



# Mapping Neonatal Abstinence Syndrome (NAS) in Davidson County, Tennessee

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# Opioid Epidemic

- Opioids are powerful painkillers that are extremely addictive
- Increase in prescription opioid use since the 1990's
- Increase in opioid-related overdose and deaths
- Opioid epidemic has been declared a public health emergency



# Why does Tennessee need to address the Opioid crisis?

- *Each day, at least three Tennesseans die from an opioid-related overdose*, which is more than the number of daily traffic fatalities.
- Each year in Tennessee, *more opioid prescriptions are written than there are people living in the state*, with more than 1 million prescriptions left over.
- In 2017 in Tennessee, the amount of morphine milligram equivalents (MME) of *opioids dispensed was enough to provide oxycodone 5mg three times a day to every man, woman, and child in the state for six weeks.*



Source: Blue Cross Blue Shield Tennessee

# TN Together

A comprehensive plan to end the opioid crisis in Tennessee

- Comprehensive plan. Comprised of legislation more than \$30 million ( state and federal funds)
- Attack the opioid epidemic through three major components:
  - 1) Prevention
  - 2) Treatment
  - 3) Law Enforcement

# Opioid Epidemic in Tennessee

- In 2016, Tennessee was the third highest prescriber of opioids in the United States.
- Opioids are the primary substance of abuse in Tennessee
- Women are more likely than men to receive prescriptions for opioids
- Women are more likely than men to progress from using an addictive substance to dependence
- Women are more likely to develop medical or social consequences of addiction faster than men



Source: Blue Cross Blue Shield Tennessee

# Opioid Use Definitions

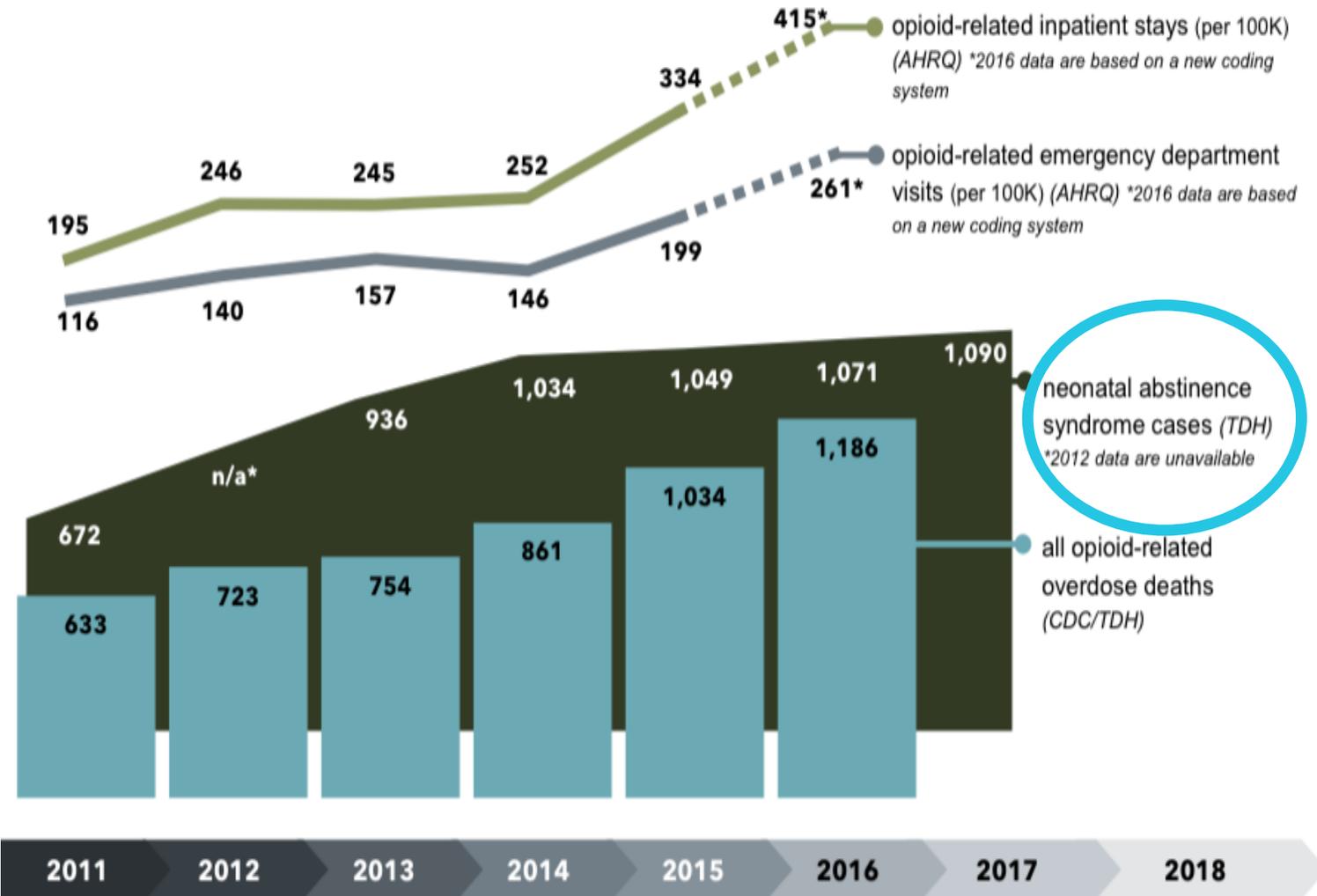
- **Misuse**
  - Taking opioids in greater amount / frequency than prescribed
- **Abuse**
  - Opioid drug use with resulting harm to health or social functioning
- **Non medical use**
  - Opioid use without a prescription or for the feeling it causes
- **Diversion**
  - Selling, trading or giving away opioids to others



# Outcomes of Opioid Misuse & Abuse

- Hospital admissions for opioid abuse
- Emergency department visits for opioid abuse
- Opioid-related overdose death
- Neonatal Abstinence Syndrome cases

THE OUTCOMES OF OPIOID MISUSE & ADDICTION



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# Neonatal Abstinence Syndrome (NAS)

- Neonatal Abstinence Syndrome (NAS) is a treatable condition that newborns experience after chronic exposure to certain substances, primarily opioids, while in utero
- Opioid use is the most common source of NAS
- Symptoms include:
  - Difficulty feeding
  - Irritability
  - High-pitched cry
  - Problems with calming/settling
  - Difficulty sleeping



# Neonatal Abstinence Syndrome (NAS)

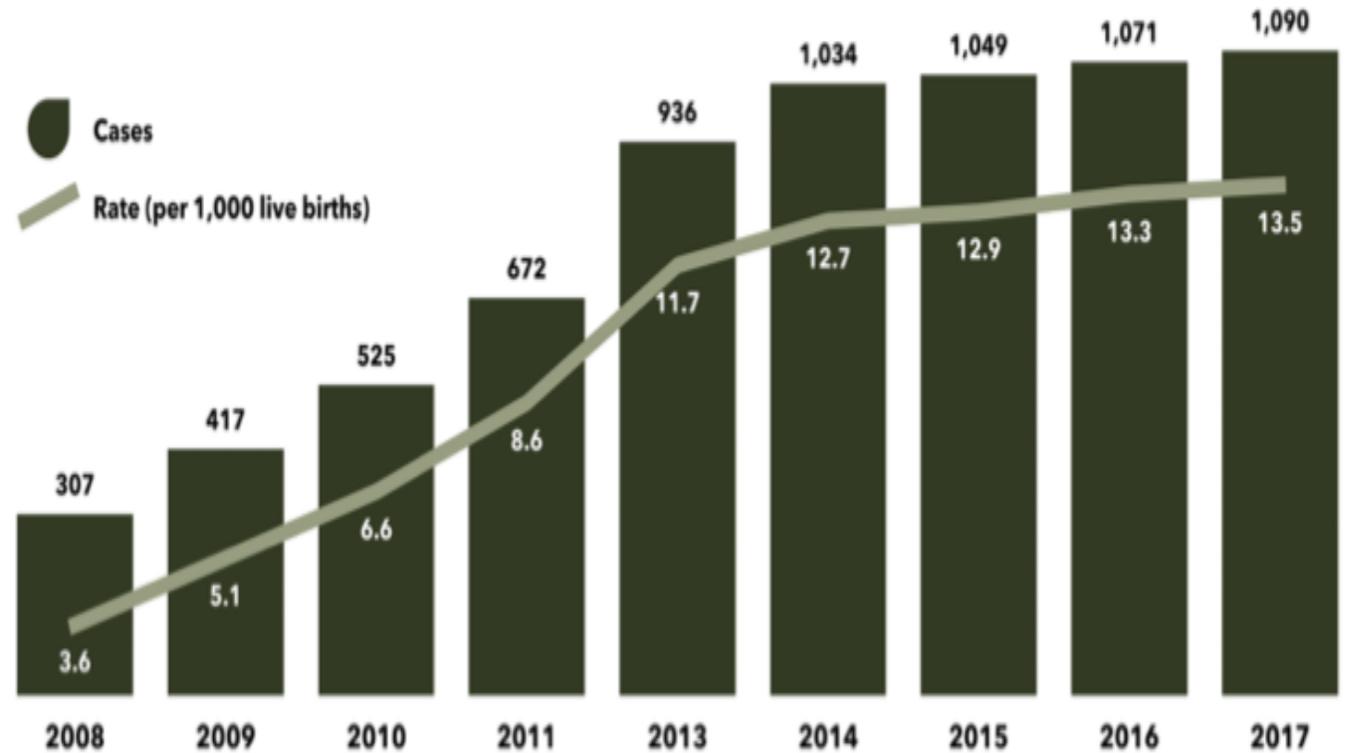
- Rate of NAS in the United States has surged 400% in recent years
- 5.8 per 1,000 hospital births affected in 2012
- Health care burden on hospitals
  - Financial strain
  - Newborns with NAS typically require NICU care (about \$3,000 per day)
- Center for Disease Control and Prevention (CDC) emphasizes the importance of **preventing and treating opioid dependence both before and during pregnancy.**



# NAS in Tennessee

- Between 2016 and 2017 Tennessee NAS births has a 2% increase
- 13.5 of every 1,000 live births involved NAS
- Rate of NAS grew 255% from 2008 to 2017
- About 70% of the NAS cases in 2017 include infants born to mothers on medication-assisted treatment (MAT) for opioid abuse

**FIGURE 3. NEONATAL ABSTINENCE SYNDROME (NAS) IN TENNESSEE**



Note: 2012 data are not available.

Sources: Tennessee Department of Health (7) (6)

# Physician Providers

- 39 Licensed residential detoxification programs in Tennessee
- Only 11 of those licensed residential detox programs will accept pregnant women for detoxification.
- Maximum beds available at 11 facilities is 132 ( swing between male and female slots).
- Average minimum amount of time for opioid detoxification is 5 days.
- 4,318 women would need 21,590 residential bed days for treatment each year.
- The 132 available beds in Tennessee can only provide 9636 of the treatment days needed to address opioid addiction for Tennessee's pregnant drug-using women.



# Barriers to Care for Pregnant Drug-Using Women

- Lack of treatment facilities that will admit pregnant women
- Lacks of high-risk OB-GYNs who will affiliate with treatment providers and these women to provide are while they are in addiction treatment
- Lack of treatment facilities that will provide recovery support for women through their pregnancies and post-partum
- Lack of childcare for women in treatment during pregnancy and post-partum
- Lack of funding for treatment
- Lack of insurance parity enforcement
- Lack of transportation for women to get treatment-especially in rural areas

**4318** pregnant women will need **access to addiction treatment** each year in Tennessee.



# Responding to the Increase in Incidence of NAS Using GIS

- ArcPro and ArcMap GIS were used to:
  - Perform network drive time analysis towards treatment facilities
  - Perform buffer analysis of physician providers in Davidson County, TN
  - Join tables to analyze distance between providers and treatment centers
- ArcGIS Online was used to develop a story map



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# Responding to the Increase in Incidence of NAS Using GIS



<https://arcg.is/19uOj5>



# Recommendations

- Develop more treatment centers in Davidson county that provide comprehensive services to pregnant women including:
  - Rehabilitation services
  - Mental health services
  - Housing
  - Child care

## Future use of GIS

- Use GIS to analyze the number of inpatient comprehensive treatment centers available to pregnant women throughout the state of Tennessee
- Develop GIS apps for hospital based tracking of NAS
- Develop apps that will integrate physician providers and treatment centers



**“I would move mountains for my kids. I don’t think I ever let...that’s one thing I don’t think I ever did was let my addiction come in the way of my parenting, cause I mean I think that’s the only thing that’s getting me through now is that I’m fighting for them.”**

*-Quote from mother in treatment  
“2015 Centerstone Study on  
Parental Substance Abuse and  
Mothering”*

<https://youtu.be/L0b58PSs9s4>



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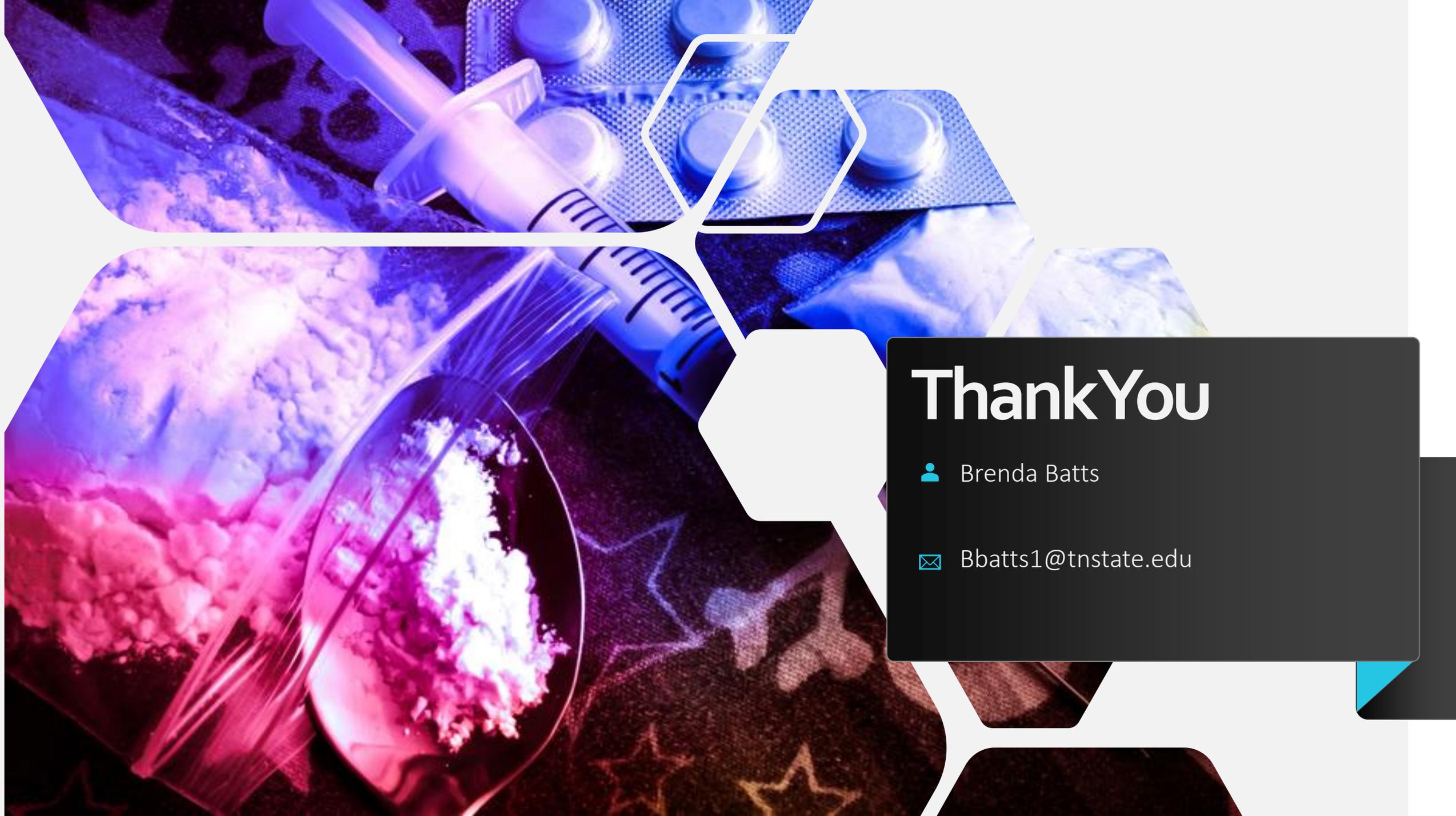
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# Thank You

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