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"Neonatal Abstinence Syndrome: One Community's Efforts to Reverse the Trend"

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Abstract

This study discusses the changes in perceptions, structural supports, and policies that are needed to adequately address the problem of Neonatal Abstinence Syndrome (NAS) within a high prevalence region of the U.S. Misperceptions regarding the benefits of methadone maintenance during pregnancy, ongoing stigma directed toward mothers affected by addiction, and actions by court or child protective agency personnel that counter evidence-based harm reduction strategies all contribute to the pervasive challenges for pregnant, substance-abusing women and their children. A community-based program model that comprises education, a safe environment, a medically supervised medication assisted treatment, and ongoing social and professional supports provides a promising path to improve substance abuse treatment effectiveness. Issues regarding women seeking methadone maintenance and the forced choice they make between treatment and child reunification will shift the orientation from ongoing punishment to support for these women in recovery.

Keywords

Neonatal Abstinence Syndrome, Methadone Maintenance

Extent of the Problem in the Community

According to the National Survey on Drug Use and Health (1), in 2011 there were 6.1 million persons (2.4 percent) aged 12 or older who used prescription type psychotherapeutic drugs nonmedically in the past month, including 4.5 million users of pain relievers. Excluding alcohol, prescription drugs accounted for 83.4 percent of all drug deaths in Florida in 2011 (2). In 2011, according to the Medical Examiner in Pinellas County, Florida, there were 217 prescription drug related accidental deaths. The 6th Judicial District, which includes Pinellas and neighboring Pasco County, have one of the highest incidences in the state of Florida of prescription drug deaths (3).

Neonatal Abstinence Syndrome

A consequence of this increase in prescription drug abuse is the rise of newborns born with Neonatal Abstinence Syndrome (NAS). Florida is seeing a growing number of babies born physically dependent to prescription drugs as the result of prescription drug abuse by their mothers. These babies are born suffering withdrawal symptoms such as tremors, seizures, abdominal pain, incessant crying, and rapid breathing. In many cases, doctors and nurses give these newborns methadone, the same drug used to treat heroin addicts.

Patrick et al. (4) show that, nationally, the number of babies born dependent on prescription drugs has nearly tripled in the past decade. This Journal of the American Medical Association study indicates that 3.4 of every 1,000 infants born in a hospital in 2009 suffered from NAS. The study concludes that newborns with NAS require longer and more costly hospitalization, and the estimated cost of caring for a newborn with NAS exceeds approximately $53,000 per infant. The study notes that in Florida, where opiate pain reliever-related deaths are four times greater than all illicit drug deaths, state leaders are taking action to address the problem.

Furthermore, information from the Florida Statewide Prescription Drug Abuse & Newborns Task Force showed a dramatic increase in babies born with NAS from 2004 to 2011, as depicted in Figure 1 (5).

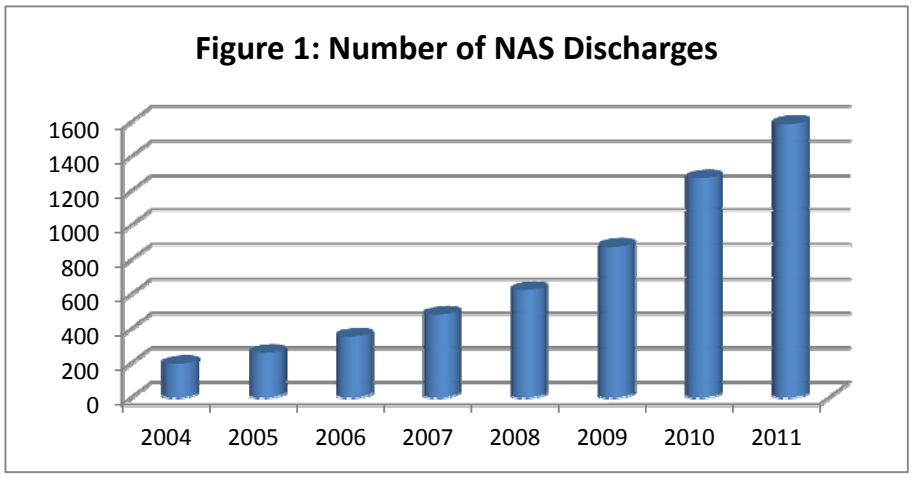

Figure 1: Number of Discharges of newborns with Neonatal Abstinence Syndrome based on ICD-9 discharge code 779.5 in the state of Florida from 2004 to 2011 (5).

As expected, the increase in the number of births displaying NAS has shown a concomitant increase in the rates of NAS per 1,000 Florida births as shown in Figure 2. In 2011, the rate peaked at 9.45 NAS births per 1,000.

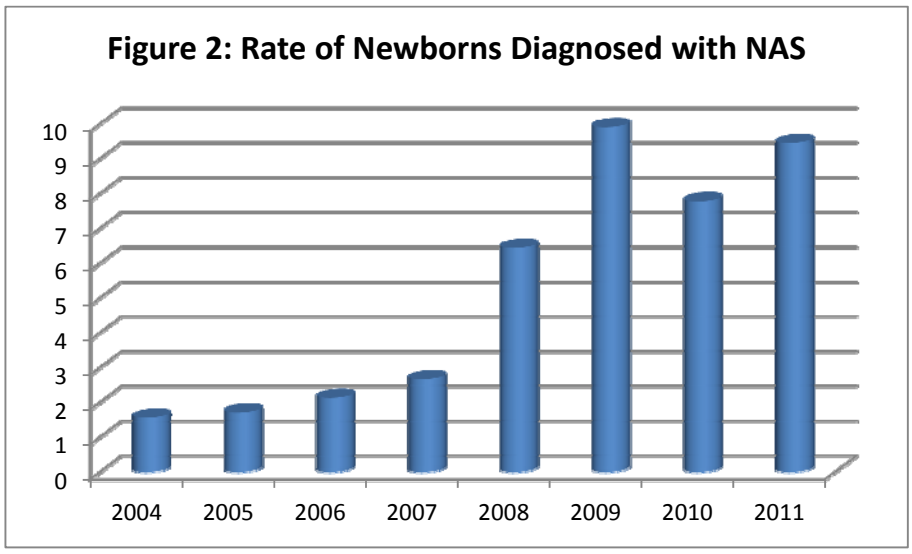

Figure 2: Rate per 1,000 births of newborns disgnosed with Neonatal Abstinence Syndrome based on ICD-9 discharge code 779.5 and 760.72 in the state of Florida from 2004 to 2011 (5).

The rates of NAS observed in the state are mirrored in Pinellas County, with one exception; Pinellas rates are higher. From 2008 to 2011, Pinellas County recorded 34,671 live births. Of those, 841 were discharged with NAS Symptom for a rate of 24.26 per 1,000 live births, a rate that is 185.4 percent higher than the state rate for the same four-year period of 8.5. In Pinellas County in 2008, 149 infants were born with NAS (infants with confirmed levels of any drug, including alcohol). That number rose to 235 in 2009, representing a 57.7% increase. In 2010, the number of newborns born with NAS dropped to 170, and then rose again in 2011 to 287, resulting in an increase of 92.7% from the 2008 number (5). In Florida, from 2008 to 2011, there were 7,380 infants born with NAS. Pinellas County, with 841 such births, accounted for 11.4% of the state total.

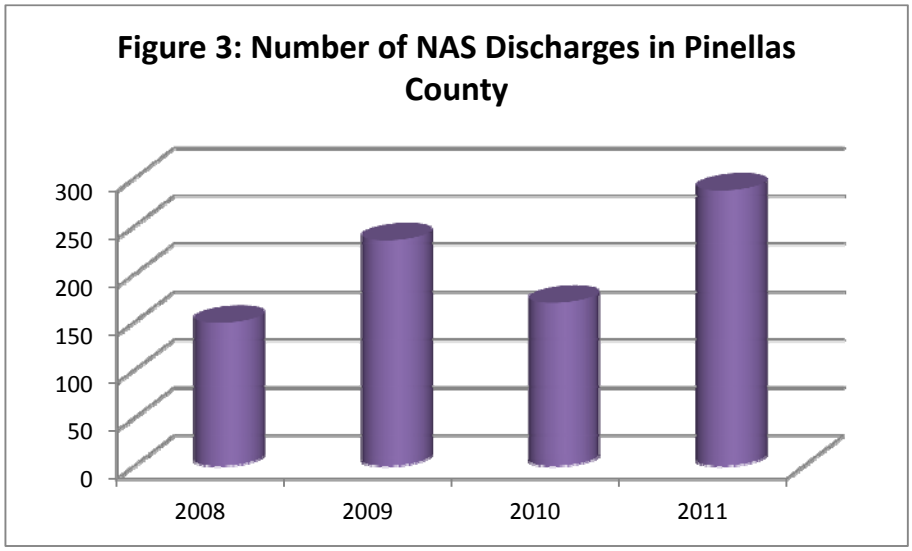

Figure 3: Number of Discharges of newborns with Neonatal Abstinence Syndrome based on ICD-9 discharge code 779.5 and 760.72 in Pinellas County, Florida from 2008 to 2011 (5).

Demographics

The Statewide Task Force on Prescription Drug Abuse and Newborns tabulated NAS discharges from 2008 to 2011, and found that the babies discharged from the hospital with NAS return home to their previous living condition 89% of the time. Though this is preferable for the mother, at present it is

unknown how many of these women leave with referrals to substance abuse treatment or the extent of their support to recover from substance use.

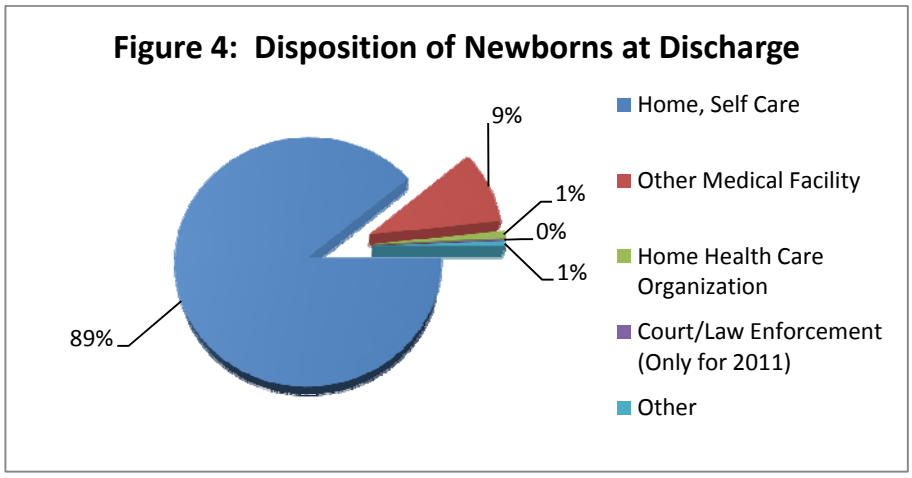

Figure 4: Disposition of Newborns with Drug Withdrawal Diagnoses at Discharge in Florida, 2008-2011 (5).

Additionally, the women who are giving birth to newborns with NAS are primarily Caucasian of non-Hispanic descent. Figures 5 and 6 illustrate that 88% are White and 92% are non-Hispanic.

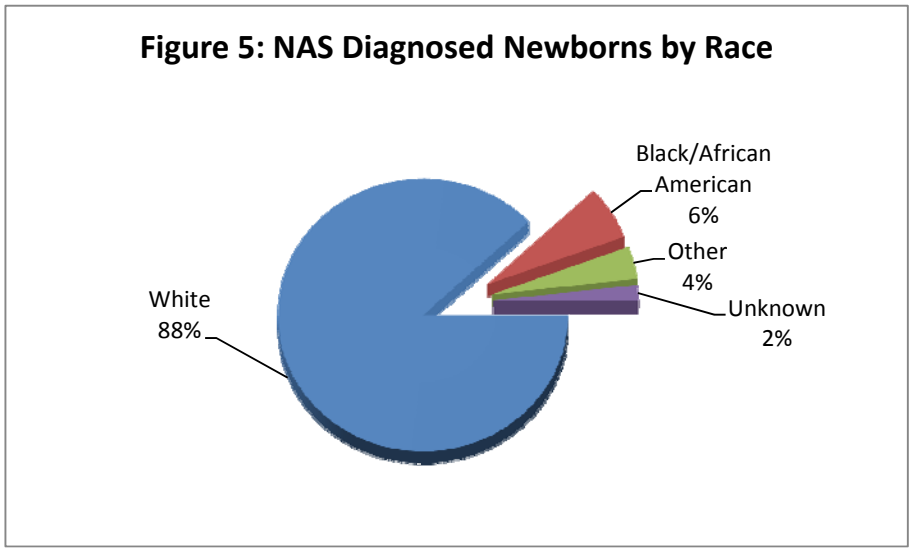

Figure 5: Disposition of Newborns with Drug Withdrawal Diagnoses at Discharge in Florida by race, 2008-2011 (5).

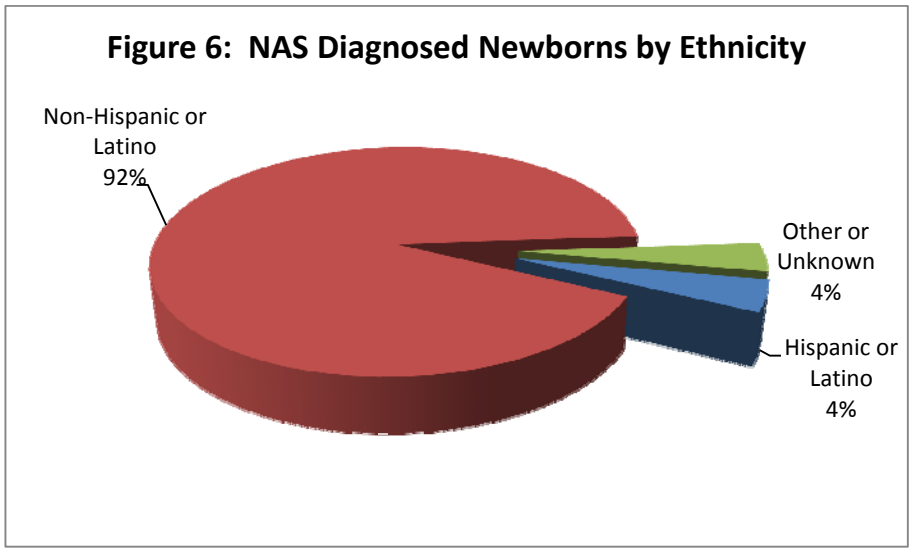

Figure 6: Disposition of Newborns with Drug Withdrawal Diagnoses at Discharge in Florida by ethnicity, 2008-2011 (5).

One issue that the data does not address is the number of babies diagnosed with NAS whose mother was on methadone and in substance abuse treatment for opiate dependence. A portion of the NAS births included in the ICD-9 codes used to tabulate these data will also include mothers who are on methadone maintenance as a way to curb their cravings for illicit or illegally obtained opioids. Though babies will be diagnosed with NAS if their mother is in a methadone maintenance program, they are in a much better position to successfully withdraw from methadone and the mother is likewise better suited to care for her child if in treatment.

Efforts at the State and County Level

Florida: Statewide Task Force on Prescription Drug Abuse and Newborns

The 2012 Florida Legislature adopted legislation creating a task force to examine the extent of prescription drug abuse among expectant mothers, as well as the costs of caring for babies with neonatal abstinence syndrome, the long-term effects of the syndrome, and prevention strategies. The Prescription Drug Abuse & Newborn Task Force examines and analyzes prescription drug-driven NAS, evaluates effective prevention and treatment strategies, and submits its findings and proposals to the Florida legislature. The objectives of the task force include the following:

1. Collect and organize data concerning the nature and extent of neonatal abstinence syndrome from prescription drugs in Florida;

2. Collect and organize data concerning the costs associated with treating expectant mothers and newborns suffering from withdrawal from prescription drugs;

3. Identify available federal, state, and local programs that provide services to mothers who abuse prescription drugs and newborns with neonatal abstinence syndrome;

4. Evaluate methods to increase public awareness of the dangers associated with prescription drug abuse, particularly to women, expectant mothers, and newborns;

5. Examine barriers to reporting neonatal abstinence syndrome by medical practitioners while balancing a mother's privacy interests;

6. Assess evidence-based methods for caring for a newborn withdrawing from prescription drugs and how nurses can assist the mother in caring for their child;

7. Develop a compendium of best practices for treating both prescription drug addicted mothers and infants withdrawing, both prenatal and postnatal; and

8. Assess the current state of substance abuse treatment for expectant mothers and determine what best practices should be used to treat drug addicted mothers.

In 2012, the Prescription Drug Abuse and Newborns Task Force launched efforts to determine the full extent of the neonatal abstinence syndrome in Florida. Much of that data is presented in this report. By the start of the 2013 legislative session, the task force will provide lawmakers with a series of policy recommendations on how to address and correct the problem.

Pinellas County: Substance Exposed Newborn Task Force

The Healthy Start Coalition of Pinellas County initiated the Substance Exposed Newborn Task Force in July of 2011. The Task Force has brought together community participants from the Pinellas

County Juvenile Welfare Board, substance abuse treatment providers, Head Start, local colleges and universities, All Children's Hospital and a number of area hospitals providing birthing services.

Efforts to Educate Pregnant, Substance-Abusing Women

Motivating New Moms

One strategy to address the increase in NAS newborns is to identify and educate pregnant women who are abusing drugs. Because of the harmful effects substance use has on the fetus, it is important to engage women as early as possible in their pregnancy and provide services and education to assist them. The Motivating New Moms (MnM) program was designed to help pregnant substance-abusing women gain knowledge and understand what to expect during a methadone maintenance program. Additionally, the program is intended to alleviate the fears of the enrolled women regarding how methadone will affect their children. The program also lends support to the women by helping them overcome the stigma that is often placed on them by health care workers with little understanding of addiction or the benefits of participating in a methadone maintenance program. Lastly, the program provides support and encouragement to postpartum mothers, so that they may be successfully treated for their addiction in the long term.

The first obstacle facing the staff in MnM is to engage the women who are not very motivated to seek treatment. The counselors work hard to gain their confidence and establish positive, healthy, and nurturing relationships. Next, the counselor will work to assure a secure environment, help the women to connect as a support group, and disconnect them from unhealthy relationships that most likely were contributing factors to their addiction. In many cases after giving birth, these women will return to that environment.

The mission of MnM is to provide a system of care to 1) assist mothers who have delivered an NAS infant in accessing treatment and learning effective parenting skills; 2) identify drug-using women during pregnancy to link them with appropriate treatment; 3) provide drug, trauma and parenting groups for parents identified by the Child Welfare System; and 4) provide Case Management Services for families with children at risk of removal.

The program maintains relationships with Pinellas Hospital Neonatal Intensive Care Units (NICUs) and Federally Qualified Health Centers (FQHCs). Their role is to provide Screening, Brief Intervention, Referral and Treatment (S-BIRT model) for pregnant women and women who have delivered a newborn with NAS. The program also provides parenting education and support groups for these women and assists participants to engage in treatment. Lastly, the program provides case management services to appropriate women involved in referral or supervision through the Child Welfare System.

Since June, 2012, the Motivating New Moms program has received 110 referrals. Of those, 88 (80.0%) have enrolled in the program. Of the 110 referrals, 95 are from methadone maintenance programs. Of the 88 enrolled in the program, 21 (23.9%) have enrolled in other intervention/treatment programs.

The Role of Methadone Maintenance During Pregnancy

Women who are pregnant and addicted to opioids have the following four choices:

1. Keep abusing the drug of choice;
2. Try to quit using and suffer through withdrawal and detoxification;
3. Enter a medically supervised withdrawal or
4. Get into an opiate substitution program and use methadone or buprenorphine.

The first three choices are not advised. Continuing to abuse drugs subjects the fetus to many environmental risks, including disease, and a reduced likelihood that mothers will take good care of themselves during pregnancy. Trying to quit on your own is also very risky. Experiencing the painful and stressful symptoms of opiate withdrawal, medically supervised or not, results in muscle aches, insomnia, sweating, agitation, diarrhea, nausea, vomiting and, most important, abdominal cramping, and is extremely risky for the fetus. The risk of miscarriage is very high. (6)

The fourth choice, enrolling in an opiate substitution program and getting on methadone or buprenorphine, is the best alternative. Some of the specific reasons for enrolling into a methadone treatment program include the following: (6, 7)

- If not on methadone, withdrawal from opioids causes muscles to be overly active (such as a women's uterus), thus resulting in premature labor and/or premature delivery due to muscle spasms/contractions;
- If not on methadone, withdrawal can also result in increased activity of the nervous system, thus the stress hormone system creates an adverse in utero environment;
- Women not on methadone and experiencing withdrawal are more likely to revert to using illicit or illegally obtained opioids to alleviate the withdrawal sickness and in turn harm their unborn child by exposing him/her to uncontrolled exposures as opposed to a controlled monitoring state with methadone maintenance;
- Women on methadone will fully suppress symptoms of withdrawal and eliminate drug hunger (cravings);
- Women on methadone normalize physiologic functions disrupted by drug use;
- Though it is known that methadone exposed babies may have a slightly lower birth weight than a non-methadone exposed baby, this can be avoided by proper pre-natal care, nutrition, stabilizing doses of methadone and abstinence from other substances, alcohol and cigarettes;
- A woman on methadone decreases risky behaviors and increases participation in pre-natal care;
- A woman on methadone will improve maternal nutrition and in turn ensure a safe and stable living environment;
- A woman on methadone has a greater probability of reducing obstetrical complications and minimizing fetal drug exposure;

- A women undergoing methadone treatment has made the first step in recovery and in turn increased the probability that she will keep custody of her child after delivery; and
- Once born, a newborn with NAS delivered by a woman on methadone maintenance can easily be detoxified and assisted through withdrawal using methadone or a morphine titration.

In short, methadone maintenance reduces adverse pregnancy outcomes, reduces adverse birth outcomes, provides a medically supervised medication assisted treatment for the infant and shows no long-term adverse neurobehavioral consequences to *in utero* exposure. Additionally, Hospital Obstetric Units are prepared to begin NAS protocols because they know the woman is in treatment and the baby will likely be born with NAS, rather than instituting treatment when symptoms occur. As pointed out by Zweben and Payte (8), "It is a popular myth that methadone withdrawal is more severe than any other. In reality, because of the long plasma half-life, the abstinence syndrome develops slowly, is of moderate intensity, and lasts a long time. Heroin or morphine addiction, on the other hand, results in a rapid onset of a more intense withdrawal that is fairly brief in duration." Methadone exposed infants are within the normal range of development and do not differ in cognitive function from non-exposed infants matched for socio-demographic, biological, and health factors.

Misconceptions About Using Methadone While Pregnant

Breast Feeding

It is wrongly believed that women on methadone should not breastfeed. For example, a source on the internet states "Methadone can pass into breast milk and may harm a nursing baby. Do not use this medication without telling your doctor if you are breast-feeding a baby" (9).

This assertion is incorrect. Bogen et al. (10) concluded that "…our data support the 2001 American Academy of Pediatrics statement that mothers on high methadone doses should be supported to breastfeed if they remain in and adherent to their comprehensive methadone treatment program."

Jannson et al. (11) concluded “In general, these results support the recommendation for breastfeeding among methadone-maintained women if it is appropriate and desired.”

Methadone Dose Affects Newborn Withdrawal

It is wrongly believed that methadone will harm a newborn baby in the form of greater doses leading to more severe withdrawal. Again, the internet provides inaccurate information. “It is not known whether Methadone will harm a fetus. Methadone may cause addiction or withdrawal symptoms in a newborn if the mother takes the medication during pregnancy. Tell your doctor if you are pregnant or plan to become pregnant while using Methadone” (12).

In a report by Berghella et al. (13) they concluded, “The maternal methadone dosage does not correlate with neonatal withdrawal; therefore, maternal benefits of effective methadone dosing are not offset by neonatal harm.”

Judicial Rulings

Lastly, another issue which adds to the stigma of a pregnant, substance-abusing woman that subsequently affects her decision to enter a methadone maintenance program is the fear of actions by courts or child protective agencies. According to evidence compiled by the National Advocate for Pregnant Women, “judges and social workers routinely override decades of medical evidence by forcing ex-addicts to either stop the treatment that works for them or give up their children. Similarly, drug courts across the country either prohibit maintenance as a treatment option or compel those on it to quit and get “real treatment.” Such bureaucratic arrogance is permissible because those affected are people with addictions” (14, 15).

Summary:

The rise in prescription drug abuse has affected the country and drastically affected the state of Florida and Pinellas County in particular. Through efforts at the state and local level, programs and task forces have been developed to address the effects of prescription drug abuse and more pointedly the innocent victims of substance abuse, the fetuses. Neonatal Abstinence Syndrome has increased dramatically

over the past four years in Florida and Pinellas County. Though programs such as Motivating New Moms and medication assisted treatment programs are important to help pregnant, substance-abusing women, there are other points to consider. In some cases, a woman may need to be in residential treatment for her own safety and for the safety of her unborn child or newborn. Residential treatment provides the woman a safe environment and helps her to build social supports. Furthermore, it provides a system to override the guilt and fear of having her baby. Regardless of the treatment modality, it is important to understand that the primary objective is the safety of the fetus and the mother.

Brief Author Biography

Mark A. Vargo, Ph.D. – Dr. Vargo is the Vice President of Research and Evaluation for Operation PAR, Inc. He received his BS from the University of Pittsburgh and a Ph.D. in Biology from the University of Illinois at Urbana-Champaign. In his current capacity with Operation PAR, he oversees the evaluation of federal grant programs, pharmaceutical clinical trials and agency outcome measures. Dr. Vargo is also the evaluator for the LiveFree! Substance Abuse Coalition of Pinellas County, Florida and serves on the Florida Behavioral Health Epidemiology Workgroup.

Jackie Griffin, MS - Jackie Griffin, MS, is the Vice President of Development at Operation PAR, Inc. She has 22 years expertise in advocacy, leadership, sustainability planning and grant development for non-profit organizations and coalitions. She has taught as adjunct faculty at Springfield College, School of Human Services Tampa Campus for a decade. During her 17 year tenure at Operation PAR, as Vice President of Development, Ms. Griffin has worked with a team to secure more than $41 million in competitive grant awards. Jackie serves as Executive Director for the LiveFree! Substance Abuse Prevention Coalition of Pinellas County and has contributed 13 years of leadership to area non-profits and organizations. As Executive Director, Ms. Griffin is assisting the LiveFree! coalition in Building a responsive Recovery Oriented System of Care in Pinellas County. Ms. Griffin is on the Florida Coalition for the Homeless Board of Directors, Floridians for Recovery, St. Petersburg College Health and Human Services Advisory Board, the Florida School of Addictions Studies Board of Directors and the Florida Coalition Alliance, Board of Directors, Vice Chair. She was selected by the Substance Abuse Mental Health Services Administration as one of the nation's first associates of the Women's Addictions Services Leadership Institute, graduating in October 2009.

Peter E. Gamache, Ph.D., MBA, MLA, MPH - Dr. Gamache is a research and development specialist for health services organizations, private foundations, and public service systems. In his current capacity as the President of the Turnaround Achievement Network, he is a designer and evaluator of system of care initiatives including substance abuse, homeless, suicide prevention, juvenile justice/criminal justice, primary health care, family reunification, disabilities/vocational rehabilitation, and HIV/AIDS outreach, testing, and treatment programs.

Conflict of Interest Statement:

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled, "Neonatal Abstinence Syndrome: One Community's Efforts to Reverse the Trend."

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References:

(1) Substance Abuse and Mental Health Services Administration, *Results from the 2011 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-44, HHS Publication No. (SMA) 12-4713. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2012.

(2) Florida Department of Law Enforcement, Drugs Identified in Deceased Persons by Florida Medical Examiners. October 2012. Available from: http://www.fdle.state.fl.us/Content/getdoc/fa86790e-7b50-45f3-909d-c0a4759fefa8/2011-Drug-Report_Final.aspx

(3) Medical Examiner District Six. Pasco & Pinellas Counties. Year 2011 Medical Examiner Annual Report. Available from: http://www.pinellascounty.org/forensics/pdfs/2011ARfinal.pdf

(4) Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal Abstinence Syndrome and Associated Health Care Expenditures United States, 2000-2009. *JAMA. 2012;307(18):doi:10.1001/jama.2012.3951*

(5) Data Source: Florida Agency for Healthcare Administration (AHCA). The data provided by AHCA were selected around two ICD-9-CM diagnosis codes concerning substance exposure

in newborns. (1) 779.5: Drug withdrawal syndrome in newborn of dependent mother. This code includes any addictive drug, and does not discern prescription drugs from non-prescription drugs. (2) 760.72: Narcotics affecting fetus or newborn via placenta or breast milk. Excludes anesthetic and analgesic drugs administered during labor and delivery (ICD-9-CM 763.5), drug withdrawal (ICD-9-CM 779.5), and cocaine (ICD-9-CM 760.75). All selected data excludes fetal alcohol syndrome (ICD-9-CM 760.71). Selected data include primary and secondary diagnoses; the number of newborns is unduplicated.

(6) Opioid Abuse, Dependence, and Addiction in Pregnancy. Committee Opinion No. 524. American College of Obstetricians and Gynecologists. Obstet Gynecol 2012; 119:1070-6.

(7) Song S, Ordean A, Kahan M. Substance Use in Pregnancy. Journal Obstet Gynaecol Can 2011; 33(4): 367-384.

(8) Zweben JE, Payte JT. Methadone Maintenance in the Treatment of Opioid Dependence A Current Perspective. Addiction Medicine and the Primary Care Physician. West J Med. 1990; 152:588-599.

(9) http://www.everydayhealth.com/drugs/methadone

(10) Bogen DL, Perel JM, Helsel JC, Hanusa BH, Thompson M, Wisner, KL. Estimated Infant Exposure to Enantiomer-Specific Methadone Levels in Breastmilk. Breastfeeding Medicine. 2011; 6:377-84.

(11) Jansson LM, Choo R, Velez ML, Harrow C, Schroeder JR, Shakleya DM, et al. Methadone Maintenance and Breastfeeding in the Neonatal Period. Pediatrics. 2008; 121:106-14.

(12) Everyday Health. Methadone. Available from: http://www.everydayhealth.com/drugs/methadone

(13) Berghella V, Lim PJ, Hill MK, Cherpes J, Chennat J, Kaltenbach K. Maternal methadone dose and neonatal withdrawal. Amer J Obstetrics & Gynecology. 2003; 189:312-17.

(14) Szalavitz M. Should methadone moms keep their babies? Available from: http://www.salon.com/2012/09/19/should_methadone_moms_keep_their_babies/

(15) Blustain R. Medical Consensus on Child Abuse? Moms on Methadone Caught in the Middle. Available from: http://www.thedailybeast.com/articles/2012/09/02/medical-consensus-or-child-abuse-moms-on-methadone-caught-in-the-middle.html.