of the site has improved overdose data sharing and transparency in Rhode Island. Preliminary results suggest a successful site launch.

Future research will evaluate the effectiveness of PORI in terms of informing strategic initiatives to reduce overdoses in affected communities. (*Am J Public Health*. Published online ahead of print September 21, 2017; e1–e4. doi:10.2105/AJPH.2017.304007)

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Drug overdose death is a public health crisis in the United States. Drug-related overdose mortality continues to increase nationally.¹ The emergence of illicit fentanyl in the drug supply has worsened the crisis, with some states reporting sharp increases in fentanyl-attributable fatal overdoses in 2015.² Similar trends have been observed in Rhode Island (a state with the fifth highest rate of drug overdose deaths in 2015).¹ In 2015, half of all overdose deaths in Rhode Island involved fentanyl and fentanyl analogs.³

In response to this crisis, Rhode Island's governor established the Overdose Prevention and Intervention Task Force in August 2015. The task force charged an academic team with drafting a strategic plan to reduce overdose morbidity and mortality.³ The main goal of the plan, launched in November 2015, was to reduce the number of drug overdose deaths in Rhode Island by one third in 3 years.

A key component of the strategic plan was the development of a publicly visible, online "dashboard" to communicate timely overdose-related data, promote transparency, and track progress toward reaching the plan's goals. As a result, an interactive, publicly available, data-focused Web site, www.PreventOverdose.RI.org, was launched on June 27, 2016.

The drug overdose dashboard, hereafter referred to as PORI (PreventOverdoseRI), uses innovative data visualization techniques to provide the latest epidemiological data on overdoses in Rhode Island as well as online resources for overdose prevention and response.

The development of PORI was grounded in the "six components" concept, an implementation approach that helps public health programs maximize their impact in the community.⁴ We describe here the objectives, partnerships, technical requirements, and initial launch of PORI to inform future overdose prevention efforts.

INTERVENTION

The primary goal of PORI was to create a public Web site using timely public health surveillance information about the overdose crisis in Rhode Island. An academic team led the development of the dashboard, working in close collaboration

with the state's health department. The PORI development team started with a stakeholder engagement phase (August 2015 to June 2016), facilitating monthly meetings and addressing community-based coalitions. The goal during this phase was to generate discussion on the Web site architecture, content, layout, and data visualization. Stakeholders included the state health department, members of the governor's overdose task force, community-based coalitions, people who use drugs and people in recovery, policymakers, and researchers.

Through the engagement process, we strengthened community and governmental partnerships and identified 3 additional stakeholder goals. One was to include overdose prevention information as well as statewide resources (e.g., availability of medication-assisted treatment, where to obtain naloxone). Next, stakeholders wanted PORI to connect

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visitors with an existing public health campaign aimed at increasing access to substance use treatment and a new statewide substance use “support line” (i.e., a toll-free number staffed by licensed counselors). Finally, they outlined key audiences they wanted to reach via the Web site, including individuals and family members affected by overdose.

To address feedback gathered during the stakeholder engagement phase, the development team focused on a responsive Web site design that emphasized accessibility and clear communication, as recommended by the Centers for Disease Control and Prevention.⁵ We used figures, plain language infographics (Figure 1), and local maps to inform focused, community-driven interventions.⁶ We contracted with health communication experts and adopted guidelines for neutral, evidence-based messaging to avoid shocking or triggering graphics (e.g., graphics depicting people experiencing overdoses).⁷⁻⁹

IMPLEMENTATION

During the implementation phase, the development team worked with partner agencies to identify data sources relevant to overdose surveillance in Rhode Island. Five data “domains” were identified:

1. overdose death,
2. emergency department visits for overdoses,
3. substance use treatment admissions,
4. medication-assisted therapy uptake and availability, and
5. naloxone distribution.

Several domains involved multiple data sources and required cross-agency collaboration

(Table A, available as a supplement to the online version of this article at <http://www.ajph.org>). For example, overdose death records obtained from the Rhode Island Office of State Medical Examiners were linked to the inmate database from the Rhode Island Department of Corrections to determine the proportion of overdose decedents released from prison within 1 year of death. These data are updated on PORI at monthly, quarterly, and semi-annual intervals by the development team.

EVALUATION

Before the official launch, we conducted a 2-week testing phase by e-mailing surveys and requesting feedback from 150 community and agency stakeholders. The Web site launch consisted of a press release event with the governor and local media interviews. Since the launch, we have received more than 100 comments e-mailed through the site with suggestions for improvement and information on how the resources are being used. For example, outreach organizations are employing the geographic data to increase resources and naloxone distribution in underserved communities with high overdose burdens. People at risk for overdose have used the “treatment locator” map to find addiction treatment services in their community. As a next stage of evaluation, the PORI development team will conduct focus groups and user testing sessions to better target content for PORI audiences.

We have tracked visits to the Web site since the launch on June 27, 2016. Between June 27 and December 31, a total of 6518 new users were logged, for an average of 931 visits per



FIGURE 1—PreventOverdoseRI Infographic

month (Figure A, available as a supplement to the online version of this article at <http://www.ajph.org>).

SUSTAINABILITY

Given the multi-institution and collaborative nature of the project, significant time was

needed to develop data-sharing policies, reporting standards for small counts and rates, and secure data transfer and management systems that met the needs of the data-sharing partners. Developing these policies required legal oversight and careful implementation. The academic team was responsible for overall data management, analysis, and security and used existing frameworks to create data-sharing policies for overdose-related data sets across jurisdictions and agencies.^{10,11} The state health department was responsible for establishing the small counts and rates policy and finalizing the data use agreements.

Substantial technical expertise was required to develop PORI. In addition to a Web developer, the team included a data visualization expert and also received assistance from staff members at the Rhode Island Office of Management and Budget regarding best practices for data visualization and evaluation metrics. The Office of Management and Budget took on the role of accountability partner and provided support to agencies responsible for the evaluation metrics outlined in the strategic plan. The development team used WordPress (an open-source Web template system) for the primary site architecture, relied

on Tableau data visualization software (<http://www.tableau.com>) to generate interactive maps and charts (Figure 2), and developed Google Maps application program interfaces to display treatment services and naloxone availability throughout the state.

PUBLIC HEALTH SIGNIFICANCE

In response to a drug overdose epidemic in Rhode Island, we developed a statewide, online, interactive dashboard to communicate real-time overdose-related data, promote transparency,

and track the state's strategic plan for reducing overdose mortality. To improve the usability of the dashboard, we placed an emphasis on plain language communication and a responsive Web site design.

As other states look to replicate this model, we recommend dedicated grant support through the state health department or a similar institution for 3 to 5 years. In the case of academic partnerships or cross-governmental subcontracts, we suggest a budget of \$200 000 per year for a team to develop and maintain the dashboard site and manage the data, with the goal of diversifying funding by year 3 to support ongoing development and innovation. Future evaluation research conducted by our team will address the impact of the surveillance system on overdose prevention efforts. **AJPH**

CONTRIBUTORS

B. D. L. Marshall led the writing of the article. J. L. Yedinak and N. Alexander-Scott contributed to the writing of the article. J. Goyer, T. C. Green, and J. A. Koziol provided critical feedback on all aspects of the article and contributed important intellectual content.

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Note. The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Rhode Island Department of Health or the Centers for Disease Control and Prevention.

HUMAN PARTICIPANT PROTECTION

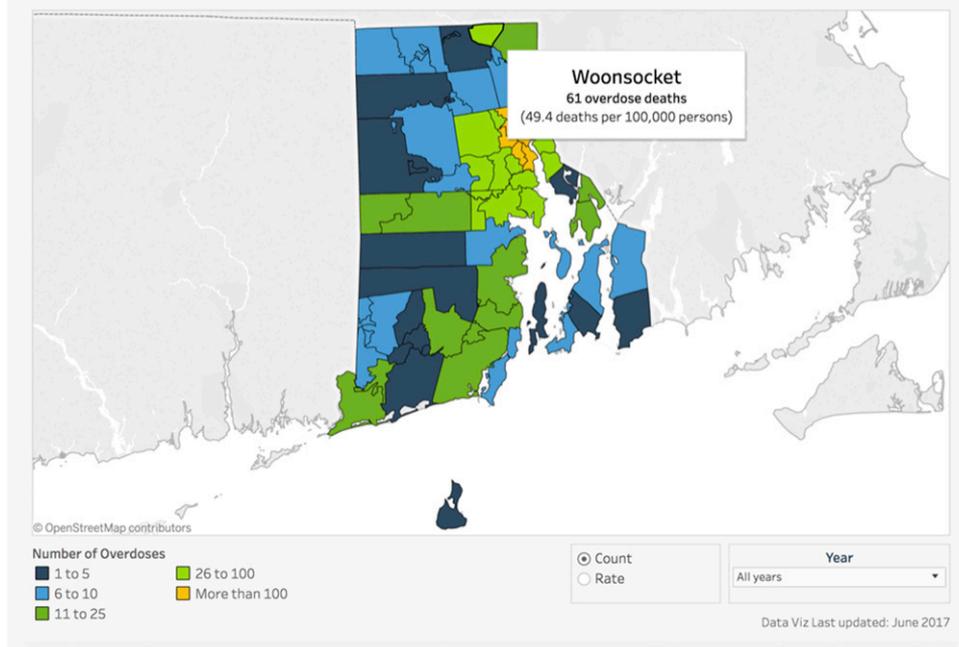
No protocol approval was needed for this study because no human participants were involved.

Overdose affects communities across Rhode Island

In 2016, 336 Rhode Islanders lost their lives to overdose. From 2011 to 2016, overdose deaths increased by more than 90 percent.

Source (RIDOH)

Overdose Deaths by City/Town (2014 to 2016)



Note. Maps are interactive such that a "mouseover" displays the number of overdose deaths by town. Shown here are the number of drug overdose deaths that occurred in the city of Woonsocket between 2014 and 2016.

FIGURE 2—Snapshot of the PreventOverdoseRI Overdose Deaths Data Page

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