

# Optimizing the Care of Opioid-Exposed Newborns



School of Medicine  
UNIVERSITY OF COLORADO



# Colorado Hospitals Substance Exposed Newborn Quality Improvement Collaborative (CHoSEN QIC)

# Variability Across Colorado Hospitals

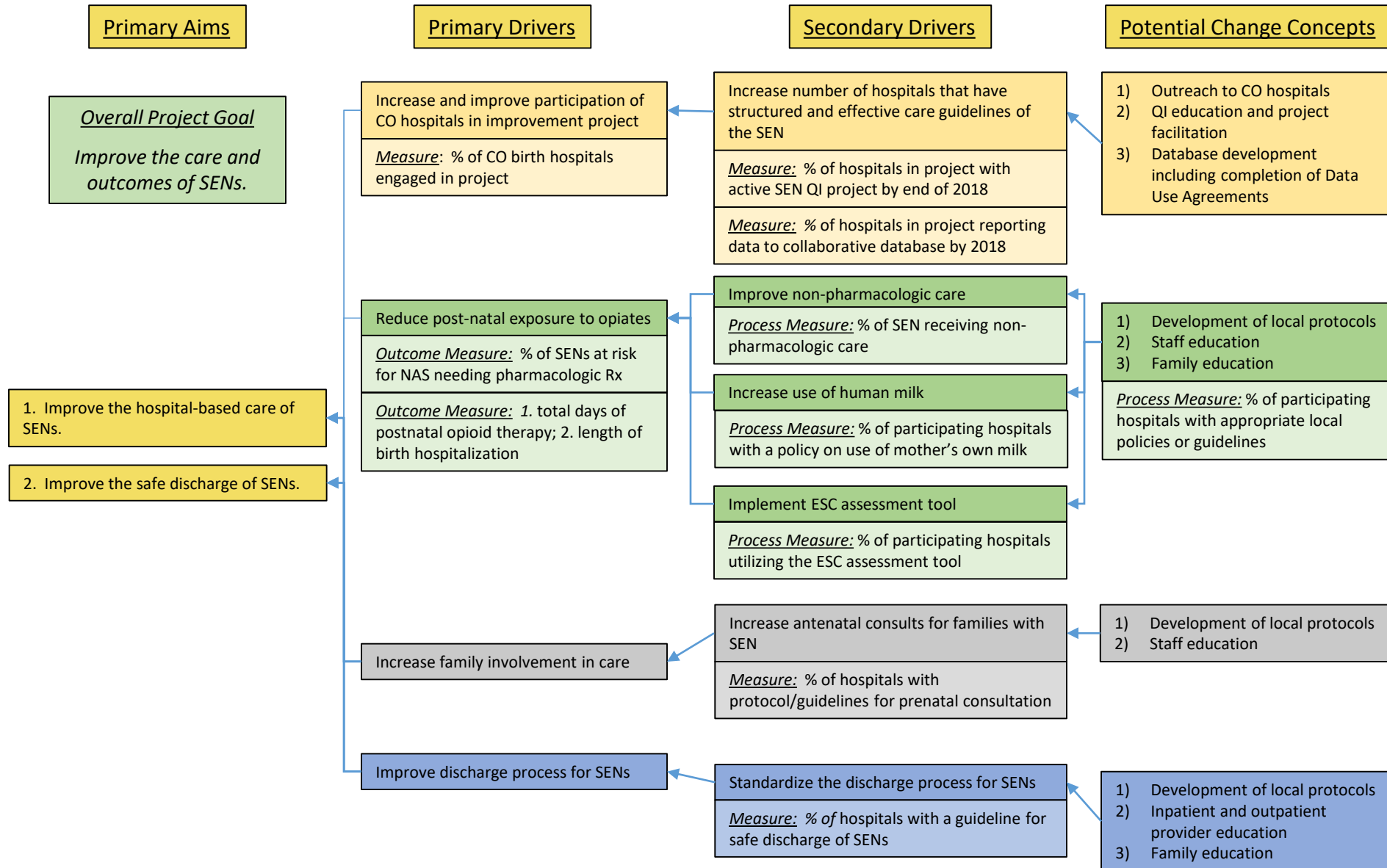
- Maternal and infant drug screening
- Infant assessment for withdrawal
- Location of care for opioid exposed newborns
- Degree of engagement of mothers
- Pharmacologic treatment modalities
  - Initiation and weaning protocols
- Criteria for discharge
- On and on and on.....

# CHoSEN QIC

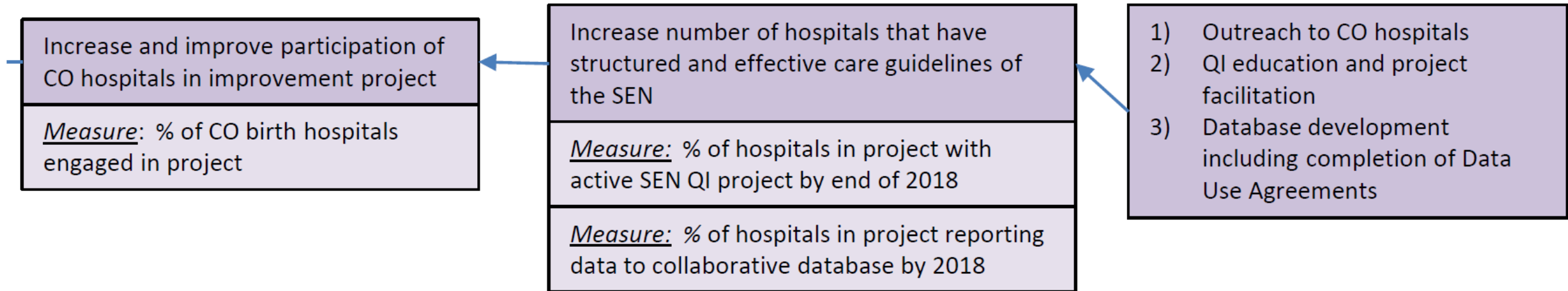
## Initiative Goal

- Our goal is to develop a collaborative quality improvement initiative of Colorado hospitals that will use structured **quality improvement methods and sharing of data and practices** to further support hospital-based improvement efforts to achieve measurable improvements in the care of substance-exposed newborns and their families.

# CHOSEN QIC Key Driver Diagram

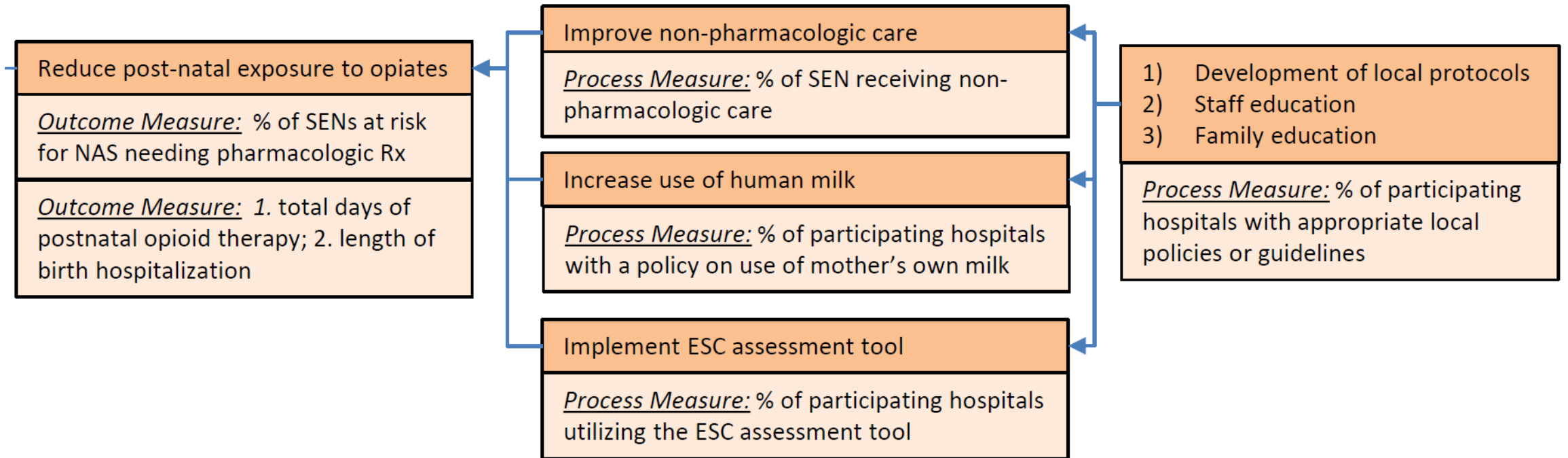


# Hospital Participation



- Learning about what is already being done
- Academic/university resources to expand the scope and rigor
  - Data collection system, analysis, and reporting
  - Workshops, webinars and forums
- Outreach and Engagement

# Reduce Postnatal Opiate Exposure



- Standardize non-pharmacologic care.
- Develop criteria for allowing mothers with substance use disorders to breastfeed.
- Transition from Finnegan Assessment to ESC.

# **Finnegan vs. Eat, Sleep, Console (ESC)**

c/o Elisha Wachman, MD



# Finnegan Scale

Central Nervous System Disturbances	Metabolic, Vasomotor, and Respiratory Disturbance	Gastrointestinal Disturbance
Excessive High Pitched Crying – 2 Continuous High Pitched Crying - 3	Sweating – 1	Excessive Sucking – 1
Sleep < 1 Hr After Feeding – 3 Sleep < 2 Hr After Feeding – 2 Sleep < 3 Hr After Feeding – 1	Fever < 101 (37.2 – 38.3 C) – 1 Fever > 101 (38.4 C) – 2	Poor feeding – 2
Hyperactive Moro Reflex – 2 Markedly Hyperactive Moro – 3	Frequent Yawning (>3) – 1	Regurgitation – 2 Projective Vomiting – 3
Mild Tremors Disturbed – 1 Mod – Severe Tremors Disturbed – 2	Mottling – 1	Loose Stools – 2 Watery Stools – 3
Mild Tremors Undisturbed – 3 Mod – Sev Tremors Undisturbed - 4	Nasal Stuffiness – 1	
Increased Muscle Tone - 2	Sneezing (>3) – 1	
Excoriation – 1	Nasal Flaring – 2	
Myoclonic Jerk – 3	Respiratory Rate (>60) – 1 Respiratory Rate (>60 w Retractions) – 2	
Seizures – 5		

Finnegan LP, et al,  
*Int Clin Pharmacol Biopharm*, 1975.

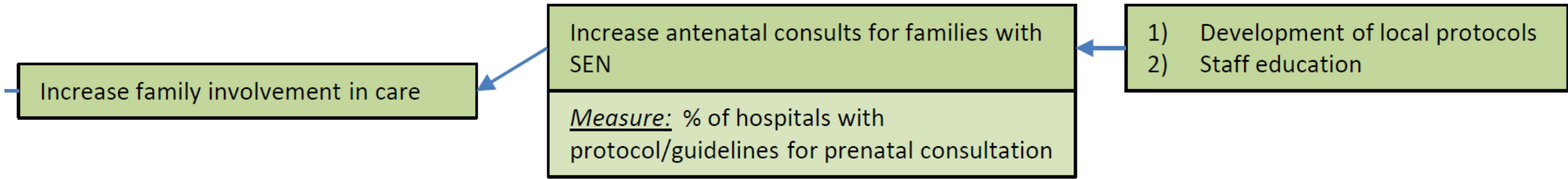
# What is a baby's job description

- **Eat**
- **Sleep**
- **Console**



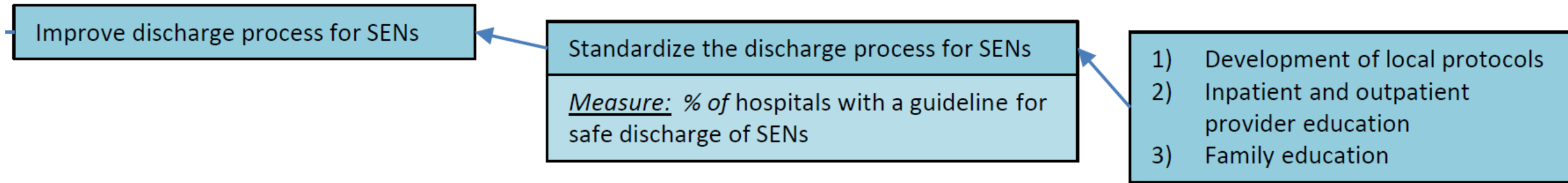
- **Mothers and Non-Pharm Care = FIRST-LINE TREATMENT**

# Optimize Family Involvement



- Develop and distribute prenatal consultation guidelines for providers (OB, midwives, pediatricians, NICU providers).
- Focused PDSA cycle on engaging prenatal providers

# Ensure “SAFE” Discharge



- Develop guidelines for “safe” discharge for SENS and their mothers.
  - Checklist for consults while hospitalized, social services and outpatient follow-up arranged at discharge
  - Education of primary care providers

Progress to Date

# September 2017

<u>Hospital</u>	<u>Team Lead Identified</u>	<u>Team Roster Completed</u>	<u>IRB Review Completed</u>	<u>Data Audit Begun</u>	<u>Interventions Implemented</u>	<u>Data Sharing Begun</u>
Denver Health	Y					
Lutheran	Y					
Parker	Y					
Platte Valley	Y					
Poudre Valley	Y					
University Hospital	Y					

# April 2019

<u>Hospital</u>	<u>Team Lead Identified</u>	<u>Team Roster Completed</u>	<u>Data Use Agreement</u>	<u>Interventions Implemented</u>	<u>Data Collection &amp; Sharing Begun</u>
Denver Health	Y	Y	Y	Y	Y
Lutheran Medical Center	Y	Y	Y	Y	Y
McKee Medical Center	Y	Y	Y		
Medical Center of the Rockies	Y	Y	Y		
Memorial Hospital	Y	Y	Y	Y	Y

2018: 61,842 births in Colorado hospitals  
 27,973 births (45.2%) occurred in CHoSEN QIC hospitals

# of Level II, III or IV NICUs in Colorado: 31  
 16 (52%) are in CHoSEN QIC

San Luis Valley Health	Y	Y			
St. Joseph Hospital	Y	Y	Y	Y	Y
St. Mary's Medical Center	Y	Y	Y	Y	Y
St. Vincent Healthcare	Y	Y			
University Hospital	Y	Y	Y	Y	Y
Valley View Hospital	Y	Y	Y	Y	Y

# Winter Forum: January 31, 2019

Over 80 attendees from across Colorado:

- Colorado Springs
- Denver Metro
- Fort Collins
- Grand Junction
- Glenwood Springs
- Greeley
- Pueblo

Representing:

- 14 Colorado hospitals
- 3 State agencies
- 3 Partner organizations





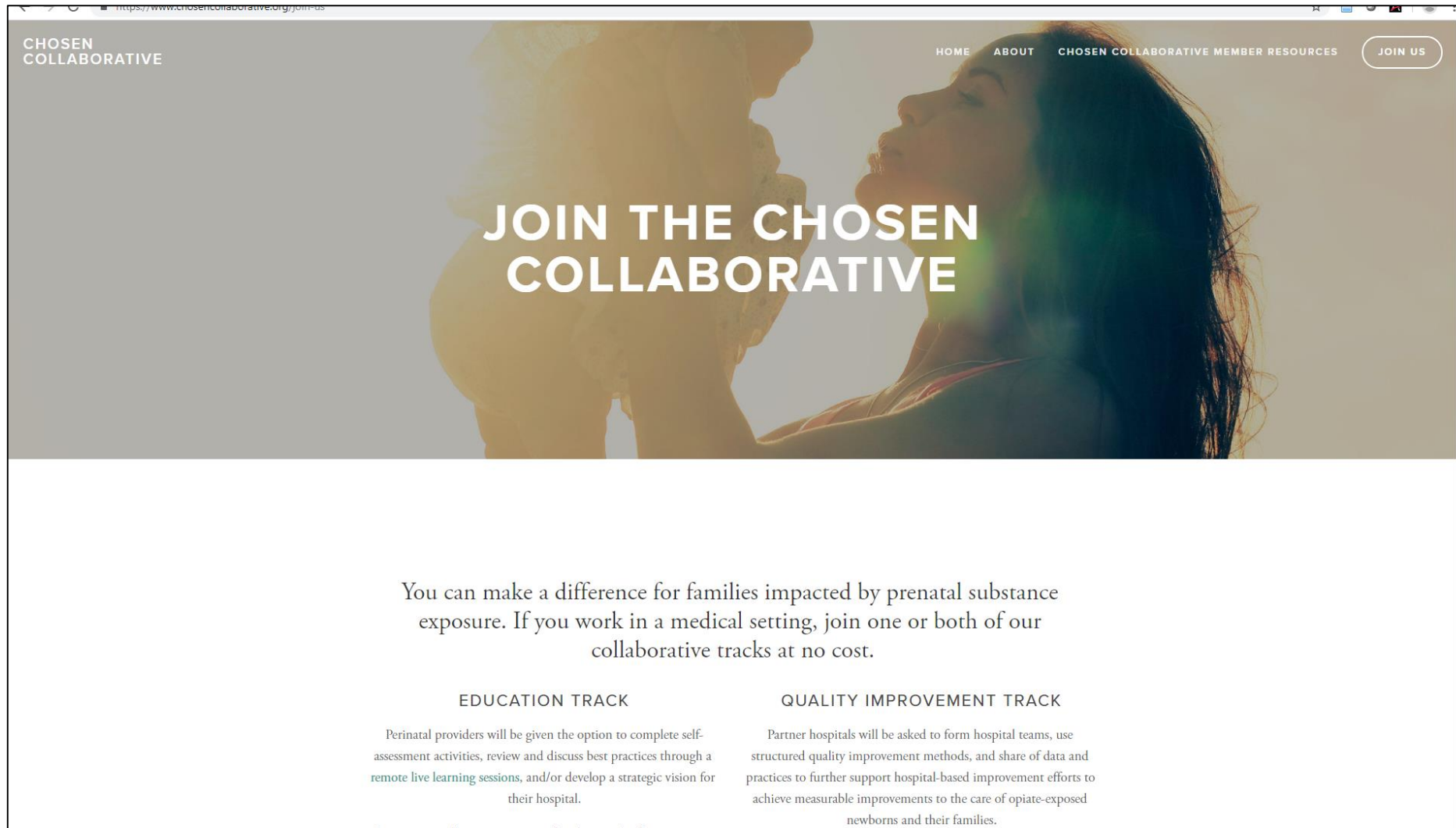
# Site Visits

Hospital	Date
Denver Health	7/13/2018
Memorial Hospital	11/9/2018
Valley View Hospital	11/19/2018
St. Mary's Medical Center	11/20/2018
Parkview Medical Center	1/14/2019
St. Joseph Hospital	2/15/2019



# Resource Access

[www.chosencollaborative.org](http://www.chosencollaborative.org)



CHOSEN COLLABORATIVE

HOME ABOUT CHOSEN COLLABORATIVE MEMBER RESOURCES JOIN US

## JOIN THE CHOSEN COLLABORATIVE

You can make a difference for families impacted by prenatal substance exposure. If you work in a medical setting, join one or both of our collaborative tracks at no cost.

### EDUCATION TRACK

Perinatal providers will be given the option to complete self-assessment activities, review and discuss best practices through a [remote live learning sessions](#), and/or develop a strategic vision for their hospital.

### QUALITY IMPROVEMENT TRACK

Partner hospitals will be asked to form hospital teams, use structured quality improvement methods, and share of data and practices to further support hospital-based improvement efforts to achieve measurable improvements to the care of opiate-exposed newborns and their families.

Data Update

# CHoSEN QIC

(Colorado Hospitals Substance Exposed Newborns Quality Improvement Collaborative)

- Timeframe: Qua2 2017 – Qua1 2019

- 443 substance-exposed newborns

- Qua2 2017: 18

- Qua3 2017: 24

OEN/NAS rate of  
11.2 per 1000 live births

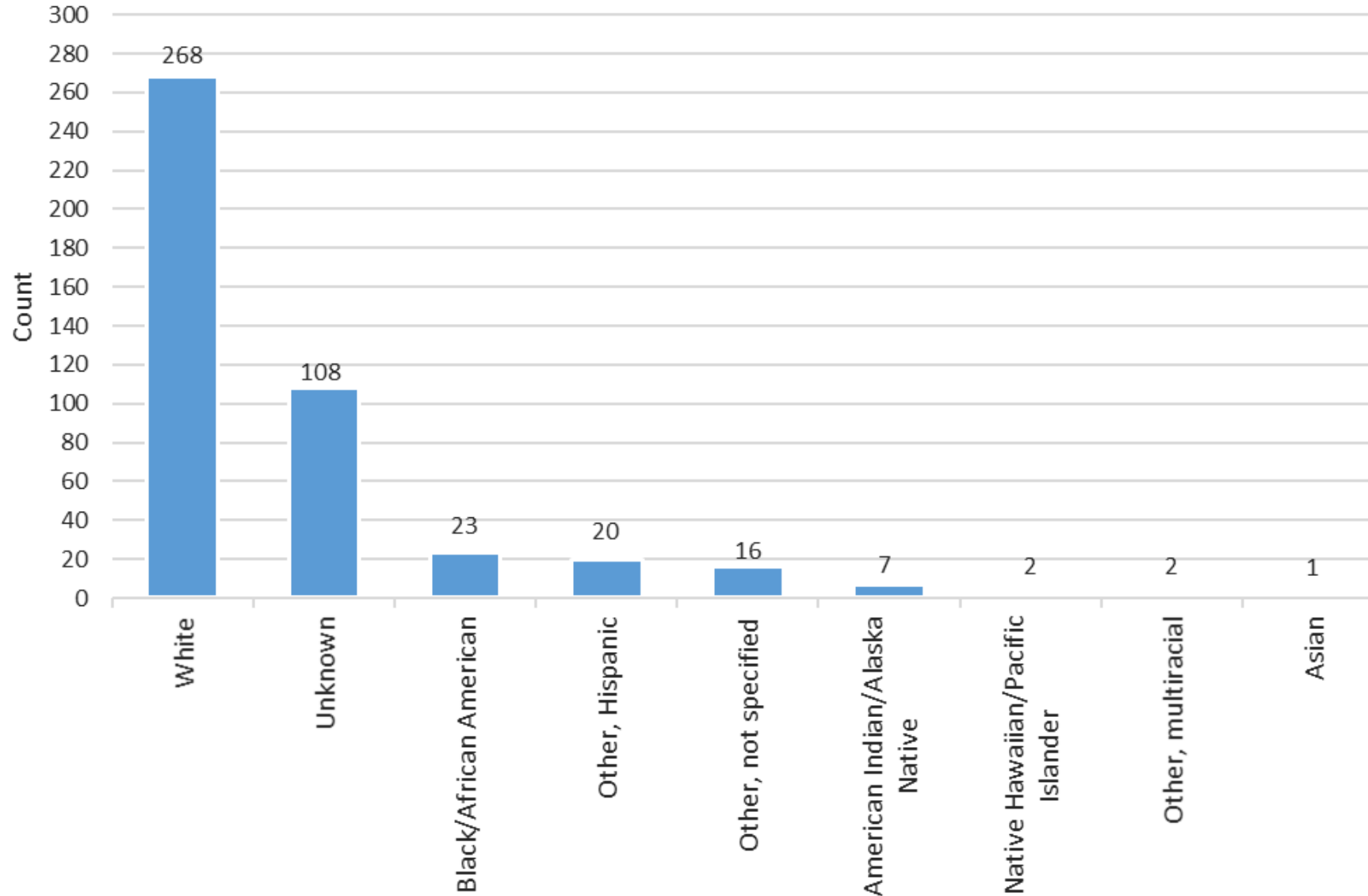
- Qua2 2018: 38
- Qua3 2018: 103
- Qua4 2018: 76
- Qua1 2019: 53

11 hospitals submitting data:

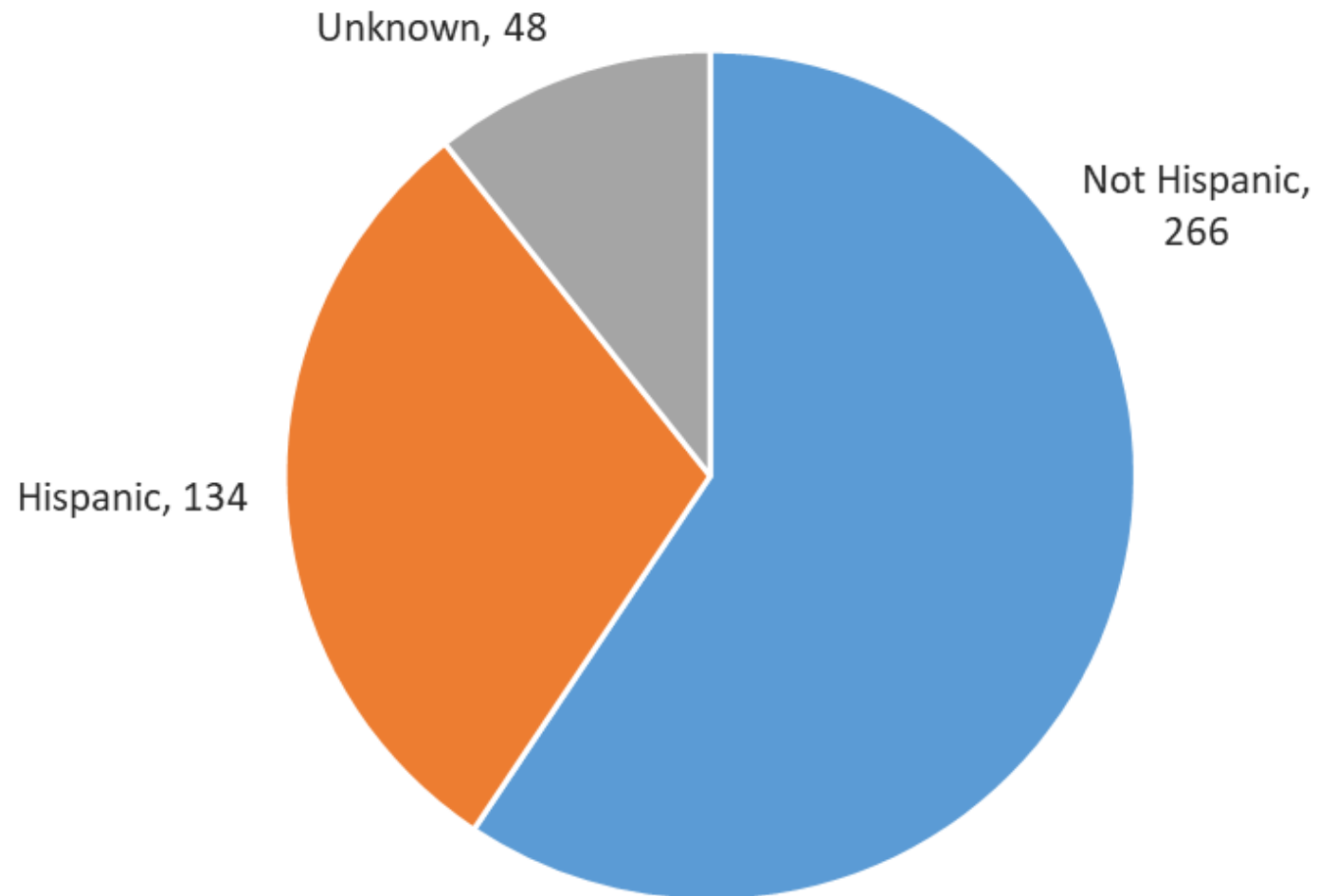
- Saint Joseph Hospital (65)
- Parkview Medical Center (145)
- UCHealth Memorial Hospital (112)
- Denver Health Medical Center (38)
- St. Mary's Medical Center (27)
- Parker Adventist Hospital (4)
- Platte Valley Medical Center (4)
- North Suburban Medical Center (16)
- University of Colorado Hospital (8)
- Valley View Hospital (6)
- Lutheran Medical Center (18)

# CHoSEN Cohort

## Cases of Substance-exposed Newborns by Mother's Race

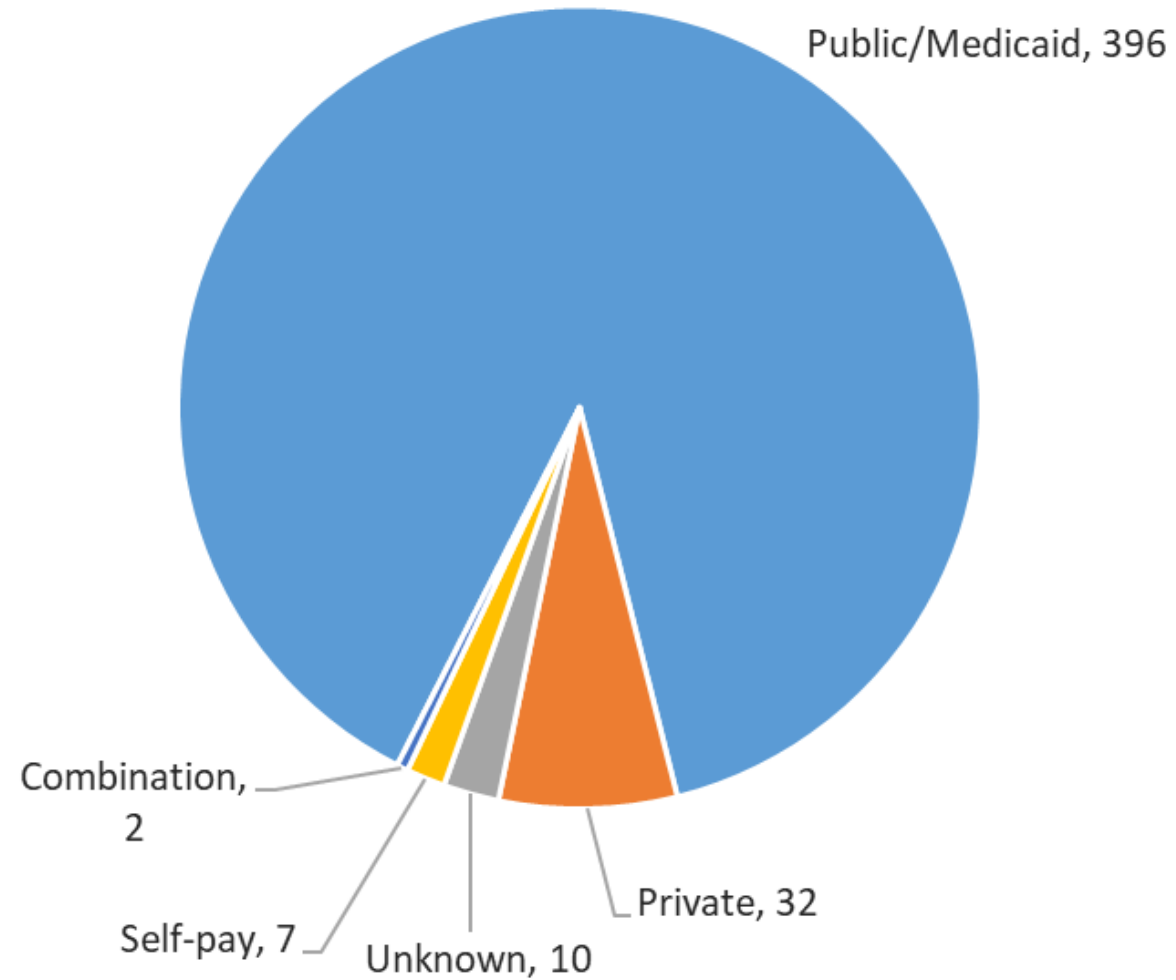


CHoSEN Cohort  
Cases of Substance-exposed Newborns by  
Mother's Ethnicity



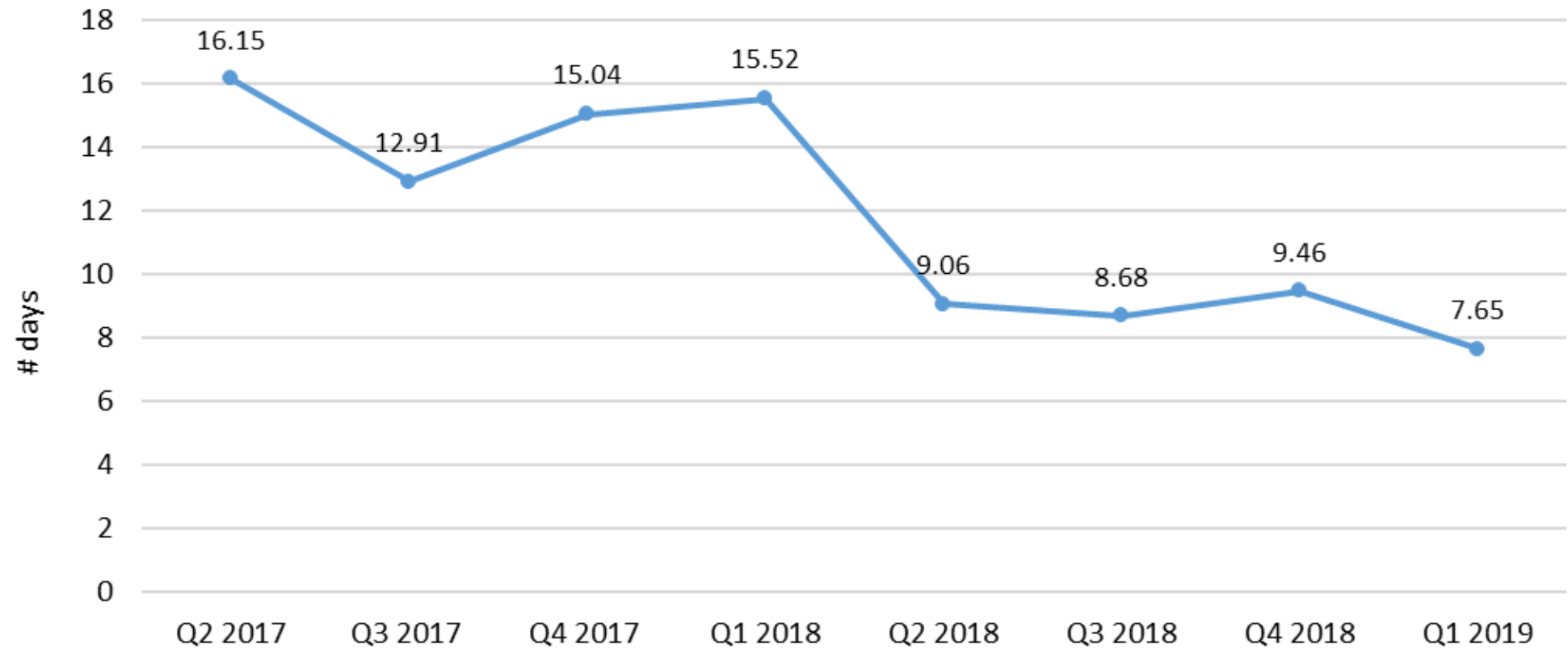
# CHoSEN Cohort

## Cases of Substance-exposed Newborns by Mother's Insurance



# CHoSEN Cohort

## Average Length-of-stay for Substance-exposed Newborns



Number of newborns each quarter:

13

22

46

62

33

89

65

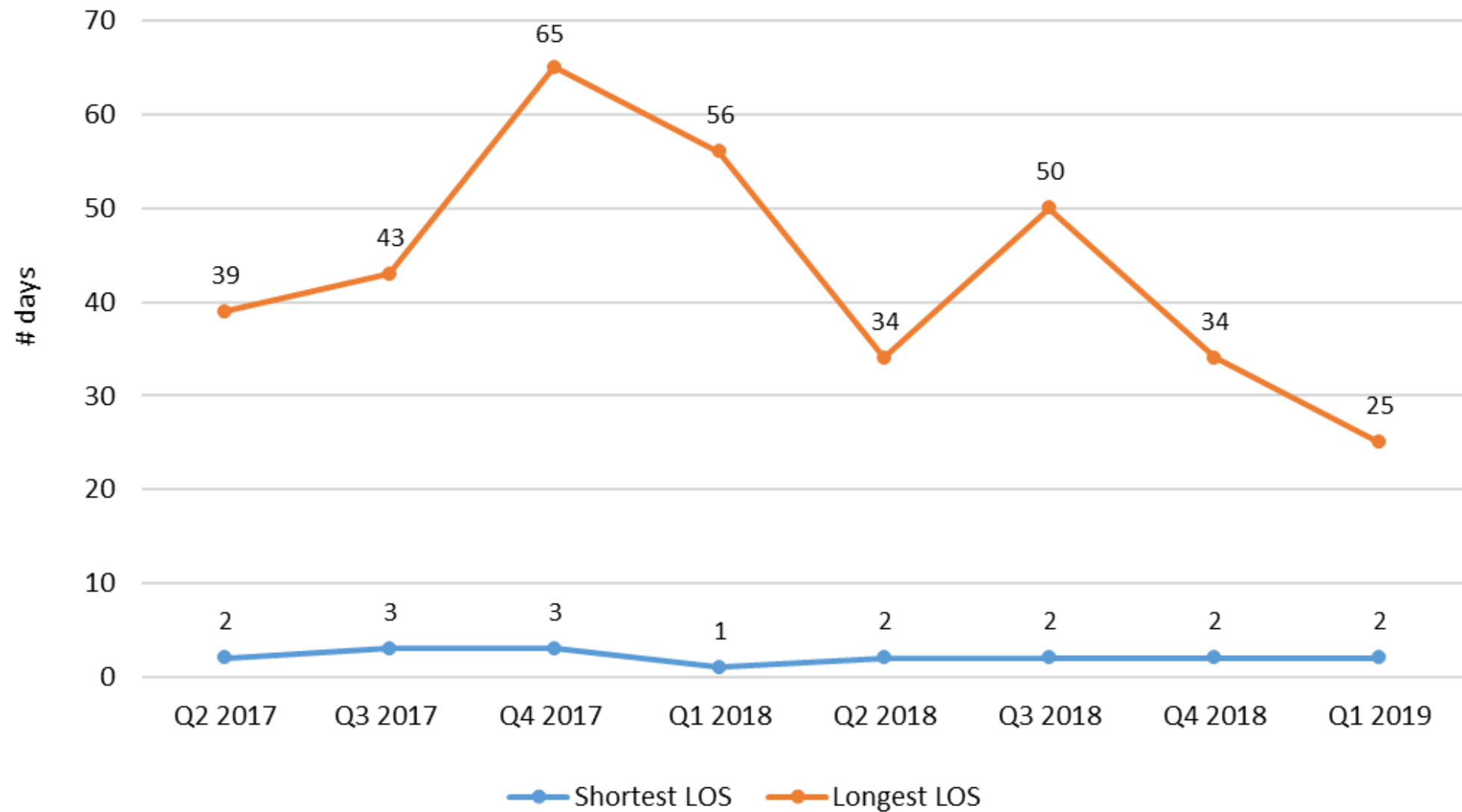
49

Newborns born under 35-0 weeks gestation and newborns transferred to another facility were excluded from the data.



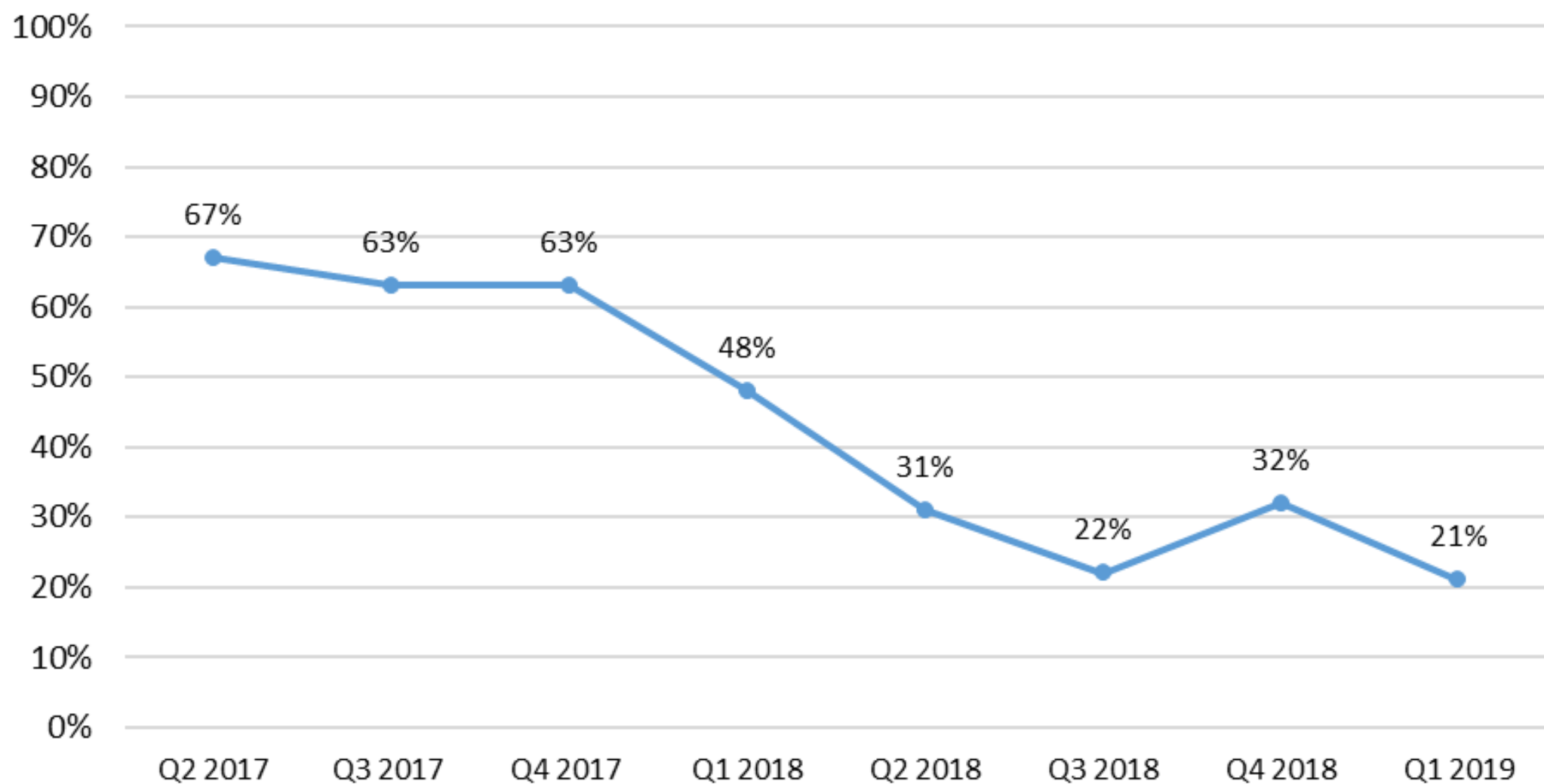
# CHoSEN Cohort

## Length-of-stay Range for Substance-exposed Newborns



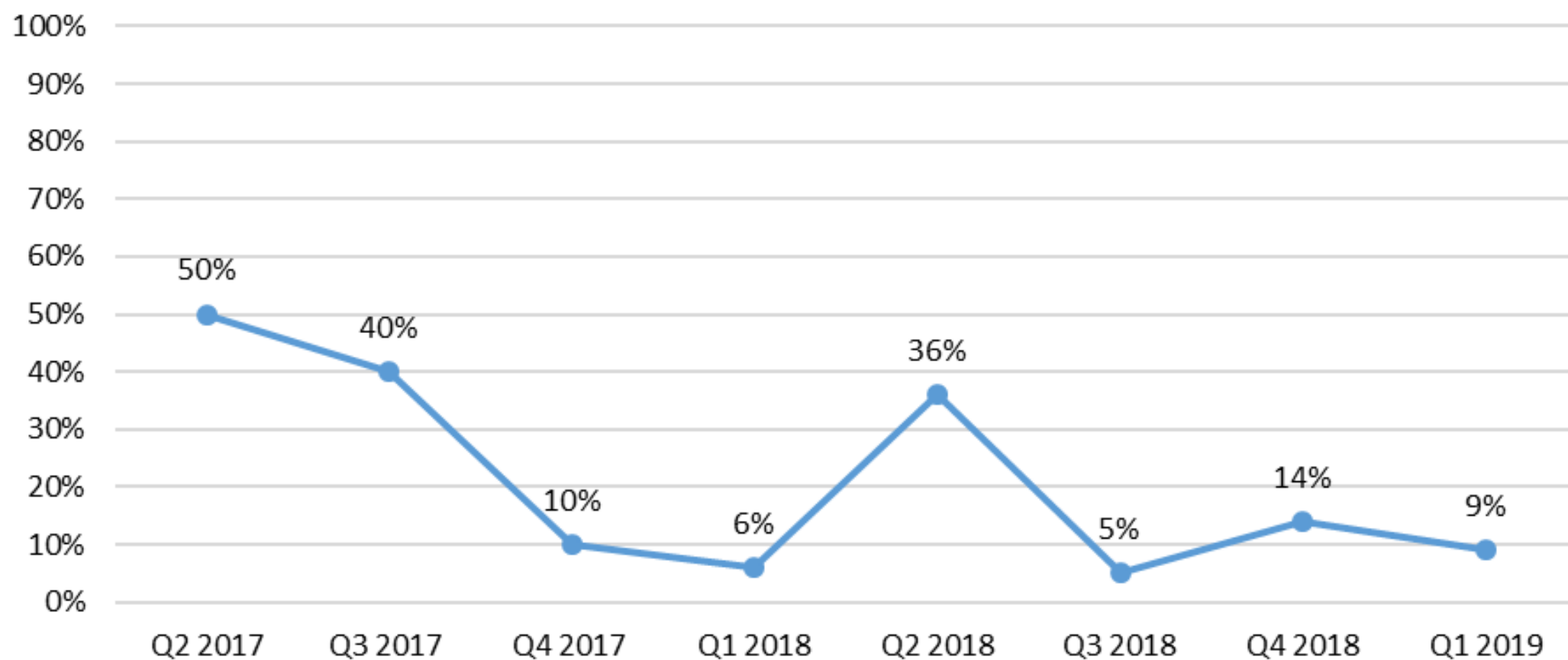
# CHoSEN Cohort

## Percent of Substance-exposed Newborns Receiving Opiate Treatment in Hospital



# CHoSEN Cohort

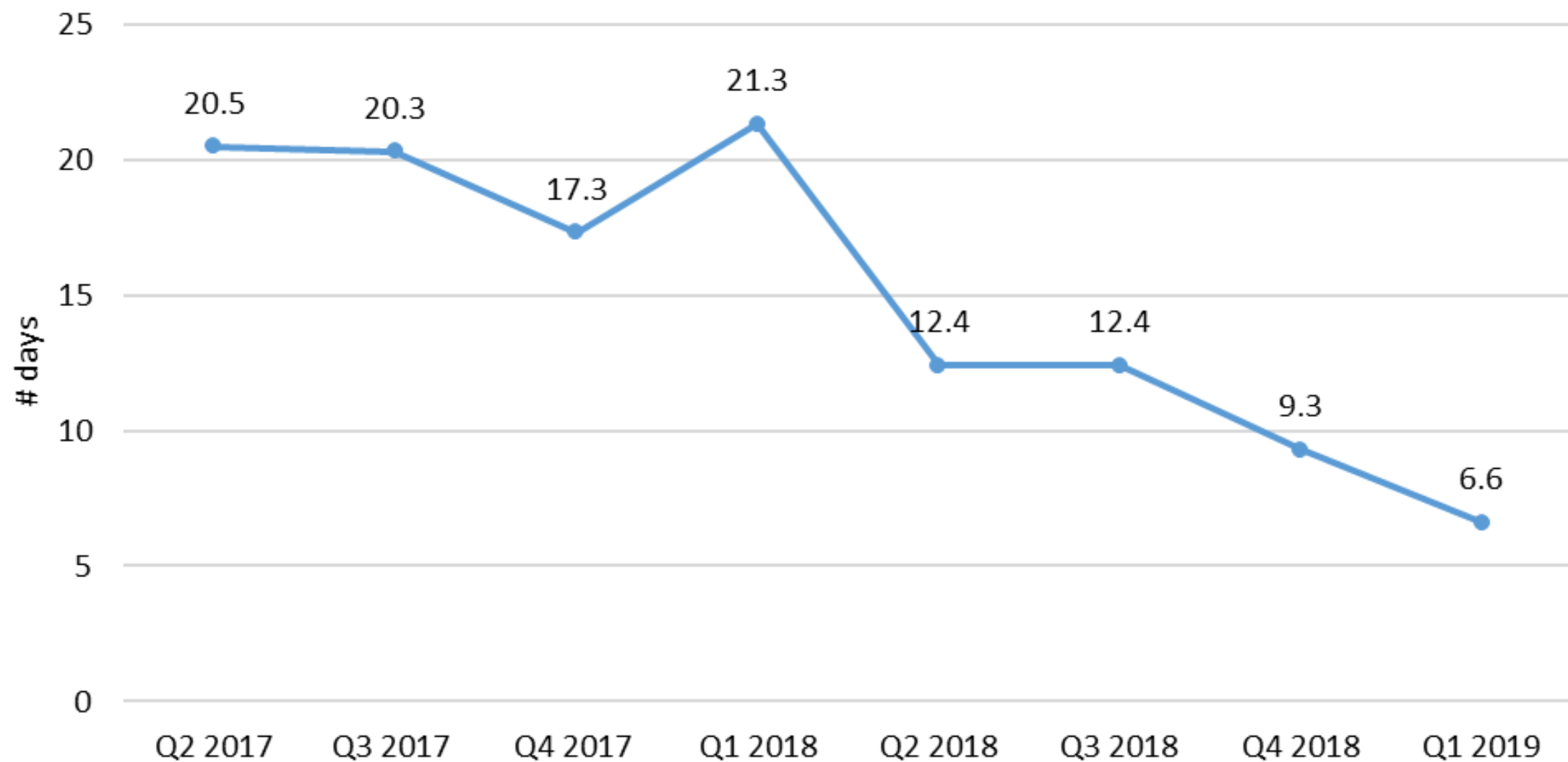
## Percent of Substance-exposed Newborns On Opiates at Discharge if Receiving Opiates During Hospital Stay



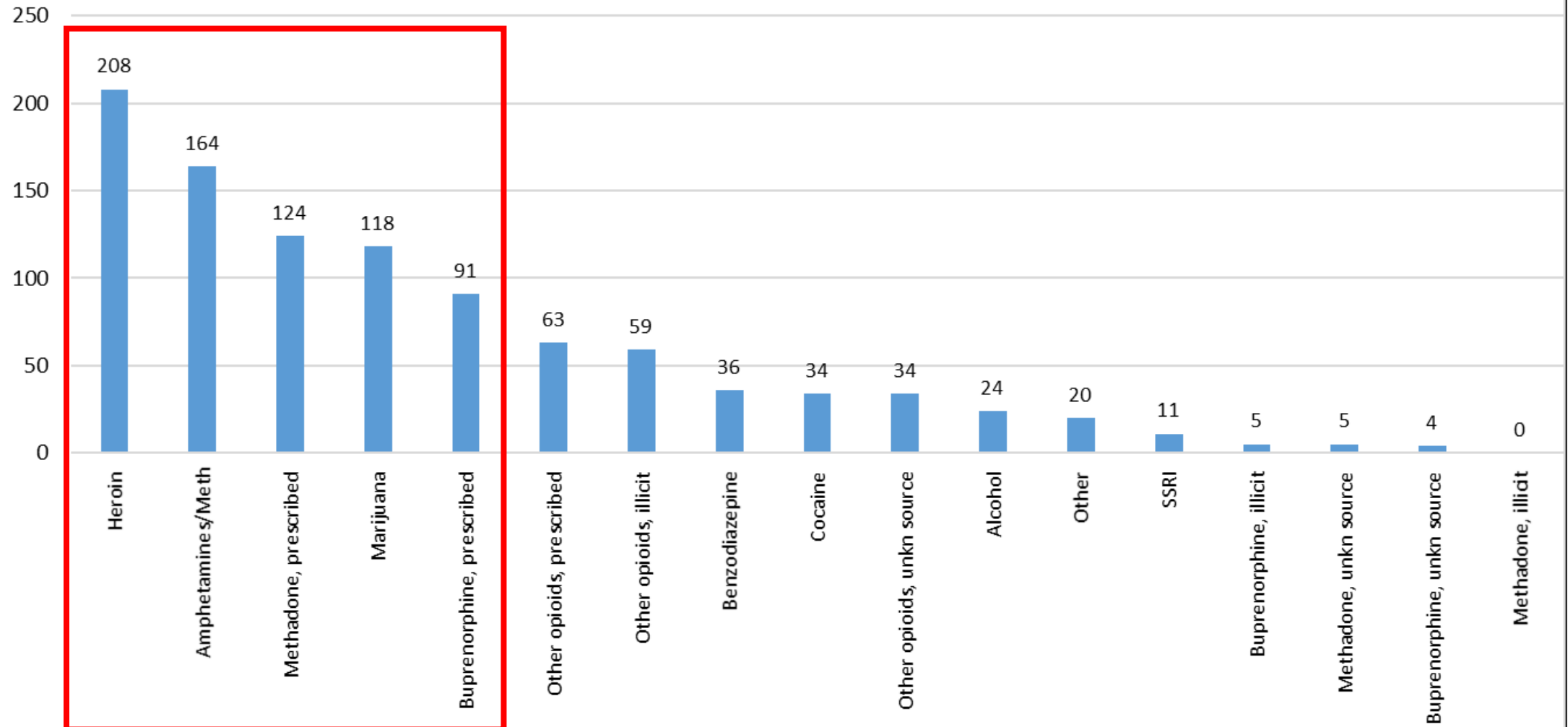
The increase in Q2 2018 is due, in part, to a significantly lower number of infants receiving opiate therapy.

# CHoSEN Cohort

## Average Number of Days of Pharmacologic Treatment



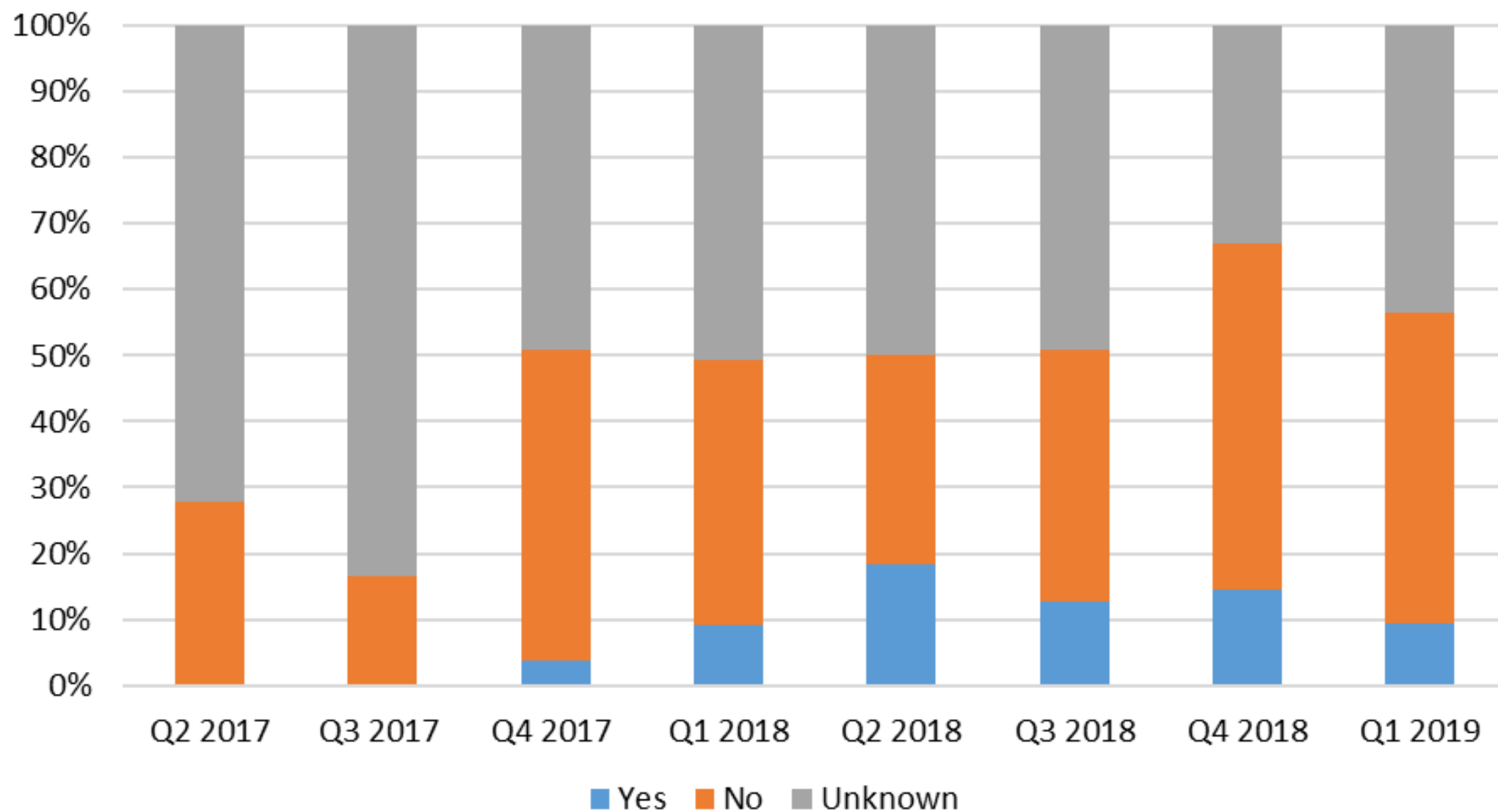
## CHoSEN Cohort Maternal and Fetal Exposures by Type of Substance



Note that 70% of newborns were exposed to more than one substance.

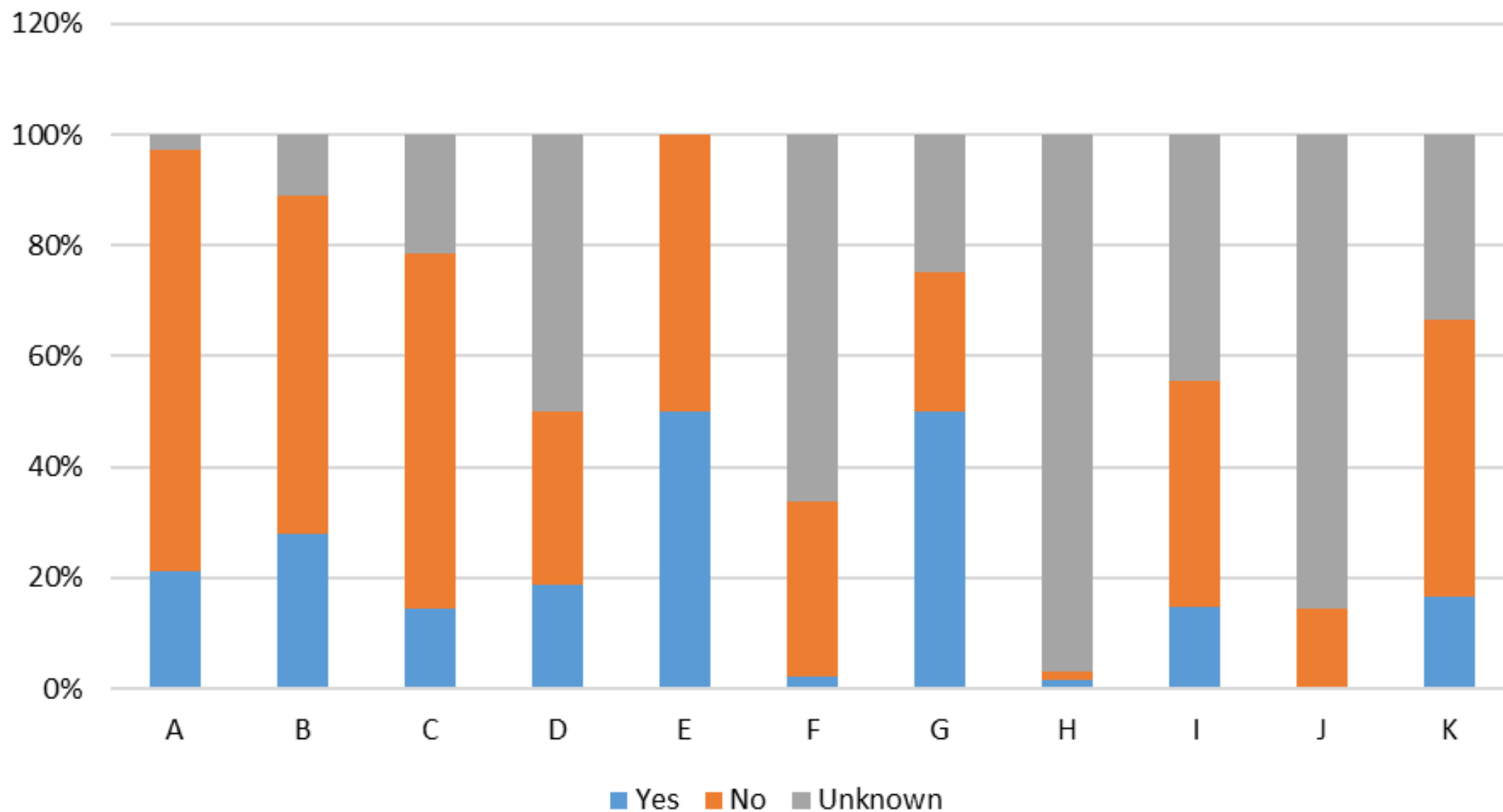
# CHoSEN Cohort

## Percent of Mothers Receiving Antenatal Counseling



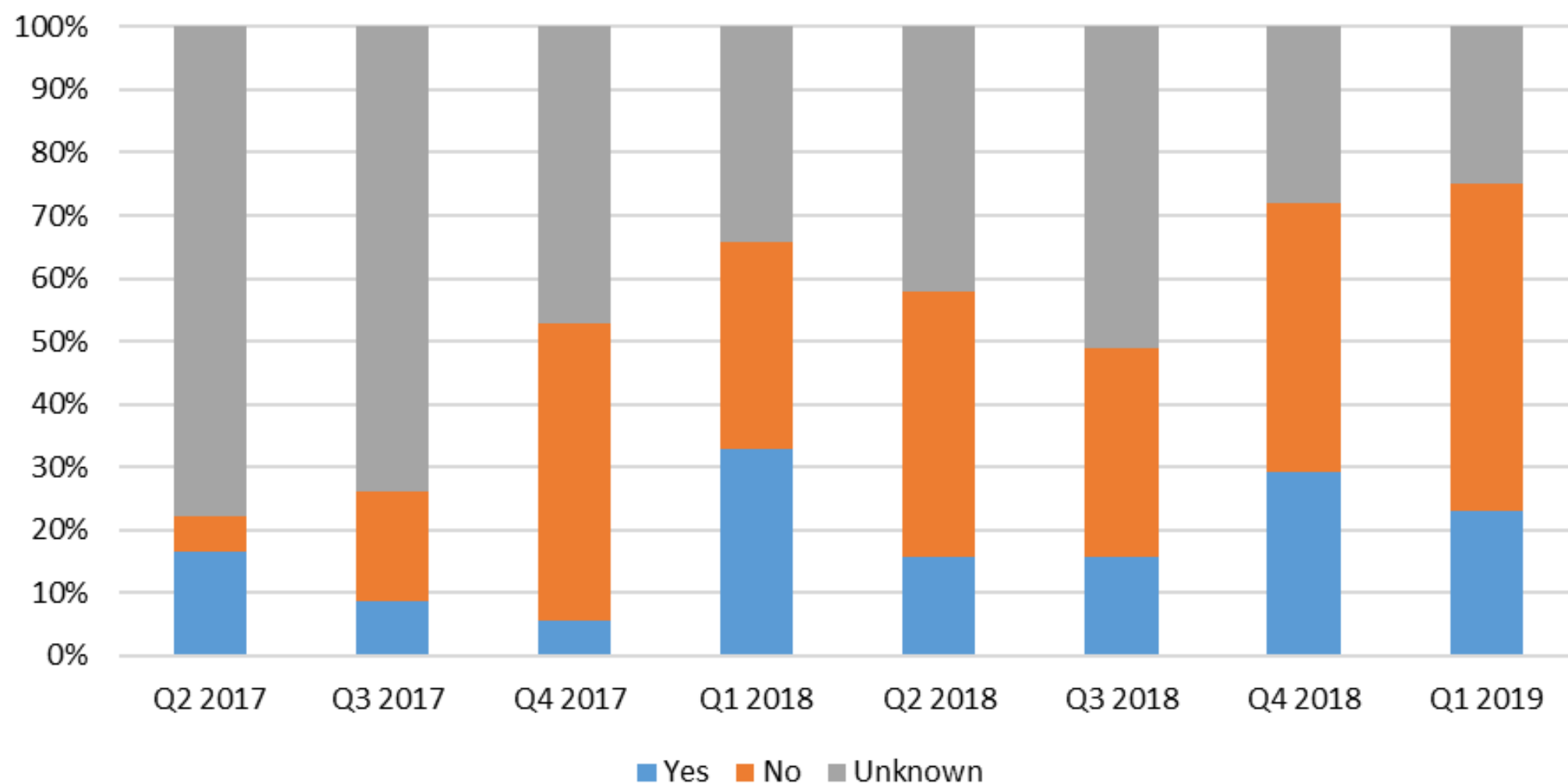
# CHoSEN Hospitals

## Percent of Mothers Receiving Antenatal Counseling



# CHoSEN Cohort

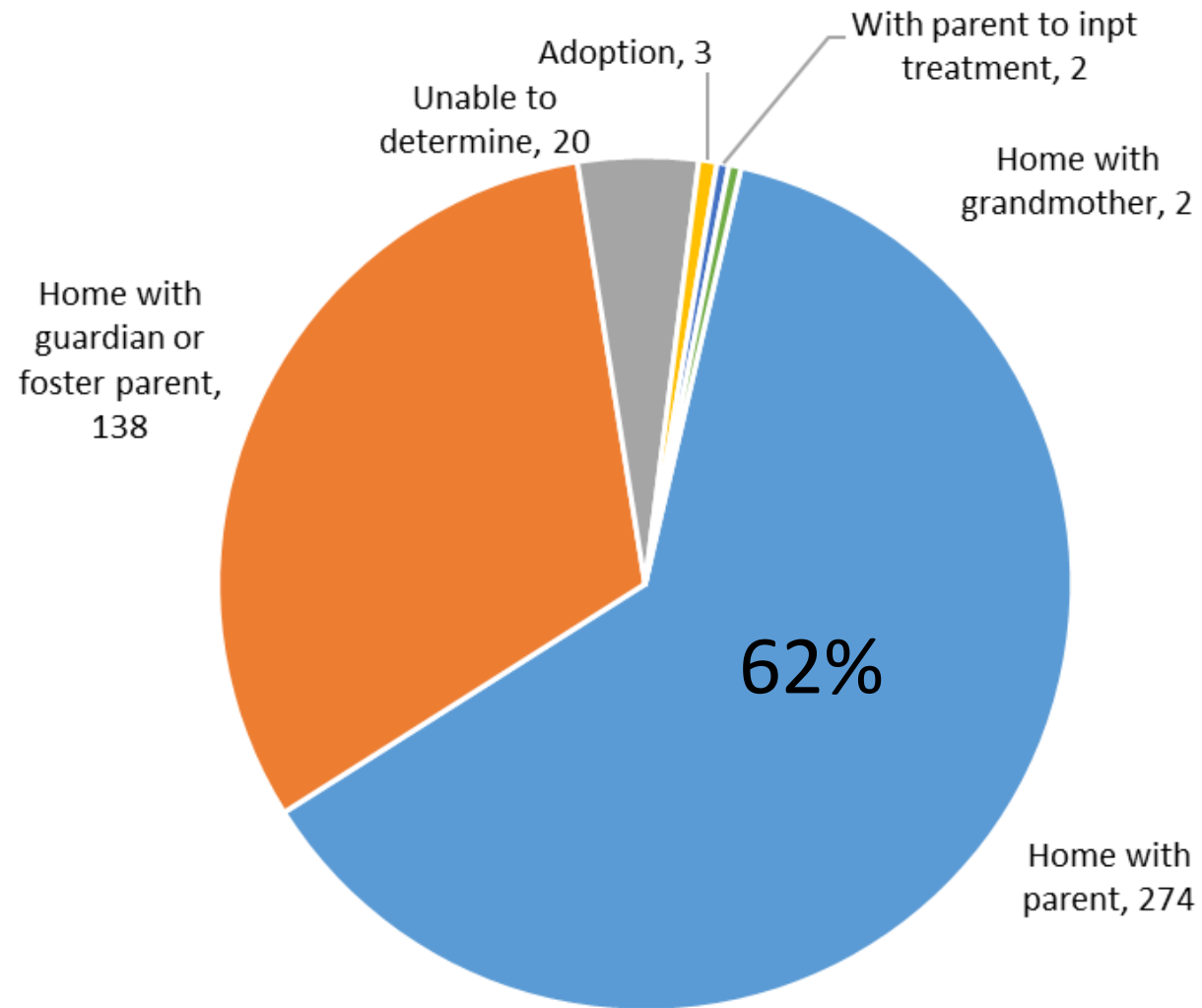
## Percent of Cases with Verbal Handoff to Primary Pediatric Provider





# ChoSEN Cohort

## Discharge Disposition of Substance-exposed Newborns



Based on the data,  
what next?

# CHoSEN QIC Next Steps

- Targeted Efforts at Local Hospitals
  - Prenatal Counseling: Parkview Medical Center
  - Breastfeeding: Hospital with the lowest BF rate
  - Safe Discharge: Poudre Valley Hospital
  - Parent engagement/Patient experience: Denver Health
- Qualitative interviews of mothers, hospital staff, and PCPs
- Increase hospital participation in CHoSEN QIC within and beyond Colorado

# Barriers (or Opportunities)

- Physical and conceptual separation of the maternal-infant dyad
- Lack of linked data systems
  - Mother - Infant
  - Prenatal - Birth Hospitalization – Postnatal Care
  - Hospital care - social service utilization
  - Maternal medical care – Mental health care – SUD Treatment

# Upcoming Forum

- Monday, November 4, 2019, 9a-4p
- Hotel Colorado, Glenwood Springs



# Acknowledgements

## CUSOM Neonatology

Randall Wilkening  
James Barry

## Illuminate Colorado

Jillian Adams  
Jade Woodard

## CPCQC

Jaime Cabrera  
Nancy Griffith  
Rachel Wright

## CHoSEN QIC Steering Committee

Ann Hall  
Susan Hwang  
Jessica Scott  
Danielle Smith  
Colleen Wheeler  
Erica Wymore

## Funders

Colorado Office of the  
Attorney General  
COPIC  
Colorado Medicaid UPL

## Hospitals

Denver Health

Lutheran Medical Center

McKee Medical Center

Medical Center of the Rockies

Memorial Hospital

North Colorado Medical Center

North Suburban Medical Center

Parkview Medical Center

Parker Adventist

Platte Valley

Poudre Valley

San Luis Valley Health

St. Joseph Hospital

St. Mary's Medical Center

St. Vincent Healthcare

University Hospital

Valley View Hospital