RSS SESSION SIGN-IN SHEET

Pediatric Care Echo Series
Home Births
October 19, 2017
John Hokanson

RSS Global Objective(s): Assess pediatric trauma given the news skills and guidelines determined to be safe for children. Identify proper tool and standardized measurement practices to improve diagnosis and treatment of pediatric patients.

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Home Birth, Pulse Oximetry Screening, & The Plain Community

New Roles for the ER

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UNIVERSITY OF WISCONSIN-MADISON

UW Health
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Growing Concerns for the ER

- The number of home births in Wisconsin continues to increase, at least in part due to an increase in births in the Plain community.
- These populations appear to be at higher risk for congenital heart disease than the general population.
- ER personnel may be called upon for evaluations traditionally performed in hospital prior to newborn discharge.

Failed Pulse Oximetry Screening

- 41 weeks gestation
- Born at home by water birth, meconium at birth, but asymptomatic
- Failed pulse oximetry screening at 48 hours and sent to ER for assessment

- ER vitals: HR 158, RR 36, single SpO2 94%, 3.54 kg
- Normal physical examination
- Discharged from ER

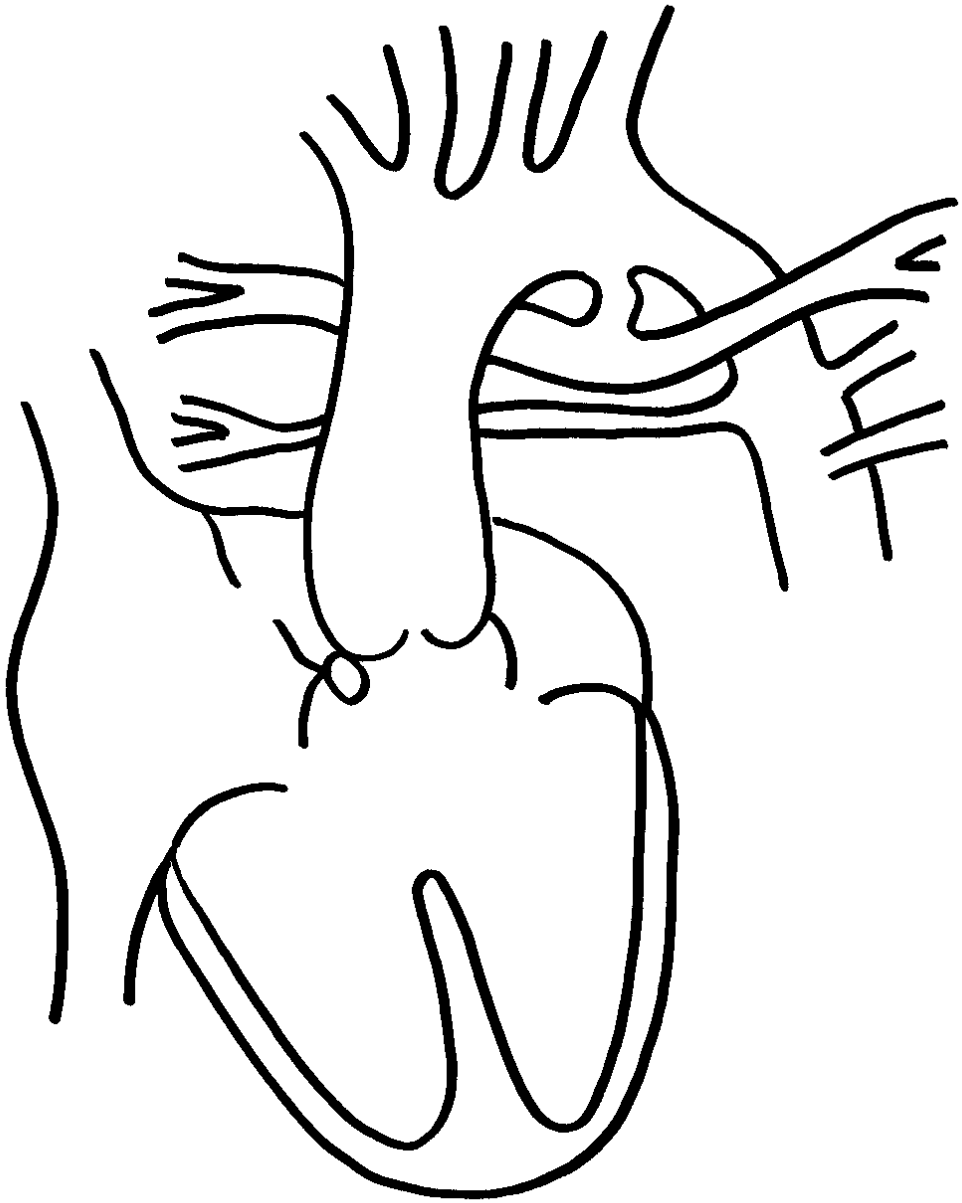
ER visit + 11 days

- 13 days old
- Lethargy, poor feeding, increased WOB
- ER vitals: HR 164, RR 48, **SpO2 63%,** 4.06 kg

- Diagnosis: Tetralogy of Fallot with Pulmonary Atresia and Major Aortopulmonary Collaterals

TOF-MAPCAs

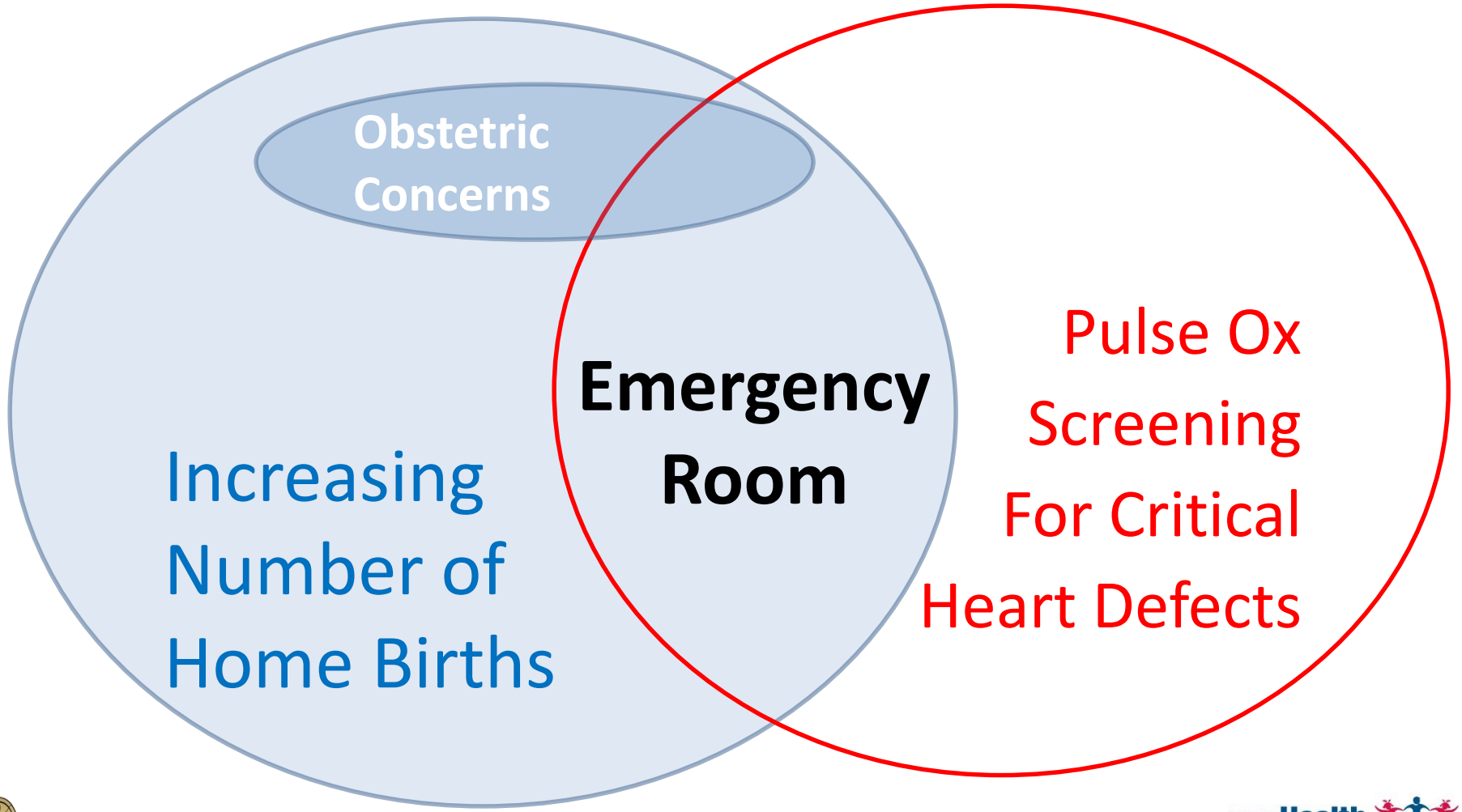
- No central pulmonary artery
- Continuous flow through MAPCAs
- As MAPCAs kink & shrink or PDA closes, total pulmonary blood flow falls, cyanosis ensues



Pulse Oximetry Screening of Neonates

- Typically at 24-48 hours after birth
- Required in WI since summer 2014
- Failed oximetry screening implies a 10-20% chance of a life threatening heart defect, but may also be the first sign of sepsis or pulmonary disease.
- **Echocardiography performed routinely on hospital born babies that fail screening.**

The ER increasingly becomes a perinatal assessment area



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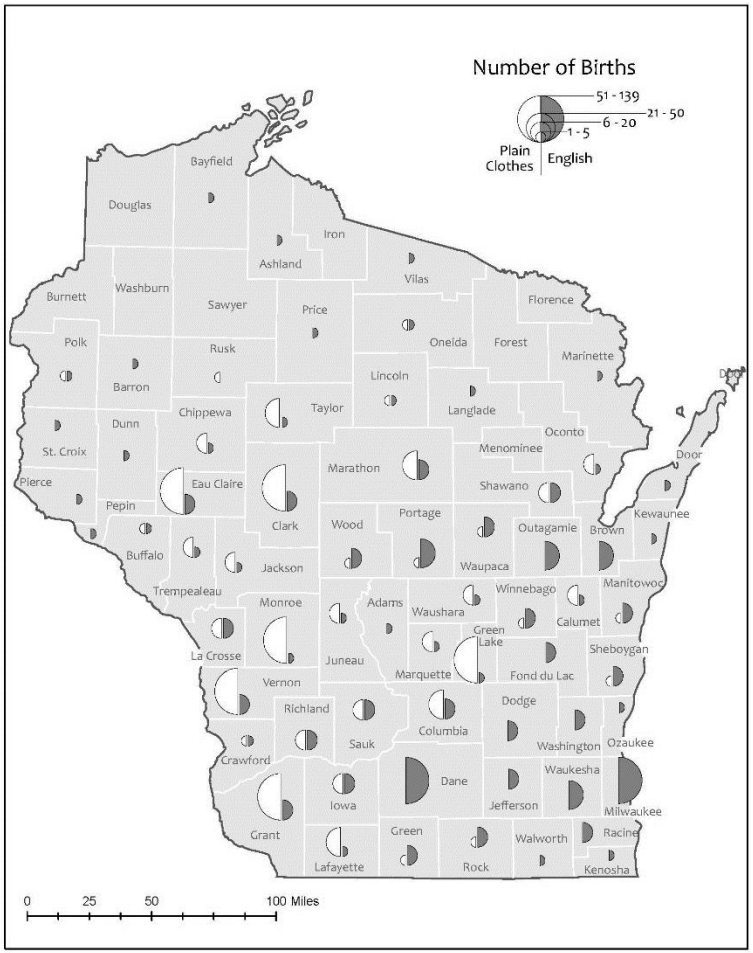
Home Birth Practices

- Licensed Midwives belonging to the Wisconsin Guild of Midwives follow prescribed patterns.
- Usually present for 3 hours after delivery
- Mother and baby check at 24 hours with blood, hearing, and oximetry screening

- Unlicensed midwives and traditional birth attendants may have very different practices.

Home Births in Wisconsin

- 2015: 1835 home births, 2.77% of all births
- Birth attendants:
  - Licensed Midwives
  - Unlicensed Midwives
  - Traditional Birth Attendants
  - Usually do oximetry screening with Masimo Rad5v device



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2015 CCHD Screening in Wisconsin

- 59,296 Screenings Reported (home & hospital)
  - 59,204 Pass (99.845%)
    - 17 babies with coarctation passed!
  - 92 Fail (0.155%)
    - 10 cases of CCHD identified
    - 5 TGA, 2 Ebstein's, TGA with PA, PA, IAA
    - Failed screening = 11% chance of life threatening CCHD
    - This is probably the lowest PPV ever documented
  - ***If you are symptomatic, it isn't screening anymore!***

Pulse oximetry screening for critical congenital heart disease in planned out of hospital births and the incidence of critical congenital heart disease in the Plain community

KK Miller[1], KS Vig[2], EM Goetz[1], G Spicer[3,4], AJ Yang[5] and JS Hokanson[1]

Journal of Perinatology (2016) 00, 1–4

- Pulse Oximetry in Wisconsin home births in 2013 & 2014
- 1616 babies after planned home birth
- 16 Failed (1%)
  - 3 CCHD (18.75%) TA, TA with IAA, Complex SV
  - 2 Sepsis
  - 2 Serious CHD (unbalanced AV canal, severe PS)
- 2 with Coarctation passed their screening

Congenital Heart Disease in the Plain Community

- Incidence of significant heart defects:
  - **"English": 0/775 Plain: 7/799**
- 72% of English women had prenatal ultrasounds, only 31% of Amish women did and most were very limited scans.
- If a significant heart defect is found prenatally, no longer a candidate for home birth.

High Risk Communities

- Prenatal ultrasound screening is essentially universal for women who deliver in hospital and have had any semblance of prenatal care.
- Prenatal ultrasound is responsible for >2/3 of CCHD diagnoses in Wisconsin.
- Women delivering at home are much less likely to have prenatal ultrasound and may have a substantially higher risk for CCHD.

Implications for the ER

- Hospital born babies who fail their oximetry screening should have their definitive assessment *before* they are discharged.
- The babies you may be called upon to assess are coming from what might be the highest risk population out there.
- Pulse oximetry screening can't definitively exclude CCHD, particularly coarctation.

Supplemental Slides

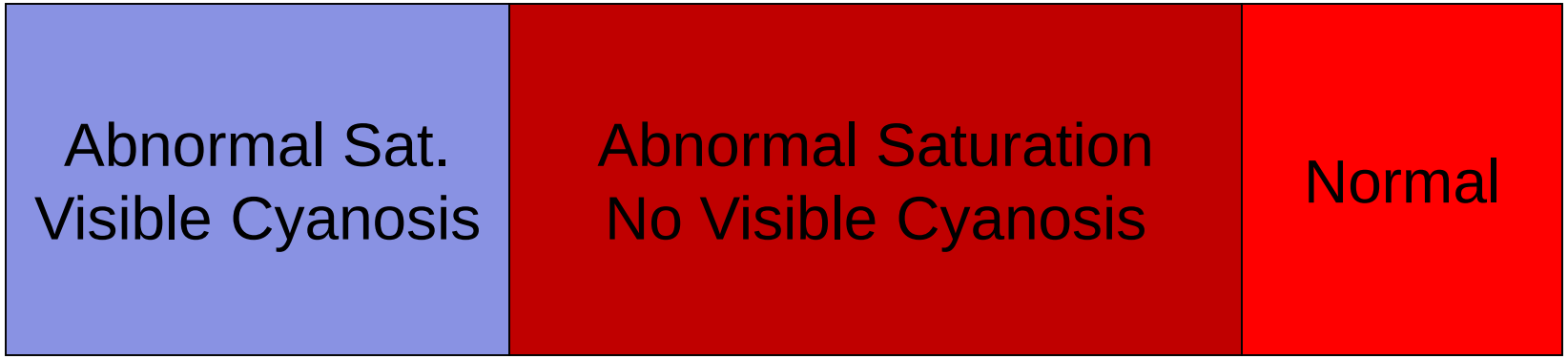
Take Home Points

- Home births are common and increasing in frequency. ER teams will be called to evaluated mothers and babies that in the past would be assessed by hospital teams.
- Many licensed midwives have assessed more babies that you have. Take them seriously.
- A failed oximetry screening should prompt an echocardiogram unless another Dx is present.
- Never hesitate to call Pediatric Cardiology.

The Cyanotic Blind Spot:
you need 3 g/dL deoxygenated Hgb

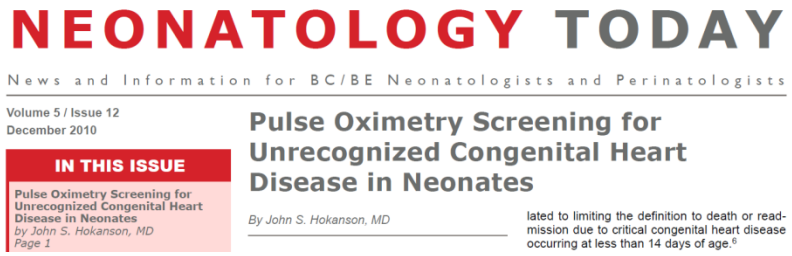
Hemoglobin of 17.5 g/dL (50th percentile)

83% 95%



78% 95%

Hemoglobin of 13.5 g/dL (5th percentile)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News and Information for BC/BE Neonatologists and Perinatologists

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lated to limiting the definition to death or readmission due to critical congenital heart disease occurring at less than 14 days of age.[6]

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