

Pregnancy & Infant Outcomes in Pregnancies Affected by Hepatitis C Allegheny County, PA 2018-2020

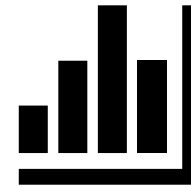
Bethany Reynolds, MPH
Epidemiology Research Associate
Bureau of Epidemiology
Pennsylvania Department of Health

Background



Hepatitis C virus (HCV) is the most common bloodborne infection in the US

Previously more common in older adults, more new infections have shifted to people of childbearing age over the past decade



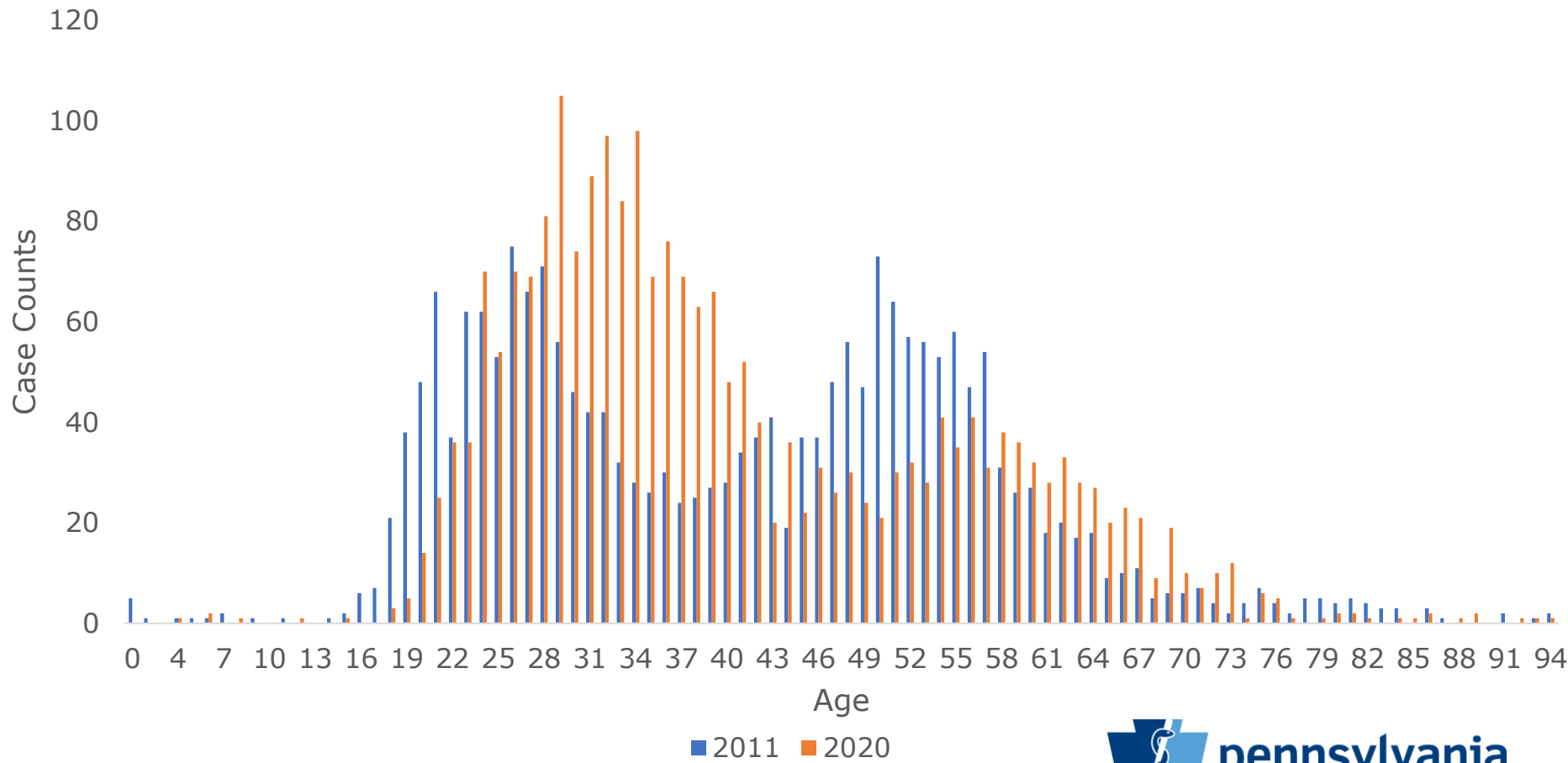
Pregnant people can transmit HCV to their infants

Perinatal HCV became nationally notifiable in 2018, but case-identification is resource intensive and not yet widespread



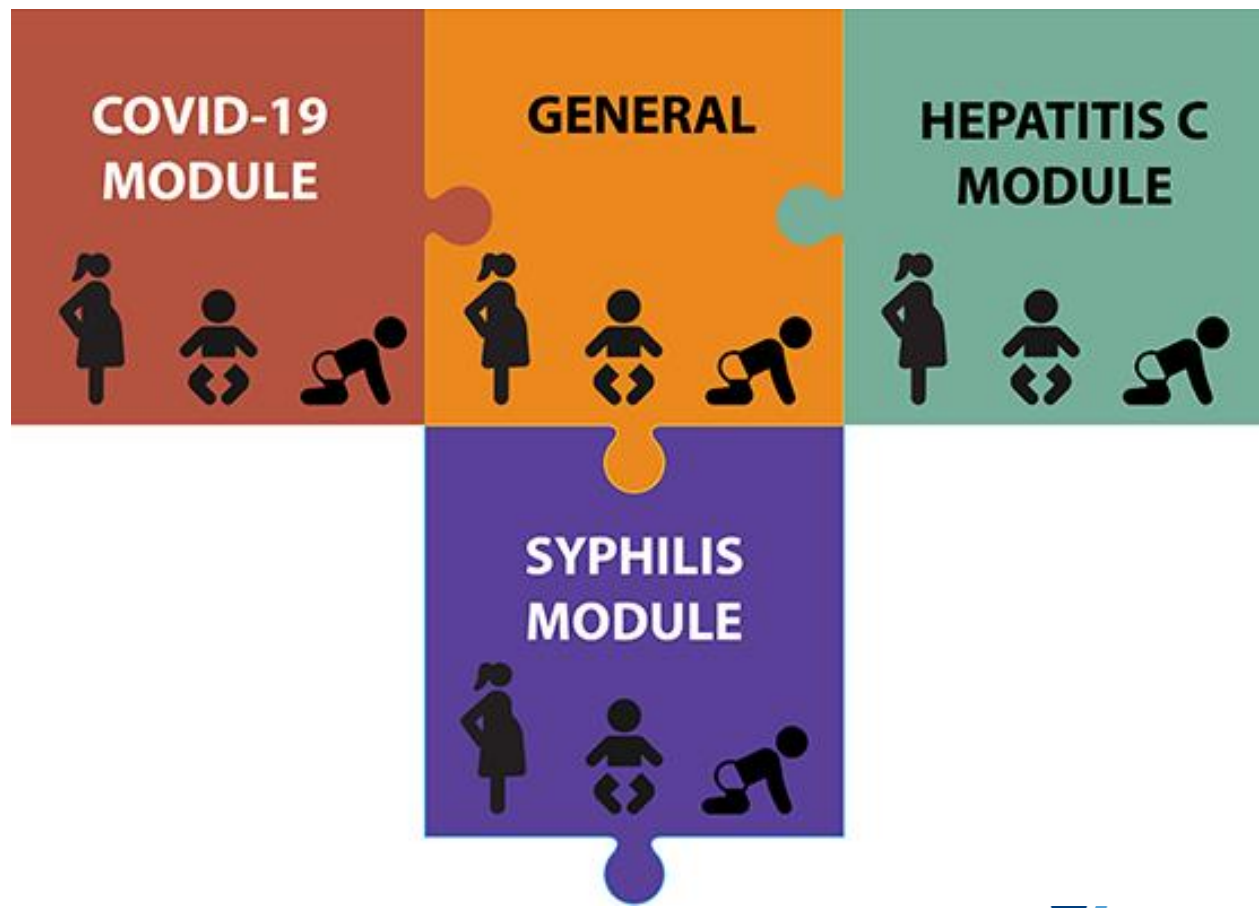
Hepatitis C Disease Burden in PA

Number of Confirmed Chronic Hepatitis C Cases Reported to PA-NEDSS, Females, 2011 and 2020



CDC SET-NET

CDC Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET)



SET-NET Framework



Maternal

- Medical history
- Prenatal care
- Labor details
- Hepatitis C-specific items

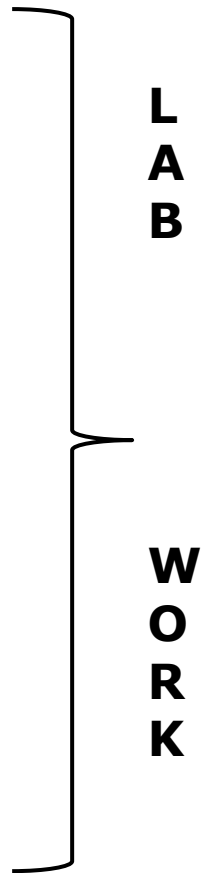
Pregnancy or Birth Outcome

- Type of outcome
- Route of delivery
- Feeding
- Birth hospitalization & any complications



Infant Follow-up

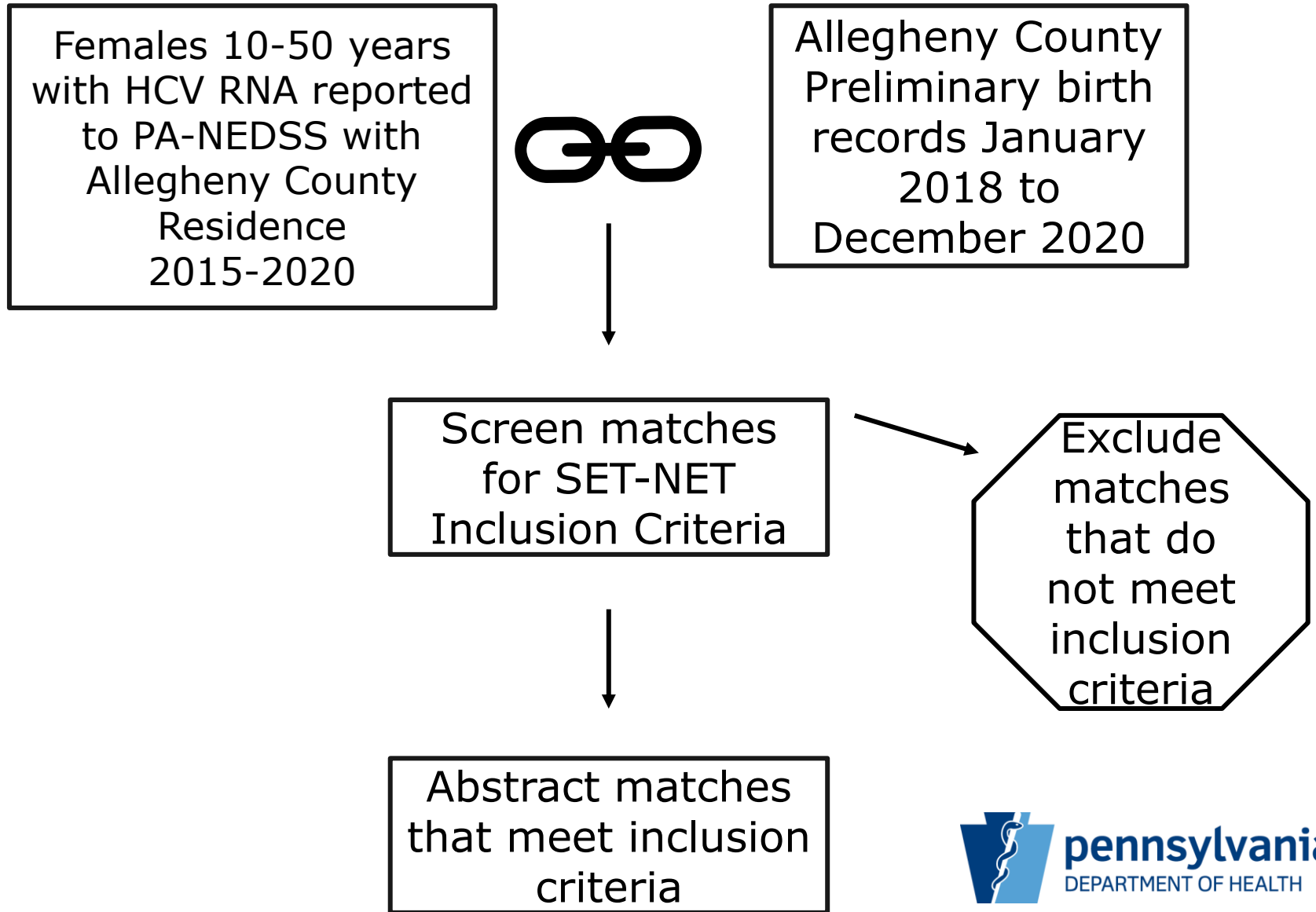
- 12-month well child check
- 24-month well child check
- Other medical referrals



SET-NET Inclusion Criteria

- Gestational parents who are HCV RNA+ during pregnancy, or within one year prior to pregnancy, without evidence of treatment of clearance
- Have a pregnancy completion or birth date on or after January 1, 2018
- Reside in a SET-NET participating jurisdiction

Methods



Matches by Year

	2018	2019	2020	Total
Total Initial Matches	113	107	115	335
Total Initial Matches Excluded	34	34	47	115
Total Meeting Inclusion Criteria	79	73	68	220
Total Abstracted	77	72	65	214 (97%)

Pregnancies, Outcomes, and Infants



214 total pregnancies

209 singleton livebirths
+ 2 (1 set) of twins
+4 miscarriages
=215 birth outcomes



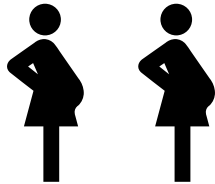
215 total birth outcomes
-4 miscarriages
-2 infants perished
=209 infants to be followed until 24-months

Maternal Demographics (N=214)

Race	88% White
Hispanic/Non-Hispanic	99% Non-Hispanic
Age (years)	Median 30, Range 20-42
Education	63% High School Diploma/GED or less
Insurance	89% Medicaid

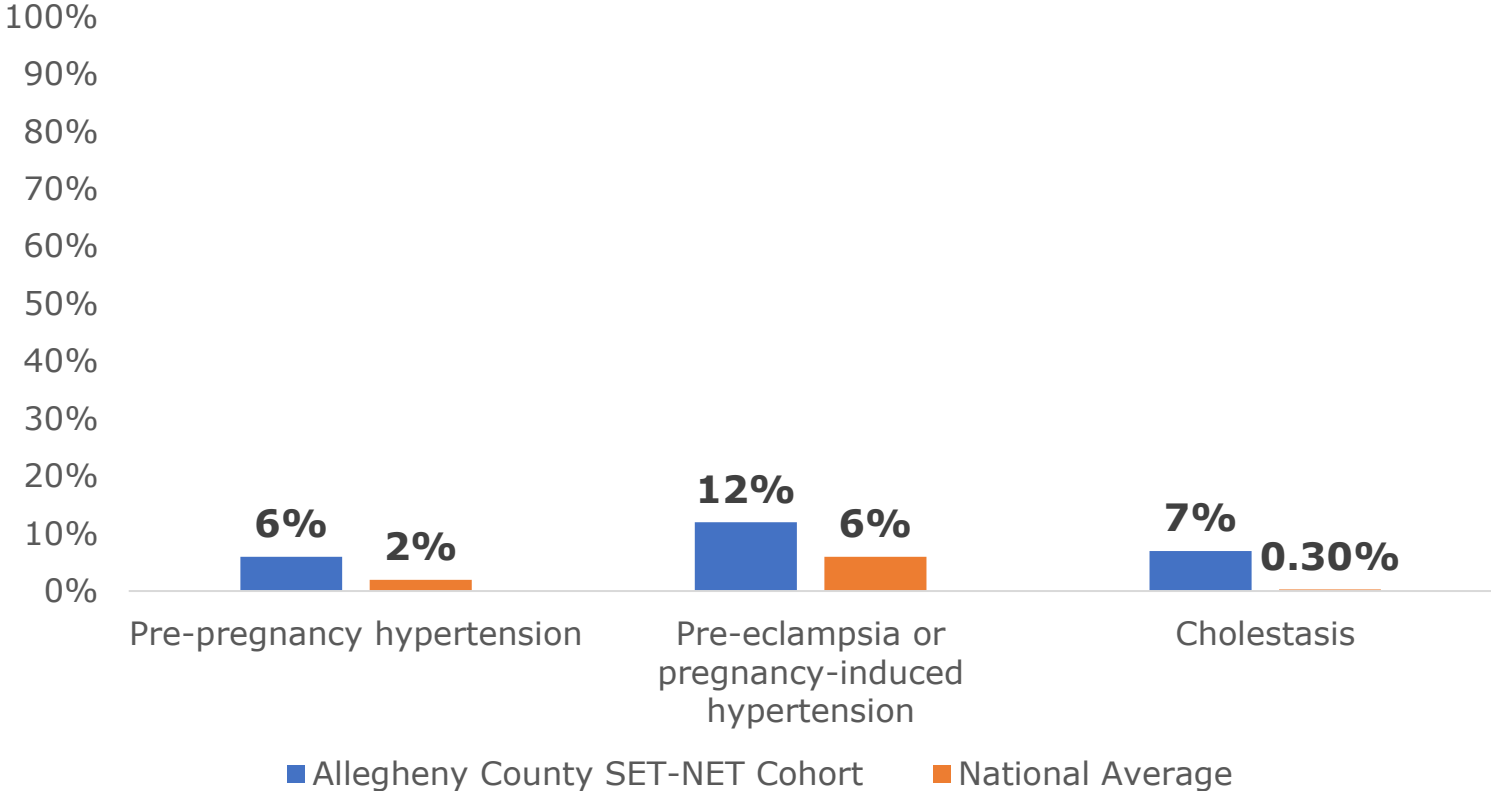
Maternal Obstetric History

Average gravidity	3.6, Range 1-13
Average parity	1.6, Range 0-7
Received prenatal care	94%
Received late or delayed prenatal care	36%
Two pregnancies between 2018 & 2020	8%

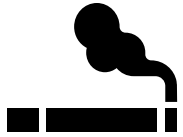


Maternal Obstetric Information

Allegheny County SET-NET Cohort Compared to National Averages



Gestational Parent Substance Use During Pregnancy



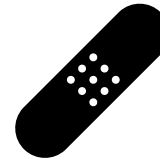
82% smoked
cigarettes



11% used alcohol



57% had
polysubstance use



64% used
medication assisted
therapy



13% had at least one hospitalization for
medication assisted therapy conversion

Gestational Parent Social History & Hepatitis C Treatment



49% had ever been incarcerated over 24 hours

89% reported ever using injection drugs



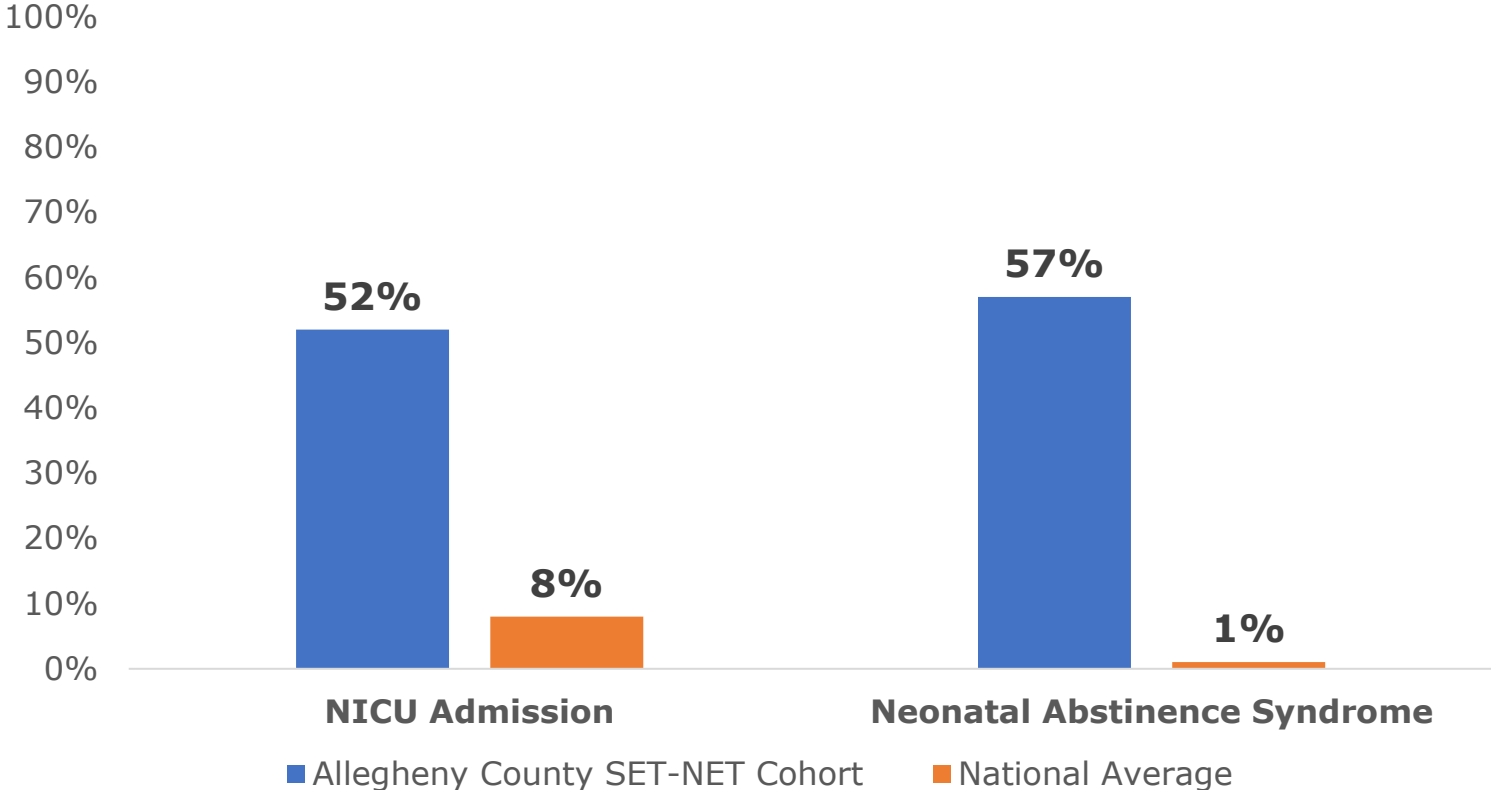
94% never received treatment for hepatitis C

Pregnancy and Birth Outcomes (N=215)

Live Births	211, 209 Singletons, 1 Set of Twins
Miscarriages	4
Delivery Type	33% Cesarean Section
Average Gestational Age	37 Weeks, 2 Days
Average Birthweight	2937 g
Percent Preterm Birth	19%
Percent Low Birthweight	21%

Adverse Infant Outcomes (N=211)

Allegheny County SET-NET Cohort Compared to National Averages



Infant Follow-up (N=209)



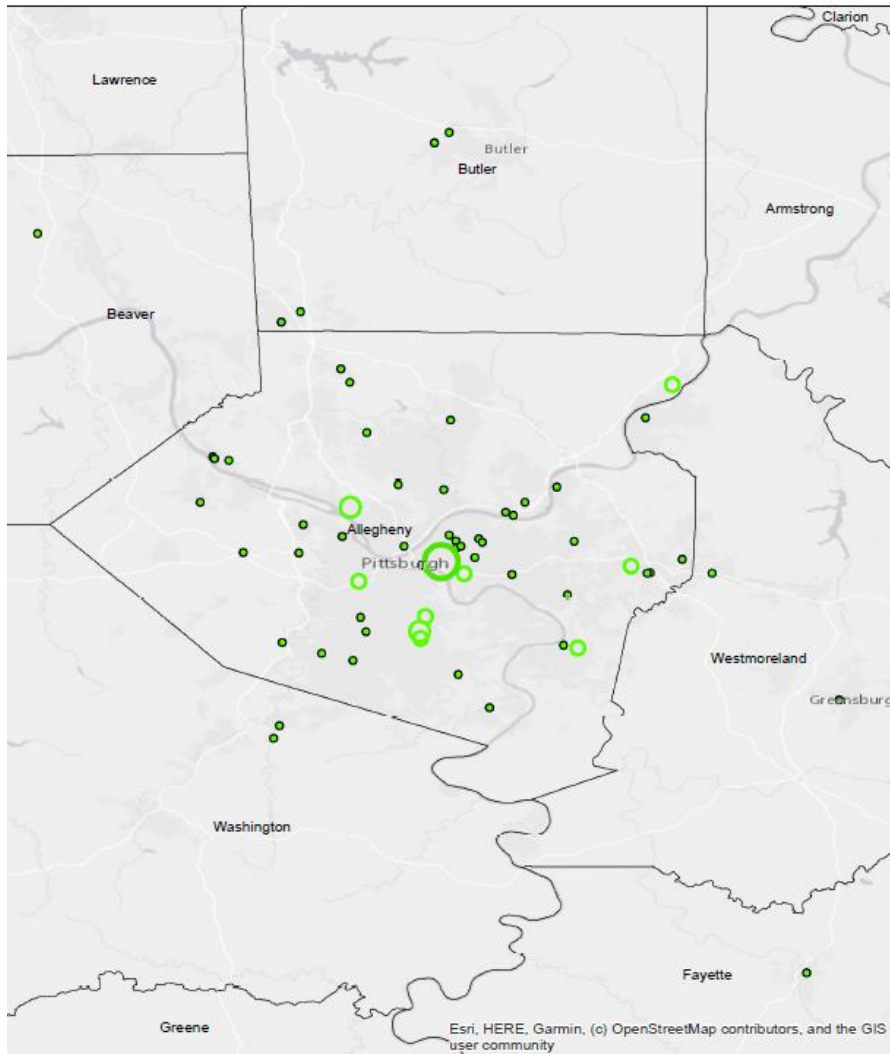
These 209 infants were born at **10** different hospitals

Infant follow-up location is identified via information in the birth hospitalization discharge document or the PA Immunization Registry (PA-SIIS)



To date, **63 individual clinics** have been identified as locations where these infants are receiving pediatric care

Geographic Distribution of Infant Follow-up



- Children in this cohort are being seen in and outside of Allegheny County for general wellness care
- Certain clinics do have higher volumes, specifically in the central and southern portions of Allegheny County

Legend

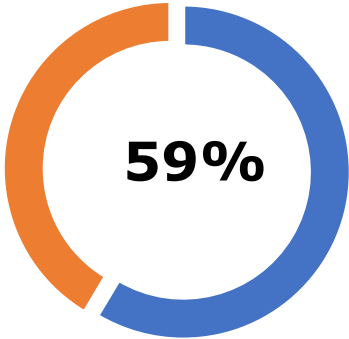
Pediatrician Offices

Total

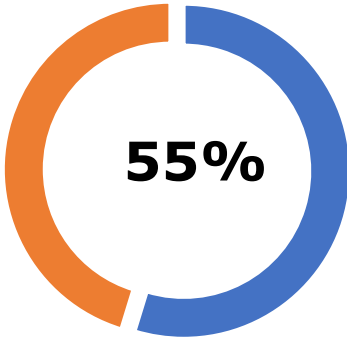
- 1-5
- 6-10
- 11-15
- 16-20
- 21-25

▶ Infant Well Child Attendance

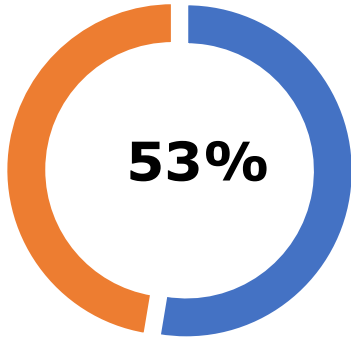
12-Month
Well Child Check
Attended &
Abstracted
123/209



24-Month
Well Child Check
Attended &
Abstracted
104/190*



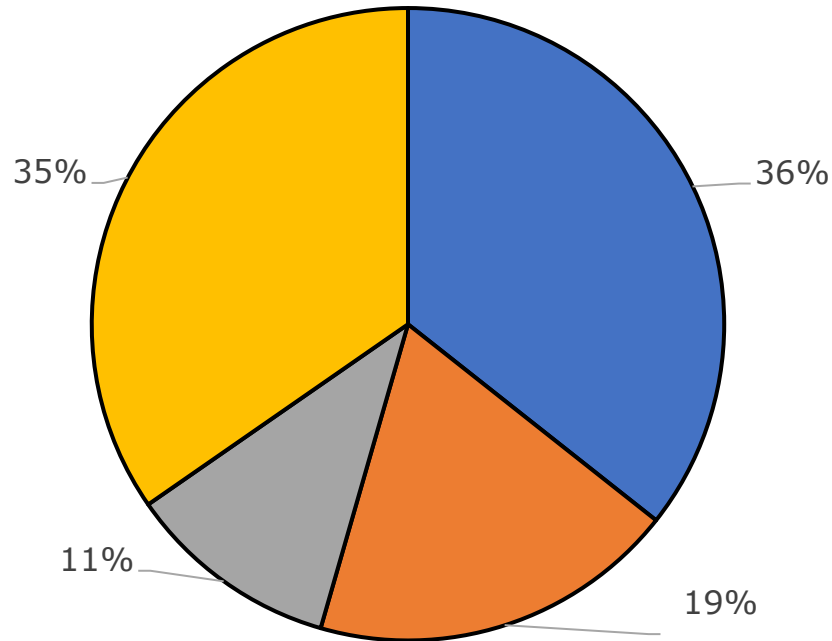
12 & 24-Month
Well Child Check
Attended &
Abstracted
100/190*



*Denominator for 24-month is less because data was analyzed in September 2022 so some late 2020 births were not at age point for visit at time of analysis

▶ Infant HCV Testing (N=209)

HCV Testing in Infants



■ Testing complete ■ Testing ordered but incomplete ■ Testing not ordered ■ Unknown

HCV Infant Test Details



- An average of **115 days** passed between order and collect date

- Average age at initial testing order was **20 months**
- Average age at initial testing completing was **23 months**



- Number of confirmed perinatal HCV cases found: **5**
- Anticipated number of confirmed perinatal HCV cases: **10**

Summary

- Perinatal exposure to hepatitis C has increased over the past decade
- 2020 recommendations for hepatitis C testing in pregnancy will allow us to detect additional perinatal exposures
- This level of perinatal HCV surveillance is resource intensive
- This pilot has and will continue to critically inform Allegheny County-specific interventions as well as expansion of this work statewide

Summary

- We observed higher Medicaid coverage, pre-pregnancy hypertension, and cholestasis of pregnancy than seen in the general population
- HCV treatment was rare in this pregnant population
- We observed more low birth weight, preterm birth, NICU admissions, and NAS than in the general population
- Testing has been completed for 35% of infants in this cohort
- An additional 19% of infants in this cohort had testing ordered but not drawn

➤ Acknowledgements

- Many thanks to those who made this work possible:
 - ▣ Allegheny County Health Department
 - ▣ Allegheny County Perinatal Hepatitis C Work Group
 - ▣ Allegheny Health Network
 - ▣ Heritage Valley Health System
 - ▣ UPMC Health System
 - ▣ St. Clair Hospital
 - ▣ Hannah Lund, CSTE Fellow

Questions?

Bethany Reynolds:
bereynolds@pa.gov