Knox County Naloxone Deployment by First Responders

October 1, 2016 – September 30, 2018

A report of the

Harm Reduction Coalition

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Knox County Health Department
Every Person, A Healthy Person

Harm Reduction Coalition Members

- American Medical Response (AMR) Rural/Metro EMS and Fire
- Appalachia HIDTA
- Cherokee Health Systems
- City of Knoxville
- Cornerstone of Recovery
- Helen Ross McNabb Center
- Knox County District Attorney General's Office
- Knox County Health Department (KCHD)
- Knox County Schools
- Knox County Regional Forensic Center
- Knox County Sheriff's Office
- Knoxville Fire Department (KFD)
- Knoxville Police Department (KPD)
- Metro Drug Coalition
- Next Step Initiative
- Positively Living
- Samaritan Ministries
- South College School of Pharmacy

Purpose of the Harm Reduction Coalition

To reduce the number of overdoses and overdose deaths while also limiting the spread of infectious disease associated with substance misuse, the Harm Reduction Coalition represents a diverse and unified group of agencies in Knoxville/ Knox County who work to rescue individuals experiencing drug overdose by deploying naloxone and by linking victims to the appropriate follow-up care.

Executive Summary

To aid in understanding the scope and depth of the opioid crisis, KCHD compiled information on naloxone deployments from first responders in Knox County from Oct. 1, 2016 to Sept. 30, 2018. This report combines the data analysis from the first report (data collected from Oct. 1, 2016 to Sept. 30, 2017) and data analysis conducted for the second report (data collected from Oct. 1, 2017 to Sept. 30, 2018).

Notable Findings

- Since the first report, the number of individuals receiving naloxone increased by 7.7 percent.
- An average of 114 individuals received naloxone each month. An average of nearly four people required naloxone from a first responder each day.
- White males ages 25-39 received naloxone most frequently.
- While nearly 90 percent of individuals received the medication from a first responder once in the span of 24 months, 10.7 percent (256 individuals) required the medication on more than one occasion. Most of those who required the medication more than once received it on two separate occasions; one person received naloxone on seven separate occasions.
- Since the first report, naloxone deployments among white individuals increased by 8.1 percent and decreased among black individuals by 10.6 percent.
- From 2016 to 2017, drug-related overdose deaths increased by 87 percent among black individuals and 39 percent among white individuals. This demographic shift follows national trends (https://www.cdc.gov/mmwr/volumes/67/wr/mm675152e1.htm?s_cid=mm675152e1_w).
- The number of Knox County ZIP codes with a deployment rate greater than 50 per 10,000 people increased by 100 percent from the first year of data collection to the second (The first year, three ZIP codes had a rate greater than 50; the second year, six ZIP codes had this rate). Using this rate helps evaluate the proportion of population affected in each ZIP code.

What is Naloxone?

Naloxone, also known commercially as Narcan, is administered by first responders when a person is suspected of overdosing on opioids. The medication provides partial or complete reversal of an opioid overdose. A person who has overdosed on opioids may be unresponsive or exhibiting the following symptoms: loss of consciousness, constricted pupils, slow or shallow breathing, vomiting, pale or clammy face, or erratic behavior. Naloxone typically works within five minutes depending on the amount and type of opioid the individual has taken. Sometimes an additional dose or doses, may be needed. Naloxone lasts only 30-90 minutes, and symptoms of overdose may return after the naloxone wears off.

Background

Convened by Metro Drug Coalition several years ago to help address the opioid epidemic, the Naloxone Community Collaborative and Harm Reduction Coalition merged in June 2018 to better evaluate the needs of the community while increasing communication and collaboration among agencies. The combined group, now called just the Harm Reduction Coalition, includes nearly 20 agencies with a vested interest in addressing this epidemic.

To support the coalition, Knox County Health Department epidemiologists analyzed naloxone deployment data from AMR Rural/Metro EMS and Fire,* KPD and KFD for the past two years (October 2016 – September 2018) and compiled the findings into this report. KCHD epidemiologists routinely gather, analyze and report data on current and emerging health issues that affect our community.

Substance misuse is a disease of isolation. Those affected isolate themselves not just from the general public but also from needed health care services. Identifying those affected and linking them to services is critically important to getting them into treatment and ultimately helping them live a life of long-term recovery.

Since the coalition was convened in 2016, more work has been done in our community to augment the response to opioid use and overdose, including the creation of syringe exchange services, an evidence-based intervention coordinated by Positively Living and funded by the State of Tennessee. Allies for Substance Abuse Prevention in Anderson County (ASAP) is providing naloxone, as the fiscal agent for the state in our region, to Positively Living and the Next Step Initiative. And, Knox County and the City of Knoxville have joined forces to create All4Knox, an initiative aimed at creating a shared understanding of the work in the community to combat the epidemic as well as a communitywide strategic plan to address it. More information is available online at All4Knox.org.

*For the purpose of this report, data collected from AMR Rural/Metro EMS and Fire are combined and reported as AMR Rural/Metro

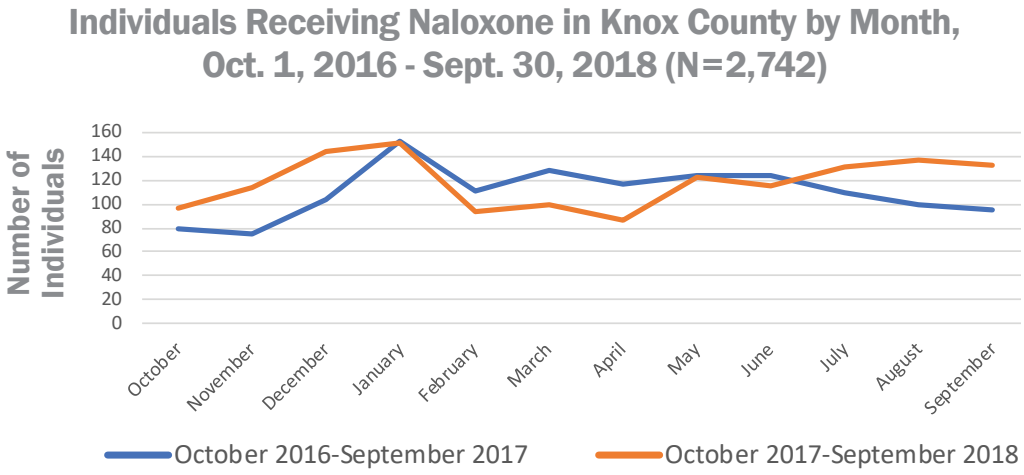
Activities

Since the first report of Naloxone Deployment by First Responders in 2018, the collaborative has noted several positive steps including:

- Increased access to naloxone for lay persons through federal grant funding
- Creation of more patient navigators to assist individuals who have experienced an overdose
- Partnered with Knoxville Academy of Medicine Alliance members and Knox County Community Schools to provide Generation R_X curriculum in the after-school programs in higher risk ZIP codes
- Passing of a resolution through the Tennessee General Assembly requesting the FDA consider making nasal naloxone available without a prescription
- Shifting naloxone within the collaborative to ensure use before expiration
- Providing more education to the public through training and media stories
- Holding an East Tennessee Opioid Conference in March 2018

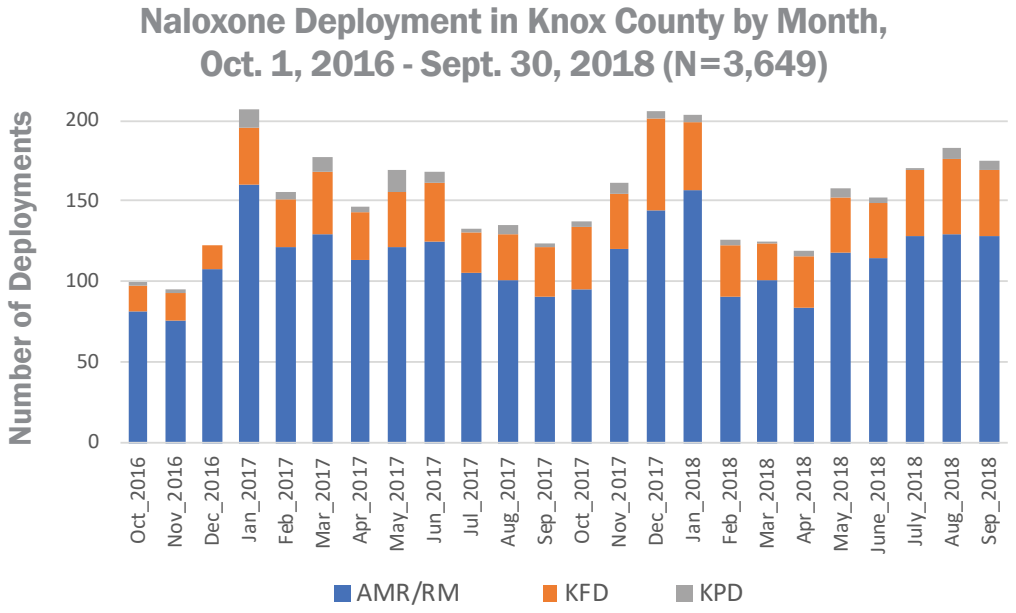
Naloxone Deployment

More than 2,700 individuals received naloxone from Oct. 1, 2016 to Sept. 30, 2018. On average, 114 individuals received the medication each month. Between the first naloxone report cycle and the second, the number of individuals receiving the medication increased by 7.7 percent.



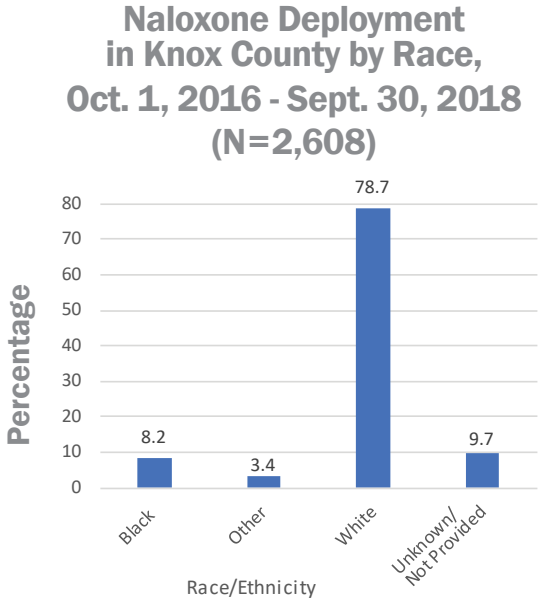
Since Oct. 1, 2016, nearly 3,700 doses of naloxone were deployed by first responders in Knox County. More than 250 individuals (10.7 percent of all individuals) required the medication on more than one occasion over the span of 24 months (a range of 2-7 times with an average of 2.4 deployments per person). More deployments occurred in winter months with peak deployment occurring in January. This pattern was seen during both years of data collection.

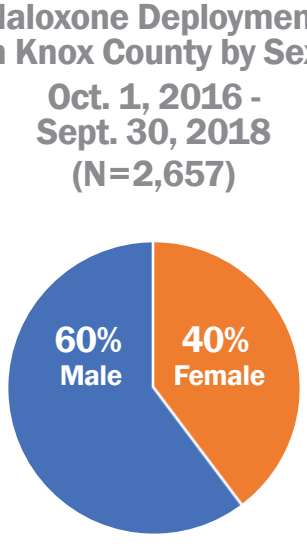
AMR Rural/Metro deployed the most naloxone followed by KFD and KPD.



Demographics

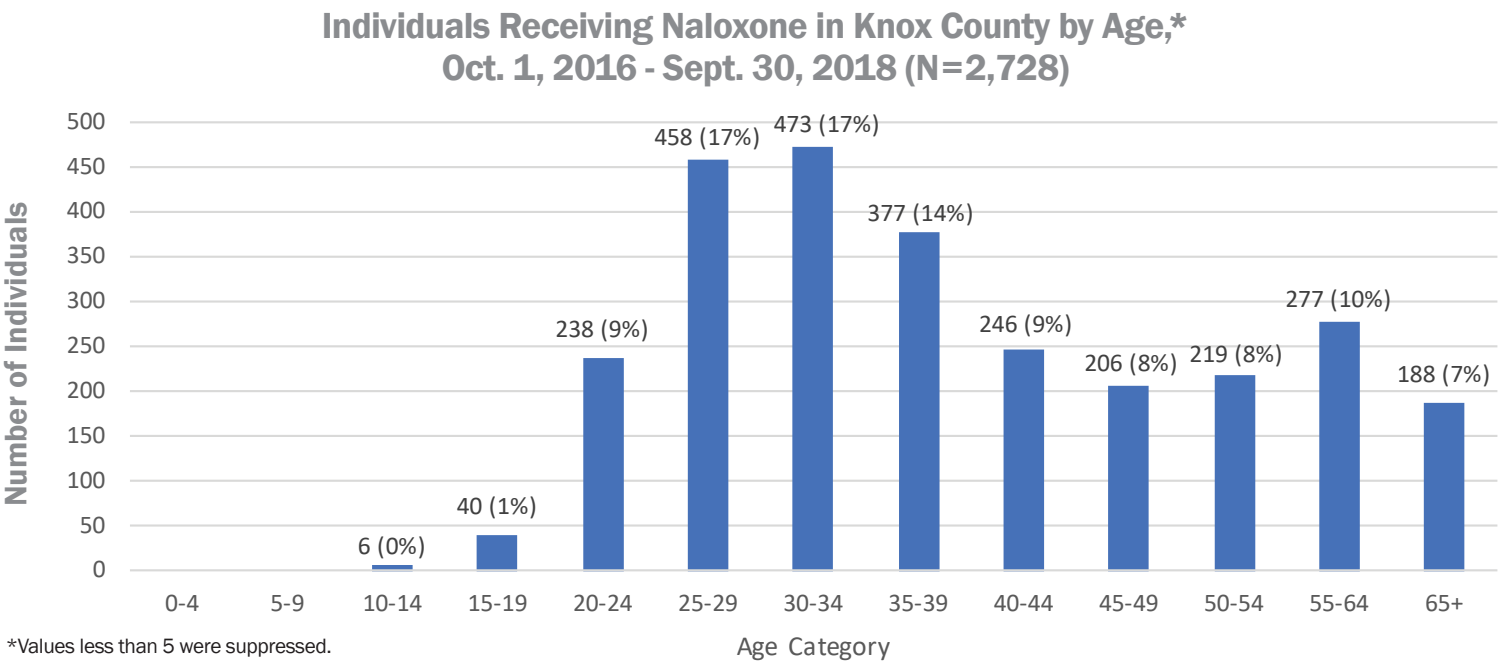
Similar to the demographic makeup of Knox County, individuals who received naloxone were predominately white (79 percent). Black individuals made up 8 percent of those receiving naloxone, while 10 percent of individuals did not have race/ethnicity listed or declined to provide the information. Naloxone deployments among white individuals increased by 8.1 percent and decreased among black individuals by 10.6 percent since the first report of naloxone deployment. The number of individuals who received naloxone were predominately male (60 percent), which has not changed since the first report.





More males than females received naloxone.

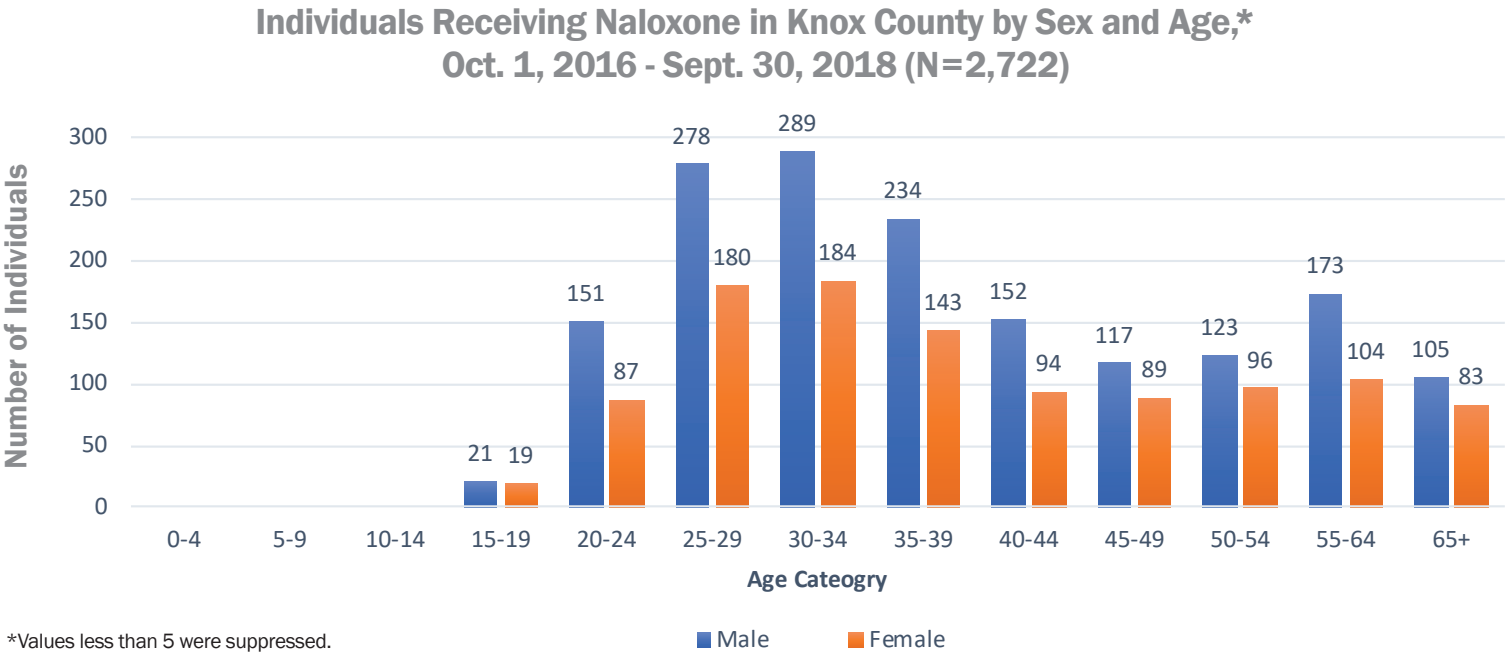
Individuals 25-39 years old made up 48.7 percent of all individuals receiving naloxone. Since the first report cycle, a 46 percent decrease in naloxone deployment was noted in the 15-19 age category, and a 12 percent decrease was seen in the 65+ category.



*Values less than 5 were suppressed.

Increases were noted for all age categories among males age 30 and over. The greatest increases (percent change) among males occurred in the 30-34 (17.3 percent) and 50-54 (23.6 percent) age categories. No significant decreases were noted among males in any age category.

A 73.3 percent decrease in naloxone deployments occurred in females ages 15-19 (from 15 cases to 4); a decrease of 30.6 percent in females ages 65 and older (from 49 to 34 cases) also occurred. The greatest increases in naloxone deployment among females occurred in the 20-24 age category (35.1 percent) and the 35-39 age category (27 percent).



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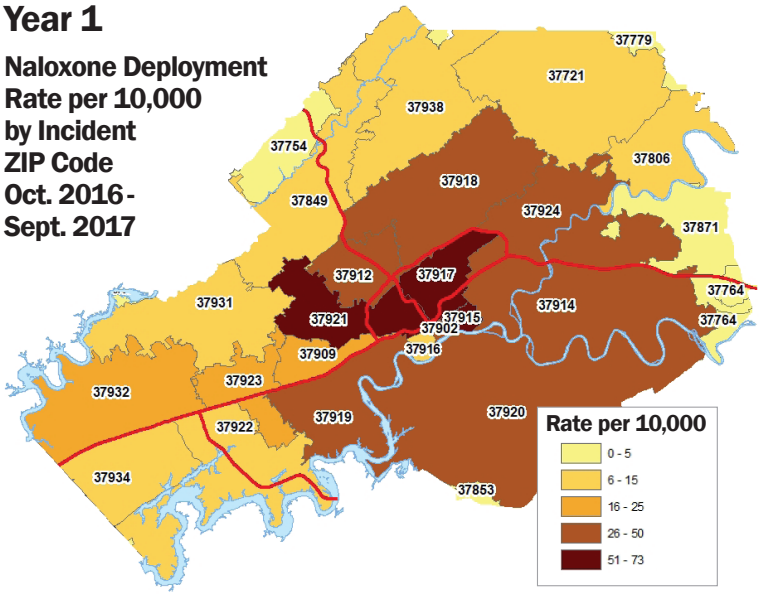
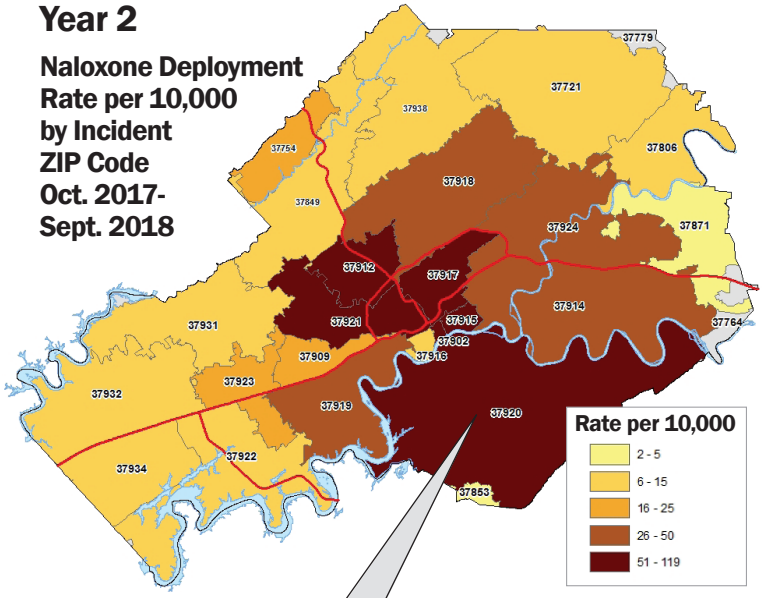
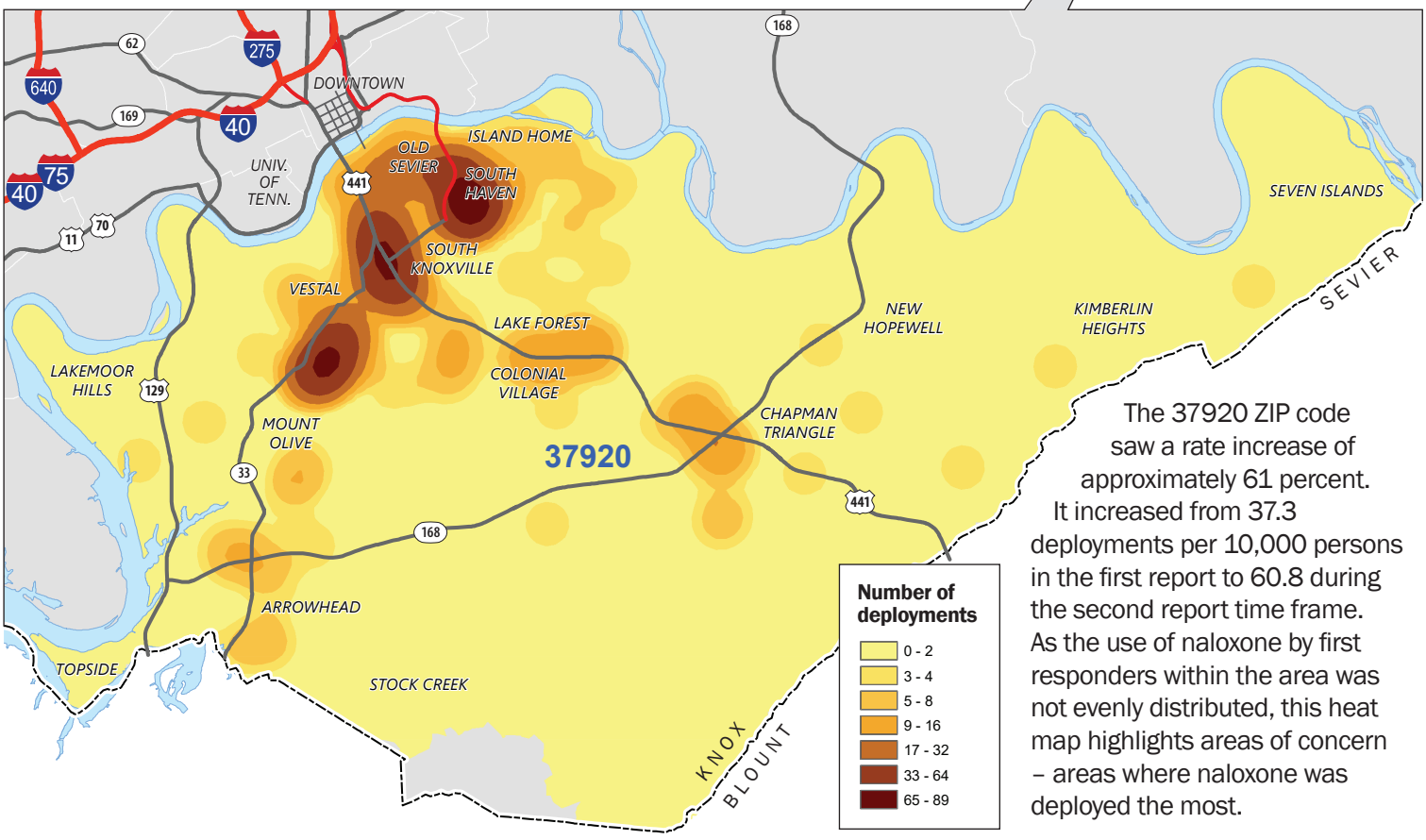
Location

Over the two-year span, 21 percent of all addresses (405 addresses where incidents occurred), were visited on more than one occasion (average of three visits each, range of 2-28 visits). Some addresses that were visited the most frequently may have been communal settings or areas that house more than one person. The 20 addresses that were visited the most frequently accounted for 397 individuals receiving naloxone, or 14.5 percent of all individuals. When looking at the address where naloxone was deployed, the majority involved a single individual. On 53 occasions, more than one person required naloxone at the same location during the same responder encounter (range of 2-4 persons with a median of 2 persons).

Naloxone was most frequently deployed in the 37920, 37921, 37917 and 37918 ZIP codes. When considering the proportion of population affected, a greater burden of suspected overdose occurred in the 37902, 37915, 37921, 37917, 37920 and 37912 ZIP code areas. Rates of deployment in these areas were greater than 50 per 10,000 persons. This contrasts the previous year of data where only three ZIP codes had rates exceeding 50 per 10,000 persons.







The 37920 ZIP code saw a rate increase of approximately 61 percent. It increased from 37.3 deployments per 10,000 persons in the first report to 60.8 during the second report time frame. As the use of naloxone by first responders within the area was not evenly distributed, this heat map highlights areas of concern – areas where naloxone was deployed the most.

Route of Administration and Dosage

Although most individuals received a 2.0 mg dose of naloxone, some individuals (13 percent) required more to achieve an adequate response for overdose reversal. This may indicate severity of overdose. KPD carries and administers a standard 2.0 mg dose of naloxone (nasal spray formulation) to those suspected of overdosing. KFD and AMR Rural/Metro are able to adjust the medication from 0.4 mg up to 2.0 mg as needed by the individual.

Naloxone Deployment and Death

In 2017, the Knox County Regional Forensic Center reported 316 overdose-related deaths. Of these, 84 (27 percent) received naloxone from a first responder Oct. 1, 2016 - Dec. 31, 2017. Not all of these individuals received naloxone on the date of their death but may have received naloxone earlier in the two-year timeframe.

The Knox County Regional Forensic Center reported that toxicological testing detected naloxone in 68 individuals who died from overdose-related causes. Not all of these individuals received naloxone from a first responder but may have been administered naloxone by someone else.

Eight percent (seven individuals) of those who received naloxone from a first responder and later died from overdose-related causes received naloxone more than once (range of 1-3 times excluding naloxone received on the date of death). Four of these seven individuals had naloxone in their system at the time of death.

For more information, see the Knox County Regional Forensic Center report accessible at knoxcounty.org/rfc/pdfs/KCRFC_DRD_Report_2017.pdf

Methodology and Report Limitations

Data received included case number, first and last name, date of birth, date, address of both case residence and incident, organization that deployed naloxone, race/ethnicity, gender, and age. Patient-level data was provided to remove duplications across data sets. Caution was taken to protect the identities of individuals receiving naloxone.

From the naloxone deployment data collected it was not possible to determine the outcome of the patient (transported or admitted to a hospital, death, etc.) or the suspected drug taken by the individual. Address ZIP codes were used to create frequency rate maps. Outcome data regarding death was retrieved from the Knox County Regional Forensic Center for the timeframe of Oct. 1, 2016 - Dec. 31, 2017. Beyond ZIP code, street-level addresses were not used to report the location of naloxone deployment on a smaller scale to further protect the identities of individuals in the data set.

Data was collected and analyzed in Microsoft Excel. Maps were created by Knox County Geographic Information System (KGIS).

Only individuals receiving naloxone from AMR Rural/Metro, KPD and KFD were included in this report. Data representing individuals receiving naloxone at area hospitals or who have obtained prescriptions for naloxone were not included in this analysis. Individuals receiving naloxone kits from syringe exchange services were also not included in this data set.

The Good Samaritan Law

In 2014, the state enacted the Tennessee Good Samaritan civil immunity law. The law grants civil immunity to anyone who administers nalaxone to someone reasonably believed to be overdosing on an opioid. It also grants immunity from civil suit to a provider who prescribes naloxone to a patient, family member, friend or other person in a position to give naloxone. The law allows the Tennessee Department of Health to provide training and instruction on how to use naloxone, and requires the person to receive basic instruction on how to give naloxone.

The Harm Reduction Coalition asks the community of Knox County to consider the following actions:

- Learn how to use naloxone: www.tn.gov/health/health-program-areas/health-professional-boards/csmd-board/csmd-board/naloxone-training-information.html
- Carry naloxone with you to potentially save a life
- Reduce the stigma of addiction by educating yourself and then spread the word
- If you are a parent, talk to your child about substance misuse: drugfree.org/
- Keep all medicines in the home secured in a lock box or locked medicine cabinet
- Safely dispose of all unused and no longer needed medications: countitlockitdropit.org

Ongoing/New Recommendations and Next Steps

- **Knox County Harm Reduction Coalition**
  - Continue to connect individuals receiving naloxone to care
  - Continue to direct prevention resources and efforts to areas of the community with higher percentages of deployments
  - Continue to encourage more first responders, community partners and individuals to carry and administer naloxone
  - Utilize mapping capabilities to evaluate data more granularly
  - Investigate temporal trends in naloxone deployment
  - Use combined data sets to target community interventions
- **Prescribers and Pharmacists**
  - Co-prescribe naloxone when writing narcotic prescriptions
  - Offer counseling and naloxone to patients picking up prescriptions for opioids
  - Increase education for prescribers on safe prescribing and care of patients with sustance use disorder

Conclusion

More individuals are receiving naloxone from first responders in Knox County and trends continue to increase, with nearly four individuals receiving naloxone from first responders each day.

We suspect that individuals receiving naloxone from first responders account for only a fraction of overdoses in Knox County.

The coalition will continue to collect naloxone deployment data from first responders to provide a clearer picture of the epidemic.

New avenues will be explored for ways in which naloxone can be provided to individuals within high-risk, high-need areas of the community, as significant evidence supports this as an effective intervention to help address the epidemic.