# Visioning Opioid Informatics

## Controlled Substance Reporting System 2.0 & Dashboard Reporting

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# Today's Talk

**Background:** PDMPs & Opioid Epidemic

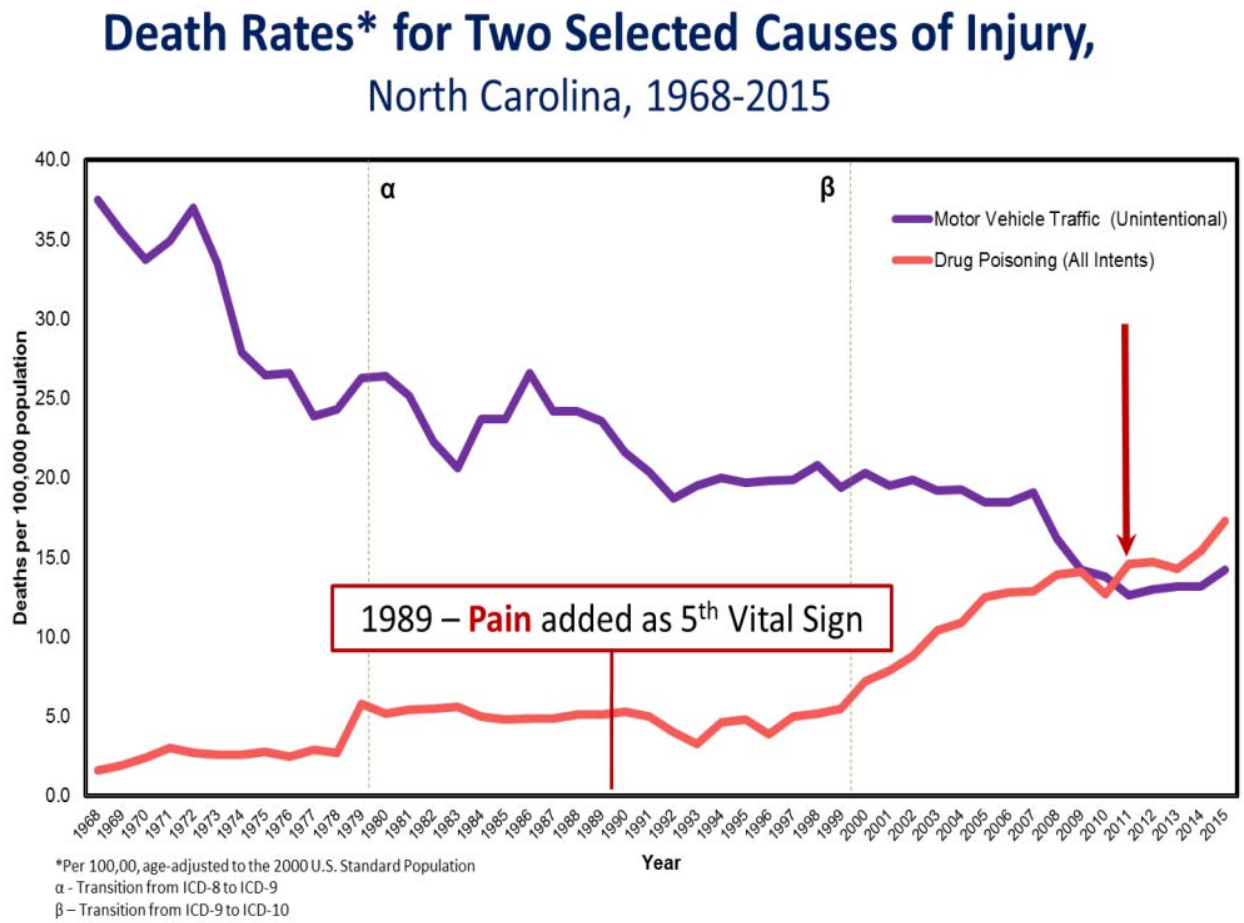
**Visioning CSRS 2.0**

- Research
- Stakeholder Meetings
- Informatics Outputs

**Opioid Action Plan:** Data Dashboard

# Background:
# Opioids & PDMPs

# Drug poisoning: a current (and rising) public health **epidemic**




National Vital Statistics System, http://wonder.cdc.gov, multiple cause dataset
Source: Death files, 1968-2015, CDC WONDER
Analysis by Injury Epidemiology and Surveillance Unit

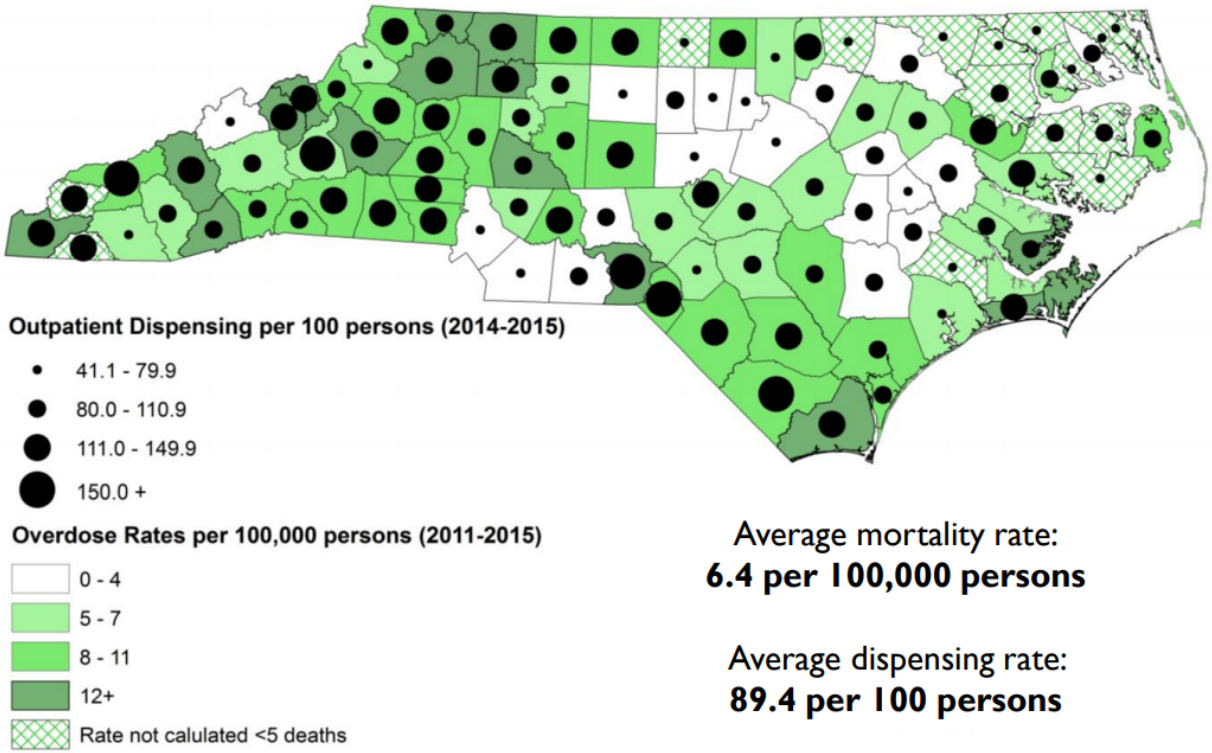
High opioid prescribing rates are **associated** with opioid overdose rates

... PDMPs* grew out of this association

* (Prescription Drug Monitoring Programs)

## Opioid overdose is more common in counties where more prescriptions are dispensed

North Carolina Residents, 2011-2015




Average mortality rate:
**6.4 per 100,000 persons**

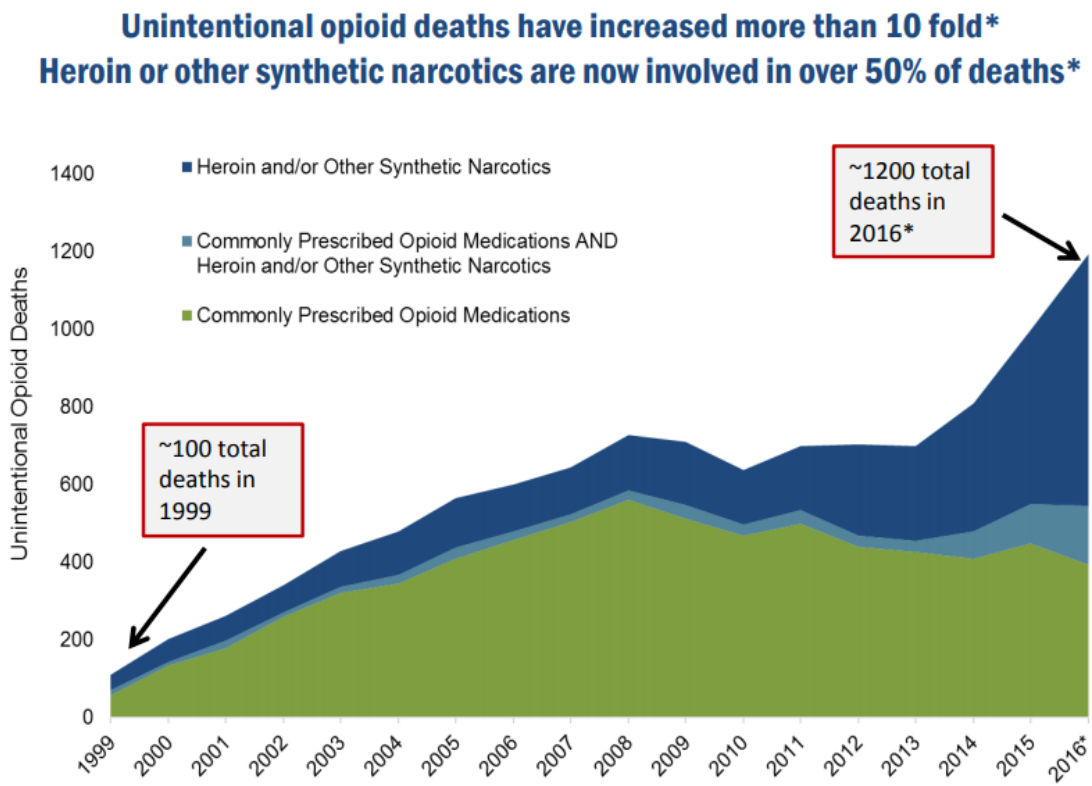
Average dispensing rate:
**89.4 per 100 persons**

Data Source: Proescholdbell SK, Cox ME, Asbun A. Death Rates from Unintentional and Undetermined Prescription Opioid Overdoses and Dispensing Rates of Controlled Prescription Opioid Analgesics-2011-2015. NC Med J. 2017 Mar-Apr; 78(2):142-143.

Landscape has changed: >50% of deaths are now **illicit drugs**

(e.g. Heroin / Fentanyl)…

…PDMPs aren't the solution, but operate in a **larger context**




*2016 data are provisional
Source: N.C. State Center for Health Statistics, Vital Statistics-Deaths, 1999-2016

Unintentional medication/drug (X40-X44) with specific T-codes by drug type.
Commonly Prescribed Opioid Medications=T40.2 or T40.3; Heroin and/or Other Synthetic Narcotics=T40.1 or T40.4.
Numbers of deaths from other synthetic narcotics may represent both prescription synthetic opioid deaths and non-pharmaceutical synthetic opioids because synthetic opioids produced illicitly (e.g., non-pharmaceutical fentanyl) are not identified separately from prescription ('pharmaceutical') synthetic opioids in ICD-10 codes.

Analysis by Injury Epidemiology and Surveillance Unit

# METRICS FOR NC'S OPIOID ACTION PLAN

| Metrics | Baseline Data (2016, Q4) | 2021 Trend/Goal |
|---|---|---|
| **OVERALL** | | |
| Number of unintentional opioid-related deaths to NC Residents (ICD-10) | 335 | 20% reduction in expected 2021 number |
| Number of ED visits that received an opioid overdose diagnosis (all intents) | 998 | 20% reduction in expected 2021 number |
| **Reduce oversupply of prescription opioids** | | |
| Average rate of multiple provider episodes for prescription opioids (times patients received opioids from ≥5 prescribers dispensed at ≥5 pharmacies in a six month period), per 100,000 residents | 29.9 per 100,000 | Decreasing trend |
| Total number of opioid pills dispensed | 145,997,895 | Decreasing trend |
| Percent of patients receiving more than an average daily dose of >90 MME of opioid analgesics | 6.7% | Decreasing trend |
| Percent of prescription days any patient had at least one opioid AND at least one benzodiazepine prescription on the same day | 25.3% | Decreasing trend |
| **Reduce Diversion/Flow of Illicit Drugs** | | |
| Percent of opioid deaths involving heroin or fentanyl/fentanyl analogues | 58.7% | ---------- |
| Number of acute Hepatitis C cases | 43 | Decreasing trend |
| **Increase Access to Naloxone** | | |
| Number of EMS naloxone administrations | 3,185 | ---------- |
| Number of community naloxone reversals | 817 | Increasing trend |
| **Treatment and Recovery** | | |
| Number of buprenorphine prescriptions dispensed | 133,712 | Increasing trend |
| Number of uninsured individuals and Medicaid beneficiaries with an opioid use disorder served by treatment programs | 15,187 | Increasing trend |
| Number of certified peer support specialists (CPSS) across NC | 2,352 | Increasing trend |

● CSRS Supplied Metric

# PDMP Context

- NC's PDMP is the Controlled Substance Reporting System (**CSRS**), started in 2009
- CSRS collects prescription, prescriber, dispenser and patient details within 72 hours of a dispensation
  - *Epidemiology note: …making this closest to ITT data*
  - *Historically used primarily to address prescriber diversion and basic prescribing patterns*
  - *Beginning to be used for research, but largely unlinked dataset*
- CSRS is managed by a 3rd party vendor (**APPRISS**), who, after consolidation in the last few years, now has a near monopoly on the US PDMP marketplace.
  - Local, flat table download provided by vendor to small analytics team at DMH/SA.
  - Data challenges (non-normal, time lag, infrastructure for big analysis, etc.).

# CSRS 2.0

A COLLABORATION BETWEEN

UNC INJURY PREVENTION RESEARCH CENTER (UNC IPRC) AND

NC DIVISION OF MENTAL HEALTH & SUBSTANCE ABUSE (NC DMH)

CSRS 2.0

# Why 2.0?

CSRS requires separate login

Entity resolution is tough.

No EHR integration.

Very hard to digest (see right).

NC Strengthen Opioid Misuse Prevention (**STOP**) Act, effective January 1 2018, requires prescribers to use NC CSRS, review 12 mo. history before schedule II and III opioid.

Prescribers surveyed say that pre-STOP act only 1 in 4 use it, and it takes too much time (>5m) during an encounter.

```
Health Information                          North Carolina DMHDDSAS                          Date: 05/04/17
Designs Inc.                                Query Report                                     Page#:     4

                                            Patient Rx History Report

DUMMY DUMMY

Pharmacies that dispensed prescriptions listed
-------------------------------------------------------------------------------------------------------------------
FS2977986    SRHS EMPLOYEE PHARMACY; SPARTANBURG REGIONAL HEALTH SERVICES DIS, 100 EAST WOOD STREET, SUITE 101, SPARTANBURG SC 293
FR0480525    ROCKY POINT PAVILION PHARMACY; 7910 US HWY 117, SUITE 110, ROCKY POINT NC 28457
FV0992380    VILLAGE PHARMACY; 14057 HIGHWAY 17, SUITE 100, HAMPSTEAD NC 28443,
BT7070775    TARHEEEL PHARMACY INC; 902 ROANOKE AVENUE, ELIZABETH CITY NC 27909,
FN5197618    NHRMC ED NORTH PHARMACY; NEW HANOVER REGIONAL MEDICAL CENTER, 151 SCOTTS HILL MEDICAL DRIVE,, WILMINGTON NC 28411,

Patients that match search criteria
-------------------------------------------------------------------------------------------------------------------
00006080          DUMMY DUMMY, DOB 01/01/01; DUMMY, MATTHEWS NC 28105
02469410          DUMMY DON, DOB 01/01/01; 2000 FAIRVIEW RD, RALEIGH NC 27608
03779697          DUMMY DUMMY, DOB 01/01/01; 138 MAPLE AVE, BURLINGTON NC 27215
04593848          DUMMY DUMMY, DOB 01/01/01; DO NOT DELETE,
05525028          DUMMY DUMMY, DOB 01/01/01; MISTAKE FILE !!!!, NORTH WILKESBORO NC 28659
08878176          DUMMY DUMMY, DOB 01/01/01; HOLDS VOIDED TRANSACTIONS, LILLINGTON NC 27546
10672353          DUMMY DUMMY, DOB 01/01/01; DO NOT DELETE, KERNERSVILLE NC 27284
11549168          DUMMY DUMMY, DOB 01/01/01; 123 MAIN ST, COLUMBIA SC 29201
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05835721          DUMMY DUMMY RX, DOB UNKOWN; ,
07414371          DUMMY DUMMY, DOB UNKOWN; DUMMY PROFILE,
12255434          DUMMY DUMMY, DOB UNKOWN; 1000 DISNEY STREET, BOILING SPRINGS SC 29316
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MED Summary
This section displays cumulative MED values by unique recipient. The MED Max value is the maximum occurrence of cumulative MED
sustained for any 3 consecutive days. This value is calculated based on prescriptions dispensed during the date range requested.
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```

https://www.ncmedboard.org/resources-information/professional-resources/publications/forum-newsletter/notice/new-summary-of-ncs-new-opioids-law-the-stop-act

CSRS 2.0

# Contract Design

- **Research**
  - Literature Review
  - Statewide Partners
  - National Partners
- **Stakeholder Meetings**
- **Informatics Outputs**
  - EHR Integration Wireframes
  - Data Quality Assurance
  - Other Informatics Considerations

# CSRS 2.0:
# Research Activities

# Research Activities: Literature Review

PDMPs are an important tool to address opioid epidemic

**Mixed evidence** regarding effectiveness of PDMPs in reducing MMEs prescribed so far[1]

- Varies by state[1,] as does structure of systems
- PDMP **utilization** expected to impact effectiveness
- **Popular press**: Recent WRAL survey of NC providers suggests NC CSRS may only be used by 1 in 4 doctors and takes >5m per patient[5.] Article lists needed improvements as "a more user-friendly interface, a visual list of medications and integrating the database with the state's electronic health records."

**Barriers** to use include information retrieval is time consuming,[2,3] data not user-friendly, [2,3] and not needed for all patients[2]

**Recommendations** include standardizing content and using push notifications[4]


1. Brady JE, Wunsch H, DiMaggio C, Lang BH, Giglio J, Li G. Prescription drug monitoring and dispensing of prescription opioids. Public Health Reports 2014;129:139-147.
2. Rutkow L, Turner L, Lucas E, Hwang C, Alexander GC. Most primary care physicians are aware of prescription drug monitoring programs, but many find the data difficult to access. Health Affairs 2014; 34(3):484-492.
3. Hildebran C, et al. How clinicians use prescription drug monitoring programs: A qualitative inquiry. Pain Medicine 2014;15:1179-1186.
4. Greenwood-Ericksen MB, Poon SJ, Nelson LS, Weiner SG, Schuur JD. Best practices for prescription drug monitoring programs in the emergency department setting: Results of an expert panel. Annals of Emergency Medicine 2016;67(6):755-764.
5. Despite new law, NC prescription database used by 1 in 4 doctors. http://www.wral.com/despite-new-law-nc-prescription-database-used-by-1-in-4-doctors-/17113894/

# Research Activities:
# Statewide Partners

Willing **statewide partners** in two large healthcare systems (Duke and UNC) were many…though full implementation would require coordination among all the other key stakeholders:

- **Healthcare systems** (Vident, Carolinas, VA) … and with *regional representation*
- **Licensing Boards**
- **Associations**
- **Providers** (A diverse group)
- **Dispensers** (private and healthcare system)
- **Other Non-user stakeholders**
  - law enforcement, public health, researchers, and community groups like NC Harm Reduction.

Statewide partners provide **key feedback** on metrics and data visualizations, explore EHR integration through pilot projects, and recommend realistic clinical workflows.

# Research Activities:
# National Partners

**National partners** in other states can provide lessons learned on topics including

- Data linkages
- EHR integration pilots
- Informatics vendors
- Metrics
- Reporting and alert systems.

**Tennessee** and **Kentucky** are national thought-leaders who have built systems North Carolina could likely learn from.

**APPRISS is everywhere**! But other states have different contractual relationships (including with other third party vendors like SAS and IBM).

# Stakeholder Meetings

Two in-person group **stakeholder meetings** (with Duke and UNC healthcare system thought-leaders) and targeted follow-up meetings and interviews suggested important improvements to and priorities for CSRS 2.0.

**Researchers & institutions** emphasized data access for linkages, data quality assurance, and timely research studies.

**Clinicians** prioritized interpretable metrics, data visualization, EHR integration, HIPAA issues and better user interfaces.

**Informatics teams** recommended pilot projects to test metrics and workflows.

Dozens of stakeholders in just those two healthcare systems suggest there are likely over **100 key expert stakeholders** to engage as implementation and design plans solidify.

# CSRS 2.0:
# EHR Wireframes

EHR Wireframes:

# Overview

- **Represents Stakeholder Feedback:** Design used to visually represent priorities and challenges from stakeholder meetings with providers and healthcare system informatics teams
- **Preliminary**: A first iteration only
- **Untested**: Any implementation would require serious iteration and pilot testing, with a strong attention to realistic workflows. What happens if X-Y-Z?
- **Idealized**: Loosely based on Epic modules, but largely EHR-agnostic. Must be instantiated in a particular EHRs… and EHRs aren't monoliths, and may differ within the same system significantly by specialty.
- **Outstanding issues are many:** include ethical considerations, metric validation, data privacy concerns, and linkage and architecture questions.

EHR Wireframes:

# Existing State

Reminder: Current Status →

Health Information Designs Inc.

North Carolina DMHDDSAS
Query Report

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EHR Wireframes:

# Stakeholder Meeting Themes

**Linking Data is important,** but underlying data privacy / ethics concerns

**Entity Resolution** should be largely out of our hands

**Fewer, key indicators** may be more useful than a predictive index
(e.g. has this patient been to an ED for an overdose?)

**Simple indicators and visuals** (e.g. red-yellow-green) must be balanced with…

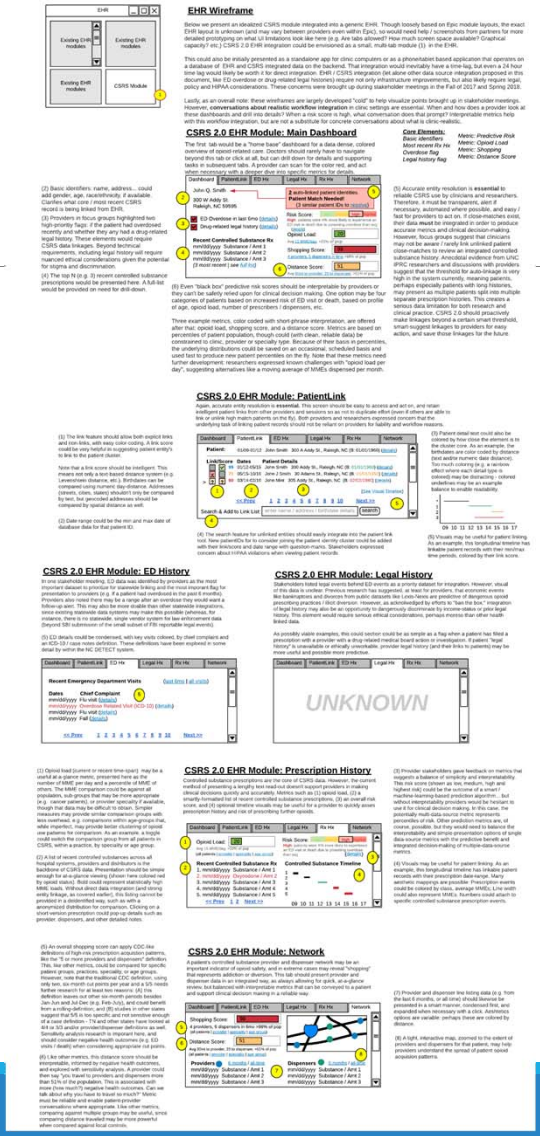
**Interpretable, actionable metrics** that can be incorporated in a clinical workflow without abdicating responsibility… while benefitting from…

**Modern predictive analytics** and **obfuscating private data**.

# EHR Wireframes:

# Deliverable

Heavily annotated wireframes



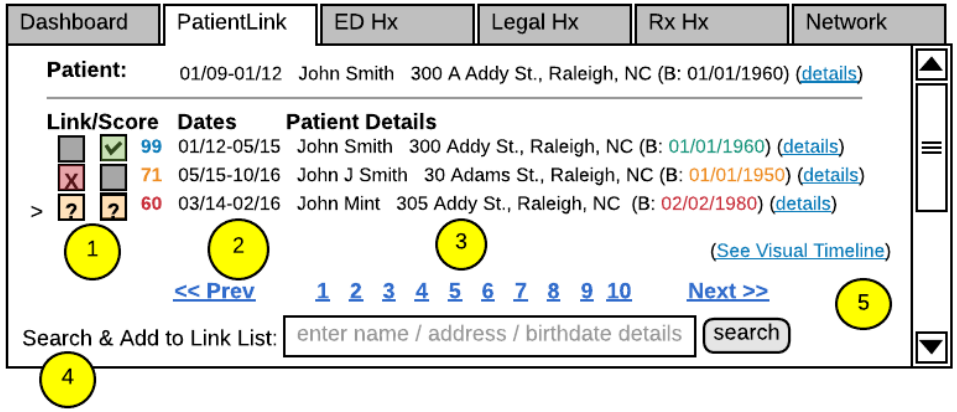
# EHR Wireframes:
# Deliverable

(zoomed, but still illegible…)

(1) The link feature should allow both explicit links and non-links, with easy color-coding. A link score could be very helpful in suggesting patient entity's to link to the patient cluster.

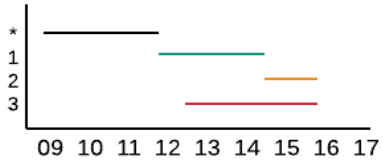
Note that a link score should be intelligent. This means not only a text-based distance system (e.g. Levenshtein distance, etc.). Birthdates can be compared using numeric day-distance. Addresses (streets, cities, states) shouldn't only be compared by text, but geocoded addresses should be compared by spatial distance as well.

(2) Date range could be the min and max date of database data for that patient ID.




(3) Patient detail text could also be colored by how close the element is to the cluster core. As an example, the birthdates are color coded by distance (text and/or numeric date distance). Too much coloring (e.g. a rainbow effect where each detail type is colored) may be distracting - colored underlines may be an example balance to enable readability.

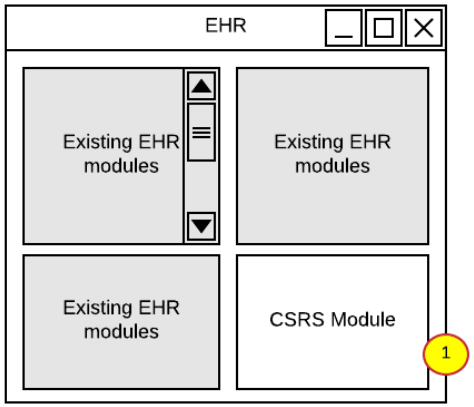
(4) The search feature for unlinked entities should easily integrate into the patient link tool. New patientIDs for to consider joining the patient identity cluster could be added with their link/score and date range with question-marks. Stakeholders expressed concern about HIPAA violations when viewing patient records

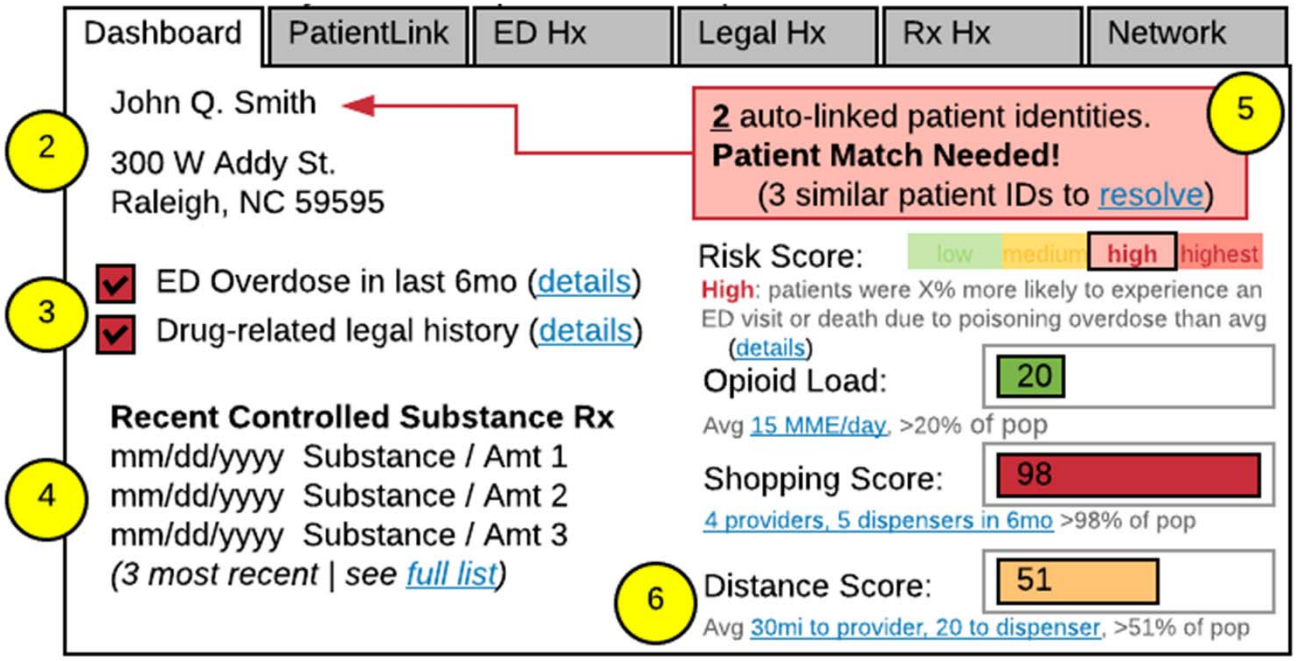



(5) Visuals may be useful for patient linking. As an example, this longitudinal timeline has linkable patient records with their min/max time periods, colored by their link score.

EHR Wireframes:

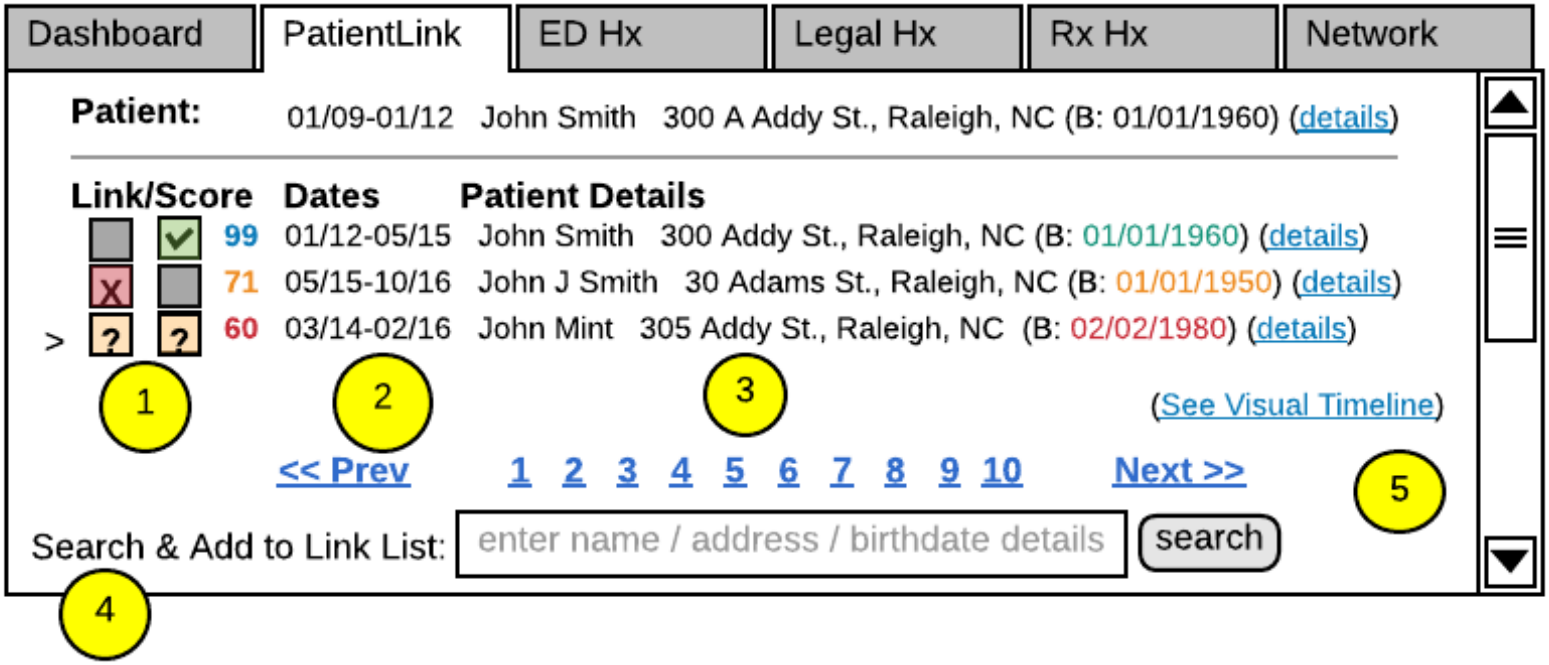
# Dashboard



EHR Wireframes:

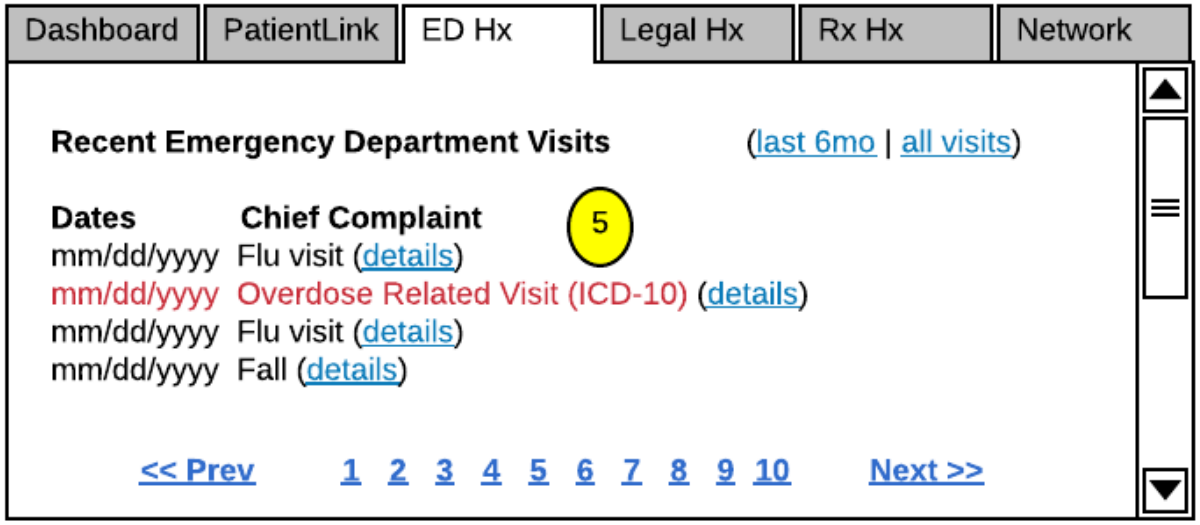
# PatientLink (Entity Resolution)

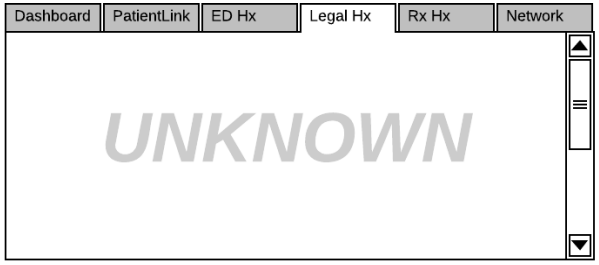


EHR Wireframes:

# ED Hx / Legal Hx

Ethical Considerations: Linking data

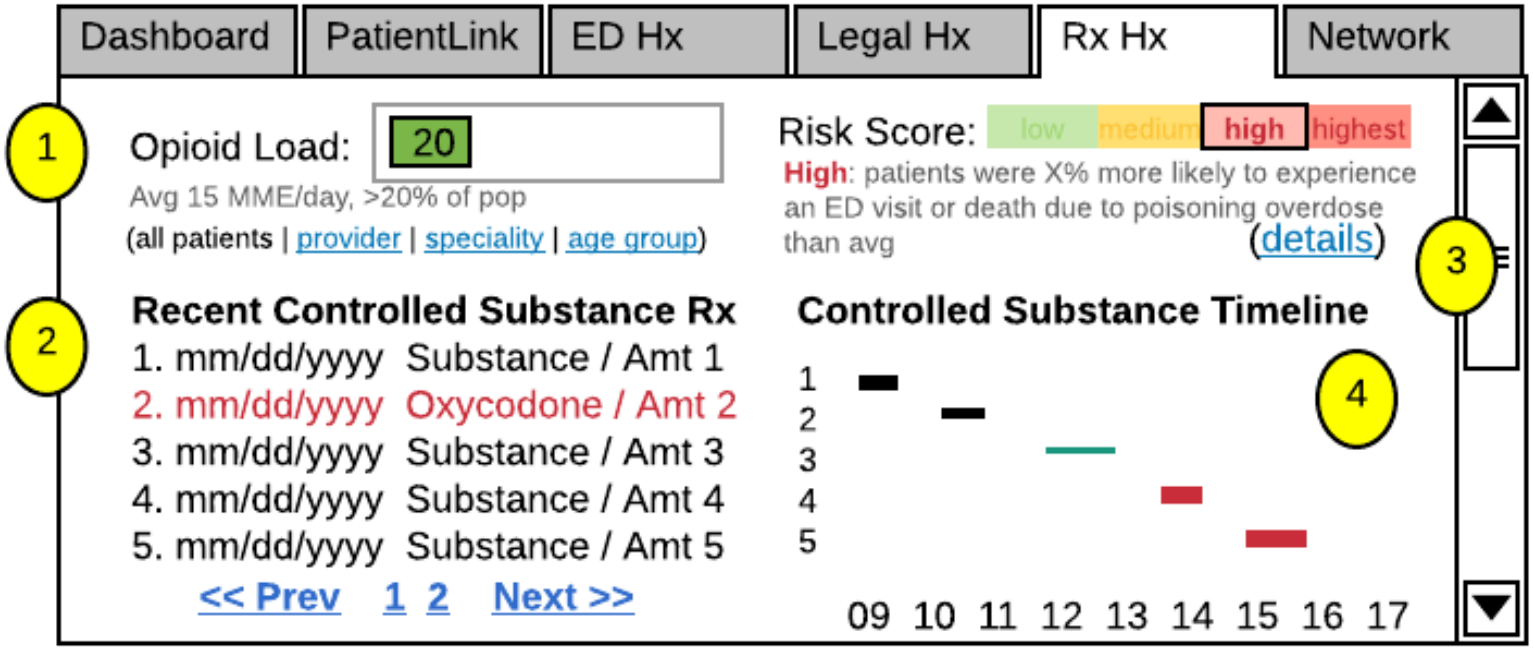


EHR Wireframes:

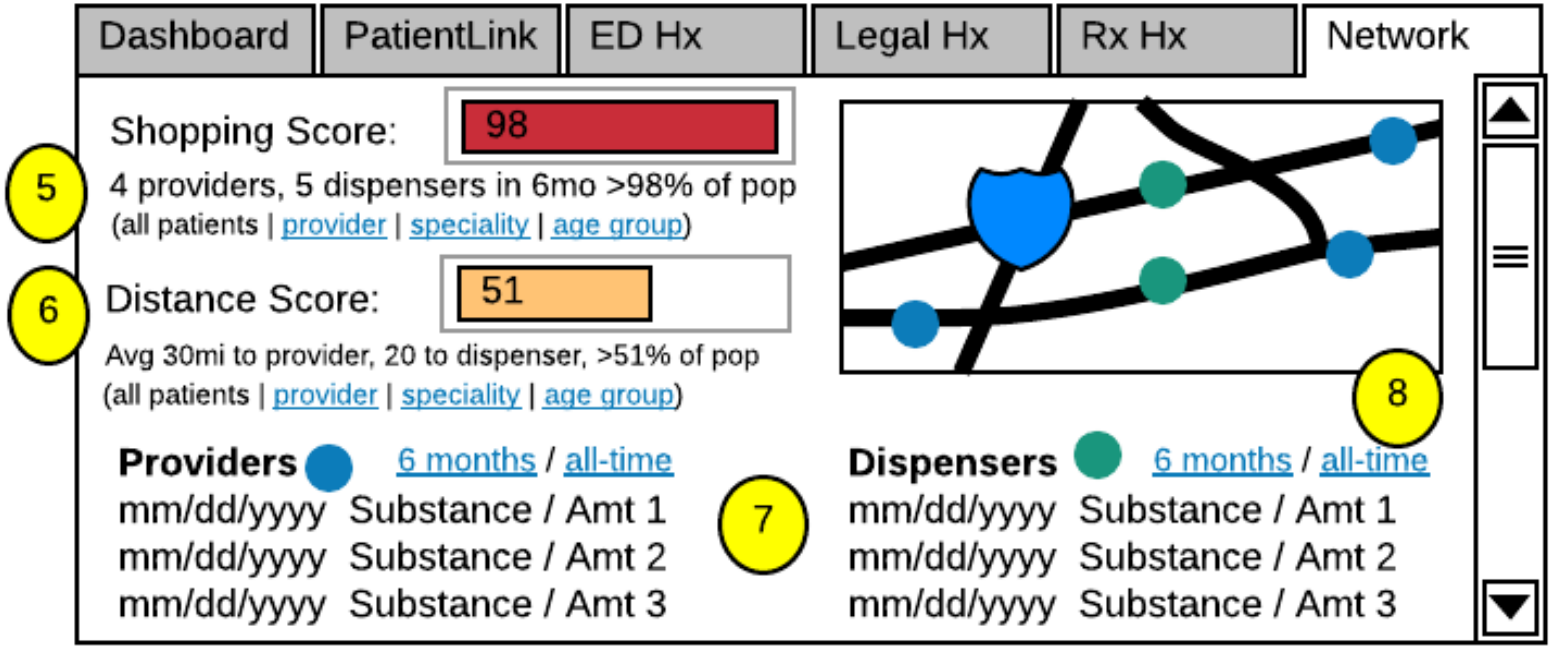
# Rx Hx

Ethical Considerations: Linking data



EHR Wireframes:

# Network

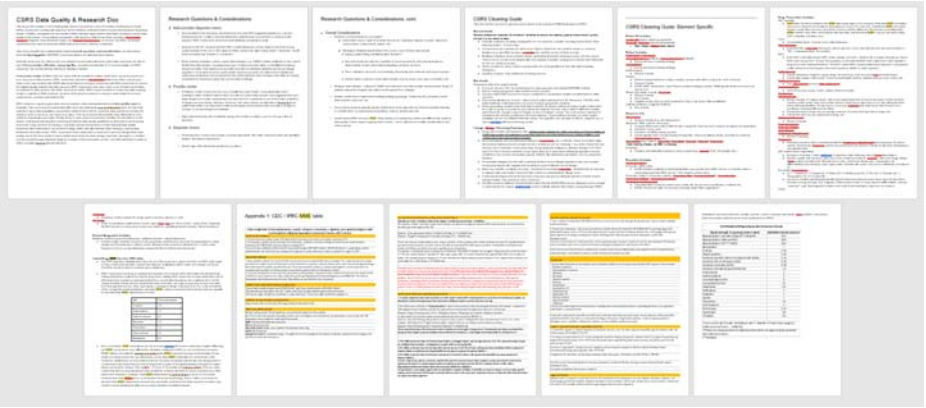


# CSRS 2.0:
# Data Quality Assurance

Data Quality Assurance:

# Process

- **Personal experience**: Spent a few months on a data analysis project using the full CSRS data. Acclimated myself with fields, created & ran data quality reports, tried new analyses (spatial, outlier searches)
- **Researcher Universe**: Interviews with a half dozen current and former research users of CSRS data. Included former employees and students.
- **Data Quality Assurance & Research Appendix**: Consolidated knowledge and compelling case examples of quality measures collapsed into a project appendix →



Data Quality Assurance:

# Overall Lessons

CSRS **data quality assurance** is paramount: without it, metrics are unusable for providers, research fails, and system trust falters.

Comprehensive data quality assurance relies on many processes and knowledge sets, including:

- Improving original **data entry**
- Cleaning **primary fields**
- Effective automation of **entity resolution** with minimal provider input
- Descriptive and predictive **metric validity**
- **Error feedback**
- **Script** and **supplementary table*** maintenance
- integrating ever-evolving **content-knowledge expertise**
- **data quality reports,** well-designed and regularly reviewed

IPRC offered ongoing support to organizations and third-party vendors tasked with maintaining the data quality at the foundation of these efforts.

Data Quality Assurance:

# A Sample of Details

**Metrics**: CDC “shopping” definition (5+5 in 6 mo). MME calculations.

**Entity resolution**: Data type savvy matching, HIE / GDAC / SAS future.

**Applying Metrics**: Avoid black boxes, prioritize

**Ethics**: Provider (HIPAA, machine-learning liability) and
researcher (stigma, linkages, discrimination) concerns

**Content-agnostic data science approaches are not enough; content knowledge matters.**
*(^ Just what an Epidemiologist would say. ☺)*

# CSRS 2.0: Informatics Considerations

Informatics Considerations:

# Highlights

Miscellaneous informatics considerations between stakeholder meetings, interviews and past research projects were collected. Highlights:

- As data linkage grows and EHR integration possibilities grow, automation and documentation of **extract-transfer-load** (ETL) operations is key.
- Automation and documentation of **cleaning and reporting** will need improvements as data throughput and timeliness increases.
- Moving to a more **push- and alert-centric system** (while avoiding alert fatigue) is key for effective utilization.
- Assuring **data quality** will be even more paramount as new **calculated metrics are integrated into workflows**.

Informatics Considerations:

# Highlights, cont.

- New and regular **data quality reports** are required and should include human and algorithm process metrics as well as measures of data quality and distributions.
- Novel functionality and metrics **should not be limited to existing fields**, but be guided by past, current and future needs and **evidence-based clinical and public health interventions**.
- Policies and practices regarding **data privacy** (notice/choice/access, HIPAA and related provider liabilities) and **data governance** need continued scrutiny, improvement and expansion to support clinician workflows, increased data linkages, practice-focused research, and informatics integration.
- All these improvements must move ahead while underlying **data security** is ensured.

# CSRS 2.0:
# Final Deliverable

**Executive Summary**

**Research Activities**:

- Literature Review
- Statewide Partners *(+ Appendix A)*
- National Partners *(+ Appendix B)*

**Stakeholder Meetings**

**Informatics**:

- EHR Integration Wireframes (*+ Appendix C)*
- Data Quality Assurance *(+ Appendix D)*
- Other considerations

**Next Steps**

# Opioid Action Plan: Data Dashboard

A SEPARATE INITIATIVE WITH NC DIVISION OF PUBLIC HEALTH
HTTPS://INJURYFREENC.SHINYAPPS.IO/OPIOIDACTIONPLAN/

Data Dashboard:

# Why?

Opioid data spread across **multiple longitudinal metrics**, many currently unavailable / hard to get at the county level, the site of local intervention design.

Previously have excel doc w/ VBA to automate production of some county data, but looking for a more **robust, online solution**.

Desire to **deeply test** a system (in this case, R Shiny) for visualization.
(State DHHS likely moving to Tableau.)

**Extensible framework** for future metric improvements and additions.

Data Dashboard:

# Process

Existing “paper” **opioid metric designs**, vetting and discussions in governors office (though only state focus).

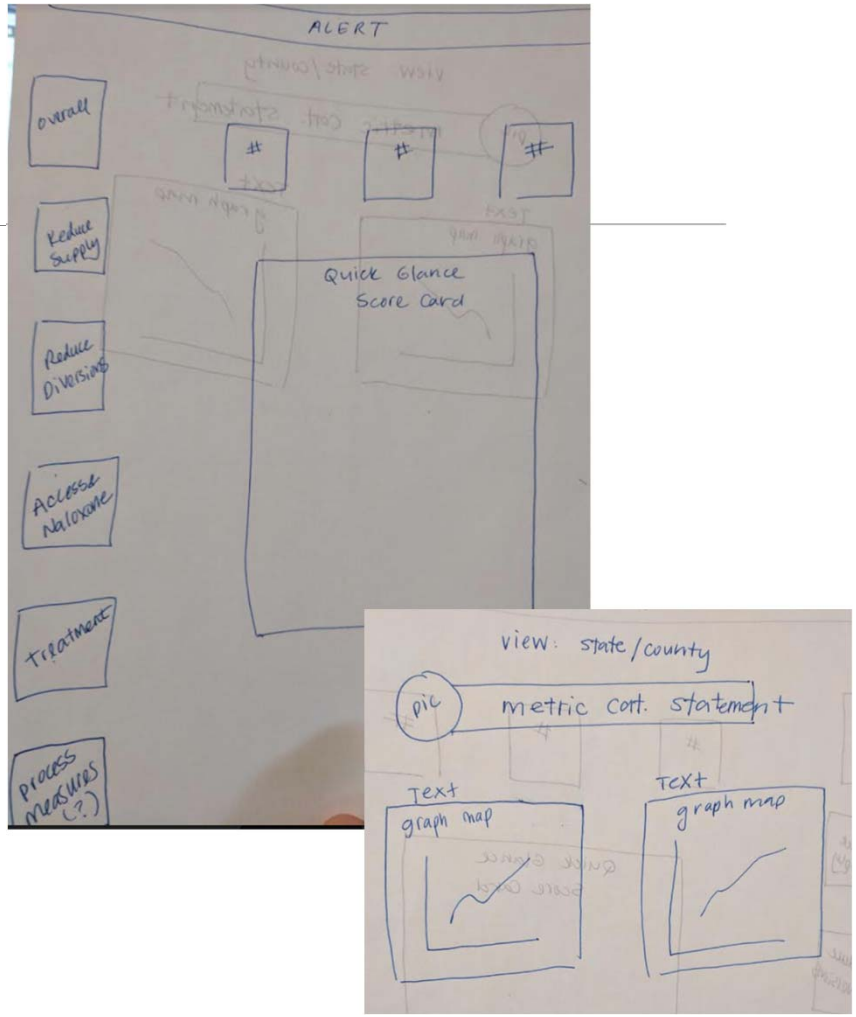
**Nationwide search** for other opioid data dashboards, pros and cons, and platforms.

Paper **wireframes**, early **prototypes** to select **graph/map packages.**

**Iteration** with state partners. Tried things we dropped.

**Debugging**, **customization**, fighting **browser peculiarities** (looking at you, IE).

Built using **R Shiny** and javascript HTML Widget packages like Leaflet and **Plotly** in R Studio IDE with some Dreamweaver work and a bit of customized CSS.



Data Dashboard:

# Challenges: Technical

- **Platform**: R Shiny vs. Tableau vs...
- **Packages**: Fighting with javascript, customizations (Plotly / Leaflet)
- **Functions vs. Customization**: Flexibly accommodate “live” data
- Pretty **Printing** / Formatting.
- **Coding overhead**: This much R Shiny is challenging if not R fluent. No CMS, but use flexible google sheets based alerts & summaries.
- **Partners / Data Specifics**: Tried to standardize formats from multiple partners, but mixed success. That said, custom data munging is efficient in R. e.g. missingness, suppression.

Data Dashboard:

# Challenges: Epidemiology & Content

- **Suppression**: small numbers, smoothing, data speed
- **Data density**: balancing
- **Trends**: defining
- **Vintage**: Data start, time lags
- **Intervention Focus**: What to DO about these metrics?
- **Next Steps**: Interventions, Strategies & Process Measures

Data Dashboard:

# Feedback & Iteration Highlights

Dropped linear **trend line, goals** from graphs.

Added mark for **OAP start-date**.

**Consistent axes** regardless of data availability to build data source fluency.

Many combinations of **mouseovers and/or labels**.

**Over/under labeling**: new users vs. repeat users (e.g. only need to see X once?…mouseover).

Created **landing page** to force navigation / reading, rather than drop users into data density (metrics or summary table) from get go.

Example discussion: **trend icons** in table. Example…

Data Dashboard:

# Example Graphs

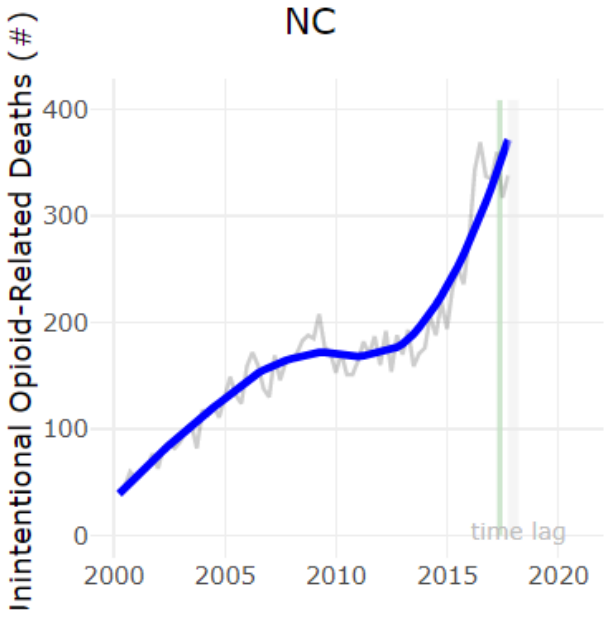
**Discussion Example:**

On a “last-four-points” definition of time-local trend, Opioid Related Deaths are **decreasing** statewide.

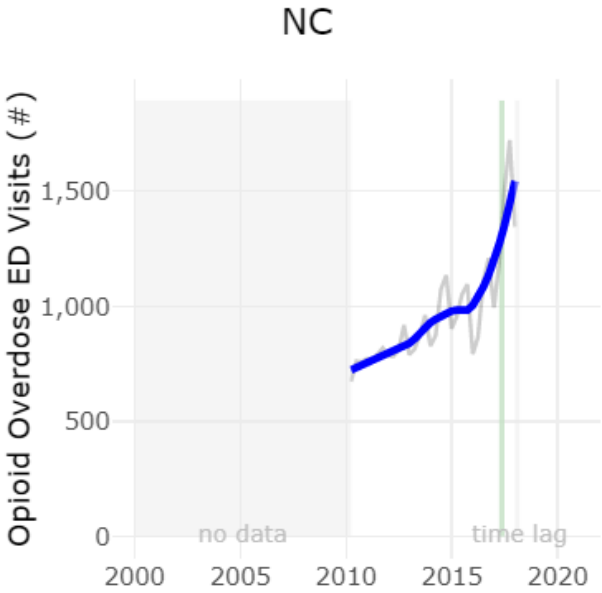
But not when considering a **statistical significance** test for trend.

**Options:** More points? “No trend?” Different for each metric? Time already non-standard…

Unintentional Opioid-Related Deaths




Opioid Overdose ED Visits



Data Dashboard:

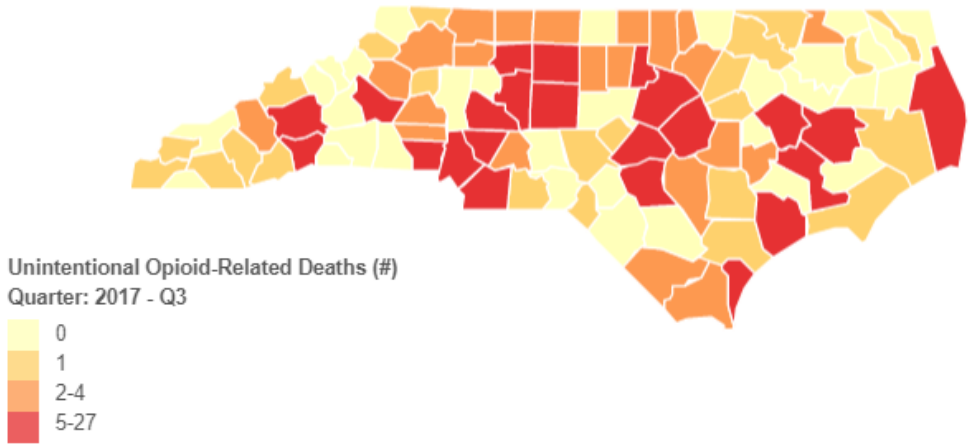
# Example Maps

Mouseovers reveal actual count.

Epidemiology education → dangers of percentile binning and artificial data spread.

No comparison to standard – dangerous in an epidemic, if local minimum is still a global high.

Unintentional Opioid-Related Deaths by County



CSRS 2.0 Mock Ups_v3 | OAP Dashboard Design | Facebook | NC Opioid Dashboard

Secure | https://mikedolanfliss.shinyapps.io/OpioidActionPlan/

# NC Opioid Dashboard

**State / County View:**

NC

- NC OAP Dashboard Home
- Metric Summary Table
- Reduce Death/ED Outcomes
- Reduce Oversupply
- Reduce Diversion
- Naloxone Access
- Treatment & Recovery
- How to Use / Tech. Notes

Links:

- NC DHHS: Opioid Crisis
- NC DHHS-IVP: Poisoning Data
- NC Safer Syringe
- NC OPDAAC
- Naloxone Saves NC
- Injury Free NC: Overdose
- Harm Reduction Coalition
- NC Division of Mental Health
- NC CSRS
- NC OCME
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- NC SBI

**2018-02-15**: **Welcome to the new NC Opioid Action Plan Data Dashboard! (Work in Progress) For tips on use see the Technical Notes Page at left.**

**2018-02-15**: Is this dashboard helpful? Click here for feedback survey! *(survey not active yet)*

## NC Opioid Action Plan Data Dashboard

In 2016, nearly 4 North Carolinians died each day from an unintentional opioid overdose. From 1999-2016, almost 11,000 North Carolinians lost their lives to unintentional opioid overdose. To combat the opioid crisis, the North Carolina Department of Health and Human Services worked with community partners to develop North Carolina's Opioid Action Plan (NC OAP). The NC OAP launched in June of 2017 and established thirteen data metrics to track and monitor the opioid epidemic. The opioid data dashboard on this site is meant to provide integration and visualization of state and county-level metrics for stakeholders across NC to track progress towards reaching the goals outlined in NC OAP. For more information on the NC OAP visit: https://www.ncdhhs.gov/opioids

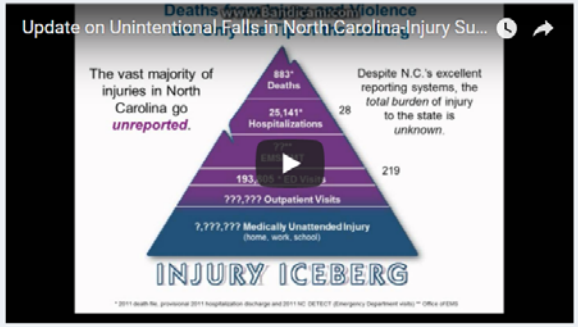
**NC Overdose Overview Stats:**

| 1,384 | 4,177 | 600,343,000 | 3,684 |
|---|---|---|---|
| NC resident unintentional opioid overdose deaths in 2016 | NC resident opioid overdose ED visits in 2016 | Opioid pills dispensed to NC residents in 2016 | Reported community naloxone reversals in NC in 2016 |

Check out the following 'How-To' video below to learn about the different ways you can use the dashboard, navigate its features, and apply the information to best meet your needs. We offer the information on the NC Opioid Dashboard in staged approaches, starting with an overview Summary Table of the metrics from North Carolina's Opioid Action Plan, followed by specific metric information organized by its five strategy areas. For detailed information on each of the metric, including trends over time and a map of the data in each county, click the strategy area link to the left. Each metric also links to the Technical Notes for those who'd like to get into the nitty gritty details of the data.

**How-To Video**

*( placeholder video; dashboard how-to video yet to be filmed)*




Your feedback is important to us. Please take a moment after using the dashboard to answer this feedback survey about your experience.

# NC Opioid Dashboard

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## Metric Summary Table

The Metric Summary Table below provides an at-a-glance look at each of the thirteen metrics being tracked as part of the NC OAP. Metrics are divided into five strategy areas:

1. Reduce Death/ED Outcomes
2. Reduce oversupply of prescription opioids
3. Reduce diversion/flow of illicit drugs
4. Increase access to naloxone
5. Treatment and recovery

Each metric is updated on a quarterly basis. The most recent quarter, year to date (YTD), and current trends are displayed in the Metric Summary Table. The Metric Summary Table can be viewed for the whole state or for an individual county by changing the State/County Focus dropdown in the upper lefthand corner of the toolbar. Trend arrows represent the direction of the linear trend of the last four quarter measurements.

**Most Recent Quarter Summary:**

Provisional Q1 2017 death data shows a continued increase in the number of unintentional opioid-related deaths in NC. In 2017, there were 5,758 opioid overdose Emergency Department (ED) visits, a 38% increase compared to 2016 (4,177 visits). The number of naloxone administrations by Emergency Medical Services (EMS) also continues to increase, while the number of reported community naloxone reversals has decreased. Provisional Q3 2017 data from the NC Office of the Chief Medical Examiner show that nearly 80% of opioid deaths involved heroin, fentanyl, and/or fentanyl analogues. The number of acute hepatitis C cases also continues to increase statewide. The current data do continue to show some progress towards reducing the oversupply of prescription opioids and increasing access to treatment and recovery.

### Metric Summary Table

Metric Summary Table: NC

| Metrics | Most Current Provisional Data | | | |
|---|---|---|---|---|
| | Time | Quarter | Year-To-Date | WIP |
| **Reduce Death/ED Outcomes** | | | | |
| Number of unintentional opioid-related deaths to NC Residents (ICD-10) | 2017 - Q3 | 338 | 1,015 | ↓ |
| Number of ED visits that received an opioid overdose diagnosis (all intents) | 2017 - Q4 | 1,345 | 5,759 | ↑ |
| **Reduce Oversupply of Prescription Opioids** | | | | |
| Average rate of multiple provider episodes for prescription opioids, per 100,000 residents | 2017 - Q3 | 136 | 586 | ↓ |
| Number of opioid pills dispensed | 2017 - Q3 | 153,262,000 | 446,289,000 | ↑ |
| Percent of patients with an opioid prescription receiving more than an average daily dose of 90+ MME of opioid analgesics | 2017 - Q3 | 6 | 6 | ↓ |
| Percent of prescription days any patient had at least one opioid AND at least one benzodiazepine prescription on the same day | 2017 - Q3 | 27 | 25 | ↑ |
| **Reduce Diversion/Flow of Illicit Drugs** | | | | |
| Percent of opioid deaths involving heroin or fentanyl/fentanyl analogues | 2017 - Q4 | 73.4 | 73.4 | ↑ |
| Number of acute hepatitis C cases | 2017 - Q1 | 45 | 45 | ↓ |
| **Increase Access to Naloxone** | | | | |
| Number of EMS naloxone administrations | 2017 - Q4 | 1,916 | 13,930 | ↓ |
| Number of community naloxone reversals | 2017 - Q4 | 1,451 | 4,176 | ↑ |
| **Treatment and Recovery** | | | | |
| Number of buprenorphine prescriptions dispensed | 2017 - Q3 | 171,131 | 466,063 | ↑ |
| Number of uninsured individuals and Medicaid beneficiaries with an opioid use disorder served by treatment programs | 2017 - Q3 | 16,325 | 47,490 | ↑ |
| Number of certified peer support specialists (CPSS) across NC | 2017 - Q4 | 2,753 | 10,411 | ↑ |

For detailed technical notes on these metrics and the Summary Table visit the 'How to Use / Tech Notes' tab at the left. ED county data < 10 are suppressed.

- Reduce Death/ED Outcomes
- Reduce Oversupply
- Reduce Diversion
- Naloxone Access
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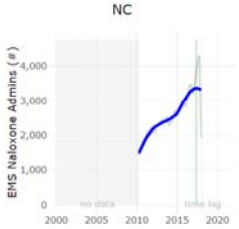
## Naloxone administrations by EMS staff continue to climb statewide

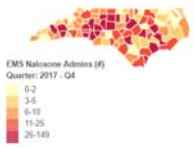
This metric tracks the number of naloxone administrations provided by Emergency Medical Services (EMS) personnel each quarter. Note that naloxone administration alone does not necessarily equate to an opioid overdose as EMS may administer naloxone when an individual is suffering from a different condition with similar signs and symptoms to an opioid overdose. Additionally, the coding transition of ICD-9-CM to ICD-10-CM occurred in October 2015, making it difficult to assess trends before and after the transition. However, this metric still serves as an indication of the number of opioid overdoses seen by EMS.

EMS naloxone administrations are updated quarterly, and are on a one-quarter lag. 2017 numbers are provisional and subject to change.

EMS Naloxone Administrations




EMS Naloxone Administrations by County



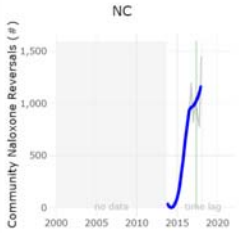

*Data Source: North Carolina Office of Emergency Medical Services (OEMS), EMSpic-UNC Emergency Medicine Department, 2012-2017. See Technical Notes.*

## Over 10,000 overdose reversals reported by communities across the state

In August of 2013, the NC Harm Reduction Coalition (NC HRC) launched their Overdose Prevention Project and began distributing naloxone rescue kits across the state. This metric reflects the number of overdose reversals using those naloxone kits reported back to NC HRC. These are reversals reported by community members and do not include administration of naloxone by first responders.

Community naloxone reversals are updated quarterly and have a one-quarter lag time.

Community Naloxone Reversals




Community Naloxone Reversals by County


*Data Source: North Carolina Harm Reduction Coalition (NCHRC), 2013-2017. See Technical Notes.*

# Thanks! Questions?

MIKE DOLAN FLISS

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