Post-Delivery Support for Neonatal Abstinence Syndrome Infants and Their Parents in Rural Montana

Evaluation Report

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by the
Center for Community Health and Evaluation
www.cche.org

Executive Summary

The opioid epidemic in the United States contributes to a growing need to address substance use disorders (SUDs) in the perinatal period. Women with SUD are at risk for poor pregnancy-related outcomes, and their newborns can suffer withdrawal symptoms known as neonatal abstinence syndrome (NAS), which can lead to the infant's removal from their family and placement in foster care.

In response to the addiction crisis taking place in rural Montana, Kalispell Regional Healthcare (KRH) staff sought to provide compassionate, non-stigmatizing integrated care to at-risk mothers and babies during their hospital stay and address their psychosocial needs after discharge. This post-delivery support program developed by KRHC's neonatal intensive care unit (NICU) team holds useful lessons for health care organizations and communities dealing with the short- and long-term harm of perinatal SUD. This evaluation report describes the program's main features and preliminary results.

The program began in late 2015 with the goal of engaging substance-exposed parents in learning activities and other services, including substance abuse recovery, mental health counseling, parenting skill development, and education both during and after the hospital stay. The NICU team posited that parental involvement would support improved outcomes, primarily lower rates of foster care placement for babies with NAS.

Key program successes include:

- **Fostering a cultural shift in the NICU** away from blaming mothers for their NAS babies and toward a more sympathetic and understanding attitude. The staff is now better prepared to meet parents "where they are" by acknowledging and addressing their needs. With a new understanding of addiction disease and the challenges faced by substance-exposed families, clinicians and other personnel can provide effective, respectful care and engage in more open and positive interactions with vulnerable women in support of overall improved outcomes.
- **Developing a more collaborative and productive relationship with Child Protective Services (CPS) representatives,** who determine foster care placement for infants. The improved cooperation between NICU and CPS personnel has enabled a fuller assessment of parents' ability to provide a safe home environment for their newborn and has likely influenced child removal decisions. This new dynamic, coupled with the active parental learning and engagement incentivized by the program, appears to have played a significant role in reducing the rate of foster care placement of NAS-affected babies.

By May 2017, the foster care placement rate for babies with NAS born at KRHC had dropped to 11.1 percent from 75.0 percent in 2015. Average length of hospital stay (LOS) for NAS-affected babies was 14.9 days in May 2017, decreasing from 30.1 days in 2014 and reflecting a pre-existing downward trend.

The NICU-based program developed at KRHC serves the needs of mothers with SUD and their babies by offering care and supportive services in a positive, non-stigmatizing environment. While there is only less than two years of complete data about the program, the findings of this evaluation indicate that

what the KRHC team has accomplished can guide new and ongoing efforts to address the challenge of perinatal SUD in Montana and beyond.

I. Introduction and Background

The opioid epidemic in the United States has brought renewed attention to the health and social problems associated with substance use disorders (SUDs) and their impact on some of the most vulnerable people affected: women who use drugs during pregnancy and their babies. These populations are at risk for poor perinatal health outcomes and need targeted care to reduce the potential for short- and long-term SUD-related harm. Infants of mothers who used drugs during pregnancy may develop withdrawal symptoms, known as neonatal abstinence syndrome (NAS); are at risk of being removed from their families and placed in foster care; and may suffer further problems in later life.

Around the country, innovative programs are working to address the multiplicity of challenges faced by children and families dealing with SUD, but few such initiatives have been carefully evaluated. This report describes and assesses early outcomes of a program providing post-delivery support for NAS infants and their parents at the Kalispell Regional Healthcare Center (KRHC) in rural Montana. Between 2000 and 2013, Montana saw a tenfold increase in the rate of infants with NAS, up to nine for every 1,000 live births, but few resources are available to pregnant women with addictions.[1] [2] SUD stigma and the threat of foster care placement for their children are further barriers to at-risk women seeking and receiving appropriate care. The Kalispell-based program offers a possible answer to this urgent problem through an integrated, non-stigmatizing approach to providing care for mothers and babies during their hospital stay and supporting their well-being post-discharge.

II. Evaluation Objectives and Methods

This evaluation had two objectives: 1) validate preliminary program data; and 2) collect additional information and insights about the Kalispell program to understand its main components, evaluate emerging outcomes and success factors, and outline possible next steps.

Evaluation methods included corroboration of clinical measures provided by the project team; examination of program materials and other relevant documents; thematic analysis of qualitative data collected through meetings and communications; and semi-structured interviews (N = 3) with project team members and other stakeholders.

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[1] Curtis, C. L., "Neonatal Abstinence Syndrome in Montana Newborns, 2000-2013," Office of Epidemiology and Scientific Support, Montana Hospital Discharge Data System (March 2015). http://dphhs.mt.gov/Portals/85/publichealth/documents/Epidemiology/MTHDDS/Special%20Reports/MTHDDS_NAS_MAR_2015.pdf. Accessed March 5, 2018.

[2] "Medicaid's Role in the Delivery and Payment of Substance Use Disorder Services in Montana," Montana Health Care Foundation (2017).https://mthcf.org/resources/medicaids-role-in-the-delivery-and-payment-of-substance-use-disorders/

III. Program Description

The program at KRHC supporting NAS infants and their parents is based in the hospital's neonatal intensive care unit (NICU),[3] which serves both local patients and those from outlying areas, including American Indian reservations. The NICU team is comprised of 27 nurses, two half-time social workers, and two full-time neonatologists, as well as comprehensive ancillary support including dieticians, pharmacists, physical and speech therapists, and lactations specialists. With a grant from the Montana Health Care Foundation (MCHF), a group of dedicated NICU staff developed the program in 2015 to address the growing number of substance-exposed mothers and newborns. Staff training and other preparation took place October through December 2015, with full program implementation in 2016.

This program leverages the opportunity to engage with families while their newborn is in the NICU. The stated goal of the intervention was **achieving parent participation in appropriate services, including substance abuse recovery, mental health counseling, parenting skill development, and education both during and after the hospital stay.** Parental involvement is thought to contribute to desired outcomes, primarily lower rates of foster care placement at discharge for babies with NAS.

Program Participation and Enrollment

While its focus is on addressing the specific needs of NAS-affected babies and families, the Kalispell program is available to all NICU patients, many of whom are from disadvantaged backgrounds. Enrollment is voluntary and offered to the parents during a care conference with providers following inpatient admission. The staff also does outreach if it learns of women with high-risk pregnancies who would benefit from the intervention. So far, 46 parents have taken part in the program.

Program Components and Activities

The Kalispell program is composed of three main elements:

1. Staff training
2. Parenting skill building and learning activities
3. Wraparound discharge services

1. Staff training

Starting in October 2015, all NICU providers and staff were trained using the Vermont Oxford Network (VON) education modules for caregivers of substance-exposed infants and families.[4] VON is a nonprofit collaboration of health professionals dedicated to improving neonatal care. The 18 VON online education units devoted to NAS present state-of-the-art, evidence-based care along with personal testimonies and real-life examples. They are rooted in the notion that reciprocity and respect between parents and caregivers are crucial to achieving improved outcomes. Although the team no longer has

[3] Kalispell Regional Health Center, Neonatal Intensive Care Unit https://www.krh.org/krhc/services/neonatal-intensive-care-unit.

[4] Vermont Oxford Center https://public.vtoxford.org/quality-education/nas-universal-training-program. Accessed 2/1/2018.

access to VON's for-pay program, it continues to practice its tenets and share them with new staff. According to a nurse:

> *Our training continues through mentoring and example. The VON modules got us to rethink our approach: Moms that are using aren't bad people, they do love their babies. They are in a vulnerable position and we are positioned to help or hinder—our choice. We all now model that behavior for new people coming on board and do not tolerate anything different.*
>
> (NICU staff member)

2. Parenting skill building and learning activities

Parental involvement is at the heart of the Kalispell program. The NICU staff encourages mothers, as well as fathers and other family members if present and appropriate, to be at the newborns' bedside, holding and comforting them. Staff also engages parents in medical decisions regarding their newborn, such as weaning from pharmacologic treatment.

Active parenting is incentivized through an Earn While You Learn curriculum. Parents can earn vouchers of varying dollar value for participating in infant care (e.g., massage, bathing, skin-to-skin contact, attending bedside rounds), taking part in skill-building classes, and completing homework and taking a short quiz. Parents with literacy challenges have access to homework on video. Topics covered by the curriculum's materials and classes include CPR, healthy intimate relationships, how to be a better father, family planning, nutrition, marijuana use, newborn care, and many others. Learning content, articles, and brochures are available from the Hope Pregnancy Ministries/Family Resource Center (Hope Center), a well-established source of community support. The NICU staff also creates materials ad hoc based on their own expertise and the parents' needs. Parents use logs to record their actions and behaviors to earn vouchers. No money is exchanged, but vouchers can be redeemed for baby items such as diapers, clothing, strollers and cribs, which are available from the Hope Center or a small stock kept by the NICU staff for out-of-town families. (See Appendix 2 for sample program activities and materials.)

3. Wraparound discharge services

The program includes wraparound discharge services to set the family up for success after they leave the hospital. Thanks to connections with local agencies and community partners, the NICU social workers can make referrals to continuing parenting education, drug addiction treatment, child and family services through the public health department, and other outside resources.

Contact with Child Protective Services (CPS) representatives is a key element of NICU discharge planning. While CPS is ultimately responsible for determining the removal of NAS-affected babies from their families and placement in foster care, this decision is made in close consultation with NICU social workers, who can share insights into the parents' behaviors and perceived ability to maintain a safe home environment. Referrals to supportive care and plans for parents' activities post-discharge (e.g., additional parenting classes, job counseling, mental health services) can affect CPS determinations. In cases where foster care placement is necessary, a parent's engagement in the NICU program and

willingness to follow up on referrals might be judged favorably by the authorities and help facilitate future family reunification.

Community partnerships offer crucial support to program operations and goals, and close collaboration with the Hope Center[5] in Kalispell is especially important. The Hope Center is a nonprofit organization that offers free or low-cost reproductive health, pregnancy, and family support services, as well as parenting education and material resources.

Through the work of the NICU team and a pre-existing relationship with the hospital—what one program staff member called "a happy accident"—many of the Hope Center's services and resources are available to parents in the NICU and after discharge. The Hope Center's Earn While You Learn model of incentivized learning provides a blueprint and materials for the Kalispell version, and Hope Center staff leads once-a-week parenting classes at the hospital. Parents holding vouchers can redeem them for baby and children's goods at the Hope Center's boutique. For up to two years after leaving the NICU, local parents can attend Hope Center's parenting classes and engage in other incentivized learning activities. Families who came to the NICU from outside Kalispell are referred to family resource centers close to home. NICU personnel maintain a database of resources in other locations.

Program Outcomes

The Kalispell team collected two quantitative measures: average NICU length of stay (LOS) in days and rate of foster care placement at discharge for babies with NAS-related diagnoses.[6] Keeping NAS-affected families together by reducing foster care placement was the program's main desired outcome, while changes in LOS were tracked as an incidental result.

Data are available from January 2013 to May 2017 for LOS and January 2014 to -May 2017 for foster care placement rates. Both measures decreased in 2016 (when the program was fully implemented after launching in late 2015, though LOS started to decline earlier. It is worth noting the sharp drop in the rate of foster care placement. (See Figures 1 and 2.) Based on partial year data, 2017 is on track to a show a slight increase in both measures—14.9 average LOS and 11 percent foster care placement rate.

[5] Hope Pregnancy Ministries, http://hopepregnancyministries.org. Accessed 2/1/2018.
[6] Identified by the following diagnosis-related group (DRG) codes: 790, 791, 793, P96.1.

Figure 1. Average LOS (in days) for NAS-Affected Infants, January 2013 – May 2017

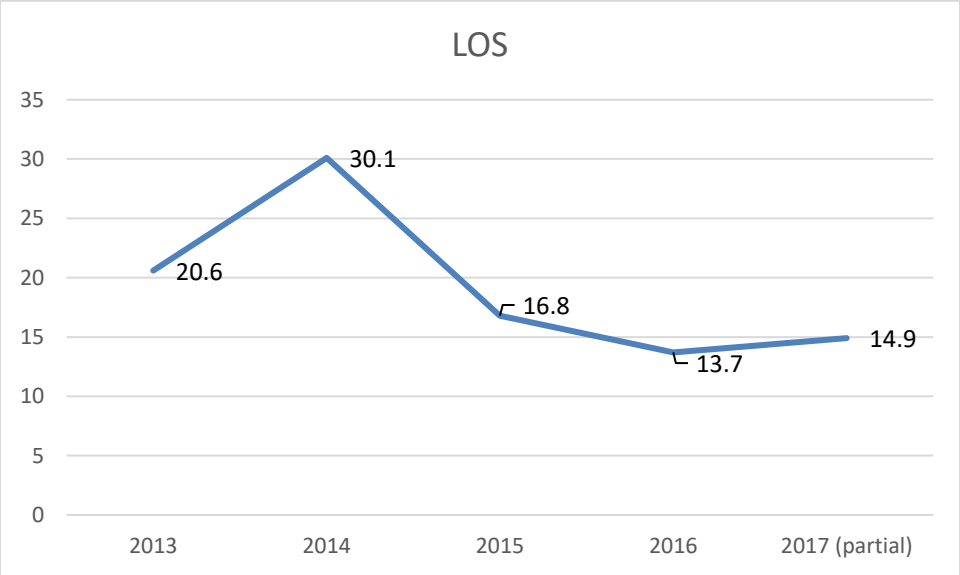
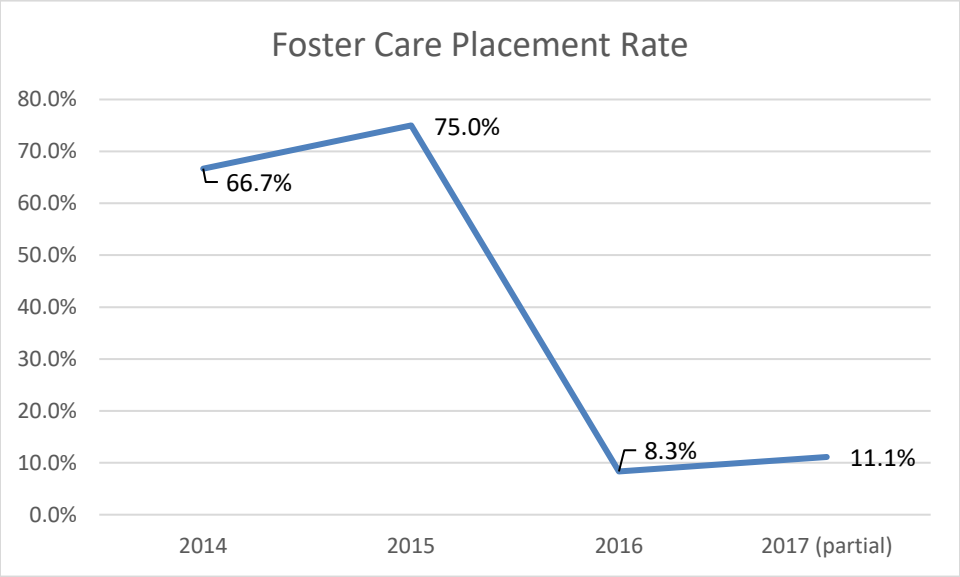


Figure 2. Foster Care Placement Rate at Discharge for NAS-Affected Infants, January 2014 – May 2017



Although preliminary results are promising, there are limitations. The short time frame (less than two years of complete data), the absence of a comparison group, and the lack of program indicators do not allow for a more definitive statement on the initiative's impact.

However, qualitative interviews with NICU staff and CPS personnel offer some corroboration for the observed trends, especially the steep decline in the proportion of NAS-affected infants who are discharged to foster care. These qualitative data underscore the program's early accomplishments and ongoing potential.

Key Program Successes

Perhaps the NICU team's most important success so far has been fostering an internal cultural shift away from blaming mothers for their NAS babies and engaging with them in subtly punitive ways and moving toward a more sympathetic and understanding attitude. By meeting parents "where they are," regardless of past behaviors or circumstances, NICU staff can better support mothers and address their urgent psychosocial needs.

> *We never, ever give up on a family. We even had moms in shackles. Lisa [the social worker] goes to the prison even before the birth to reinforce that moms have an important role to play.*
>
> (NICU staff member)

Program staff attributes shifts in perceptions toward substance-using patients to VON's online training and a specialist's lecture on the effects that the disease of addiction has on the brain. This education is thought to have encouraged greater acceptance and respect for SUD-affected mothers. From providers to ancillary personnel, all those working in the NICU were asked to adjust their approach to substance-exposed families. However, change has been hard, according to the program team:

> *It took a full year to start turning the culture around with nurses [and other personnel]. The general feeling is "why are you doing this? They [drug-using mothers] don't deserve it."*
>
> (NICU staff member)

There are signs that the team's efforts are paying off and helping to generate positive interactions between parents and staff that support the program's desired outcomes. The new behaviors, such as nurses treating SUD-affected mothers with the same courtesy as they treat non-drug using mothers and even providing them with special care in tending to their needs, contribute to parents' willingness to use incentivized services and engage with their newborns. The greater empathy demonstrated to SUD-affected parents is slowly spreading beyond the NICU to the OB department. Both staff experience and the published literature suggest that greater maternal involvement and contact with the infant at the bedside have clinical benefits that might be reflected in shorter LOS.

An important consequence of the changed cultural climate is that mothers of babies with NAS are less fearful of being judged, so are more open with nurses and other staff and likely to disclose information that can help meet the family's needs. And when this information is shared with CPS, it can support appropriate child removal decisions.

The resulting richer communication with CPS staff has helped create a more collaborative relationship with the agency. This improved cooperation is a second key accomplishment of the NICU team. CPS and NICU personnel interacted before, but are now more likely to support each other in achieving common goals: doing what is best for the NAS-affected family and, if possible, preserving and even strengthening parental bonds while ensuring the child's safety. CPS' recent adoption of a Family Engagement model,[7] a non-punitive, supportive philosophy that values the family's strengths and works to address its needs, is aligned with the NICU's own cultural evolution and enabled by it. Increased awareness of the family's situation can add to the staff's confidence that the knowledge and skills learned from the NICU program will equip parents to provide a safe home environment and adequate care for their infant. As stated by a CPS employee:

> *The education piece is huge. Mothers—and fathers if and when they are in the picture—are able to know what to do with the babies, how to take care of them, rather than saying "I'll do whatever" ... The program is actually improving. They're learning how to deliver the program better, seem to be getting more from the mothers—more trust and openness. Parents now work more closely with the hospital, the social workers, the nurses.*
>
> (child protection specialist)

These factors appear to play a significant role in the decline of the foster care placement rate for NAS-affected babies at KRH

Challenges

Lack of access to substance abuse treatment is a challenge for parents of NAS-affected babies. Treatment centers tend to have long wait times, and most inpatient facilities do not accept mothers with children. The NICU program works to address these challenges by incentivizing attendance at AA and similar support groups, and social workers can refer parents to private counselors in the community at discharge. CPS does not usually initiate post-discharge referrals but can assist with finding inpatient treatment and moderating other barriers to access.

IV. Summary and Conclusions

The NICU-based parenting program developed by the KRHC team serves the needs of NAS-affected and other disadvantaged infants and families through interventions that support parents' engaging with and learning to care for their newborns in a compassionate, blame-free environment. Staff training to inspire understanding and respect for mothers with SUD is central to this approach, as are collaborative relationships with community-based organizations. The basic elements and underlying values of the initiative are aligned with emerging best practices to address the needs of NAS-affected families, and

[7] See https://dphhs.mt.gov/Portals/85/cfsd/documents/cfsdmanual/103-1.pdf Accessed 2/1/2018

early data suggest possible program impacts on infants' hospital LOS and especially the rate of foster care placement at discharge.[8]

There are indications that the core elements of the program can be sustained past the life of the grant. MHCF's funds, which are being phased out, supported data collection, stocking education materials, and having staff sign parents' vouchers as they completed their homework. However, all incentives come from donations, the Hope Center works with the NICU free of charge, and NICU personnel perform most program activities as part of their regular workflow.

As KRHC continues to confront SUD and serve the needs of affected parents and infants, the following could help better assess the effectiveness and value of the NICU-based program:

- Tracking process measures (e.g., number of vouchers disbursed, number of participants in activities)
- Conducting chart reviews of NAS-affected babies before and after program implementation
- Collecting parents' views about their experiences with the NICU-incentivized activities
- Following up on a sample of families to understand the initiative's longer-term outcomes

[8] Ordean, A. and Kahan, M., "Comprehensive Treatment Program for Pregnant Substance Users in a Family Medicine Clinic," *Canadian Family Physician* 57, no. 11 (2011): E430-E435; Patrick, S. W., et al., "Improving Care for Neonatal Abstinence Syndrome," *Pediatrics* 137, no. 5 (May 2016): e20153835. *PMC*. Web. 2 Feb. 2018.

Appendix 1. Program Logic Model

Program: Post-Delivery Support for Neonatal Abstinence Syndrome Infants and Their Parents in Rural Montana – Logic Model
Situation: Neonatal Abstinence Syndrome (NAS) occurs when a newborn suffers withdrawal from drugs used by the mother during pregnancy. The symptoms of withdrawal can be severe, leading to lengthy hospital stays, costly drug treatment, and problems for children later in life. NAS is a fast-growing problem in Montana.

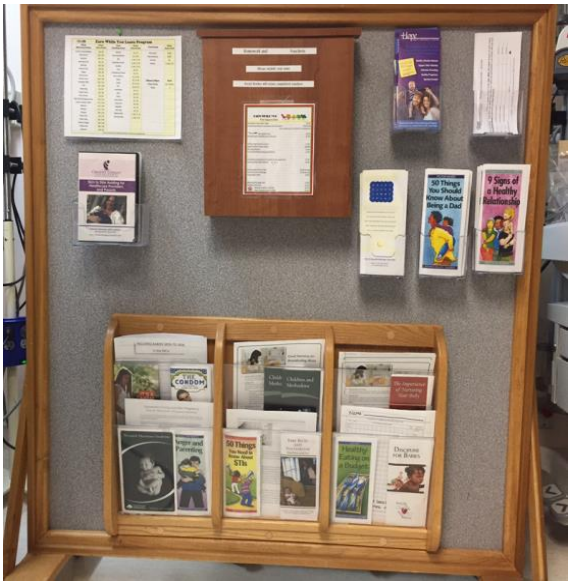
Inputs	Outputs		Outcomes – Impact		
	Activities	*Participation*	*Short*	*Medium*	*Long*
-Staff (Kalispell Regional Healthcare providers and personnel) -Time -Space -Materials -Money (MHCF grant, community investments, Medicaid and IHS reimbursements) -Food, housing, and transportation -Hospital leadership support -Data collection and tracking tools	-Train Kalispell Regional Healthcare staff -Engage community leaders and agencies -Provide or arrange housing, food, transportation, and childcare for families -Teach active parenting skills through parenting classes -Offer incentives for program participation (e.g., vouchers), in a variety of activities (e.g., time at bedside, classes) -Offer access to counseling, job seeking assistance, and other supportive programs	-NAS babies -Parents and families of NAS babies -Kalispell Regional Health Care personnel -Hospital and community leaders -State agencies (Medicaid, CPS)	**NAS babies** -Lower rates of foster care placement **Parents and families** -Greater parental involvement in the NICU -Abstinence from active drug use -Parent participation in substance abuse recovery, mental health counseling, parental skill development, and education -Parent and child stay together **System** -NICU staff displays more sympathetic attitudes toward mothers with SUD	**NAS children** -Better clinical, developmental, and social outcomes **Parents and families** -Recovery from drug addiction -Parent and child stay together -Greater self-esteem and parenting confidence and skills -Healthier lifestyles and behaviors **System** -Greater understanding of addiction, needs of drug-abusing mothers and families -Cost savings from improved outcomes for NAS babies and children -Program scaling at Kalispell Regional Healthcare	**NAS children** -Better clinical, developmental, and social outcomes along the lifespan **Parents and families** -Sustained addiction recovery -Improved social outcomes **System** -Cultural shift lowering barriers for drug-abusing mothers in the community -Long-term investment in family-centered services -Potential program spread to other communities/health systems -Sustained cost savings and positive ROI for state services and other funders

Assumptions: Resources can be found to sustain services beyond the grant; hospital leadership will continue to support the program; community engagement and support will be ongoing.
External Factors: Unforeseen economic, organizational (e.g., new CEO), and political changes could imperil services; a growing addiction problem in the community could stress capacity.

Appendix 2. Sample Program Activities and Materials

Examples of incentivized activities and brochures:

- Watching NICU specific videos
- Reading educational pamphlets and completing homework
- NICU Story Bead Group
- Participating in multidisciplinary rounds
- Completing applications for assistance
- Accepting a follow up Public Health Nurse referral
- Attending AA or NA groups if applicable
- Smoking Cessation if applicable
- WIC appointments
- Performing skin to skin, infant massage, giving a bath
- Turning in breast pumping logs with a goal of 6-8 times a day
- Infant CPR
- Attending discharge class



Activity list and point values

EARN WHILE YOU LEARN

Point Opportunities

"No Matter How Small" video	$1.00
"Skin-to-Skin" Video	$1.00
Completing articles or brochures with homework	$1.00-5.00 (can redeem up to $10/week in homework)
Story Bead Group	$1.00
Participating in Multidisciplinary Rounds	$1.00
Visiting Hope Resource Center	$1.00
Hope Resource Center classes	variable
WIC Appointment	$1.00
Counseling/AA/NA visits/appointments	$1.00
Completing Applications for Assistance/per application	$1.00
Accepting Baby Steps Referral	$1.00
Participating in Skin-to-Skin	$1.00 per day
Performing Infant Massage	$1.00 per day
Giving baby a bath	$1.00
Pumping Log - at least 6 pumpings/day	$1.00
Attending Discharge Class	$1.00
Attending CPR Class	$1.00
Smoking Cessation, Quit Line	$5.00
Other Smoking Cessation Class	$5.00

Activity participation voucher

Hope
FAMILY RESOURCE CENTER

940 1st Avenue East, Kalispell, MT 59901 | 406-257-6006

_____ **(client's name) is part of the *Earn While You Learn* Program at Hope Family Resource Center. This form lets HFRC know that our client has participated in an activity that will earn *Mommy/Daddy Money* to spend at our Baby Boutique.**

Date: _____ Visit/Activity/Homework: _____ $_____ Rep Initial _____

Date: _____ Visit/Activity/Homework: _____ $_____ Rep Initial _____

Date: _____ Visit/Activity/Homework: _____ $_____ Rep Initial _____

Representative: (print) _____ Signature: _____

In order to receive credit this voucher must be signed by the KRMC OB/NICU Social Worker

Marijuana quiz

Get the Facts

You've heard about marijuana. But do you have all the facts? Answer the questions inside and find out. This quick quiz will fill you in and get you thinking!

Answers:

1. e 2. a, b, c, d or e 3. e 4. True 5. True
6. a, b, c 7. a, b, c 8. True 9. True
10. True 11. a 12. e 13. Your choice

GET THE FACTS!

The Brain-Scrambling Marijuana Quiz

TEST YOUR REALITY

1. Marijuana is:

   a. A drug that changes how the brain works

   b. A green, brown or gray mix of dried, shredded flowers and leaves of the hemp plant (Cannabis sativa)

   c. Illegal for minors (unless prescribed by a doctor)

   d. Rolled into a cigarette called a 'joint', smoked in a pipe or eaten in baked goods.

   e. All of the above

2. Which of these can happen within minutes of smoking marijuana?

   a. Problems remembering what just happened.

   b. Distorted sight, sound, time and touch

   c. Loss of coordination

   d. Increased heart rate and anxiety

   e. Embarrassing or hurtful mistakes

3. Which of these might be signs that someone has been using marijuana?

   a. Giggling and silliness for no reason

b. Red, bloodshot eyes

c. Forgetfulness

d. Acting paranoid

e. Any of the above

4. If you smoke marijuana regularly, it can cause many of the same breathing problems that smoking tobacco causes – coughing and wheezing, colds and lung infections like bronchitis. True / False

5. Regular use as a teen can change how your brain develops and lower your IQ. True / False

6. Some of the other health risks of smoking marijuana include :

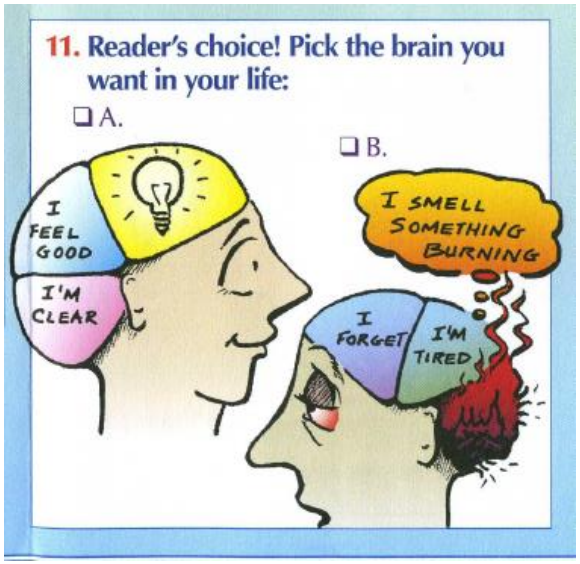
- A higher risk of a heart attack
- Possible damage to disease-fighting tissues and cells.
- Exposure to some of the same cancer- causing chemicals found in tobacco smoke

7. Using marijuana and driving is dangerous because it:

- Slows responses to sights and sounds
- Makes it harder to judge distances
- Increases the chances of getting in a car crash.

8. Statistics show that most young people do not use marijuana. True / False

9. Some people can become dependent on marijuana. True / False



10. Using marijuana doesn't make problems go away; and it may create new problems. True / False

12. What do you risk losing if you use marijuana?

a. Energy and enthusiasm

b. Interest in friendships and activities

c. Family ties

d. Good health

e. All of the above.

13. What can you say if someone pressures you to smoke marijuana?

- ☐ No, thanks. I've got better things to do.
- ☐ I want to keep all my brain cells.
- ☐ No way. Inhaling smoke is bad news.
- ☐ Other response _____