

Substance Use Disorder in Pregnancy & Neonatal Abstinence Syndrome

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Dignity HealthTM

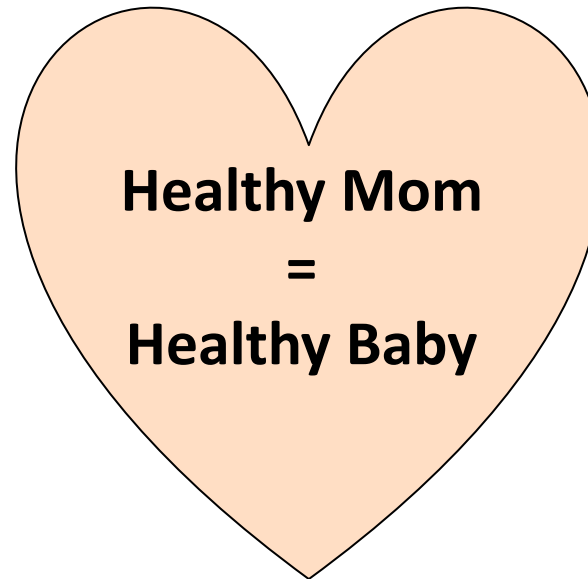
St. Rose Dominican

Abbreviations

- OUD = Opioid Use Disorder
- SUD = Substance Use Disorder
- NAS = Neonatal Abstinence Syndrome
- NOWS = Neonatal Opioid Withdrawal Syndrome
- HC = Head Circumference
- SGA = Small for Gestational Age
- IUGR = Intrauterine Growth Restriction
 - Diagnosis when an unborn baby is not growing at a normal rate inside the womb leading to that baby being smaller than he/she should be.
 - Puts the baby at risk for health problems during pregnancy, delivery & after birth

Pregnancy is a Time for Change!

- Pregnancy offers a unique opportunity for intervention
 - Women are more willing to seek care & remain in treatment



Opioid use disorder during pregnancy...

Opioid Use During Pregnancy

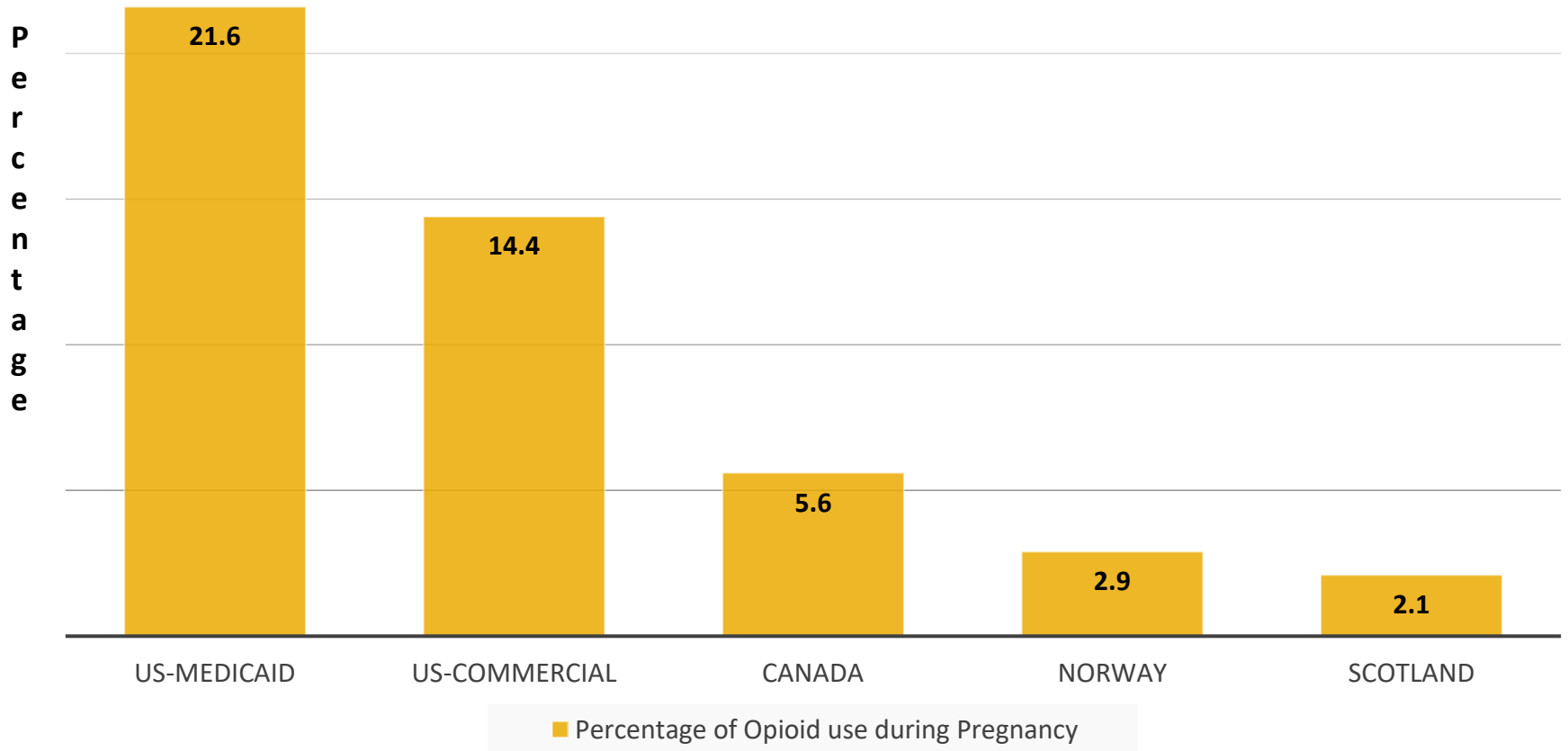
- Drug-induced deaths are now the leading cause of death for reproductive-age women in the U.S.
- Rates of opioid use disorder (OUD) in pregnant & postpartum women have also increased
 - 1.7 per 1,000 delivery admissions in 1998 to 3.9 per 1,000 in 2011
 - > 40% of pregnant women enrolled in Medicaid receive a prescription for opioids

Centers for Disease Control and Prevention. Annual surveillance report of drug-related risks and outcomes—United States, 2017. In: Vol surveillance special report 1. Atlanta (GA): Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2017. 18.

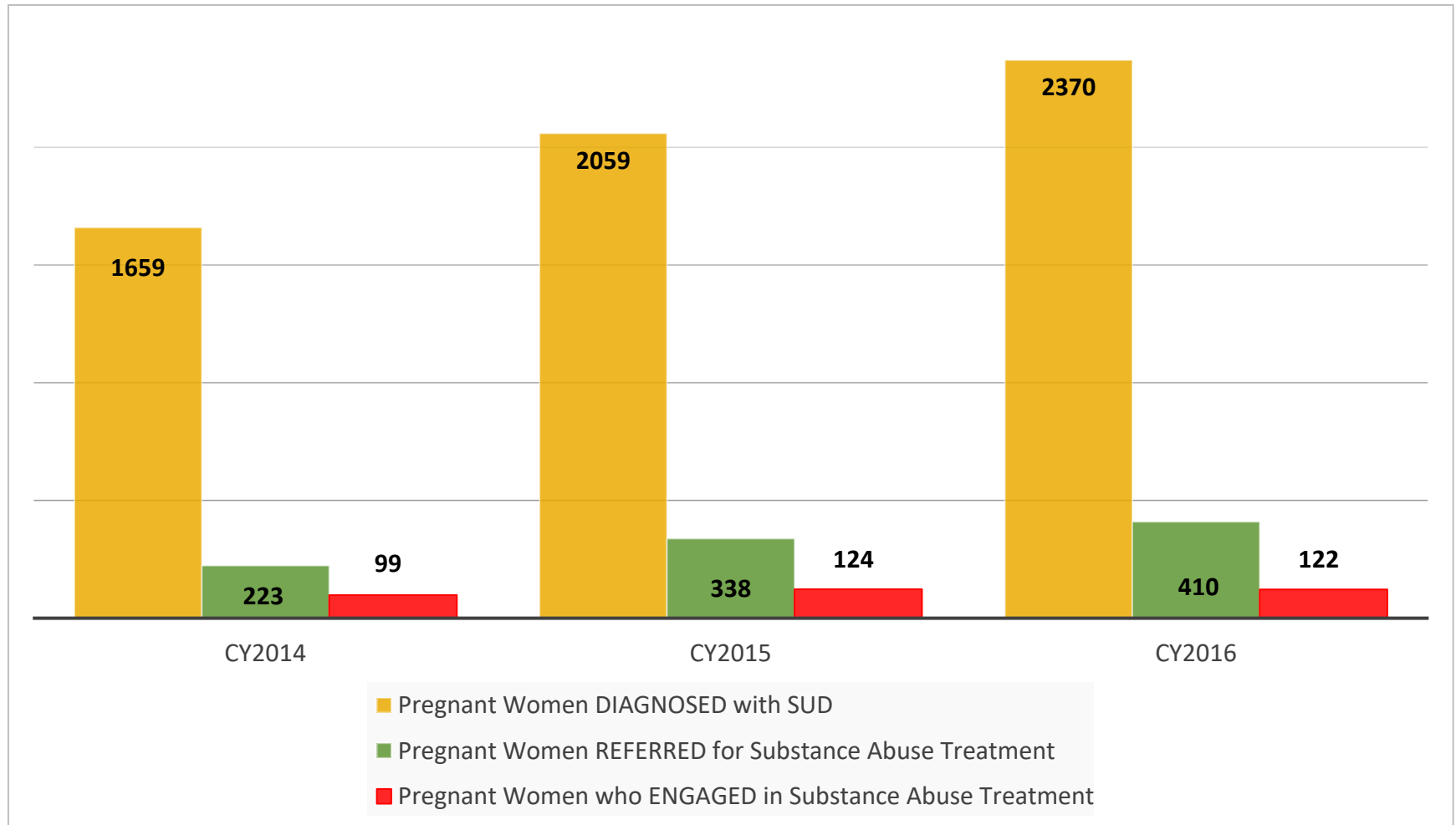
Smid MC, Stone NM, Baksh L, et al. Pregnancy-Associated Death in Utah. *Obstetrics & Gynecology*. 2019;133(6):1131–1140. doi: 10.1097/AOG.0000000000003279. 1

ASTHO Experts, States consider neonatal abstinence syndrome prevention and treatment. February 4, 2020

Opioid Use During Pregnancy

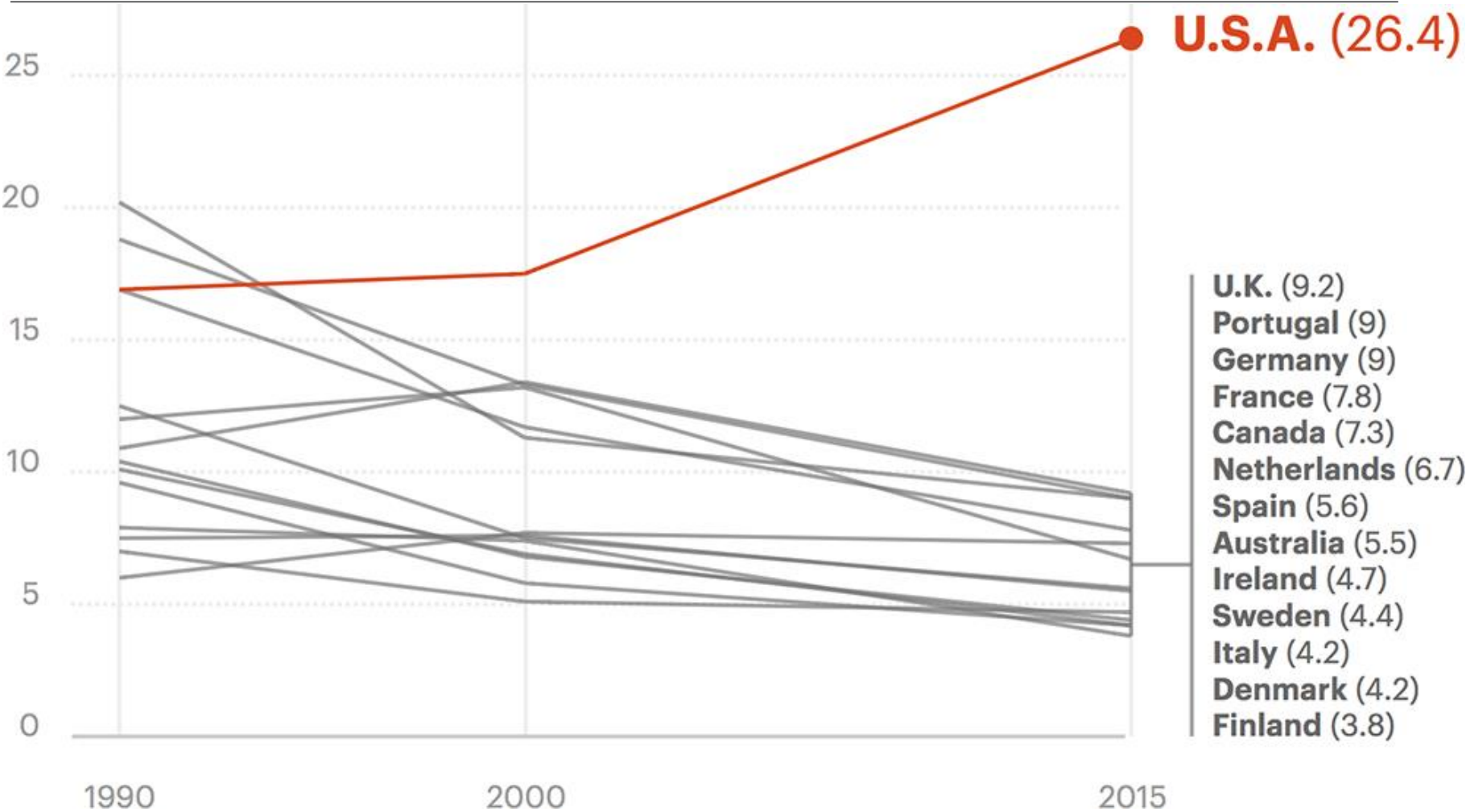


Nevada: Initiation and Engagement in Treatment for Pregnant Women



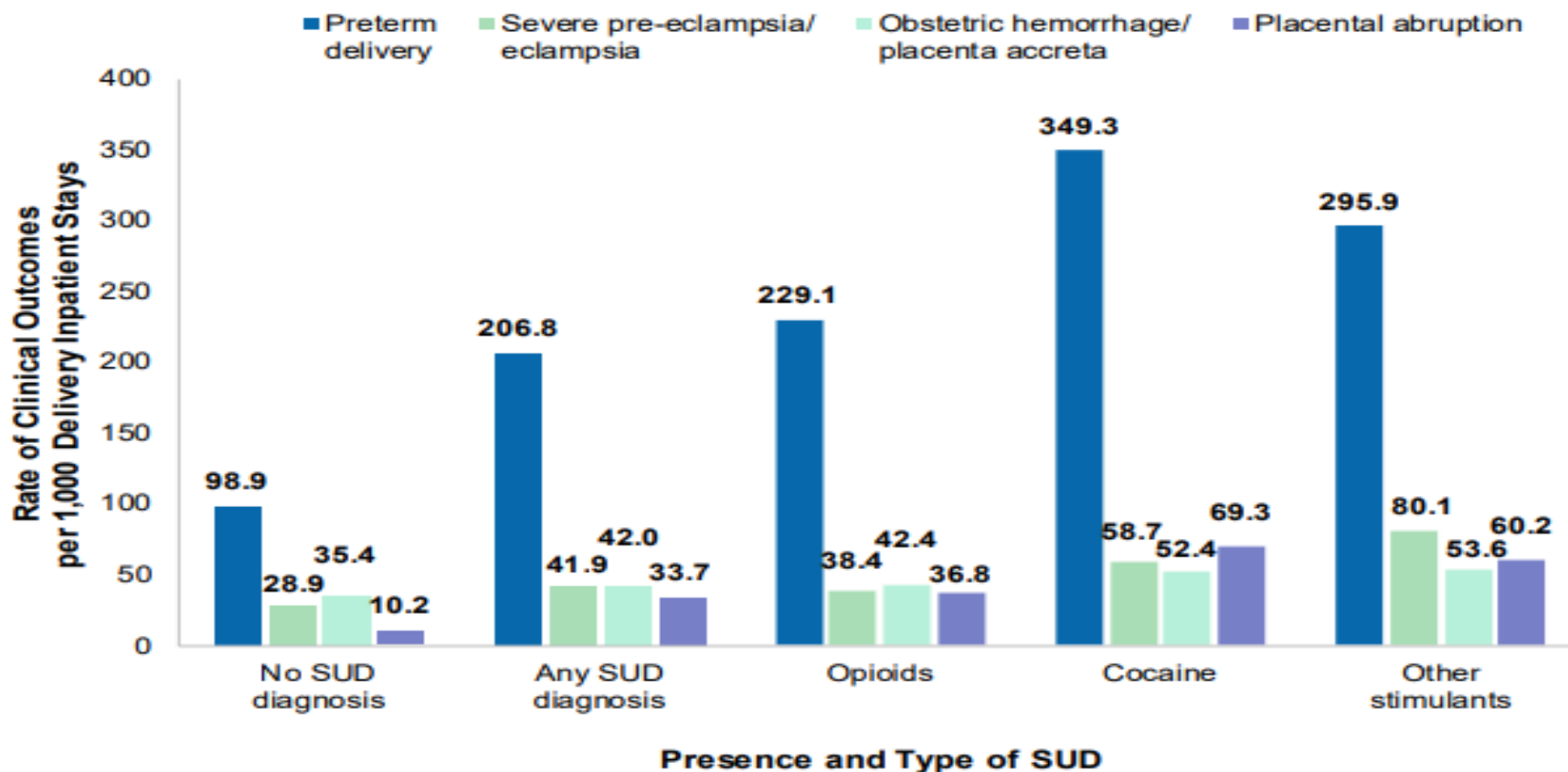
The effects of opioid use disorder on maternal mortality....

Maternal Mortality Rates: USA vs. Developed Nations



Impact on Clinical Outcomes

Figure 2. Comparison of clinical outcomes among delivery stays with and without an SUD diagnosis, 2016



Abbreviation: SUD, substance use disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2016

Maternal Mortality and Overdose Rates

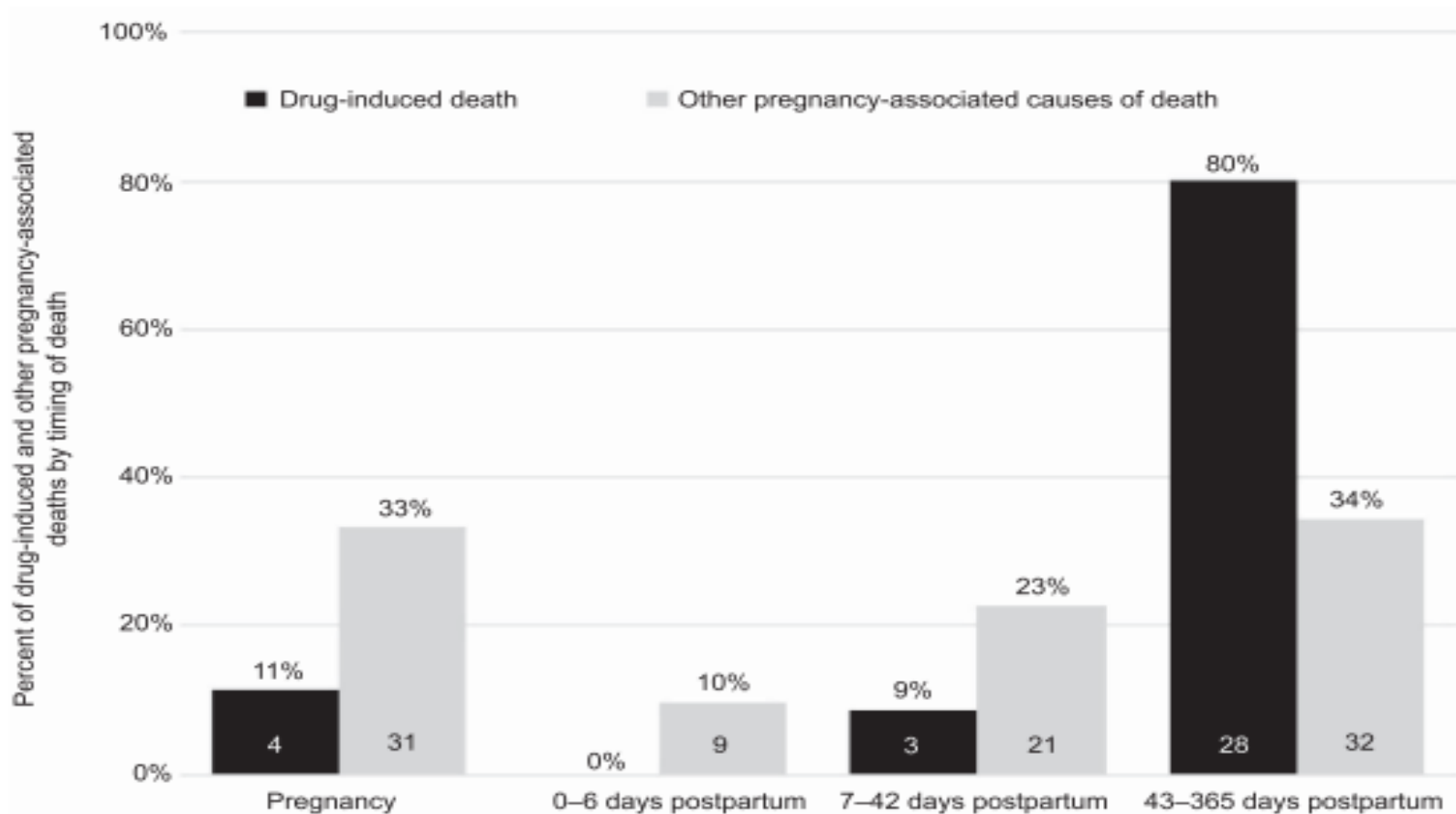


Fig. 1. Proportion of pregnancy-associated, drug-induced deaths vs all pregnancy-associated deaths, 2005–2014 (N=136). *Smid. Pregnancy-Associated Drug-Induced Deaths in Utah. Obstet Gynecol 2019.*

Treatment options for maternal opioid use disorder....

Maternal Treatment Options

Methadone	Buprenorphine
<ul style="list-style-type: none">-Full opioid agonist-Requires daily visits to a federally certified opioid treatment program-Greater risk of overdose than Buprenorphine-Higher incidence, more severe symptoms & longer duration of NAS/NOWS	<ul style="list-style-type: none">-Partial opioid agonist/antagonist-May be prescribed in office setting-Less risk of overdose than Buprenorphine-Generally less incidence, milder symptoms & shorter duration of NAS/NOWS

Buprenorphine vs. Methadone

- 3 different prospective studies have shown lower NAS rates for infants delivered to mothers receiving Buprenorphine

Study	Outcome
Methadone versus buprenorphine in pregnant addicts	Mean duration of treatment for NAS was longer for methadone vs. buprenorphine (5.3 vs 4.8 days p = 0.766)
PROMISE Trial	Length of hospitalization was longer for neonates exposed to methadone vs. buprenorphine (8.1 vs 6.8 days, P=0.021)
MOTHER Trial	Neonates exposed to buprenorphine required significantly less morphine. (1.1 vs 10.4mg, p<0.0091) Neonates exposed to buprenorphine had a significantly shorter duration of NAS treatment. (4.1 vs 9.9 days, p<0.003) Neonates exposed to buprenorphine had a significantly shorter hospital stay. (10.0 vs 17.5days, p<0.009)

Buprenorphine vs. Methadone Cost Effectiveness

Theoretical Cohort of 20,000 opioid maintained pregnant women based on amount of pregnant women exposed to opioids in pregnancy.		
	Methadone	Buprenorphine
Neonatal Abstinence Syndrome (NAS)	9,080	5,263
Preterm Birth (< 37 weeks)	3,490	1,917
IUGR	927	564
CP	167	100
IUFD	5	5
Discontinued Treatment	3,600	5,625
Mother-Baby Dyad QALYs	1,109,800	1,120,600
Cost (in millions)	\$1,207	\$924

Per 20,000 patients treated buprenorphine results in

- 3187 less cases of NAS
- 1573 less cases of Preterm Births
- 362 less cases of growth restriction

Cost Savings of \$283 million dollars

Saves \$23,000 per pt for 7 months of treatment

In-utero effects on the fetus....

Opioid Exposure and the Brain

- Clinical studies in children & newborns
 - In utero exposure to opioids shows white matter microstructure changes on MRI
 - Decreased brain volumes (areas of effect are similar to animal studies)
 - Methadone exposure shows similar changes in neonatal brains
 - Correlates with studies showing decreased head circumference in infants with neonatal abstinence syndrome (NAS)

Effects on the newborn.....

NAS and Newborn Head Circumference

	Subjects	Controls	Signif.
Number	332	332	
HC $\leq 10^{\text{th}}\%$	98(29.5%)	41(12.3%)	$p < .001$
HC $\leq 3^{\text{rd}}\%$	25(7.5%)	5(1.5%)	$p < .001$
HC $\leq 10\% > 3\%$	73(22%)	36(10.8%)	$p < .001$
SGA/IUGR	54(16.3%)	37(11.1%)	$p = 0.07$
HTN etc.	65(19.6%)	69(20.8%)	$p = 0.8$
Diabetes	26(7.8%)	36(10.8%)	$p = 0.2$

Study shows fetuses exposed to Methadone during pregnancy had significantly smaller head size compared to fetuses not exposed to opioids

Neonatal Abstinence Syndrome (NAS)...

What is NAS/NOWS?

- Prescription misuse & illicit drug use during pregnancy
- NAS - Neonatal Abstinence Syndrome
 - Withdrawal symptoms in Infants born to mothers who used drugs during pregnancy
- NOWS - Neonatal Opioid Withdrawal Syndrome
 - Specific form of NAS
 - 50-80% of opioid exposed infants develop NOWS

Symptoms of NAS

- Effects of withdrawal manifest in the following ways in infants:

Neurologic Symptoms	Gastrointestinal Symptoms	Autonomic Symptoms
<ul style="list-style-type: none">-Irritability-Increased wakefulness-High-pitched cry-Tremors-Increased muscle tone (stiffness)-Yawning/sneezing-Seizures	<ul style="list-style-type: none">-Vomiting/diarrhea-Dehydration-Poor weight gain-Poor feeding-Uncoordinated & constant sucking	<ul style="list-style-type: none">-Sweating-Nasal stuffiness-Fever-Temperature instability-Elevations in respiratory rate & blood pressure

How do we treat Neonatal Abstinence Syndrome (NAS)?

Treatment of NAS

Non- Pharmacologic

- Breastfeeding
- Skin-to-skin Contact
- Rooming-in
- Swaddling
- Pacifier use
- Quiet/dark environment

Pharmacologic

- Morphine
- Buprenorphine
- Clonidine
- Phenobarbital
- Clonidine

**Start these conversations
prior to delivery!!**

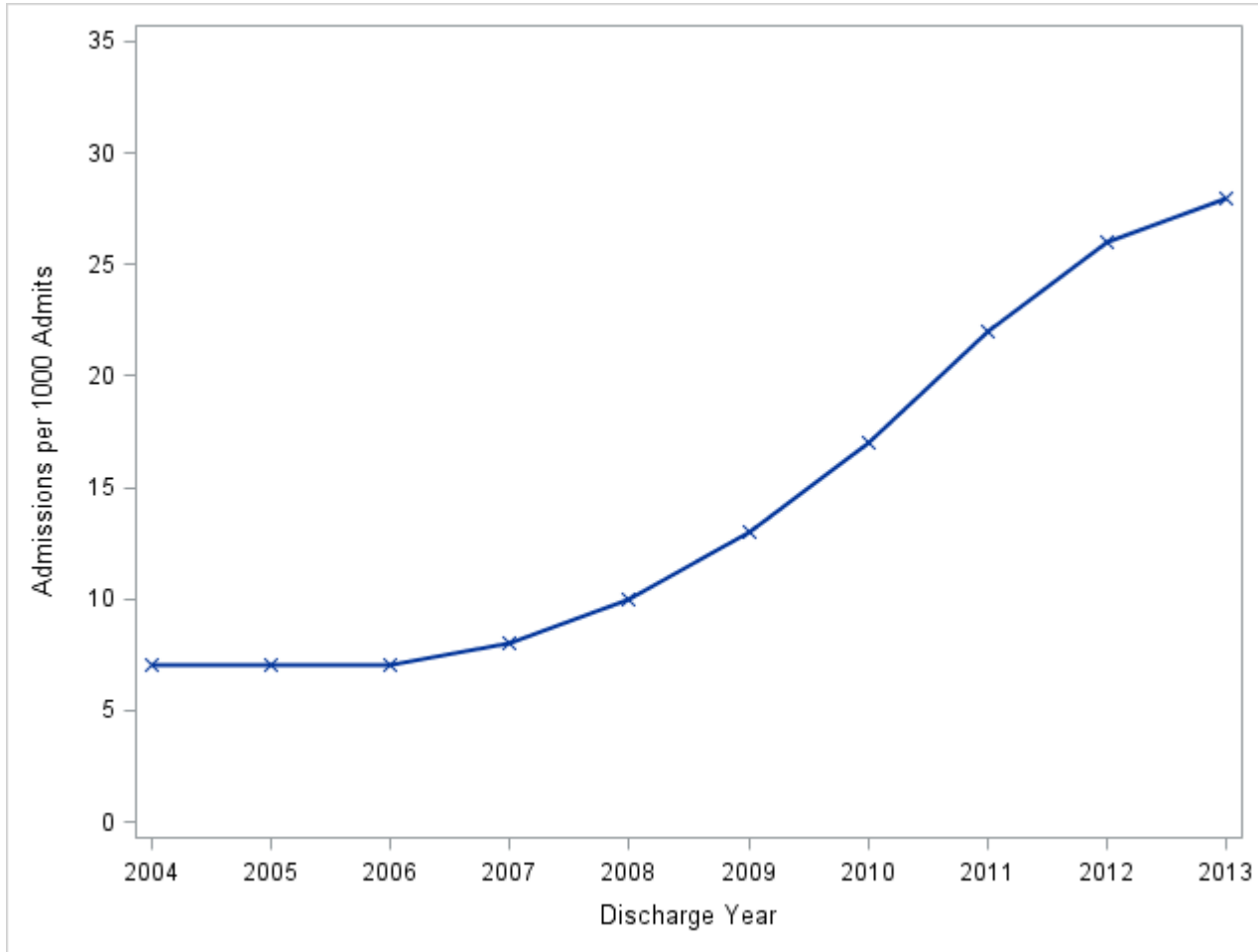
What is the scope of NAS in the United States?

National Scope of NAS

- CDC:
 - Rate of hospital births for NAS increased from 1.5 to 6 per 1,000 hospital births from 1999 to 2013
 - 300% increase
- Patrick, et al:
 - Rate of NICU admissions for NAS increased from 1.2 cases to 5.8 per 1,000 hospital births from 2000 to 2012
 - ~400% increase

NAS NICU Admissions 2004-2013

Total N = 674,845 NICU Infants



Rate of NICU admissions for NAS increased from 7 to 27 cases per 1,000 admissions from 2004 to 2013

What is the cost of NAS?

Cost of NAS



2009

- \$732 Million hosp cost
- 3.4 per 1000 hosp births

2012

- \$1.5 Billion
- 5.8 per 1000births
- 81% of costs- Medicaid

2014

- 6.7% of all neonatal costs by Medicaid

What is the scope of NAS in Nevada?

Prevalence of NAS in Nevada

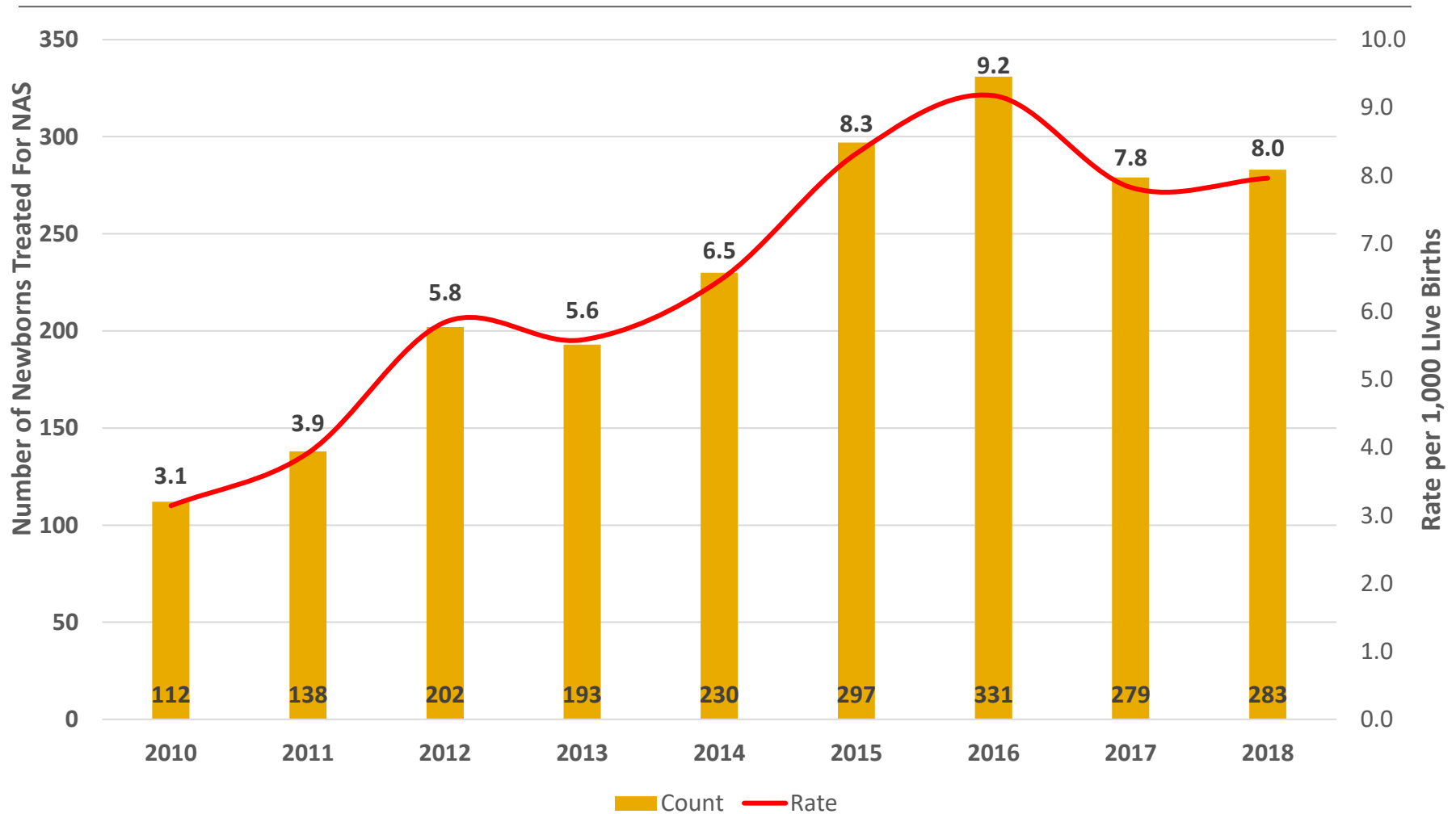
Mednax Data

Year	Patients	NAS Patients	Nevada NAS Rate	Mednax NAS Rate	Nevada LOS	Mednax LOS	P Value
2014	3739	145	3.9%*	2.7%	24.2	22.1	< 0.001*
2015	3940	215	5.5%*	3.2%	20.8	20.9	< 0.001*
2016	3959	209	5.3%*	3%	20	22.5	< 0.001*

**Only includes infants treated with medication

***Does **NOT** include infants who were not started on medications or not admitted to the NICU

Neonatal Abstinence Syndrome, Nevada Residents, 2010-2018



What is the scope of NAS in our
community?

Prevalence of NAS in Southern Nevada

St. Rose Dominican Hospitals 2015-2016

Women in treatment:

- 51% of mothers in treatment were (+) for a controlled/illicit substance
- 77% of infants born to a mother in treatment were positive for a controlled/illicit substance

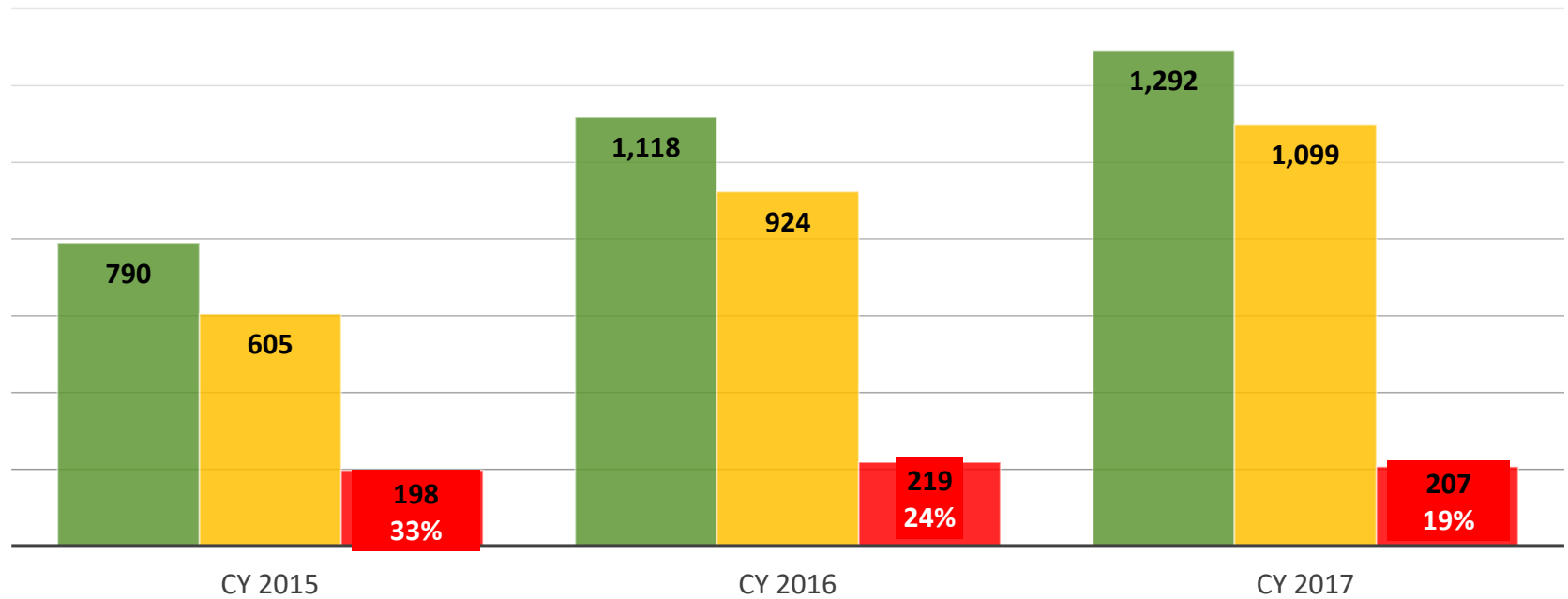
All infants treated for NAS:

- 62% of infants treated for NAS were (+) for an illicit substance
- 60% of infants treated for NAS were (+) for a controlled substance
- 70% of infants treated for NAS were (+) for > 1 substance (polysubstance use)

Prenatal Care/Discharge

- 22% of women had no prenatal care
- 34% of infants were discharged to someone other than their parents

Statewide Child Protective Services (CPS) Reports with an Allegation of Substance Exposed Infants Calendar Year 2015 - 2017



- Unique Count of Reports
- Count of Reports Investigated
- Count & Percent of Investigations Substantiated

Source: query as of 8/31/2018
Prepared by Office of Analytics-DCFS
Branch

Take-Home Points

- More pregnant women appear to be seeking treatment
 - Compliance is poor
- Polysubstance use is high
- Nevada NAS rates are nearly double national rates
 - 3 consecutive years show this
- CPS & foster care burden is high

How does NAS impact our community?

Pregnancy/Delivery Costs

- High risk pregnancy
 - Poor fetal growth = Lower birth weight
 - One study estimated OUD pregnancy-related hospitalizations cost an additional \$30 million dollars annually
- Hospital cost contributed by NAS
 - \$316 million in 2012, not including ongoing costs for follow-up care
 - Average mean charge \$93,400 for NAS baby vs \$3500 for healthy newborn
- Estimated total hospital costs over a 10 year period
 - \$2.5 Billion from 2004-2014

Long-Term Effects of NAS

- Long-term developmental outcomes related to NAS are limited
- Lifelong Impact- social, emotional, physical and mental health challenges that last into adulthood
 - School failure, alcohol and drug use
 - Increased chance for health conditions: obesity, heart disease, etc
- Estimated Additional Liability:
 - >\$150,000/pt for ongoing medical care, education, social services

What did we do to reduce the impact
of this epidemic?

EMPOWERED Pathway

Empowering Mothers for Positive Outcomes With Education, Recovery, and Early Development

Resources

Community Support

- Support Groups
- Baby Cuddlers
- Baby's Bounty
- St. Rose WIC
- Lactation Support
- NV Health Link

Educational Classes

- Baby Basics
- Birth Center Tours
- Boot Camp for New Dads
- Breastfeeding Classes
- Infant CPR
- Prepared Childbirth

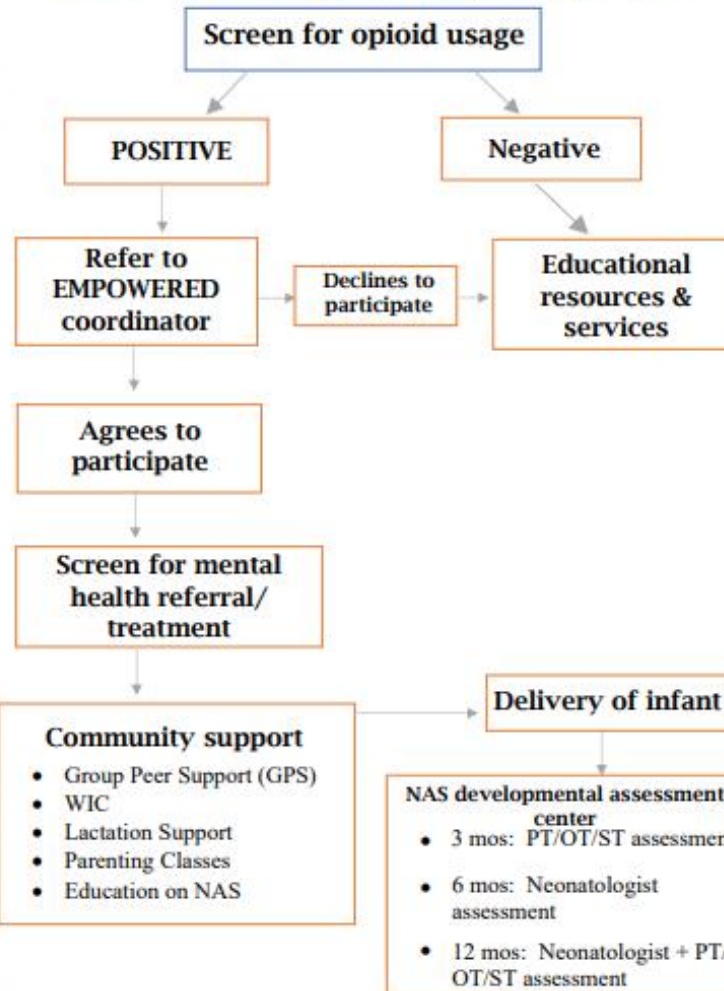
Developmental Assessment Center

- Assessment
- Evaluation

If you are looking for additional assistance or information, please call 702.492.8593.

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SPK 5/20/19/18



Contributions to the Community from the EMPOWERED Program...

Dignity Health EMPOWERED Program Update (June 2018 – September 2019)

- 135 patient encounters

Resources Provided by EMPOWERED

- Referrals for MAT: 42%
- Referrals for prenatal care: 44%
- Referrals to a pediatrician: 4%
- Referrals for pain management: 7%
- WIC: 17%
- Assistance with employment: 5%
- Assistance with transportation: 84%
- Assistance with housing: 26%
- All clients receive referrals to appropriate St. Rose Wellness Center infant & parenting classes

Barriers to Care Identified by the EMPOWERED Program

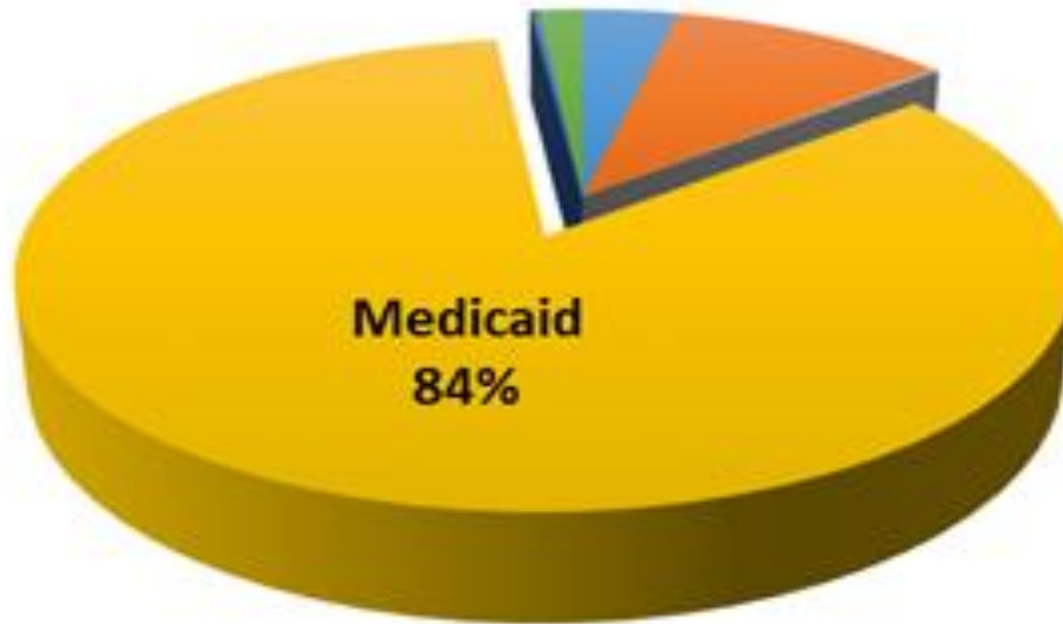
- Care coordination
- Loss of services with newly identified pregnancy
 - Pain management
 - Psychiatric care
- Mental health support
 - Inpatient admission process
 - Inadequate provider network
- Housing
- Transportation

Case Studies...

Financial impact of the EMPOWERED program.....

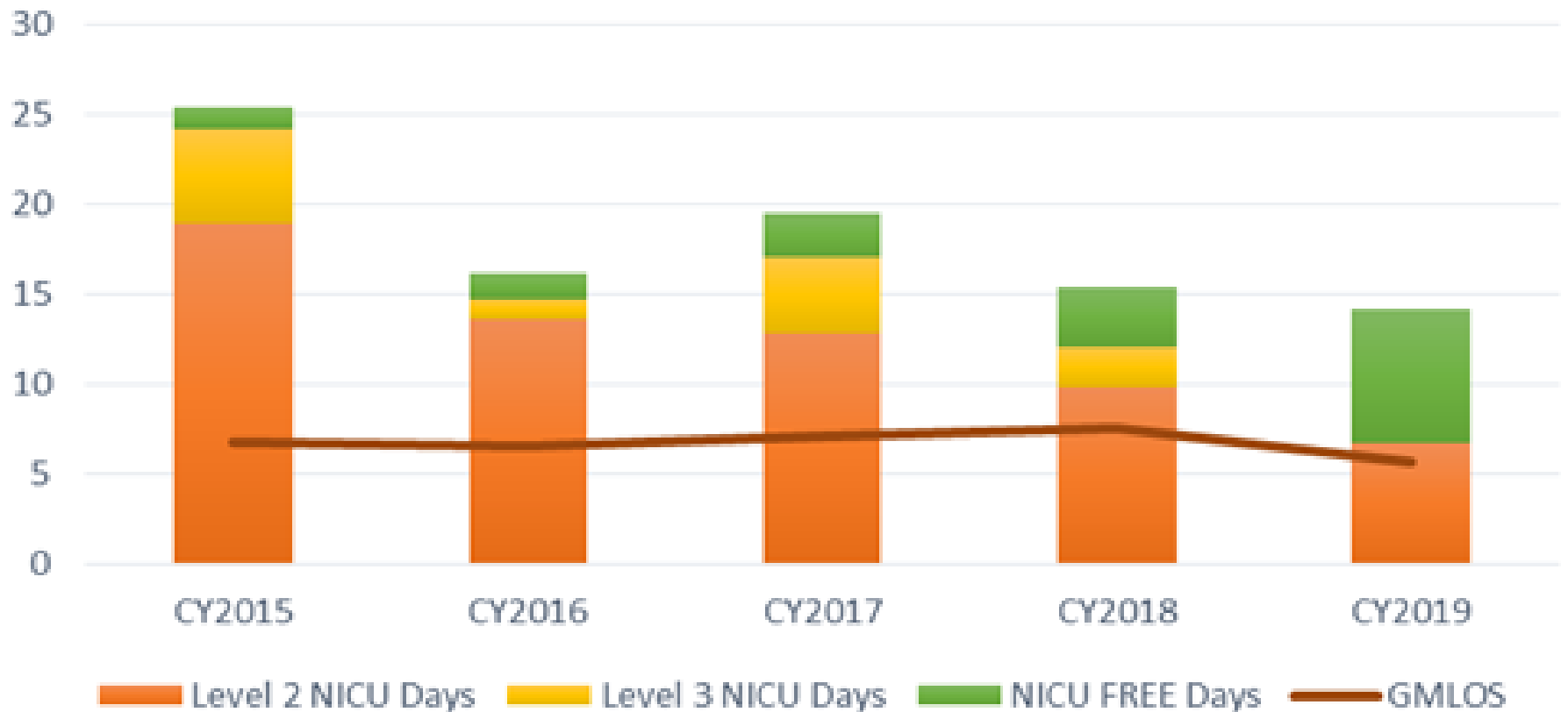
EMPOWERED: Financial Impact

NAS Baby Payor Mix



EMPOWERED: Financial Impact

NAS Baby Length of Stay



What can I do to help my state?

Action Items

- **Universal screening** for substance abuse for every woman of child-bearing age with a validated verbal screening tool
 - Early screening allows more time for an effective intervention
 - Universal screening minimizes potential for bias
 - Drug addiction affects all racial, ethnic & social groups
 - Universal screening minimizes potential for implicit bias
 - Evidence suggests that hospital staff are more likely to perceive black women as being higher risk of using drugs, even though white women have similar rates
 - Evidence also suggests that black women are more likely to face punitive consequences
 - Screening should occur with an empathic, compassionate, non-judgmental approach that lets the woman know all women are asked the same questions
 - Appropriate use of toxicology testing

Action Items

- Break down barriers to care
 - Reduce stigma
 - Knowledge gaps among providers
 - Gaps in care coordination & communication
 - Address inadequate capacities that exist to meet treatment & recovery needs of pregnant/parenting women
- Identify infants at risk for NAS
 - Maintain the mother-baby dyad, whenever possible
- Utilize trauma informed care
- Ensure that linkage to home visitation programs or that other home supports are in place

Legislative Policy Ideas

- Mandatory Education for Physicians in Screening, Brief Intervention and Referral to Treatment (SBIRT)
 - In 2017, [Utah passed legislation](#) for mandatory education in SBIRT, but gave physicians ample time to be able to obtain it. SBIRT is now billable and Project ECHO is doing CEUs for this.
- CARA Plan of Safe Discharge to Pediatrician
 - Currently, the Nevada CARA plan of safe discharge is only distributed to CPS, but it would help to give pediatricians the ability to obtain it and follow babies closely for their safety and for developmental delays
- Other Areas of Interest
 - CPS/Courts, Transportation and phones for Medicaid patients

Thank you!