MONTANA PUBLIC HEALTH

July, 2013
Vol. 8, Issue 7
http://www.dphhs.mt.gov/

PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Most Montana Birthing Facilities Have Begun Newborn Screening for Critical Congenital Heart Disease

Congenital heart defects are the most common type of birth defect and are associated with approximately 8 births per 1,000.[1] Approximately 25% of these defects are critical congenital heart defects (CCHD)[2] and require surgery or catheter intervention within the first year of life. Many CCHDs are detected through prenatal ultrasound or by postnatal physical examination; however, CCHDs are not detected until after discharge in some newborns, putting them at risk of severe disability or death.[3] Pulse oximetry has been recommended by the US Department of Health and Human Services as a screening tool for CCHD and has been added to the Recommended Uniform Screening Panel for Newborns[4]. In order to determine current practice in Montana, in April-May 2013 the Department of Public Health and Human Services (DPHHS) conducted a telephone survey of the 28 hospital-based birthing facilities in Montana. This issue of *Montana Public Health* describes the results of that survey.

CCHD Screening in Montana Twenty seven of the 28 (96%) hospitals completed the survey; representing 98% [5] of all hospital births in Montana. Of the 27 hospitals responding to the survey, 20 (74%) are currently screening all newborns (68% of births in 2011), 6 (22%) have plans to begin screening (31% of births in 2011), and only 1 (4%) had no plan to begin screening (1% of births in 2011). A majority of birthing hospitals in Montana are currently performing pulse oximetry screening on babies born in their facility; however, screening protocols are varied. While all of the screening hospitals identified one or more providers whom they currently consult for follow up of positive screens, only 45% of the hospitals have the capability to perform pediatric diagnostic echocardiograms onsite. A barrier identified by both screening and non-screening hospitals is the expense of screening, specifically equipment cost and inadequate reimbursement.

Characteristics of Hospitals Currently Screening Hospitals currently screening all newborns with a pulse oximetry test prior to discharge were asked questions related to recording of results, billing method, and follow up. (Table 1) All reported recording the screening result in the baby's chart while no hospital was recording screening results on a central log. Most of the hospitals indicate their method of charging for screening is by bundling it with the room charge (55%) or vital signs (15%), while 25% of hospitals are not currently charging. All hospitals identified one or more providers with whom they consult for follow up on a positive screen. In-state pediatric cardiologists (40%), neonatologists (35%), and out of state providers (35%) were the top three provider types identified for this consultation. Only 45% of the screening hospitals have the ability to perform pediatric diagnostic echocardiograms onsite and some of these hospitals report that they do not have trained staff available every day of the week. Interpretation of echocardiograms is currently primarily provided by one of the three in-state pediatric cardiologists or by out-of-state consultants. Half of the screening hospitals currently have the capability to use telemedicine. Barriers to guideline-based screening identified by these facilities include a need for education on screening guidelines, equipment expense, difficulty in accurately testing infants, and some difficulty with staff consistently performing the screening. Although specific screening protocols were not assessed with this survey, comments by respondents indicate a wide variation in screening practices among the hospitals.

Table 1. Selected Characteristics of Montana Birthing Hospitals Currently Screening for CCHD; N = 20

Characteristic	No.	(%)
Ability to perform a pediatric diagnostic echocardiogram on-site		
Yes	9	(45)
No	11	(55)
Capability to use telemedicine for consultation on babies born with suspected CCHD		
Yes	10	(50)
No	10	(50)
Babies with diagnosed or suspected CCHD referred for consultation by provider type*		
Pediatric Cardiologist	8	(40)
Neonatologist	7	(35)
Perinatologist	2	(10)
Out-of-State	7	(35)
Other	3	(15)

*Question permitted more than one response; therefore column total > 100%.

Characteristics of Hospitals Not Currently Screening Of the hospitals not currently performing pulse oximetry screening, 86% have discussed screening and have plans to implement it. (Table 2) Items that may be considered barriers to screening at these facilities were also assessed. Cost of equipment and uncertainty over screening guidelines were the top two barriers identified. Other barriers mentioned include inadequate reimbursement, concern with the potential effect of altitude on pulse oximetry results and concern with delaying discharge while waiting for further consultation on a positive screen.

Implications for Public Health The costs associated with screening are a concern for birthing hospitals in Montana. Adequate reimbursement for CCHD screening may facilitate timely, accurate screening. In this regard, one study from Sweden reported that the savings in health care costs from the prevention of one case of circulatory collapse

Table 2. Characteristics of Montana Birthing Hospitals Not Currently Screening for CCHD, N = 7

Characteristic	No.	(%)
Discussed and plan to implement a pulse oximetry screening program to detect CCHD		
Yes	6	(86)
No	1	(14)
Barriers to screening*		
Cost of equipment	3	(43)
Unsure of screening guidelines	3	(43)
Inadequate reimbursement	2	(29)
Other	2	(29)
No barriers	1	(14)
Cost of Screening (Staff time and training costs)	0	(0)
No billable CPT code	0	(0)
Availablity of follow-up care	0	(0)
No clear plan for follow-up of positive results	0	(0)
Lack of support from the medical community	0	(0)
No state mandate for screening	0	(0)

*Question permitted more than one response; therefore column total > 100%.

Recommendations:

- All birthing hospitals in Montana should screen newborns for critical congenital heart disease with a pulse oximetry test prior to discharge.
- Hospitals should adopt a standardized protocol designed to ensure accuracy and minimize false positive findings. Strategies for implementing CCHD screening, including a screening algorithm, have been developed by a workgroup convened by The Secretary's Advisory Committee on Heritable Diseases in Newborns and Children (SACHDNC).[7] (http://pediatrics.aappublications.org/content/128/5/e1259.full.pdf)
- Hospitals should ensure that policies and procedures for follow up of positive screen results are in place and implemented.
- DPHHS plans to convene a group of Montana clinicians to develop the method for birthing facilities to report screening results to a central registry. This method and reporting requirements will be described in a future issue of *Montana Public Health*.

References:

MONTANA DPHHS
Healthy People. Healthy Communities.
1400 Broadway
Helena, MT 59620-2951

Richard Opper, Director, DPHHS
Steven Helgerson, MD, MPH, State Med. Officer
Jane Smilie, MPH, Administrator, PHSD

1. Reller MD, Strickland MJ, Riehle-Colarusso T, Mahle WT, Correa A. Prevalence of congenital heart defects in metropolitan Atlanta, 1998-2005. J Pediatr 2008; 153:807-13
2. Centers for Disease Control and Prevention. National Center on Birth Defects and Developmental Disabilities. Key Findings: Critical Congenital Heart Defects in the United States. Available at: http://www.cdc.gov/ncbddd/features/CCHD-keyfindings.html.
3. Mahle WT, Newburger JW, Matherne GP, Smith FC,et al. Role of pulse oximetry in examining newborns for congenital heart disease: a scientific statement from the American Heart Association and American Academy of Pediatrics. *Pediatrics*. 2009;124:823– 836.
4. US Department of Health and Human Services, Health Resources and Services Administration. Secretary's Advisory Committee on Heritable Disorders in Newborns and Children. Available at: http://www.hrsa.gov/advisorycommittees/mchbadvisory/heritabledisorders/recommendations/correspondence/cyanoticheartsecre09212011.pdf
5. Montana Office of Vital Statistics, Birth Records for 2011.
6. de-Wahl Granelli A, Wennergren M, Sandberg K, et al. Impact of pulse-oximetry screening on the detection of duct dependent congenital heart disease: a Swedish prospective screening study in 39,821 newborns. *BMJ*. 2009;338:a3037
7. Kemper AR, Mahle WT, Martin GR, et al. Strategies for implementing screening for critical congenital heart disease. *Pediatrics*. 2011; 128:e1259-e1267.

2,110 copies of this public document were published at an estimated cost of $0.67 per copy, for a total cost of $$1,413.70, which includes $$464.20 for printing and $949.50 for distribution.

MONTANA DPHHS
Healthy People. Healthy Communities.
Department of Public Health & Human Services

1400 Broadway
Helena, MT 59620-2951

Richard Opper, Director, DPHHS
Steven Helgerson, MD, MPH, State Med. Officer
Jane Smilie, MPH, Administrator, PHSD