

Perinatal illicit drug use and fetal exposure: consequences and management with a public health approach

Resmiye Oral*

Scope of the Problem

Perinatal illicit drug use and *in utero* exposure to illicit drugs have been significant public health issues affecting reproductive-age women and children because of the associated medical, social, psychological, and legal consequences. The Substance Abuse and Mental Health Services Administration reported that, among pregnant women aged 15 to 44 years, 4% reported using illicit drugs in the past month in 2005–2006 and 11.8% reported current alcohol use.^[1] While these figures represent a reduction from 5.5% and 18.8%, respectively in 1995, and from 4.3% for substance use in 2002–2003 with alcohol use showing a slight increase from 9.8% in that year, users still represent a significant proportion of pregnant women.^[2,3] Considering 4 169 000 live births occurred in 2006–2007 in the USA, the data suggest that approximately 180 000 women might have used illicit drugs with or without alcohol, and that a similar number of newborns might have been exposed to illicit drugs during pregnancy.^[2] Other studies conducted at urban teaching hospitals have found maternal illicit drug use during pregnancy to range from 9% to 45% of all births.^[4–7] Perinatal illicit drug use and *in utero* illicit drug exposure in rural populations have received less attention than in urban populations. However, the few studies performed in rural communities, namely in Utah and Missouri, have shown a prevalence of up to 7.8% of all pregnancies.^[8,9]

Consequences

It is well known that many pregnant women stop using or at least reduce their use of illicit drugs once they become aware of their pregnancy.^[10] The rate of abstinence may be as high as 94% by the end of pregnancy but, if substance abuse treatment is not accomplished during pregnancy, a number of women who have stopped using illicit drugs or reduced their use during pregnancy will relapse shortly after delivery and the rate of abstinence will go down to 24% as reported by Bauer *et al.*^[7] We know that drug use is strongly associated with poor physical and mental health and with social and economic difficulty.^[11] It is also well known that illicit drug exposure may affect the fetus in many ways. Fetal growth may be retarded, and there are strong correlations with low birth weight, microcephaly, and short stature even after controlling for confounding factors; gestation may be shortened leading to prematurity that has its own inherent problems; brain cells may be damaged leading to developmental, behavioral, and learning problems; and there may be some associations with congenital gastrointestinal, urogenital, and cardiac malformations.^[5,12–18]

However, *in utero* exposure is not the sole determinant of the outcome for offspring. Several studies reported that there is a significant association between parental illicit drug use and child abuse and neglect. With no intervention, newborns born to illicit drug-using parents, surrounded with an unfavorable social environment, will grow up to become infants and children who will often fall victim to further drug exposure, child abuse and neglect, and mental and behavioral problems.^[12,13,19–28]

Impact of Intervention

Timely and comprehensive intervention with a public-health approach, on the other hand, can have a significant impact. If pregnant women are offered services early during pregnancy, the rate of prematurity, low birth weight, neonatal intensive care unit admissions, hospital costs, foster care placement, and maternal mental health problems have all been shown to decrease.^[10,23,27–29] California passed a law in 1991 requiring all 58 counties to develop protocols for identifying and intervening in cases of perinatal illicit drug use and exposure (albeit with no enforcement). Despite a lack of enforcement in at least two counties, child abuse reports declined after a protocol was implemented voluntarily.^[26] Management of *in utero* exposure to illicit drugs should in no way result in legal consequences for the mother. That approach has proven to have been a devastating deterrent to pregnant women's use of health services with subsequent worsening medical outcomes for both the mothers and offspring.^[30–32] If everything else fails, however, utilizing the child protection services both to protect the child and provide the needed services to the mother after delivery should be considered as a useful last resort.^[32,33]

Cost/Benefit and Risk/Benefit

The 1999 National Household Survey on Drug Abuse reported that one-third of the total adult population admitted to the use of illicit drugs; a quarter of these individuals identified cocaine as their drug of choice. The National Institute on Drug Abuse reported in a national pregnancy and health survey in 1996, that

* Correspondence to: Resmiye Oral, 200 Hawkins Drive, 2601 JCP, Iowa City, Iowa, 52245, USA. E-mail: Resmiye-oral@uiowa.edu

Department of Pediatrics, Carver College of Medicine, University of Iowa, USA

it was estimated that approximately 45 000 infants are born each year after having been exposed to illicit substances, especially cocaine, *in utero*.^[5] However, literature-based estimation suggests this number may be upwards of 150 000/year.^[2] The United States General Accounting Office estimates that the median hospital cost for taking care of drug-affected infants ranges from \$1100 to \$8450 per child more than that for non-exposed infants.^[34] Drug treatment services for women, on the other hand, produced net reductions in medical expenditures of \$4644 per mother-infant pair.^[35] Several other studies showed that timely intervention during pregnancy is cost effective by reducing the cost of addiction and alcoholism both to the society and the individual since it improves the outcome both for the pregnant women and their infants by improving social, medical and legal life trajectory for both parties.^[27–29,35–38]

Implications for Medical Practice

Intervention may include programs to improve parenting skills, maternal and paternal drug and mental health treatment, home assistance, medical, developmental, and behavioral treatment services for the infant, and social services involvement to support the family without criminal prosecution.^[29,33,39] It is, then, reasonable to expect that reduced parental drug use, in combination with post-natal interventions, may result in less chaotic lifestyles, improved care-giving, reduced numbers of child protective services interventions and foster care placements, and decreased maternal depression, hence improved outcomes for children as well.^[13,27] Because of this, obstetricians, pediatricians, and family practice physicians have a responsibility to implement a collaborative intervention program at each birthing hospital.

Need for Screening/Testing

The provision of services to initiate intervention depends on the recognition of drug-using pregnant women and exposed infants. With this in mind, states and hospitals have used a variety of approaches to deal with the problem of drug abuse among pregnant women. Many states have left the screening, testing and reporting decisions to the healthcare provider's discretion. California and Virginia passed laws mandating that hospitals develop structured perinatal illicit drug-use screening protocols.^[26,40] Many states have passed laws regarding the mandated reporting of a newborn exposed to illicit drugs following Illinois and California.^[30,40–42] However, the establishment of services early during pregnancy has been left to the discretion of hospitals and departments of public health. Despite these limitations, there are several reports in the literature indicating that implementation of either hospital-based or statewide policies does encourage health professionals to engage in efforts to recognize and provide services to this population.^[23,29,40,43]

Type of Screening

Perinatal illicit drug screening is an invaluable tool in the recognition of illicit drug-using pregnant women and exposed infants. Maternal interviews should be taken into careful consideration in assessing any risks for perinatal illicit drug use. The design of the interview instrument reportedly makes a big difference in obtaining self-disclosure of substance abuse from pregnant women.^[10] If

a pregnant woman discloses substance abuse and accepts referral for substance abuse treatment, maternal drug testing may not be critical to establish the diagnosis. However, with maternal consent, future testing may be helpful to sustain abstinence. When there are risk factors, but the pregnant woman denies substance use and refuses service referral, maternal urine testing may be helpful. Consent should invariably be obtained to test the mother.

There are many studies reinforcing the observation that the maternal interview alone can not be relied upon, at least to determine which infants need assessment for perinatal illicit drug exposure.^[4,44–46] Especially in cases where recognized risk factors are present, neonatal meconium and urine testing may yield more objective information.^[17,18,39,44,46]

In testing, urine is the test of choice for the mother and both urine and meconium should be used to test the newborn. Meconium starts forming at 12–14 weeks of gestation. Thus a meconium test provides information on exposure during the last two trimesters of pregnancy. Urine tests, on the other hand, provide information on exposure ranging from the last several days to the last week of pregnancy. Ten milliliters of urine would be adequate for testing. If submission to the lab is to be delayed it should be kept refrigerated until testing. Between 2 g and 5 g of meconium is necessary for testing. It may be refrigerated up to 48 hours after collection until the required amount is collected. Every institution should have a procedure for documentation according to their policies and procedures in handling all specimens obtained for the purpose of newborn toxicology testing.

Need for Policy Development

The recognition of risk factors outlined by a structured protocol may help healthcare providers in their decision-making as to who should be tested and provided with services as early in the process of pregnancy as possible.^[12,13,18–25,28] In urban, inner city and teaching hospital settings, perinatal illicit drug exposure has been recognized for a long time and many of these institutions have individually developed protocols for detection and intervention.^[42,47] However, this is not necessarily true for rural areas, smaller towns, and private hospitals. Many states have not adopted any statewide regulation or legislation, either.^[48] In the absence of a statewide perinatal illicit drug-screening policy, birthing hospitals may or may not develop structured protocols. Even if they do, these protocols are likely to vary greatly from hospital to hospital and region to region, with regard to comprehensiveness and effectiveness.^[12,41,43] The advantages of establishing a statewide perinatal illicit drug-screening protocol to establish a uniform standard of care, on the other hand, are clear as it has been shown to affect physician response and detection rates positively.^[23,30,40,43] Structured protocols may help staff recognize women at risk of substance abuse in a way that is free of biases and may also improve staff-patient communication and rapport-building to improve patients' compliance. In addition, for those pregnant women who decline any support, structured protocols may be used to identify infants who are at risk of drug exposure based on maternal history. Such protocols increase the likelihood that timely meconium and urine tests may be done, which may then prompt follow-up treatment offers and referrals for subsequent interventions both for the infant and the mother. For a sample state wide policy refer to Appendix 1.^[49]

Controversies Regarding Policy Development

The controversy related to comprehensive institutionalized programs for diagnosing perinatal illicit drug use/exposure by testing the newborn stems from concerns about maternal rights to privacy and staff biases related to risk recognition, testing, and reporting. Some of this concern comes from the fact that some states have approached perinatal illicit drug exposure from a criminal perspective rather than a public health perspective, which stigmatized and targeted poor minority women. This approach also damaged the efforts to help pregnant women addicted to illicit drugs across the nation.^[30–33] Secondly, most states recognize perinatal illicit drug exposure of newborns as a form of child abuse and neglect. Based on these child protection laws, mandatory reporters must report a newborn testing positive to child protective services. This is easily perceived by the public as automatically criminalizing the mother, even in instances where the mother is protected by law against prosecution. There are, in fact, a wide range of state statutory policies regarding suspected cases of exposed newborns. In order to report to child protective services, some require observation of withdrawal in addition to testing positive (Utah, Colorado); for some, positive toxicology results suffice regardless of the newborn's clinical presentation (Illinois, Minnesota, Iowa); some may not even recognize it as a child-abuse category (New Hampshire), whereas some may require the reporting of even fetal alcohol syndrome (Utah, Illinois).^[50] Because of all these controversies, medical staff should work hard to develop policies so that their clients (pregnant women) understand the good intentions of the staff in trying to help them help themselves. Lastly, state laws should also be amended so that any remote possibility of criminalizing perinatal illicit drug use can be eliminated across the country. This approach coupled with education of judicial staff on the risks of such criminalization will improve the effect of medical staff's efforts in achieving higher rates of drug use disclosure from pregnant women, consent for testing and evaluation, and finally treatment.

Risk Assessment Tool

The literature review indicates that numerous risk factors are associated with perinatal illicit drug use or *in utero* illicit drug exposure. Risk factors reported vary from study to study depending on the size of the population, duration of the study, and regional differences (rural *versus* urban settings). However, some characteristics such as domestic violence, poor prenatal care, maternal untreated mental health problems, maternal alcohol and tobacco use during pregnancy, maternal syphilis, gonorrhea, hepatitis B or C, HIV infection, acute unexplained maternal high blood pressure, stroke, abruptio placenta, unexplained prematurity, unexplained *in utero* growth retardation including microcephaly, neonatal withdrawal symptoms, and gastrointestinal and genitourinary congenital anomalies are shared by many large-scale studies and policy statements as representing indicators for at risk status.^[5,7,17,18,23,27,29,30,33,40,42,44,51]

One major controversy regarding testing newborns comes from staff bias in assessing at-risk status. There are several studies reporting that poor, minority women and their infants are tested and reported to state agencies including law enforcement more often.^[30–34] Short of universal screening of newborns, the use of a risk-assessment tool arising from evidence-based objective studies may be the only approach to prevent newborns from

ethnic and minority groups from being disproportionately tested and reported to child protective services. Lastly, with regard to legal and rights to privacy concerns, one cannot emphasize enough the importance of making sure that no woman will be reported to law enforcement and prosecuted due to perinatal illicit drug use. For a sample risk assessment tool refer to Appendix 2.^[49]

Acknowledgement

I would like to extend my gratitude to Michael Artman, MD, Edward Bell, MD, Michael Acarregui, MD, Richard Early, JOD, Rizwan Shah, MD, and Shannon Sullivan, MD for their support in the materialization of the statewide policy development on perinatal illicit drug screening and intervention in Iowa that led to this manuscript, and to William Flanagan, PhD for his editorial support.

References

- [1] Substance Abuse and Mental Health Services Administration, Office of Applied Studies (SAMHSA): Illicit Drug Use. Available at <http://oas.samhsa.gov/NSDUH/2k6NSDUH/2k6results.cfm#Ch2>, accessed 2 February 2009.
- [2] S. Shankaran, B. M. Lester, A. Das, C. R. Bauer, H. S. Bada, L. Lagasse, R. Higgins. *Semin. Fetal. Neonatal. Med.* **2007**, 12, 143.
- [3] M. M. Hohman, A. M. Shillington, H. G. Baxter. *Child Abuse Negl.* **2003**, 27, 303.
- [4] E. M. Ostrea, M. Brady, S. Gause, A. L. Raymundo, M. Stevens. *Pediatrics* **1992**, 89, 107.
- [5] C. R. Bauer, S. Shankaran, H. S. Bada, B. Lester, L. L. Wright, H. Krause-Steinrauf, V. L. Smeriglio, L. P. Finnegan, P. L. Maza, J. Verter. *Am. J. Obstet. Gynecol.* **2002**, 186, 487.
- [6] B. Bar-Oz, J. Klein, T. Karaskov, G. Koren. *Arch. Dis. Child. Fetal Neonatal Ed.* **2003**, 88, 98.
- [7] C. R. Bauer, J. C. Langer, S. Shankaran, H. S. Bada, B. Bester, L. L. Wright, H. Krause-Steinrauf, V. L. Smeriglio, L. P. Finnegan, P. L. Maza, J. Verter. *Arch. Pediatr. Adolesc. Med.* **2005**, 159, 824.
- [8] L. B. Sloan, J. W. Gray, S. W. Snyder, W. R. Bales. *Obstet. Gynecol.* **1992**, 79, 245.
- [9] K. F. Buchi, M. W. Varner, R. A. Chase. *Obstet. Gynecol.* **1993**, 81, 239.
- [10] I. Chasnoff, R. F. McGourty, G. W. Bailey, E. Hutchins, S. O. Lightfoot, L. L. Pawson, C. Fahey, B. May, P. Brodic, L. McCulley, J. Campbell. *J. Perinatol.* **2005**, 25, 368.
- [11] J. G. Frohna, P. M. Lantz, H. Pollack. Maternal substance abuse and infant health: policy options across the life course. *Millbank Q.* **1999**, 77, 531.
- [12] J. V. Brown, R. Bakeman, C. D. Coles, K. A. Platzman, M. E. Lynch. *Child Dev.* **2004**, 75, 1282.
- [13] L. Berger, J. Waldfogel. *Soc. Serv. Rev.* **2000**, 74, 28.
- [14] H. S. Bada, A. Das, C. R. Bauer, S. Shankaran, B. Lester, L. L. Wright, J. Verter, V. L. Smeriglio, L. P. Finnegan, P. L. Maza. *Obstet. Gynecol.* **2002**, 100, 916.
- [15] H. S. Bada, A. Das, C. R. Bauer, S. Shankaran, B. Lester, C. C. Gard, L. L. Wright, L. Laqasse, R. Higgins. Low birth weight and preterm births: etiologic fraction attributable to prenatal drug exposure. *J. Perinatol.* **2005**, 25, 631.
- [16] H. S. Bada, J. Langer, J. Twomey, C. Bursi, L. Lagasse, C. R. Bauer, S. Shankaran, B. M. Lester, R. Higgins, P. L. Maza. *J. Dev. Behav. Pediatr.* **2008**, 29, 173.
- [17] American Academy of Pediatrics. *Pediatrics* **1998**, 101, 1079.
- [18] American Academy of Pediatrics, Committee on Substance Abuse. *Pediatrics* **1995**, 96, 364.
- [19] S. Easton, R. Oral. Factors Associated with Parental Drug Involvement in Confirmed cases of Child Maltreatment. Proceedings of 19th San Diego Conference on Child Maltreatment, San Diego, California, 24–28 January **2005**.
- [20] T. F. Locke, M. Newcomb. *J. Fam. Psychol.* **2004**, 18, 120.
- [21] J. A. Stein, M. B. Leslie, A. Nyamathi. *Child Abuse Negl.* **2002**, 26, 1011.
- [22] C. Walsh, H. L. MacMillan, E. Jamieson. *Child Abuse Negl.* **2003**, 27, 1409.

- [23] P. Nair, M. E. Schuler, M. M. Black, L. Kettinger, D. Harrington. *Child Abuse Negl.* **2003**, 27, 997.
- [24] I. J. Chasnoff, A. Anson, R. Hatcher, H. Stenson, K. Laukea, L. A. Randolph. *Ann. N. Y. Acad. Sci.* **1998**, 846, 314.
- [25] R. Tyler, J. Howard, M. Espinosa, S. S. Doakes. *Child Abuse Negl.* **1997**, 21, 337.
- [26] V. Albert, D. Klein, A. Noble, E. Zahand, S. Holtby. *Child Abuse Negl.* **2000**, 24, 173.
- [27] B. B. Little, L. M. Snell, T. T. Van Beveren, R. B. Crowell, S. Trayler, W. L. Johnston. *Am. J. Perinatol.* **2003**, 20, 255.
- [28] P. J. Sweeney, R. M. Schwartz, N. G. Mattis, B. Vohr. *J. Perinatol.* **2000**, 4, 219.
- [29] A. El-Mohandes, A. A. Herman, M. Nabil El-Khorazaty, P. S. Katta, D. White, L. Grylack. *J. Perinatol.* **2003**, 23, 354.
- [30] S. J. Ondersma, S. M. Simpson, E. V. Brestan, M. Ward. *Child Maltreat.* **2000**, 5, 93.
- [31] G. J. Annas. *N. Engl. J. Med.* **2001**, 344, 1729.
- [32] S. J. Ondersma, L. H. Malcoe, S. M. Simpson. *Child Abuse Negl.* **2001**, 25, 657.
- [33] J. R. MacMahon. *Pediatrics* **1997**, 100, E1.
- [34] United States General Accounting Office. Prenatal care: Medicaid recipients and uninsured women obtain insufficient care. Washington DC: US Government Accounting Office, **1990**, No. HRD 87–137.
- [35] D. S. Svikis, A. S. Golden, G. R. Huggins, R. W. Pickens, M. E. McCaule, M. L. I. Vellez. *Drug Alcohol Dependence* **1997**, 45, 105.
- [36] I. J. Chasnoff. *Curr. Probl. Pediatr. Adolesc. Health Care* **1992**, 22, 302.
- [37] T. M. Field, F. Scafidi, J. Pickens, M. Prodromidis, M. Pelaez-Nogueras, J. Torquati, H. Wilcox, J. Malphurs, S. Schanberg, C. Kuhn. *Adolescence* **1998**, 33, 117.
- [38] K. Stamma, S. Merkel, K. Mann, H. J. Salize. *Psychiatr. Prax.* **2007**, 34, 194.
- [39] T. C. Kwong, R. M. Ryan. *Clin. Chem.* **1997**, 43, 235.
- [40] G. L. Zellman, C. C. Fair, J. Hoube, M. Wong. *Matern. Child Health J.* **2002**, 6, 205.
- [41] I. J. Chasnoff, H. J. Landress, M. E. Barrett. *N. Engl. J. Med.* **1990**, 322, 1202.
- [42] M. Birchfield, J. Scully, A. Handler. *J. Perinatol.* **1995**, 15, 208.
- [43] G. L. Zellman, P. D. Jacobson, R. M. Bell. *Addiction* **1997**, 92, 1123.
- [44] E. M. Ostrea, D. K. Knapp, L. Tannenbaum, A. R. Ostrea, A. Romero, V. Salari, J. Ager. *J. Pediatr.* **2001**, 138, 344.
- [45] P. W. Appel, J. H. Hoffman, H. T. Blaine, B. Frank, R. Oldak, M. Burke. *J. Psychoactive Drugs* **2001**, 33, 47.
- [46] K. W. Bibb, D. L. Steward, J. R. Walker, V. D. Cook, R. E. Wagener. *J. Perinatol.* **1995**, 15, 199.
- [47] T. A. O'Connor, H. H. Bondurant, J. Siddiqui. *J. Matern. Fetal Neonatal Med.* **1997**, 6, 108.
- [48] R. Oral, T. Strang. *J. Perinatol.* **2006**, 26, 660.
- [49] Guidelines for Perinatal Services. 8th Edition. Iowa Department of Public Health www.idph.state.ia.us/hpcdp/statewide_perinatal_care.asp. Retrieved on 2/13/2009.
- [50] E. L. Abel, M. Kruger. *Am. J. Obstet. Gynecol.* **2002**, 186, 768.
- [51] American College of Obstetrics and Gynecology, Committee on Ethics. *Obstet. Gynecol.* **2004**, 103, 1021.

Appendix 1: Iowa Statewide Perinatal Illicit Drug-Screening and Intervention Protocol^[49]

Scope of the problem

The National Survey on Drug Use and Health (NSDUH) reports that in 2002 and 2003, 4.3% of pregnant women aged 15 to 44 had used illicit drugs including opiates, marijuana, cocaine, hallucinogens, inhalants, tranquilizers, stimulants, and sedatives in the past month. Also 4.1% reported binge alcohol use and 18% reported smoking cigarettes.^[1] The rate of drug use for pregnant teenagers was approximately 15%.^[2] The NSDUH data also suggest that women increased their substance use during the year after giving birth.

Illicit substance use/abuse (and legal substance use/abuse including alcohol and tobacco) may affect a pregnant woman's

health, the course of her pregnancy, and the development of her fetus. Fetal effects of illicit substances include teratogenesis, intrauterine growth retardation, prematurity, low birth weight, birth complications, central nervous system damage. Exposed newborns are at risk for neonatal abstinence effects and developmental and behavioral abnormalities.

Increasing rates of substance abuse during pregnancy translate into higher numbers of drug-exposed infants. In 2004 and 2005 DHS confirmed *in utero* drug exposure on 549 and 306 newborns, respectively, in Iowa.^[5] However, this number is lower than the expected 1500–1750 newborns based on ~37 000 infants being delivered in Iowa annually. This discrepancy is mainly due to poor screening/testing practices. The unrecognized infants are discharged to their homes where mothers are likely to continue to use/abuse illegal substances. These infants continue to be exposed to illegal substances and the associated chaotic life style, health degradation, violence, child abuse and neglect, and family dysfunction.

Research shows that intervention works. Treatment for substance abuse during pregnancy is significantly more effective than at other times in a woman's life. Treatment also has a positive affect on fetal outcome (fewer intensive care admissions due to greater gestational age and birth weight).^[6] Early recognition, early intervention, timely entry into treatment, and a sustained, long-term treatment regimen minimize the fetal impacts of perinatal maternal illicit drug use and improve a woman's prognosis for successful, ongoing recovery from addiction. A screening and intervention protocol developed by a panel of experts from across Iowa will help medical care providers to make objective decisions regarding their screening/testing/intervention practices for substance abuse in women during pregnancy and for their offspring.^[7,8]

Purpose

- Develop a community practice guideline for perinatal illicit substance-use screening and testing.
- Identify illicit substance using patients during pregnancy and their exposed infants.
- Provide a screening tool to identify the patients and infants at risk for use and exposure.
- Provide guidelines for referral and intervention both for the mother and the infant.
- Increase secondary and tertiary prevention efforts to reduce pregnancy-related illicit drug use/abuse.

The sole goal of identification is to provide early access to assessment and treatment for the mother/infant dyads without application of punitive measures. Identification efforts should start at the first prenatal visit. Screening for maternal substance abuse must begin with a thorough but non-judgmental and compassionate interview. History taking should include questions about the pregnant woman's and her immediate family members' use of prescribed and un-prescribed drugs, tobacco, and alcohol.

Consent for testing

Specific consent should be sought from the pregnant woman to perform urine toxicology testing if any risk factor is recognized via risk assessment form. Urine testing history including testing offer dates, maternal responses (consented *versus* declined), test dates, results, positive-testing drug(s) should be documented in the chart. Any concerning result should be shared with the hospital social worker and the pediatric team.

Maternal consent is not needed to test a newborn as long as one or more of the risk indicators related to maternal and infant history or presentation are present, if the risk factors equate to the conditions stated in Iowa law – that is ‘if a health practitioner discovers in a child physical or behavioral symptoms of the effect of exposure to cocaine, heroin, amphetamine, methamphetamine, or other illegal drugs including marijuana, or combination or derivatives that were not prescribed by a health practitioner or if the health practitioner has determined through examination of the natural mother of the child that the child was exposed in-utero.’ However, the mother should be informed of the decision to test the newborn. Urine/meconium testing with testing dates and results should be documented in the chart.

Risk assessment in prenatal clinic, labor and delivery and neonatal units

This tool consists of two assessments: one to assess the risk status of the pregnant/delivering woman, the other of the infant.

- *Prenatal clinic/delivery room risk assessment form.* Prenatal clinic and labor and delivery staff will fill out this form. This risk assessment should take place at the first encounter with the pregnant woman and at delivery. At other encounters the staff should document that the pregnant woman continues to be abstinent.
- *Neonatal risk assessment form.* This form will be filled out by the newborn staff who will also review the above listed form and maternal drug testing results.
- Labor and delivery staff should share the maternal risk assessment and testing results with the medical team providing care to the newborn. If prenatal care and delivery take place at different hospitals, the delivery hospital should request maternal consent to obtain the prenatal records from where prenatal care was obtained.
- Each hospital is encouraged to either adopt these forms as in their attached form or develop a system to incorporate the risk assessment forms into the prenatal/neonatal records. Prenatal clinic/labor and delivery staff, hospital substance abuse management team, hospital social worker(s), psychiatry staff, and pediatric team should review these forms in their assessment of their client (infant and/or the mother).

Test specimens

- Urine: 10 ml urine; if submission to the lab is to be delayed it should be kept refrigerated until testing.
- Meconium: 5 g of meconium is necessary. It may be refrigerated up to 48 hours after collection.
- Urine is the test of choice for the mother; both urine and meconium should be used to test the newborn.
- Every institution should have a procedure for documentation according to its policies and procedures in handling all specimens obtained for the purpose of newborn toxicology testing.

Institutional response to addiction in prenatal clinic/labor and delivery unit

Hospitals are recommended to establish an in-house team to respond to the needs of pregnant women using illicit drugs. This team may include staff from prenatal clinic, newborn unit, hospital social services, hospital/community chemical dependency unit/agency, and psychiatry department. Staff becoming aware

of substance abuse or positive test results should have this team or the hospital social worker involved to improve the referral process for treatment at any time during pregnancy. Information on referral centers for substance abuse treatment can be found at www.idph/state.ia.us under Bureau of Substance Abuse/Online Resources/Licensed Substance Abuse Treatment Programs.

Notification guidelines

Any staff becoming aware of an infant testing positive for illicit substances as defined in Iowa code is required by law to file a report with DHS for ‘presence of illegal drugs’. Any staff becoming aware of maternal substance abuse, positive test result and/or multiplicity of risk indicators for perinatal illicit substance exposure should have the hospital social worker get involved to assess for a need to file a report for ‘Denial of critical care’ with DHS for child protection.

Appendix 2: Perinatal Illicit Substance Exposure Risk Assessment Tool*[49]

A. Obstetrics Clinic and Labor and Delivery Unit

► Risk Factors Related to Current Pregnancy

Maternal urine drug screen positive	Yes No
Maternal report of illicit drug use	Yes No
No prenatal care or late prenatal care (>16 weeks gestation)	Yes No
Poor prenatal care (≤4 prenatal visits)	Yes No
Abruptio placenta	Yes No
Unexplained premature delivery	Yes No
Unanticipated out-of-hospital delivery	Yes No
Unexplained discrepancy between delivery/prenatal care facilities (hospital hopping)	Yes No
Presented at hospital in second stage of labor	Yes No
Precipitous labor (<3 hours)	Yes No
Unexplained episode of acute hypertension (≥140/90 mmHg)	Yes No
Unexplained seizures, stroke, or myocardial infarction	Yes No
Tobacco/Alcohol use or prescription drug (i.e. Vicodin, Oxycotin) abuse	Yes No
Physical attributes suggesting illicit drug use such as IV track marks, visible tooth decay, sores on face, arms, or legs	Yes No
Altered mental status suggesting influence/withdrawal from illicit drugs	Yes No
Unexplained stillbirth	Yes No

► Risk Factors Related to Maternal Medical History

Unexplained Hepatitis B or C, syphilis, or HIV within the last 3 years	Yes No
Untreated maternal depression or major psychiatric illness within the last 3 years	Yes No
Ever used illegal drugs during any pregnancy	Yes No
Ever delivered an infant who tested positive for illicit drugs	Yes No

► Risk Factors Related to Maternal Social History

History of illicit drug use by mother or partner within the last 3 years	Yes No
History of illicit drug rehabilitation by mother or partner	

within the last 3 years Yes No
 History of domestic violence by partner within the last
 3 years Yes No
 History of child abuse, neglect, or court ordered placement of
 children outside of home Yes No

Physician/CNM/Nurse Signature

Date

This risk assessment should take place at the first encounter with the pregnant woman and at delivery. At other encounters the staff should document that the pregnant woman continues to be abstinent. If any of the above questions is answered with a YES, please do the following:

- Request informed consent from the mother to order urine screening for illicit drugs
- Contact the unit social worker to initiate detailed psychosocial assessment
- Request Chemical Dependency Services consult if the social worker and the physician believe it is warranted
- Request Psychiatry consult if mental health problems recognized
- Communicate the risk status with Newborn Nursery or NICU staff verbally (for L&D staff)
- Attach copy of this form to Labor and Delivery Form and send to the Newborn Nursery or NICU along with the baby

B. Newborn Nursery/NICU (please review maternal risk assessment from L&D unit)

► Risk Factors Related to Newborn Assessment

Maternal risk factor(s) present Yes No
 Mother was tested during this pregnancy or labor
 for illicit drugs Yes No

Mother tested positive for illicit drugs during
 this pregnancy Yes No
 Gestation ≤ 37 weeks from unexplained
 preterm delivery Yes No
 Unexplained birth weight less than 10th percentile for
 gestational age Yes No
 Unexplained head circumference less than 10th percentile
 for gestational age Yes No
 Unexplained seizures, stroke, or brain infarction Yes No
 Unexplained symptoms that may suggest drug
 withdrawal/intoxication: high pitched cry, irritability,
 hypertonia, lethargy, disorganized sleep, sneezing,
 hiccoughs, drooling, diarrhea, feeding problems, or
 respiratory distress Yes No
 Unexplained congenital malformations involving
 genitourinary tract, abdominal wall, or gastrointestinal
 systems Yes No

Physician/Nurse Practitioner Signature Date

► Staff should order meconium and urine screening tests for illicit drugs if the answer is Yes to one or more questions under the Risk Assessment Tool parts A or B.

*Tool developed by task force of statewide perinatal experts in collaboration with the Iowa Perinatal Care Program.