



Drug-endangered children: Neonatal drug screening

Resmiye Oral, MD

University of Iowa
Child Protection Program

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Glossary

- DEC Drug-endangered children
- CAN Child Abuse & Neglect
- CR Cedar Rapids
- DM Des Moines
- RMC Regional Medical Center
- IC Iowa City
- STD Sexually transmitted diseases
- PNC Prenatal care
- DCC Denial of critical care (neglect)
- DHS Department of Human Services
- THC Marijuana
- H/o History of
- Meth Methamphetamine
- GC Gonorrhea
- CPP Child Protection Program
- IV Intravenous

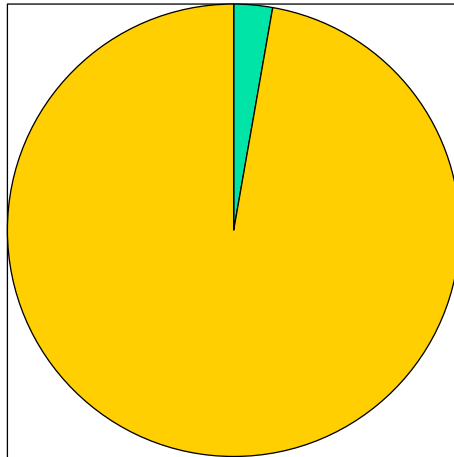


Child Abuse & Neglect in Iowa Code

- Physical Abuse
- Sexual Abuse
- Mental Injury
- Denial of Critical Care (Neglect)
- **Drug exposure (DE)**
- **Manufacture & Possession of Illicit Substance in child's presence (MPIS)**
- Prostitution
- Bestiality

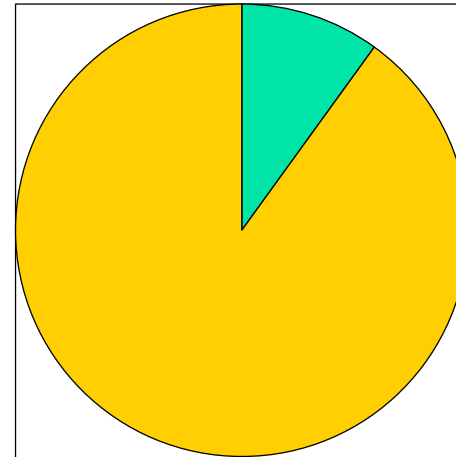
Drug exposure in confirmed CAN - 2000 - 2003 Iowa

2000: 2.4%



■ DEC
■ other CAN

2003: 9.3%



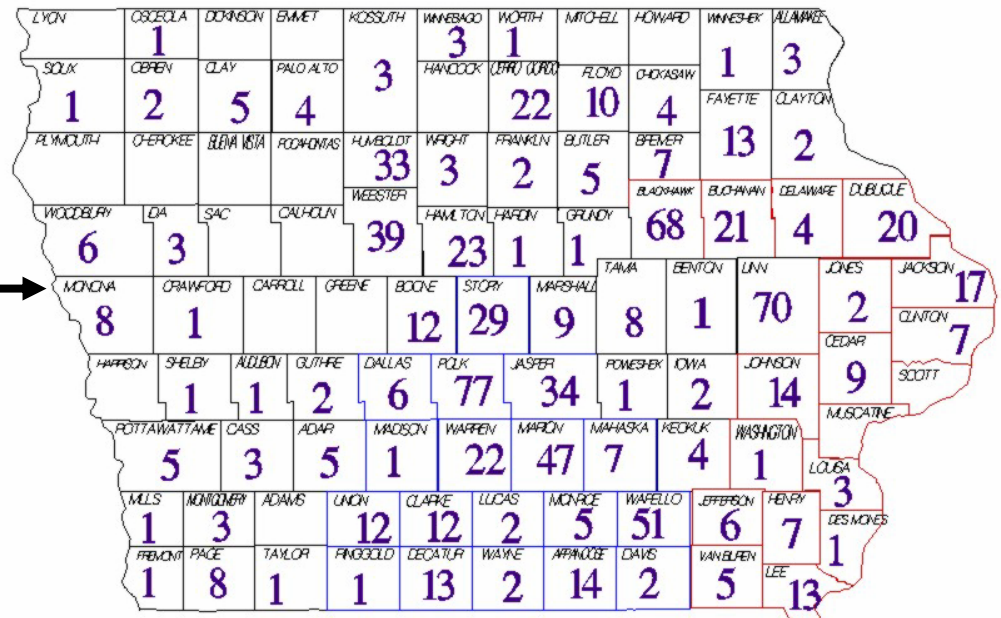
■ DEC
■ other CAN

Meth labs in Iowa

Iowa 1009 in 2002



Iowa 1369 in 2004
 36% ↑ in 2 years

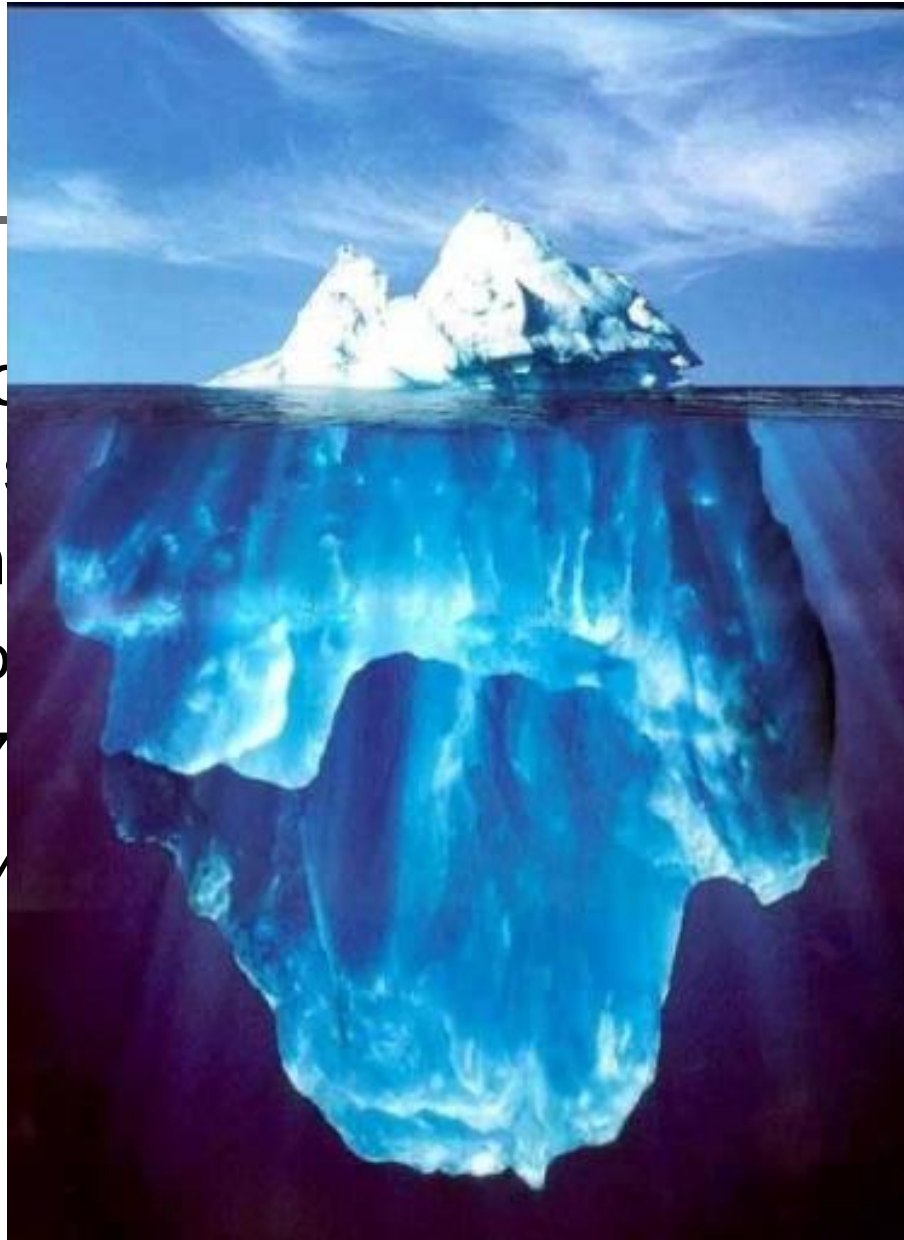


Pare

abuse

- Retro
case
John
 - Co
 - 67
 - 3%

nfirmed
3 from



Screening for perinatal drug exposure

- Maternal risk factors
- Infant-related risk factors





Maternal risk factors for perinatal drug exposure

- Maternal report (past or current)
 - Drug use history
 - Social risk factors
 - Delivery history
 - Mental health history
 - Past medical/gynecologic history



Maternal risk factors for perinatal drug exposure

- Current pregnancy
 - Age, tobacco/alcohol use
 - Level of prenatal care
 - Pregnancy problems
 - Physical or behavioral indicators of drug use
 - Delivery problems



Infant risk factors for perinatal drug exposure

- Congenital anomalies
- Birth Weight/Head Circumference < 10%
- Prematurity (< 36 weeks)
- Unexplained need for intervention



Unexplained need for intervention

- Excessive arousal
- Sleep disturbance
- Feeding problems
- Diaphoresis
- Respiratory problems
- Seizures

Drug Endangered Children - 2003

Hospitals with a structured risk assessment protocol

	CR St. Luke's	CR Mercy	Ottumwa RMC	DM Mercy	DM Broadlawns
Total deliveries	2543	1020	797	3402	363
Total screened	540 21%	230 22%	287 28%	540 16%	60 17%
Total confirmed	45 1.8%	8 0.8%	20 2.5%	45 1.3%	12 3.3%

Drug-Endangered Children - 2003

Hospitals without structured risk assessment protocol

	UIHC	IC Mercy	DM Lutheran	DM Blank/ Methodist
Total deliveries	1478	1253	1328	3400
Total screened	66 4.5%	6 0.5%	66 5.0%	230 6.8%
Total confirmed	11 0.7%	2 0.2%	11 0.8%	8 0.2%



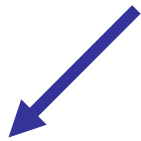
High screening - rate versus low screening - rate

	High screening	Low screening	<i>P</i>-value
Total deliveries	8125	7459	
Total screened	1595 20%	368 5%	
Positive testing	130 1.6%	32 0.4%	< 0.001

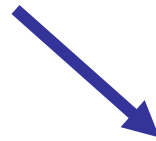


What is our responsibility?

- Appropriate neonatal screening
 - If relevant risk factors are present
- Appropriate reporting



Drug exposure



Denial of critical care
Reasonable concern
for infant's safety



Child Abuse & Neglect in Iowa Code

- Denial of critical care:
 - 8 subheadings ...
 - Failure to provide adequate health care
 - Failure to provide proper supervision
 - ... reasonable & prudent person...
 - ... causing danger of injury or death



Case Comparison

Characteristic	Mother A	Mother B
Insurance	Medicaid	Medicaid
Unplanned pregnancy	Yes	Yes
Domestic violence	Yes	Yes
Depression	Yes	Yes
First pregnancy age	16	15
Previous drug use	Meth, THC	Meth, THC, IV cocaine



Case Comparison

Characteristic	Mother A	Mother B
1st prenatal visit	23 rd wk	No risk factor
Marital status	Single	No risk factor
Incarceration	Father	No risk factor
STDs	No risk factor	GC, Chlamydia, Hepatitis C
Drug use during pregnancy	THC	THC
Quit date	End of 2 nd tri	End of 1 st tri
Positive screen	End of 2 nd tri	36 d prior to delivery



Case Comparison

- Infant A was not screened
 - Discharged home to mother
- Infant B was screened
 - Meconium screen positive for THC
 - Reported to DHS for drug exposure



Mother-infant dyads from UIHC

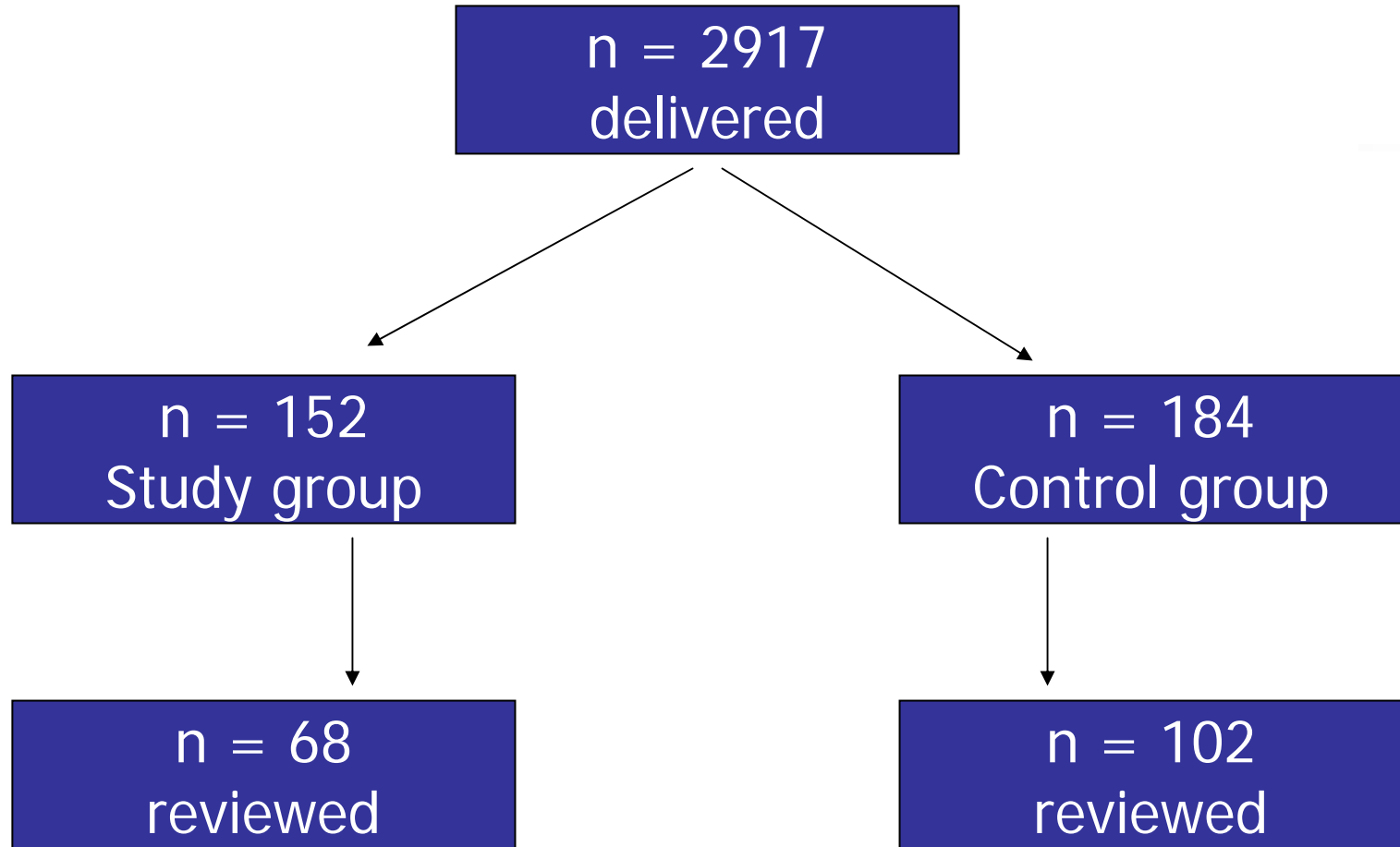
- Hypotheses:
 - Documentation of risk factors is inadequate
 - Prevalence of risk factors is higher than number of infants screened
 - Child protection actions related to illicit drug use during pregnancy are inadequate



Mother-infant dyads from UIHC

- Retrospective chart review of mother-infant dyads (2002 & 2003)
- Study group
 - Mother reported illicit drug use during pregnancy
 - Mother screened for illicit drugs
 - Infant screened for illicit drugs
- Control group
 - Every 15th chart not qualifying for study group

Flow diagram





Documentation rate of risk factors - I

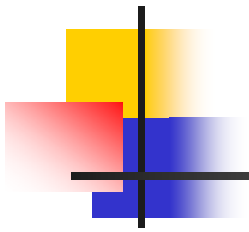
Risk factor	Study n = 68	Control n = 102	<i>P</i>- value
Tobacco use	97%	97%	NS
Prenatal care	91%	77%	< 0.01
Alcohol use	76%	76%	NS
Depression	70%	65%	NS
Domestic Violence	62%	54%	< 0.05



Documentation rate of risk factors - II

Risk factor	Study n = 68	Control n = 102	<i>P</i>-value
Drug rehabilitation	33%	0%	< 0.001
Maternal incarceration	31%	0%	< 0.001
Paternal Incarceration	12%	2%	< 0.01
Prostitution	3%	0%	NS

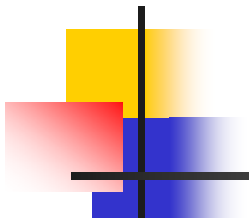
Hypothesis I: Documentation of relevant risk factors inadequate



Group Characteristics - I

Study group versus control group

Characteristics	Study	Control	<i>P</i>-value
Maternal age (y)	25	27	< 0.05
Maternal education (y)	11	14	< 0.05
Age @ 1st pregnancy (y)	17	25	< 0.01
Prenatal visits (n)	9	12	< 0.01
1st prenatal visit (wk)	15	10	< 0.01



Group Characteristics - II

Study group versus control group

Characteristics	Study	Control	<i>P</i>-value
Unplanned pregnancy	94%	31%	< 0.001
Tobacco use	85%	16%	< 0.001
Single mother	76%	21%	< 0.001
Medicaid / No insurance	70%	26%	< 0.001
Alcohol use	52%	13%	< 0.001
Premature delivery	50%	30%	< 0.01
Birth weight (gm)	2865	3167	< 0.05



Control group contaminated?

Characteristic	Mother A	Mother B	Mother C
Insurance	None	None	None
Marital status	Single	Single	Single
Premature delivery	Yes	Yes	Yes
1st prenatal visit	22 nd wk	32 nd wk	12 th wk
PNC visits (n)	4	3	7



Control group contaminated?

Characteristic	Mother A	Mother B	Mother C
Duration of labor	2.6 hours	No risk factor	No risk factor
Domestic violence	No risk factor	Yes	No risk factor
Tobacco use	No risk factor	Yes	No risk factor
Alcohol use	No risk factor	No risk factor	Yes
Depression	No risk factor	No risk factor	Yes
STDs	No risk factor	No risk factor	HPV, HSV
Incarceration	No risk factor	No risk factor	Father



Control group contaminated?

- Of 102 control group dyads:
 - 17 had multiple maternal risk factors
 - Late prenatal care
 - Depression
 - Premature delivery
 - STDs
 - Smoking/alcohol
 - High blood pressure
 - Domestic violence
 - Abruption



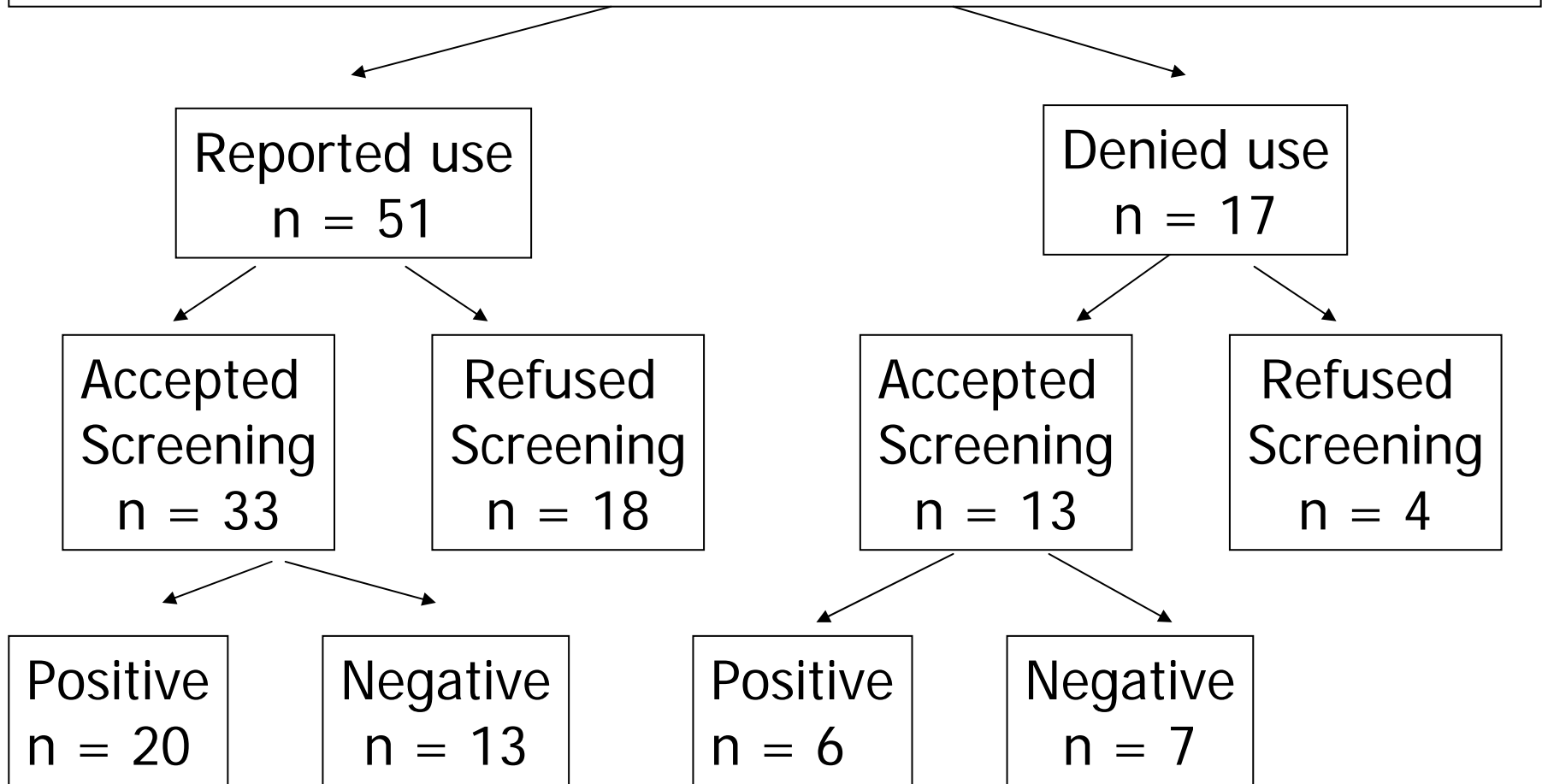
Control group contaminated?

Hypothesis II:

- Prevalence of risk factors for perinatal drug exposure is higher than reflected by number of screened infants

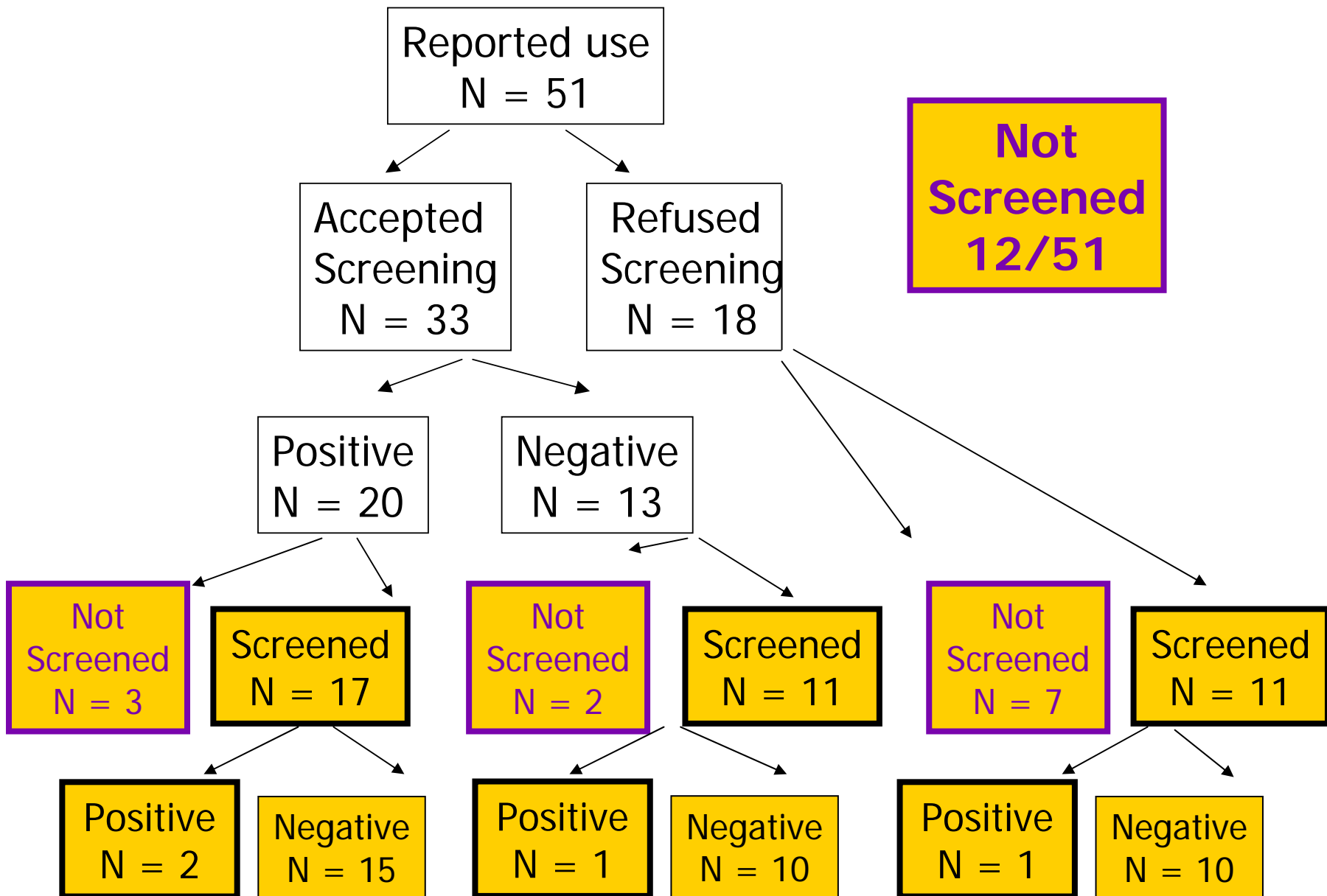
Study group n = 68

Maternal history of drug use during pregnancy

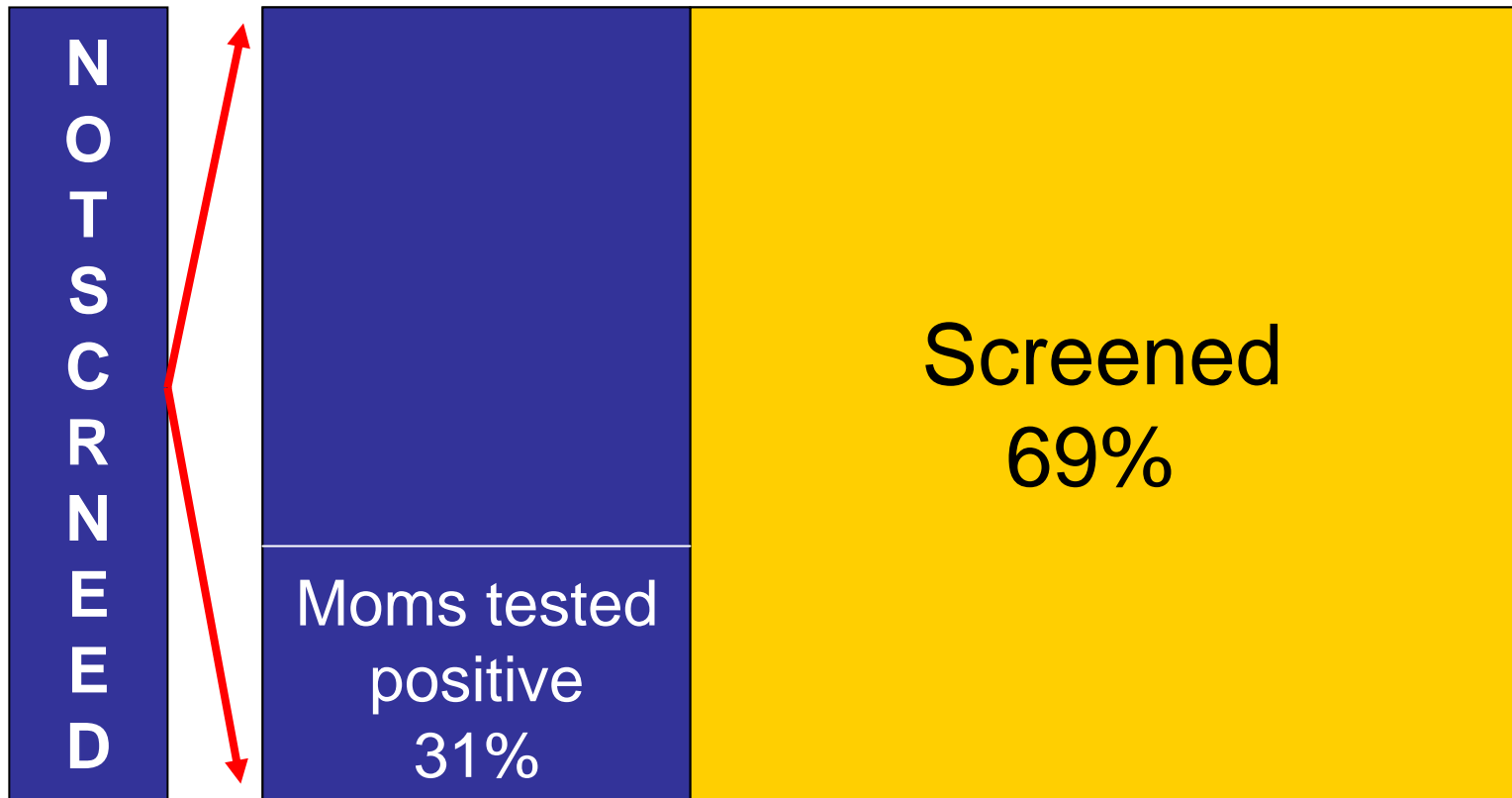


Maternal report

Neonatal drug screening



Mother infant dyads from UIHC Study group



Study group n = 68

Reported use
n = 51

Control group
n = 68

Denied use
n = 17

Missed
screening
n = 12

Missed
screening
n = 17

Missed
screening
n = 8

Study
n = 68
Control
n = 17

N = 85

Missed
screening
n = 37

44 %



Mother-infant dyads from UIHC

Missed opportunities of reporting

Characteristic	Dyad A	Dyad B	Dyad C	Dyad D
Drug use	IV cocaine	Crack	IV Meth	Meth
Quit time	1 st tri	2 nd tri	end 2 nd tri	last tri
Mother test	Negative	Refused	Negative	Positive
Infant test	Negative	Negative	Negative	Negative



Mother-infant dyads from UIHC

Mandatory reporting

- Based on maternal report of drug use
- 51 infants were eligible for child protection:
 - 7/51 (14%) were reported
 - All for drug exposure
 - None was reported for neglect



Mother-infant dyads from UIHC

Mandatory Reporting

- Two deliveries a year apart
- Mother reported drug use, refused screening
- 1st infant tested negative, 2nd not screened
- No child protection action
- Both removed due to child abuse during infancy of second-born



Hypotheses testing

- Hypothesis 1: Documentation of risk factors inadequate
 - Data collection/documentation may be biased
- Hypothesis 2: Risk factors are present in more dyads than screened infants
- Hypothesis 3: There are missed opportunities of initiating child protection & substance abuse treatment



TO SUM UP...

- UIHC neonatal screening rate : ~5% of all deliveries
 - Drug exposure rate: ~0.7% of all deliveries
- 44 % of infants eligible for screening were not screened in 2002 - 2003
- Room for improvement
 - Documentation of risk assessment
 - Inter-departmental communication
 - Proper reporting to DHS



Risk recognition

- Recognition of high risk in prenatal clinic
- Referral of pregnant women for treatment
- Recognition of high risk in delivery room
- Inter-departmental communication
- Recognition of high risk in nurseries
- Proper screening orders
- Involvement of social work & CPP
- Proper child protection action via DHS



Maternal risk factors for perinatal drug exposure

- Maternal report (past or current)
 - Illegal drug use, enrollment in a drug rehabilitation program
 - Prostitution, incarceration, domestic violence
 - Serious mental illness, institutionalization, depression
 - Stillbirth, previous delivery of an exposed infant
 - Hepatitis B & C, HIV, other STDs, severe / unexplained hypertension



Maternal risk factors for perinatal drug exposure

- Current pregnancy
 - < 20 y / o, tobacco / alcohol use
 - Inadequate prenatal care
 - Physical or behavioral indicators of drug use
 - Attempted home delivery, poor weight gain
 - Abruptio placenta, oligohydramnios
 - Total labor < 3 hr



Risk factors - Infant

- Congenital anomalies
- Birth weight / Head circumference
< 10 %
- Prematurity (< 36 w/g)
- Unexplained need for intervention



Unexplained need for intervention

- Excessive arousal
- Sleep disturbance
- Feeding problems
- Diaphoresis
- Respiratory problems
- Seizures

STAFF EDUCATION

Risk recognition
Documentation
Communication
Screening
Consulting
Reporting

**R
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