4-1-2011

Evidence for the Need of a Screening Tool to Recognize Perinatal Substance Abuse

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EVIDENCE FOR THE NEED OF A SCREENING TOOL TO RECOGNIZE PERINATAL SUBSTANCE ABUSE

by

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Master of Science in Nursing, University of North Dakota, 2011

An Independent Study

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Science

Grand Forks, North Dakota

April

2011

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Title Evidence for the Need of a Screening Tool to Recognize Perinatal Substance Abuse

Department Nursing

Degree Master of Science

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Abstract

Perinatal substance abuse is a dangerous and detrimental problem faced by providers. Many questions arise when suspecting perinatal substance use. When is the appropriate time to screen? Are there clinical signs that providers can use to guide their decision? Is there the need for a tool that providers can use to guide their decisions? Screening for perinatal substance use is a difficult choice for providers. If a tool existed that would allow providers to screen for perinatal substance abuse based on clinical signs and symptoms, the judgment would lie in the evidence, and not with the provider. A screening tool gives the provider the information needed to make an evidenced based decision.

It is the purpose of this paper to present the reader with the evidence that perinatal substance use/abuse exists, that perinatal substance abuse is prevalent in our society, and that it is not sufficiently being screened for. Although there are many tools available to screen women of childbearing age for alcohol use, there are few such tools available to screen for illicit drug use. Adequate screening will lead to decreased maternal and newborn complications. Therefore, an additional purpose of this paper is to create a tool to be used by providers when screening for perinatal substance abuse. This tool will give providers the evidence needed to provide non-judgmental, evidence based care. Screening will lead to recognition of a problem, which will lead to treatment and care, and will reduce complications suffered by mothers and their newborns.

Key Words: pregnancy, peri-natal, prenatal, substance abuse, marijuana, methamphetamine, cocaine, alcohol, and screening tool.

Evidence for the Need of a Screening Tool to Recognize Perinatal Substance Abuse

It was not until the early 1970's that teratogens such as alcohol were identified as causing adverse infant outcomes, and it was not until 1990 that the Alcohol Beverage Labeling Act of 1988 went into effect. This was the first intervention by the Surgeon General focusing on substance abuse of pregnant women(Grant 2009). In the past 20 years research has shown that perinatal substance abuse has continued to create negative infant outcomes. Nearly 90 percent of drug abusing women are of childbearing age(Vucinovic 2008). The National Survey of Drug use and Health (2010) found that 11% of pregnant women reported current alcohol use and 2.9% reported binge drinking. The same survey revealed that 4% of pregnant women reported illicit drug use. Smith et al., (2006) conducted a study of 1618 newborns. With parental consent, meconium stool was collected at delivery, 82 infants tested positive for methamphetamines. According to Husley (2005), more than 739,000 women use illicit drugs during pregnancy each year. Based on this prevalence, it is estimated that an infant exposed to drugs is born every one and one half minutes.

Early treatment and intervention is the key to successful outcomes for infants affected by substance abuse. Many studies show that substance using women, particularly cocaine or opiate users, are significantly less likely to obtain prenatal care(Schempf 2009). Substance abuse during the preconception period predicts substance use during the prenatal period(Floyd 2008). This finding strongly suggests the need for clinicians practicing in an obstetrical or gynecological (OBGYN) setting, as well as, those outside of the OBGYN (such as emergency departments, operating rooms, and out-patient clinic) setting be aware of the signs and symptoms of perinatal substance abuse.

Purpose

The purpose of this paper is to explore the literature surrounding perinatal substance abuse and to answer the critical question: Is there a need for a rapid recognition screening tool that would facilitate clinicians' recognition of perinatal substance use? If results show that the need exists, a tool will be developed to assist health care providers to screen patients for perinatal substance abuse. This tool will be evaluated by staff of the Labor and Delivery Unit, Post-Anesthesia Care Unit, and the Emergency Department at North Country Regional Hospital in Bemidji, Minnesota.

Nursing practice will be influenced by this study through the heightened awareness of the social injustice of perinatal substance abuse. The nursing staff, physicians, and advanced practice nurses (all levels of clinicians) at North Country Regional Hospital are in need of a screening tool that will facilitate the rapid recognition of perinatal substance use/abuse. Previous studies have shown that maternal history is a poor predictor of maternal substance abuse, making an objective method to measure substance abuse a necessity at some point during pregnancy(Azadi 2008). A screening tool would facilitate an objective assessment of substance abuse.

Significance

In 1988, a literature review conducted by Howell, Heiser and Harrington revealed that, at that time, there was a lack of substance abuse treatment options for and available to women, particularly mothers and pregnant women. In addition, there was a corresponding lack of research on this topic(Howell 1998). In 2008 Floyd et al. reported:

> Although a number of well validated, brief instruments are available for use in primary care setting for screening child- bearing-aged women for alcohol abuse, fewer such instruments are available for use in screening women for illicit drug use. Alcohol,

> tobacco and illicit drug use pose a significant health risk to the health of childbearing-aged women and their children. Early identification of patterns of use of these substances in the preconception period provides opportunity to assist women in reducing major health risks (p. 336).

According to the literature, little has changed since the discovery of this public health concern. There are more deaths, illnesses, and disabilities from substance abuse than from any other preventable health condition. Currently one in four deaths is attributed to alcohol, tobacco or illicit drug use(Albright 2009). Almost 90% of drug abusing women are of reproductive age, with an estimated 4.6 million female users of cocaine in the United States and 750,000 drug exposed births annually(Strathearn 2010). North Country Regional Hospital is the only facility in Beltrami and Clearwater Counties in Minnesota that provides labor and delivery services. According to Shannon Hilmer, Director of Nurses, Labor and Delivery, "We have over one thousand deliveries a year. Over the past five years we have seen a significant rise in the amount of positive meconium drug screens at our facility. I believe we are currently over twenty percent" (personal communication, April 28, 2010). As reported by Albright (2009), "Rates of substance abuse are modifiable by public health interventions, with tobacco use and substance abuse (alcohol and or illicit drugs) being listed among the 10 major public health concerns for the US population in Healthy People 2010" (p.891).

Theoretical Framework

Lave's Situational Learning Theory will be used as the theoretical framework on which to write this paper, as well as to develop a tool that can be used by clinicians and RNs. Lave's theory of situational learning states that learning is situated, that is, as it normally occurs. Learning is embedded within our culture and activity and that it is usually unintentional rather

than deliberate(Knowledgebase 2011). Situational learning theory is a practice theory that requires that learning take place in settings or situations that are normal to that environment. Practice theories are used in the actual delivery of patient care to clients. They are also used to carry out nursing interventions, as well as educating patients and staff, and communicating with patients and staff. Social interaction and collaboration between all parties are essential components of Lave's practice theory. Situated learning requires that knowledge be presented in its authentic context, or in settings and situations that would normally involve that setting(Knowledgebase 2011). It is the intention of this paper to develop a tool that will be used by nursing and clinicians to rapidly recognize perinatal drug abuse signs and symptoms and make informed decisions on the need to screen. Perinatal substance abuse can be seen in many settings in healthcare. The tool designed from this paper will be universal to any health care provider and will be able to be used in any setting. The clinicians using the tool will need be educated in their specific settings. Patients less than 20 weeks gestation at NCRH are evaluated in the ED when presenting for any non-obstetric reason. According to Laves theory, this will need to be taken into consideration when educating nurses and clinician's on the proper use of the tool. This will be taken into consideration when developing a screening tool, as well as when educating clinicians and nurses to properly use the tool. A universal tool that can be used multiple departments will be designed.

Definitions

Many of the terms used in this paper require definition and clarification to facilitate full understanding of the concepts. Those terms include substance abuse, and peri-natal, and prenatal care.

1) Substance abuse: "misuse of alcohol or illicit drugs"(Albright 2009).

2) Peri-natal: "Pertaining to or occurring in the period shortly before and after birth, variously defined as beginning with completion of the twentieth to twenty eighth week of gestation and ending 7 to 28 days after birth"(Lexic.US 2010).
3) Prenatal Care: "Adjective. Occurring or existing before birth"(Lexic.US 2010).

Review of Literature

The literature found regarding perinatal substance abuse has proved consistent results. There is a national, as well as, global need for interventions surrounding perinatal substance abuse. in addition, there is a need for further screening tools that are specific to women and pregnant women. For the purpose of this study emphasis will be placed on those studies that only address substance abuse in pregnancy and reproductive aged women.

The following review and critique will examine five quantitative research studies conducted by Azadi & Dildy (2008), Pinto et al.. (2010), Schempf & Strobino, (2009), Smith et al.. (2009), and Vucinovic et al.. (2008), as well as, two qualitative studies by Nueshotz & Fitzpatrick (2008) and Walkup et al., (2009), and two meta-analyses conducted by Greenfield et al.. (2010) and Howell et al.. (1998).

Purposes

One quantitative and one qualitative article focused on identifying the prevalence of substance abuse, as well as, factors that interfere with screening and intervention of substance abuse problems (Azadi & Dildy, 2008; Neushotz & Fitzpatrick, 2008). Two quantitative studies focused on the contribution of substance abuse to negative outcomes in pregnancy (Pinto et al., 2010; Vucinovic et al.. 2008). Two quantitative studies focused on the correlation of maternal

substance abuse and little to no prenatal or mental health care (Schempf et al., 2009; Smith et al., 2009). The purpose of one qualitative study was to evaluate the efficacy of a home-visit intervention program among young, reservation based American Indian mothers and their increased parenting knowledge, including a reduction in perinatal substance abuse (Walkup et al.,2009).

Designs

Due to the nature of perinatal substance abuse and the fear of stigmatization and discrimination, many pregnant women keep the use of illicit drugs from their providers. Because of this, it is not surprising that the large majority of controlled studies are retrospective cohort studies (Azadi & Dildy, 2008; Neushotz & Fitzpatrick, 2008; Pinto et a.., 2010; Schempf & Strobiono, 2009; Smith et al., 2009; and Vucinovic et al., 2008). All six of the retrospective studies were longitudinal with durations ranging from four months to ten years. One research study used a randomized control, longitudinal, double blind trial of a home based intervention for young reservation based American Indian mothers (Walkup et al., 2009).

Samples

Sampling refers to the way study participants are selected, and a sample refers to the segment of a population that is selected to participate in the study(Rubin 2008). Many of the quantitative studies had large sampling sizes. For example, Vucinovic et al., (2008) looked at statistical data from 43,181 deliveries at Split University Hospital in Croatia. This sampling method resulted in a study sample of 85 mothers that continued in the study. The samples in the quantitative studies varied greatly from 812 in the study by Schempf and Strobino (2009) to 85 in the study by Vucinovic et al. (2008). Of the qualitative studies, one had a sample size of 167

(Walkup et al., 2009) and one study did not clearly identify the sampling process or the sample (Neushotz & Fitzpatrick, 2008).

Methods and Measures

Methods and measures varied between the studies. Three of the quantitative articles used data analysis (Pinto et al., 2010; Schempf & Strobino, 2009; Vucinovic et al., 2008). The data gathered and analyzed by Pinto et al., (2010) came from patients' records and specifically focused on demographic details, smoking, and past and present history of drug use, current antenatal problems, and self reported and clinically discovered substance use. Schempf & Stobino (2009) focused on data pertaining to low income, one or no prenatal visits, and positive drug screens. Vucinovic et al., (2008) analyzed data on all pregnancies complicated by illicit drug use over a 10 year period at Split University Hospital.

Azadi & Dildy (2008) screened pregnant women who delivered at University Hospital in New Orleans in the first four months of 2005. On admission for labor, women were screened by urine toxicology testing for substance use. Demographic, labor and outcome data were obtained from the records of those patients who tested positive. Those patients were also interviewed at the hospital during their labor admission. Those with positive urine toxicology screens and negative delivery outcomes were included in the sample. In the study by Smith et al., (2009), pregnant and postpartum women who tested positive underwent a diagnostic evaluation, were provided at least one mental health referral, and were encouraged to seek treatment for substance abuse, as well as, depressive disorders. Follow up evaluations were done on these women at one month, three months, and six months. Logistic regression was used to estimate the relationship between clinical and psychosocial factors and self-reported mental health service use.

The qualitative studies had two different methods and measures. Neushotz & Fitzpatrick (2008) conducted interviews with the clinic staff from a major metropolitan academic hospital in New York City. The staff included Physicians, Resident Physicians, one Social Worker, and seven Registered Nurses. The initial interview was conducted with the Director of Nurses and the Medical Chief. Notes, reflections, and recordings of the meetings between the clinicians were analyzed extracting information on adherence to current practice guidelines regarding substance abuse screening. Walkup et al., (2009) conducted a study of expectant American Indian mothers aged 12-22 years randomized into one of two home visit intervention groups. The intervention began during pregnancy and continued to six months postpartum. They focused on prenatal and newborn care with specific emphasis on substance abuse, among other things. Mothers and children were evaluated at baseline, two months, six months, and twelve months post partum.

Approaches to Analysis

Data was collected and recorded in a number of different data bases. Stata was used by Pinto et al. (2010), Microsoft Office Access was used by Azadi & Dildy (2008), and Vucinovic et al., (2008) reported using SPSS 10. Five studies reported using the chi-square test to determine bivariate associations between factors, namely the variables and controls. Four of the five studies using the chi-square test were quantitative (Azadi & Didly 2008; Pinto et al. 2010; Schempf & Strobino, 2009; Vucinovic et al., 2008) and one study was qualitative (Walkup et al., 2009). Of these studies the p value reported to be statistically significant was <0.05. The Mann-Whitney rank sum was also used for normally distributed and skewed data in the Azadi & Dildy (2008) and Pinto et al. (2010) studies, and for statistical data analysis of quantitative data in the

Vucinovic et al., (2008) study. The Smith et al. (2009) study used multivariate analysis to categorize variables between pregnant and post partum women.

Findings

Three of the qualitative studies focused on negative pregnancy outcomes related to substance abuse. The three studies by Azadi & Dildy (2008), Pino et al. (2010), and Vicinovic et al., (2008) resulted in similar findings. Statistically, there were a significant number of births affected by substance abuse. Pino (2010) stated that 19% of pregnant women screened positive for drugs. Adverse fetal outcomes were most likely to occur when illicit substances were used during pregnancy. Low birth weight infants were seen in 21-30%, and abruption was seen in 7% and 49% of all substance abusing woman who tested positive for Hepatitis C.

Five of the studies focused on treatment and screening. Three of the studies were quantitative (Pinto et al., 2010; Schempf & Strobino, 2009; Smith et al., 2009) and two were qualitative (Neushotz & Fitzpatrick, 2008; Walkup et al., 2009). The results of three studies were similar, Neushotz & Fitzpatrick (2008), Schempf & Stobine (2009), and Smith et al., (2009) all found there to be limited screening, as well as, limited prenatal care for substance abusing mothers. Of those mothers who were screened and tested positive, there were neither interventions nor treatment programs available to pregnant or postpartum women. Walkup et al. (2009) found evidence to support an in-home intervention for pregnant, American Indian women.

Two literature reviews were also used for the purpose of strengthening an understanding of the available data. Greenfield et al., (2006) examined the literature containing characteristics associated with treatment outcomes in women with substance use disorders and found that women with substance use disorders are less likely over their lifetime to enter treatment

compared to their male counterparts. Howell et al., (1998) conducted a literature review to determine the information available in 1998. Howell also wanted to gain insight to the level of progress made in combating the social injustice called perinatal substance abuse. In 1998, Howell et al. reported:

> The prevalence of perinatal illicit drug use is known to be about 5% of all pregnant women nationwide, with higher rates for selected subgroups. Local studies have shown much higher rates. Substance abuse is associated with poverty, with the substance abuse of significant others, and with family violence. Perinatal substance abusers experience poorer birth outcomes (p.196).

Reports of both meta-analyses agreed with the data found in the research studies. There were a significant number of perinatal substance abusers, and perinatal substance abuse had a negative impact on the health of the mother, as well as, the child.

The greatest weakness found in all studies is unavoidable. It is not ethical to knowingly study women who are actively taking illicit drugs while pregnant. Therefore, all of the studies required collection of retrospective data. The studies also relied heavily on self reported data. Many of the authors recognized this as an inherent weakness of the data. Neushotz & Fitzpatrick (2008) do not clearly list a sample size. They reported the total patient population and the numbers of patients that each primary care provider treated annually. The authors also listed the numbers of those patients who were male and female, as well as, the numbers of females who had used illicit drugs. The reader assumed this was the control group, but it was not listed as such. There were potential biases in both of the studies (Pinto et al., 2010; Vucinovic et al., 2008) that focused on the effects of substance abuse on pregnancy. Those biases included body mass index not recorded in either study, which could affect birth weight and hypertensive

disorders. Data on HIV and Hepatitis was not collected in the Pinto et al., (2010) study, but was in the Vucinovic et al. (2008) study. This is an important omission since HIV and Hepatitis can both affect birth outcomes.

Results

Results of six studies reported the incidence of perinatal substance abuse, effects on pregnancy and neonatal outcomes, as well as, the success of screening and treatment (Azadi & Dildy, 2008; Neushotz & Fitzpatrick, 2008; Pinto et al., 2010; Schempf and Strobino, 2009; Smith et al., 2009; Vucinovic et al., 2008). Unanimously, they reported that perinatal substance abuse resulted in negative pregnancy outcomes such as preterm delivery, low birth weight, placental abruption, neonatal hemorrhagic stroke, and an increased incidence of infection in the neonate. There was a 17-19%rate of positive drug screens in the patients studied. Previous studies on substance abuse were focused on men. The screening tools available at this time are designed to be used on men and there is a scarcity of treatment programs available to pregnant mothers.

Walkup et al., (2009) reported that participants (mainly teenaged, first time pregnancy, unmarried mothers living on reservation communities) had greater pregnancy weight gains than control mothers who did not receive a home visit intervention. There were fewer reports of perceived stress, as well as, substance abuse in the mothers who received the intervention.

Characteristics of individual studies included in this paper are presented in Table B1 *Summary of Study Characteristics* (Appendix B).

Methods

For the purpose of this paper, a literature search was conducted through the University of North Dakota, Harley E. French Library of the Health Sciences using the CINAHL, Cochrane

Library, and PubMed databases. An internet search was also conducted gleaning data from Government sites such as Healthy People 2010, CDC, National Institute of Drug Abuse, The National Institute of Health, US Census Bureau, and the Department of Health and Human Services. In addition, Mosby's Nursing data base which is available to all staff of North Country Regional Hospital (NCRH), was used. Terms used in the search were pregnancy + substance abuse, Pregnancy + drug+ abuse, Drug abuse+ pregnancy+ screening+ tool, Pregnancy + illicit+ drug+ use, pregnancy+ treatment+ substance+ abuse. Google Scholar was also used and gleamed the most results, 67,435 for pregnancy + substance + abuse. Many of the results were abstract only but allowed the researcher to identify article authors and titles that were incorporated in a search of Mosby and PubMed.

The information taken from this literature search will be used to develop a screening tool for clinicians that will facilitate the rapid recognition of perinatal substance abuse. This screening tool will then be presented to hospitals providing labor and delivery services to Beltrami and Clearwater counties in Minnesota. The project will be critiqued by my advisor at the University of North Dakota College of Nursing, Kris Stellon, MA, RN, ACNS-BC. In addition, the screening tool will also be critiqued and evaluated by my mentor in practice, Dr. Jane Killgore, OB-GYN at NCRH as well as the nursing staff of the Family Care Center, the ED, and the PACU at NCRH.

Results

The perinatal substance abuse tool (Appendix A) was presented to Registered Nurses in the Labor and Delivery department, the PACU, and the Emergency department at North Country Regional Hospital in Bemidji Minnesota. It was also shown to Jane Killgore OB/GYN, Sanford Clinic -Bemidji, as well as Bonnie Eck FNP-BC, Clearwater Health Services (CHS) -Bagley.

The tool was critiqued by professionals from each of these areas. These professionals are frequently exposed to perinatal substance abuse. Positive comments on the tool include; very easy to follow, great reminders, easy to determine the need for a drug screen and very useful. Bonnie Eck FNP-BC states that the tool will be especially helpful at CHS as they have no providers that perform pre-natal care. Because of this fact, Bonnie feels that the tool will give CHS providers a quick and easy reference to use when substance abuse is suspected.

Only one suggestion for improvement was given. It was suggested that "with provider discretion the following may indicate the need for testing" be added to the first of the neonate's signs and symptoms section. This suggestion was implemented into the tool.

Implications for Nursing

Practice

It is estimated that every one and one-half minutes an infant is born exposed to drugs(Husley 2005). Recent studies have indicated that the reason health care providers give for not screening is changing from lack of education and confidence in their ability to screen, to concerns that there is lack of evidence that screening is effective(Seng 2008). A combination of medical, obstetric, and behavioral characteristics should be considered when identifying women with substance abuse problems(Albright 2009). Multiple screening tools exist to assess patients for substance abuse disorders. However, these tools are not gender specific, and were developed for men(Albright 2009). The extensive literature search for this paper did not identify a screening tool specific for perinatal substance abuse.

Nursing clinicians (RNs and APNs) must have effective tools to provide confident, competent care. The screening tool developed from this project will give the nursing staff, as well as clinicians outside of nursing, the ability to provide this level of care. Clinicians and

nursing staff that are responsible for the care of pregnant patients, regardless of the setting, will need to be educated on the proper use of the screening tool, as well as how to implement the tool into policies and procedures. The most effective way to educate staff on the use of the tool is to develop an in-service education session that will give clinicians and registered nurses education on the issues surrounding perinatal substance use, and training on proper use of the assessment tool.

Research and Education

The lifetime prevalence rate for methamphetamine abuse had grown to 12 million Americans by 2004, a doubling of 1994 figures. It is currently estimated that more than 35 million people worldwide use methamphetamines and it is the second most commonly abused drug, following Marijuana(McGuinness 2008). Women are underrepresented in traditional substance abuse treatment programs. This may be partly due to the fact that women tend to find treatment outside of traditional treatment centers, such as clergy or unofficial support groups. In addition, it is thought that the intense social stigma and related shame and guilt feelings also prevent women from seeking treatment as often as men. Because women are to be the "care-takers", they should not have issues of addiction, and the "do it for your kids" attitude is often seen(Albright 2009). Because nurses have access to pregnant women in a wide variety of settings, helping women address these concerns is critical (Kovalesky 2004). The goal of the literature review and subsequent screening tool is to provide clinicians of all disciplines the ability to recognize the presence of substance abuse in clients. Recognition will facilitate treatment. Education will need to be given to all nurses as well as providers that are giving care to pregnant women. As already stated, education opportunities must include incidence and issues surrounding perinatal substance abuse, as well as proper use of the tool.

Policy

In the practice setting, policy will need to be developed regarding the positive results of a substance abusing client. Policy will need to incorporate the screening tool as the initial assessment and will need to be developed appropriately regarding positive results. Policy should be written by an expert clinician or team of clinicians. Policy should also include proper use of the tool, and suggested treatment and follow up for positive screens.

Summary/ Conclusions

After reviewing the literature, it is obvious that there is not adequate treatment for pregnant or postpartum mothers suffering from substance abuse disorders. Further research needs to be done on effective treatment approaches, as well as, development of treatment programs focused on perinatal substance abuse. Current screening tools are male focused and lengthy. Pregnant female specific screening tools need to be developed. Because nurses are exposed to pregnant women in a variety of settings, they are the front line defense against perinatal substance abuse. They must have the tools needed to effectively diagnose and refer perinatal substance abusers.

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Appendix A

Screening Tool for Recognition of Perinatal Substance Use

Maternal Indicators for Substance Use Screening: (With provider discretion the following findings may indicate the need for screening)	1) History of previous or current substance abuse 2) Few or no prenatal care visits 3) Evidence of unexplained poor weight gain during pregnancy 4) Previous unexplained fetal demise 5) Repeated spontaneous abortion 6) Behaviors specific to withdrawal • mood swings • aggression • seizures • nausea and vomiting 7) Unexplained hypertension 8) Preterm labor if in conjunction with any of the findings 9) History of Hepatitis C or B, HIV, or 2 or more STDs
Maternal Indicators Requiring Immediate Screening:	1) Placental abruption 2) Admitted substance use (at any time perinatal) 3) Cardiovascular accident 4) Myocardial infarction
Neonatal Indicators for Substance Use Screening: (With provider discretion the following findings may indicate the need for screening)	1) Unexplained apnea 2) Microcephaly 3) Birth weight <5th percentile for gestational age (unexplained IUGR or SGA) 4) Urogenital anomalies in the newborn 5) Necrotizing Enterocolitis in full term newborn
Neonatal Indicators Requiring Immediate Screening:	1) CVA or other vascular accidents 2) Signs of neonatal abstinence syndrome (the following symptoms indicate NAS, and may require immediate screening) • tremors (trembling) • irritability (excessive crying) • sleep problems • high-pitched crying • tight muscle tone • hyperactive reflexes • seizures • yawning, stuffy nose, and sneezing • poor feeding and suck • vomiting • diarrhea • dehydration • sweating • fever or unstable temperature

Appendix B

Table B1

Summary of Study Characteristics

Authors and Year	Subjects, Sample	Study Purpose	Study Type	Instrument; Analysis	Findings
Azadi, A., Didly, G., (2008) Universal screening for substance abuse at the time of parturition	Four hundred sixty two women that delivered during the first four months of 2005 at a New Orleans Obstetrics department.	To determine the prevalence of substance abuse in an inner city population at delivery admission by universal toxicology screening	A Retrospective Cohort	Universal toxicology screening results, compared to demographic, labor and outcome data. The seven substances tested for were amphetamines, cocaine, barbiturates, opiates, benzodiazepine, and phencyclidines.	Nineteen percent of the tested population tested positive for one of 7 substances at admission for delivery.
Bently et al., (2007) Implementing a clinical and research registry in obstetrics: overcoming barriers	All patients 15 years and older that were cognitively able to complete the survey that were admitted to the obstetric clinic at Harborview medical clinic during an unspecified time frame.	To define the obstacles and solutions in developing and implementing a prospective obstetrics database registry that collects biopsychosocial data on women during pregnancy and postpartum	Observational-Longitudinal, Prospective Cohort study	Questionnaire given to all obstetric patients in one clinic over a specific period of time	A mental health registry that merges clinical data and research needs can be successfully integrated into the obstetrical setting.
Schmpf, A., Strobino, D., (2008) Drug use and limited prenatal care: an examination of responsible barriers	812 low income women who delivered at Johns Hopkins Hospital	To determine sociodemographic, psychosocial and health belief factors that explain the association between maternal drug use and little	Retrospective Cohort study.	Analysis of toxicology screens, medical records, and self reported drug use. Survey given to those mothers determined to	Adjustments for sociodemographic characteristics and cocaine and opiate use were predictive of little or no prenatal care. The effects of cocaine were

		or no prenatal care.		have used drugs.	explained by psychosocial factors; external locus of control, fear of being reported. Where opiate use remained strongly related to little or no care in fully adjusted models. Therefore, different outreach and education strategies may be necessary with cocaine VS opiates.
Smith et al., (2009) Success of mental health referral among pregnant and postpartum women with psychiatric distress	Initially 465 pregnant and post partum women receiving care from publicly funded obstetric clinics between April 1 and June 25th 2005.	To measure the rates of and determined factors associated with mental health services use among 465 pregnant and postpartum women.	Prospective Cohort study	Diagnostic evaluation screening tool.	Rates of mothers accessing and particularly continuing in mental health treatment were low.
Walkup et al., (2009) Randomized controlled trial of a paraprofessional delivered in home intervention for young reservation based American Indian mothers	Teenage, first time, unmarried, mothers living in reservation communities, with interventions beginning during pregnancy and continuing until 12 months post partum.	To evaluate the efficacy if a paraprofessional delivered home visiting Family Spirit intervention among young, reservation based American Indian mothers on parenting knowledge, involvement and maternal infant outcomes with emphasis on parenting knowledge, social support, stress, depression and substance abuse.	Treatment, Randomized Double Blind study	25 "Family Spirit" home visits were performed with the treatment group and 23 breast feeding/nutrition education interventions were performed with the active control group. Evaluation done at baseline, 2 moths post partum, 6 months post partum and 12 months post partum. A computerized collection of	The study supports the efficacy of the paraprofessional delivered Family Spirit home intervention for young American Indian mothers on maternal knowledge and infant behavior outcomes.

				data to ensure randomization.	