Collaborating with State and Local Partners to Drive Opioid Policies

Data, Modeling, and Policy Making to Address the Opioid Epidemic

Committee on Applied and Theoretical Statistics
The National Academies of Sciences, Engineering, and Medicine
Washington, DC
June 10th, 2019

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Brown University School of Public Health
Today’s Objectives

Discuss Rhode Island’s strategic action plan to address the overdose and addiction crisis

Learn about Rhode Island’s efforts to improve the collection, analysis, and dissemination of overdose surveillance data

Discuss best practices for collaborating with state and local partners
Developing our state’s strategic plan

- In 2015, Rhode Island Governor Gina Raimondo commissioned a Strategic Plan on Overdose & Addiction
- Authored by an academic research team
- Approved and endorsed by the Governor’s Overdose Prevention and Intervention Task Force
Enter the Governor’s Overdose Prevention Action Plan

With this plan, Rhode Island will reduce overdose deaths by 1/3 in 3 years — that means saving hundreds of lives.

We have one goal:
to save lives.

Here’s how we plan to do it:

**Prevention**

Help doctors protect their patients by using safe prescribing practices.

**Fact**

It’s time to change how we treat pain — opioids don’t need to be the first line of defense.

**Rescue**

Make sure everyone has access to naloxone.

**Fact**

Nearly every opioid overdose death is preventable with naloxone.

**Treatment**

Make sure everyone who needs it can get medication-assisted treatment (MAT), like methadone or buprenorphine.

**Fact**

MAT lowers the risk of both relapse and death.

**Recovery**

Expand peer recovery services and treatment options that help people start recovery.

**Fact**

We’re making sure that all patients treated for addiction have a long-term recovery plan.
Rescue Strategy: Increase the number of naloxone kits distributed in the community each year.

Estimated annual number of naloxone kits distributed statewide (2014 - 2018)

Goal: 10,000
We all have a role to play in ending Rhode Island’s overdose crisis. What’s yours?
Expanded stakeholder analyses

Protected: Member Portal

We would like to thank you for visiting our member portal, a private page created to give you detailed information not available on our public website.

**Action Plan Metrics →**
View a summary visualization of all metrics that we track which were outlined in the Strategic Action Plan. You can also view past reports of metric tracking spreadsheets.

**Treatment Admissions Data →**
We created visualizations of Treatment Admissions data, including the primary substance of abuse, age, and primary route of administration.

**Naloxone Data →**
Here you can find data about naloxone distribution and administration by EMS, Hospitals, and other agencies in Rhode Island.

**48 Hour Reporting Data →**
We created visualizations of 48 Hour Reporting data, including treatment and counseling services, broken down by hospital.

**PORT Visit Statistics →**
Find information about who is visiting our website, by month, page type, and location.

**Overdose Death Data →**
Explore more detailed data about overdose deaths in Rhode Island.

*Please do not share the details found on these pages with the public.*
Direct monthly reporting to Governor’s office and agency directors

Overdose Prevention and Intervention Metrics Update
October 2018

Rebecca Boss, MA, Director of the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities, and Hospitals

Nicolle Alexander-Scott MD, MPH, Director of the Rhode Island Department of Health

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Metric Type</th>
<th>Metric</th>
<th>Update frequency</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Q3 2018</th>
<th>2018 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overarching</td>
<td>Primary</td>
<td>Reduce accidental drug-related overdose deaths per year.</td>
<td>Monthly</td>
<td>240</td>
<td>290</td>
<td>316</td>
<td>323</td>
<td>323</td>
<td>191</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce number of ED visits for overdose (monthly average).</td>
<td>Monthly</td>
<td>-</td>
<td>-</td>
<td>136</td>
<td>139</td>
<td>128</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>Increase the cumulative unique number of people receiving buprenorphine each year.</td>
<td>Quarterly</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>8,436</td>
<td>6,154</td>
<td>6,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase the cumulative number of people receiving methadone each year.</td>
<td>Monthly</td>
<td>5,525</td>
<td>5,973</td>
<td>6,342</td>
<td>6,539</td>
<td>6,428</td>
<td>6,152</td>
</tr>
<tr>
<td>Treatment</td>
<td>Secondary</td>
<td>Increase the number of trained and data-waivered practitioners.</td>
<td>Quarterly</td>
<td>192</td>
<td>206</td>
<td>267</td>
<td>362</td>
<td>434</td>
<td>420</td>
</tr>
<tr>
<td>Strategies</td>
<td></td>
<td>Increase the percentage of trained data-waivered practitioners actively prescribing.</td>
<td>Quarterly</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>57%</td>
<td>51%</td>
<td>90%</td>
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<tr>
<td>Prevention</td>
<td>Primary</td>
<td>Number of clinical alerts for patients receiving an opioid and benzodiazepine prescription in a 30 day period (monthly average).</td>
<td>Monthly</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13,135</td>
<td>10,663</td>
<td>12,500</td>
</tr>
<tr>
<td>Strategies</td>
<td>Secondary</td>
<td>Number of clinical alerts for patients receiving an opioid prescription from more than four pharmacies and prescribers in a six month period (monthly average).</td>
<td>Monthly</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,543</td>
<td>1,288</td>
<td>1,200</td>
</tr>
<tr>
<td>Recovery</td>
<td>Primary</td>
<td>New client enrollments in peer recovery specialist services.</td>
<td>Quarterly</td>
<td>600</td>
<td>88</td>
<td>1,066</td>
<td>2,798</td>
<td>2,211</td>
<td>3,000</td>
</tr>
<tr>
<td>Strategies</td>
<td></td>
<td>Number of newly trained peer recovery specialists annually</td>
<td>Quarterly</td>
<td>75</td>
<td>83</td>
<td>124</td>
<td>146</td>
<td>69</td>
<td>168</td>
</tr>
<tr>
<td>Rescue</td>
<td>Primary</td>
<td>Increase the number of naloxone kits distributed in the community each year.</td>
<td>Quarterly</td>
<td>1,500</td>
<td>2,762</td>
<td>6,341</td>
<td>7,798</td>
<td>11,609</td>
<td>10,000</td>
</tr>
<tr>
<td>Strategies</td>
<td>Secondary</td>
<td>Percent of discharged opioid overdose patients that receive a naloxone kit or report already having naloxone.</td>
<td>Monthly</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>36%</td>
<td>40%</td>
<td>38%</td>
</tr>
</tbody>
</table>

In Progress   On Track Off Course

Data points represented by a check mark (✓) have no reported data for that time period.

* Includes data from the Centers of Excellence (COE) and the Prescription Drug Monitoring Program (PDMP). PDMP data prior to April 2016 is not reliable due to changes in PDMP vendors.
** Includes the all-inclusive reporting system (AIRS), Rhode Island pharmacies, and community-based organizations that are the Rhode Island Department of Corrections (RICO), PMH, and ANCHOR Recovery.
*** Data from 2017 year begins April 2017.

Data sources: Rhode Island Department of Health (RIDOH), Office of State Medical Examiners (OSME), Prescription Drug Monitoring Program (PDMP), Behavioral Healthcare, Developmental Disability, and Hospitals (BHD), Behavioral Health, Preventing and Reducing Overdose and Related Interventions of The Addictive Health (RADH), Rhode Island Department of Corrections (RICO), Hospital Emergency Department, Anchor Recovery, and Rhode Island pharmacies.

Data last updated: November 9th, 2018
4 Guideposts for Improving Collaboration with State and Local Partners to Strengthen Overdose Response

1. Go slow to get there faster: Relationships

2. The devil is in the details: Data & Technology

3. Get it in writing: Data Sharing and Usage

4. Close the loop: Publish and distribute your results
2016 CDC-Driven Analysis: 220 Counties identified as “at risk” for HIV outbreaks

Where Disease Eruption Is a Threat
A CDC report identified 220 counties where factors such as unemployment rates, overdose deaths and sales of prescription painkillers contribute to a high vulnerability for outbreaks of HIV and hepatitis C among injection drug users.

Source: Van Handel et al., 2016
Purpose of CDC Jurisdiction -Level Vulnerability Assessments

1. Support state and local health departments to develop and disseminate jurisdiction-level vulnerability assessments that identify sub-regional areas at high risk for: (1) opioid overdose, and (2) bloodborne infections associated with non-sterile drug injection.

2. Findings from the vulnerability assessments should be used to develop and initiate implementation of jurisdiction plans that strategically allocate prevention and intervention services to maximally reduce these life-threatening complications of the national opioid crisis.

Source: NCHHSTP (2018)
Village Project: Objectives & Deliverables

1. **Conduct a statewide vulnerability assessment**
   a. Identify neighborhoods (census tracts) at high risk of future drug-related HIV/HCV outbreaks and overdose
   b. Share results with stakeholders

2. **Develop a jurisdictional plan (online dashboard, report, & infographic)**
   a. Assess service gaps across state
   b. Identify community-based organizations and healthcare systems to help increase protective factors in areas with high vulnerability scores
   c. Direct service delivery to areas of highest need
1. Relationships Are Key

The Goal:
- Engage stakeholders early on to solicit feedback and improve data literacy.
- To address any political concerns or barriers about data sharing and surveillance.

Who is involved:
- Any person or agency who might benefit from using the latest data about overdose.

What does this look like:
- We collaborate extensively with the Rhode Island Department of Health.
- Convene a stakeholder group. We meet monthly to discuss preliminary results and how they would put it to use.

Why is it important:
- These are the people who can use the data to direct resources in their community.
- They are your data sharing champions and allies.

2. Get Comfortable With Data and Technology

The Goal:
- To identify what datasets and variables to use and decide on methods
- To identify the technologies that will store, transfer and analyze those datasets

Who is involved:
- Technical people at each organization (database managers, IT specialists, Web designer)
- Analysts or epidemiologists (people with skills in Excel, SAS, R, or GIS)

What does this look like:
- You will connect people who know how to work with confidential datasets, data quality, privacy and confidentiality, HIPAA, etc.
- You will learn about necessary software for data transfers, encryption, and analyses

Why is it important:
- This is how you get the technical work and analyses done

# Summary of VILLAGE data sources

<table>
<thead>
<tr>
<th>Publicly Available</th>
<th>State Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Housing (Census &amp; ACS)</td>
<td>• Overdose death locations (RIDOH)</td>
</tr>
<tr>
<td>• Income (Census &amp; ACS)</td>
<td>• Methadone treatment admissions (BHOLD)</td>
</tr>
<tr>
<td>• Gender (Census &amp; ACS)</td>
<td>• Needle exchange data (ENCORE)</td>
</tr>
<tr>
<td>• Age (Census &amp; ACS)</td>
<td>• HIV &amp; HCV rapid testing data (RIDOH)</td>
</tr>
<tr>
<td>• Employment (Census &amp; ACS)</td>
<td>• New HIV Infections (RIDOH)</td>
</tr>
<tr>
<td>• Education (Census &amp; ACS)</td>
<td>• HIV viral load data (RIDOH)</td>
</tr>
<tr>
<td>• MAT provider locations (SAMHSA)</td>
<td></td>
</tr>
<tr>
<td>• Parks, schools, fire stations,</td>
<td></td>
</tr>
<tr>
<td>hospitals, police stations, bus</td>
<td></td>
</tr>
<tr>
<td>stops (RIGIS)</td>
<td></td>
</tr>
<tr>
<td>• CDC Social Vulnerability Index</td>
<td></td>
</tr>
<tr>
<td>(SVI)</td>
<td></td>
</tr>
</tbody>
</table>
3. Data Sharing: DUAs, MOUs, BAAs, etc..

The Goal:
- To formalize relationships and expectations between organizations and individuals
- To protect confidentiality of the individuals and organizations handling the data

Who is involved:
- "Owners" of the data (community organizations or state agencies)
- Managers or Directors with signatory powers
- Legal counsel and technical consultants who can advise on data sharing agreements

What does this look like:
- Signed and executed documents on file at all participating agencies & organizations
- Rules or Policies about handling, transferring, and analyzing data - HIPAA, Small Numbers, Privacy, 42CFR, IRB approval, etc.

Why is it important:
- This is how you set expectations, ensure compliance, and protect your data
Machine Learning Prediction Methodology

1. Defined outcome distribution as Poisson since the outcome is count of overdose deaths at the census tract level.

2. Outcome: number of overdose deaths in each census tract in 2017

3. Over 200 predictors in final model

4. Used LASSO (Least Absolute Shrinkage and Selection Operator) method as well as elastic net method (H2o package in R)
Observed vs. Predicted Overdose Deaths in Rhode Island

$R^2 = 0.41$
4. Do Something With Your Data

The Goal:
- To distribute the results of the research early and often

Who is involved:
- Owners of the data
- Data sharing partners
- Analysts
- Potential users of the data

What does this look like:
- Public webpage, downloadable white paper, google maps, task force meeting presentations, scientific manuscripts, etc.

Why is it important:
- This is where & how you communicate your progress and key points about the overdose crisis and keep your data sharing partners engaged.
Community Level Risks for Future Drug-Related HIV Infections and Overdose
by census tracts within municipalities (Rhode Island, 2018)

Using Centers for Disease Control and Prevention (CDC) methodology, we used different data sources to identify communities at highest risk for future drug overdose and HIV outbreaks in Rhode Island.

Red areas – those of high risk – indicate areas that share characteristics with neighborhoods that have seen high levels of overdose.

The risk level does not necessarily mean that these communities have seen or will see high levels of overdose, but this map can be used to help deploy resources appropriately to prevent harms in communities that may face the biggest risk.

Please visit preventoverdoseri.org/rfmap to view an online version of this map.

Last revised: February 18, 2019
Interpreting and communicating machine learning results is a major challenge!

**Iterations to the map title**

Dec 20th: “Areas at Risk for Drug-Related Harms”

Jan 16th: “Community Vulnerability to Overdose, HIV/HCV risk, and Other Drug-Related Harms”

Jan 24th: “Community Vulnerability to Overdose and Other Drug-Related Harms”

Feb 6th: “Communities at Risk for Overdose and Other Drug-Related Harms”

Feb 14th: “Rhode Island Modeling Map of Community Risk Level for Overdose Death and Injury”

Feb 15th: “Community Level Risks for Future Drug-Related HIV Infections and Overdose”
Interpreting the maps

● “The risk level does not necessarily mean that these communities have seen or will see high levels of overdoses or HIV infections. However, these communities share characteristics with places that have experienced addiction and drug overdose in recent years.”

● These maps are guidelines, not instructions
  ○ Each neighborhood is unique and presents different challenges
  ○ Example: distribute 100 kits of naloxone to Providence vs. West Warwick
Key lessons learned so far

1. Stakeholders recognize the importance of using data to drive services, but don’t always feel confident in how to make changes.

2. Data sharing is a technical and legal challenge, but not an insurmountable one.

3. Data visualization techniques are essential to conveying results.

4. Interpreting model output and sharing project results with the public is challenging; more work is needed here.
Drug overdose deaths are decreasing

Source: Rhode Island Office of the State Medical Examiners & www.PreventOverdoseRI.org
The VILLAGE Project Team

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Acknowledgements

• The VILLAGE Project is funded by the Centers for Disease Control & Prevention (CDC-RFA-TP-1802)
• PreventOverdoseRI is funded by the CDC (CDC-RFA-CE15-1501)
• Other funding from the NIGMS (P20-GM122207)
• Outstanding colleagues at the Rhode Island Department of Health!
  • Tom Bertrand, Chief of the Center of HIV, STDs, Viral Hepatitis, and TB (CHSVTB), RIDOH
  • Katharine Howe, Anna Civitarese & Theodore Marak, of the CHSVHTB, RIDOH
  • Leanne Lasher & Samara Viner Brown; Center for Health Data & Analytics (CHDA), RIDOH
  • Jennifer Koziol & Meghan McCormick, Overdose Prevention Program, RIDOH
  • Nicole Alexander-Scott, MD, MPH, Director, Rhode Island Department of Health
Thank you!

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