MHA Road Map to a Perinatal Safety Program Updates
April 30, 2015
11 a.m. – 1 p.m.

The Perinatal Patient Safety Road Map provides evidence-based recommendations/standards for Minnesota hospitals in the development of a comprehensive Perinatal Safety Program. The road map and accompanying tool kit were developed in 2012 as part of the Minnesota Perinatal Safety Program which was made possible with funding through CMS’ Partnership for Patients (P4P) Initiative. This webinar will cover updates to the road map have been made, including practices related to eclampsia, maternal hemorrhage and safe sleep.

Objectives:
1) Understand current perinatal outcome measures
2) Describe early detection and treatment of hypertensive emergency based on ACOG guidelines
3) Identify risk factors for maternal hemorrhage
4) Review early elective delivery prevention practices
5) Connect safe sleep practices to SIDS/SUIDS prevention

Agenda:

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 11:00 a.m. | Welcome and Agenda Overview  
Tania Daniels, Vice President, Patient Safety, Minnesota Hospital Association |
| 11:02 a.m. | Data Collection and Tracking  
Katie Banks, Patient Safety and Quality Data Analyst, MN Hospital Association |
| 11:05 a.m. | Scheduled Induction and/or Caesarean Scheduling Process  
Barbara Hyer, M.D., OB/GYN, Regions Hospital, St. Paul |
| 11:25 a.m. | Assessments, Operative Vaginal Delivery, TOLAC  
Phillip Rauk, M.D., Maternal-Fetal Medicine, Fairview Health Services |
| 11:40 a.m. | The Importance of Reducing EED  
Jeff Schiff, MD, MBA, Medical Director, Minnesota Department of Human Services |
| 11:50 a.m. | 10 minute break |
| Noon | Hypertensive Emergencies, Pre-eclampsia, Eclampsia and Transitions in Care  
Mary Goering MPH, RN Clinical Practice Coordinator, United Hospital – Allina Health/Children’s |
| 12:20 p.m. | Obstetric Hemorrhage, VTE Prevention, Peri-operative Infection Prevention  
Kathleen Pfieghaar, M.D., St. Cloud Hospital Perinatal Clinic |
| 12:40 p.m. | Safe Sleep Practices  
Kathleen Fernbach, P.H.N., Director, Minnesota Sudden Infant Death Center, Children’s Hospitals and Clinics of Minnesota |
| 12:55 p.m. | Wrap-Up |
| 1:00 p.m. | Adjourn |
# Road Map to Perinatal Safety Program

**UPDATES**

April 30, 2015

## Welcome and Agenda

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Perinatal Patient Safety Road Map

- The Perinatal Patient Safety Road Map, originally developed in 2012, provides evidence-based recommendations/standards for Minnesota hospitals in the development of a comprehensive Perinatal Safety Program.
- The road map and accompanying tool kit were developed as part of the Minnesota Perinatal Safety Program which was made possible with funding through the CMS Partnership for Patients Initiative.
- Updates to the Perinatal Safety Road Map 2.0 include improved pre-eclampsia and maternal hemorrhage recommendations, SAFE count reminders, infection prevention and SAFE sleep practices.
- The “SAFE” infrastructure has been removed as a first step toward maintaining one overall quality/patient foundational practices road map per facility.

Original Planning Group Members

- Carol Busman, HealthEast Care System, St. Paul
- Stanley Davis, M.D., Fairview Health Services, Minneapolis
- Jan Maxfield, Rice Memorial Hospital, Willmar
- Patricia O’Day, M.D., Essentia Health, Duluth
- Sandra Hoffman, Allina Health, Minneapolis
- Nancy Struthers, M.D., Allina Health, Minneapolis
- Kristi Miller, Fairview Health Services, Minneapolis
- Julie Thompson Larson, HealthPartners, St. Paul
- Barbara Hyer, M.D., HealthPartners, St. Paul
- Penny Beattie, CentraCare Health System, St. Cloud
- Nathan Lee, M.D., CentraCare Health System, St. Cloud Medical Group
- Fritz Ohnsorg, Minnesota Department of Human Services, St. Paul
- Tania Daniels, Minnesota Hospital Association, St. Paul
- Mickey Reid, Minnesota Hospital Association, St. Paul
- Kattie Bear-Pfaffendorf, Minnesota Hospital Association, St. Paul
Perinatal Safety Advisory Group 2015

- Sureshbabu N. Ahanya, Abbott Northwestern Hospital
- Carol Busman, MS, RN, IBCLC, CNS-BC, HealthEast Care System
- Becky L. Gams, RN, MS, CNP, University of Minnesota Medical Center, Fairview
- Lisa Hiltz, R.N., Allina Children's Clinical Service Line
- Sandra Hoffman, MS, RNC-EMF, CNS, Abbott Northwestern Hospital
- Barb Hyer, M.D., Regions Hospital
- Trista Klaphake, RN, CentraCare Health - Melrose
- Melissa Lahn, RNC-OB, MSN, St. Cloud Hospital
- Nathan D. Lee, M.D., St. Cloud Medical Group
- Eric Locher, MD, Park Nicollet HealthPartners Care Group
- Jan M. Maxfield, RN, Rice Memorial Hospital
- Kim R. Pearson, RN, BC, Essentia Health-St. Mary's Medical Center
- Kathleen Pfleghaar, M.D., St. Cloud Hospital Perinatal Clinic
- Phillip Rauk, M.D., Fairview Health Services
- Julie Thompson Larson, BSN, MS, Regions Hospital
- Katherine A. Todd, DNP, RNC, PHN, Park Nicollet HealthPartners Care Group
- Tania Daniels, PT, MBA, Minnesota Hospital Association
- Marilyn Grafstrom, Minnesota Hospital Association

New perinatal measures (MHA)

- Strictly a Minnesota Hospital Association requirement

- Not a substitute for reporting to any other agency

- Enter directly to MHA via www.portal.mnhospitals.org (Call to Action/Patient Safety Site)

**enter Q2-2015 data beginning July 1, 2015**
Perinatal Measures

Massive OB transfusion
- Numerator – women administered ≥ 4 units of PRBC

Timely treatment for pre-eclampsia
- Numerator – women receiving anti-hypertensive drugs within 60 minutes (of first high reading)

Exclusions apply (see data definitions)

Denominator – women giving birth ≥ 20 weeks
Rate is per 100 birthing women

Scheduled Induction and/or Caesarean Scheduling Process

Dr. Barbara Hyer, OB/GYN, Regions Hospital, St. Paul
MHA Roadmaps: scheduled induction and/or Caesarean scheduling process

- No change to content
- Combined redundant points

Scheduled induction and/or Cesarean scheduling process - includes at minimum

1a) The facility has a hard stop policy in place to prevent elective deliveries < 39 weeks without medical indication.

1b) Hospital staff is authorized to deny a request to schedule an elective delivery before 39 weeks and 0 days of gestation.

1c) Providers are required to obtain approval from physician leadership before performing an elective scheduled delivery before 39 weeks.
Eliminate the Term Elective

The term “elective” is commonly used in obstetrics. We performed an electronic search of MEDLINE database using the terms “elective” and “obstetrics,” which provided 2,208 publications. We found “elective” was more often used in relation to surgical interventions (e.g., cesarean delivery, cerclage) and medical procedures (labor induction) rather than diagnostic procedures. Our review indicates the term lacks the necessary scientific specificity when used to modify procedures such as cerclage, cesarean delivery, timing of delivery, episiotomy, hysterectomy, labor induction, preterm delivery, termination of pregnancy, and ultrasonography.

The lack of specificity of the term suggests the most reasonable and prudent course of action is to not use it, but rather to document the specific indication (whether medical or non-medical) for the intervention or procedure (e.g., “cesarean delivery on maternal request,” “history-indicated cerclage,” “induction for preeclampsia”). We propose that the term “elective” should be eliminated from the vocabulary of obstetric practice.

(Obstet Gynecol 2011;117:372–6)
DOI: 10.1097/AOG.0b013e31820780ff

The facility utilizes the following criteria to establish gestational age for all elective deliveries:

2a) Ultrasound measurement at less than 20 weeks of gestation supports gestational age of 39 weeks or greater.

2b) Fetal heart tones have been documented as present for 30 weeks by Doppler ultrasonography.

2c) It has been 36 weeks since a positive serum or urine human chorionic gonadotropin pregnancy test result.
Additional Process Items

2d) The facility has a process in place to document both gestational age and medical indications for delivery as a pre-requisite to schedule delivery prior to 39 weeks.

2e) The facility has developed, accepted, and maintained a list of medical indications for delivery prior to 39 weeks.

2f) The facility has a quality improvement process in place to review all deliveries less than 39 weeks, for appropriateness of the medical indications.

Indications include but are not limited to the following: fetal indications

- Growth restriction
- Fetal anomalies
- Multiple gestation
- Fetal demise
- Iso-immunization
- Abnormal fetal testing
## Indications include but are not limited to the following: obstetric indications

- Placenta abnormalities; previa, abruption
- Previous uterine surgery (classical C-section, myomectomy)
- Amniotic fluid abnormalities
- PROM

## Indications include but are not limited to the following: maternal indications

- Hypertensive disease
- Diabetes
- Lupus
- Renal disease
- Pulmonary disease
- Liver disease
- Coagulation defect
Sample Scheduled Delivery Form

**SCHEDULING FORM FOR INDUCTIONS AND CESAREAN SECTIONS**

Call (613) 734-1405 or (613) 734-0267 (last edit 2/6/13)

<table>
<thead>
<tr>
<th>Requesting Provider</th>
<th>Patient's Name</th>
<th>Age</th>
<th>G</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Record #</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Method of Delivery Planned:** Induction: Cervical ripening Pitocin Fetal presentation __________________________ Effacement

Cesarean delivery: Primary or Repeat Plans PPTL MHCP pt - Federal Consent signed

<table>
<thead>
<tr>
<th>Requested Date of Procedure:</th>
<th>Gestational Age on date of Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMP: ________________________</td>
<td>________________________</td>
</tr>
<tr>
<td>EDD: ________________________</td>
<td>________________________</td>
</tr>
<tr>
<td>Infertility treatment with known date of conception on ________________________ (date)</td>
<td></td>
</tr>
<tr>
<td>Doppler FHT+ for 30 weeks: date of FHT ________________________ +hCG for 36 weeks: date of first HCG ________________________</td>
<td></td>
</tr>
</tbody>
</table>

For Level 2, 3 or 4 indications, if gestational age is not ≥39 weeks determined by above methods, then identify documentation of fetal lung maturity: A mature fetal lung test in the absence of clinical indication is not considered an indication for delivery

**Fetal Lung Maturity test Date:** ________________________ Results: ________________________

Sample Scheduled Delivery Form

**Reasons for Scheduled Delivery:** Check all appropriate indications below

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Induction</td>
</tr>
<tr>
<td></td>
<td>Blood group incompatibility</td>
</tr>
<tr>
<td></td>
<td>Cholestasis</td>
</tr>
<tr>
<td></td>
<td>Cholestasis</td>
</tr>
<tr>
<td></td>
<td>Diabetes on insulin (poor control or vascular disease)</td>
</tr>
<tr>
<td></td>
<td>Fetal compromise (IUGR, oligohydramnios, severe perinatal anomalies, abnormal amniotic testing)</td>
</tr>
<tr>
<td></td>
<td>Fetal demise</td>
</tr>
<tr>
<td></td>
<td>HIV/other</td>
</tr>
<tr>
<td></td>
<td>HIV (pneumonitis, perinatal, complications, BP &gt; 160/90; X &gt; 6 hours spurt, or BP &gt; 140/110 or HELLP syndrome)</td>
</tr>
<tr>
<td></td>
<td>Medical condition (cardiac, pulmonary, renal, lupus, antiphospholipid syndrome, thrombocytopenia)</td>
</tr>
<tr>
<td></td>
<td>Rh factor</td>
</tr>
<tr>
<td></td>
<td>Rhine: L/S or Lipitor segment (prematurity, classical tire)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 2</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Antepartum or prior difficult birth - see guidelines</td>
</tr>
<tr>
<td></td>
<td>Maternal medical condition (cardiac, pulmonary, renal, lupus, antiphospholipid syndrome, thrombocytopenia)</td>
</tr>
<tr>
<td></td>
<td>Prior Birth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advanced maternal age</td>
</tr>
<tr>
<td></td>
<td>Previous cesarean, placenta previa</td>
</tr>
<tr>
<td></td>
<td>Previous fetal demise, complications (cardiac, pulmonary, renal, lupus, antiphospholipid syndrome, thrombocytopenia)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 4</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fetal compromise, unstable to delivery</td>
</tr>
<tr>
<td></td>
<td>macrosome</td>
</tr>
<tr>
<td></td>
<td>patient choice</td>
</tr>
<tr>
<td></td>
<td>Prior C/S</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 5</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gestational diabetes no insuline, or &gt;40 weeks with cervical ripening</td>
</tr>
<tr>
<td></td>
<td>legal or legal indications</td>
</tr>
<tr>
<td></td>
<td>elective with favorable cervix</td>
</tr>
</tbody>
</table>

**Other Indication** ________________________
Sample Scheduled Delivery Form

Bishop Score (for inductions): circle each element of the exam below and add:
Date: ____________________ (within 7 days)

<table>
<thead>
<tr>
<th>Score</th>
<th>Dilation</th>
<th>Effacement</th>
<th>Station</th>
<th>Consistency</th>
<th>Position</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Closed</td>
<td>0-30%</td>
<td>-3</td>
<td>Firm</td>
<td>Posterior</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1-2</td>
<td>40-50%</td>
<td>-2</td>
<td>Medium</td>
<td>Midposition</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3-4</td>
<td>60-70%</td>
<td>-1, 0</td>
<td>Soft</td>
<td>Anterior</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5-6</td>
<td>80%</td>
<td>+1, +2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedure scheduling determination:
Level 1: May schedule <39wks as requested. Medically indicated procedure.
Level 2: May schedule <39wks with documented fetal lung maturity or at >39wks as requested.
Level 3: May schedule ≥39wks. Cervical ripening when indicated.
Level 4: May schedule ≥39wks. No cervical ripening unless medical indication for delivery

May not schedule Level 3 or Level 4 procedure at Gestational Age < 39 weeks unless approved by Section Head.

Completed by: ____________________________________________

Summary

- Each facility will have a process in place to prevent scheduling a delivery prior to 39 weeks unless facility criteria are met, or the scheduling is approved by physician leadership
- Facility criteria will include best methods to establish gestational age
- Facility will include process for documentation of gestational age and indication for delivery prior to 39 weeks
- The facility has a process in place to review deliveries prior to 39 weeks for appropriateness of indication
Summary

- The Roadmap as written; allows each facility to determine the criteria that will be used to determine appropriate timing of delivery
- References are provided to assist with using national expert opinion to establish indications for delivery prior to 39 weeks
- Minnesota Hospital Association will use the Joint Commission Exclusion list as a reference to measure accepted indications for early delivery

Joint Commission Core Measure PC-01

- For purposes of Measure – The MHA will use the same exclusion criteria as The Joint Commission for accepted indications for early term delivery
### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 042 HUMAN IMMUNO VIRUS DIS
- 576.8 DIS OF BILIARY TRACT NEC
- 641.01 PLACENTA PREVIA-DELIVER
- 641.11 PLACENTA PREV HEM-DELIV
- 641.21 PREM SEPAR PLACEN-DELIV
- 641.31 COAG DEF HEMORR-DELIVER
- 641.81 ANTEPARTUM HEM NEC-DELIV
- 641.91 ANTEPARTUM HEM NOS-DELIV

### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 642.01 ESSEN HYPERTEN-DELIVERED
- 642.02 ESSEN HYPERTEN-DEL W P/P
- 642.11 RENAL HYPERTEN PG-DELIV
- 642.12 RENAL HYPERTEN-DEL P/P
- 642.21 OLD HYPERTEN NEC-DELIVER
- 642.22 OLD HYPERTEN-DELIV W P/P
- 642.31 TRANS HYPERTEN-DELIVERED
- 642.32 TRANS HYPERTEN-DEL W P/P
- 642.41 MILD/NOS PREECLAMP-DELIV
- 642.42 MILD PREECLAMP-DEL W P/P
Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 642.51 SEVERE PREECLAMP-DELIVER
- 642.52 SEV PREECLAMP-DEL W P/P
- 642.61 ECLAMPSIA-DELIVERED
- 642.62 ECLAMPSIA-DELIV W P/P
- 642.71 TOX W OLD HYPERTEN-DELIV
- 642.72 TOX W OLD HYP-DEL W P/P
- 642.91 HYPERTENS NOS-DELIVERED
- 642.92 HYPERTENS NOS-DEL W P/P

Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 645.11 POST TERM PREG-DEL
- 646.21 RENAL DIS NOS-DELIVERED
- 646.22 RENAL DIS NOS-DEL W P/P
- 646.71 LIVER/BIL TRCT DISR-DEL
- 648.01 DIABETES-DELIVERED
- 648.51 CONGEN CV DIS-DELIVERED
- 648.52 CONGEN CV DIS-DEL W P/P
- 648.61 CV DIS NEC PREG-DELIVER
- 648.62 CV DIS NEC-DELIVER W P/P
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>▪ 648.81 ABN GLUCOSE TOLER-DELIV</td>
</tr>
<tr>
<td>▪ 648.82 ABN GLUCOSE-DELIV W P/P</td>
</tr>
<tr>
<td>▪ 649.31 COAGULATION DEF-DELIV</td>
</tr>
<tr>
<td>▪ 649.32 COAGULATN DEF-DEL W P/P</td>
</tr>
</tbody>
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<tr>
<td>▪ 651.01 TWIN PREGNANCY-DELIVERED</td>
</tr>
<tr>
<td>▪ 651.11 TRIPLET PREGNANCY-DELIV</td>
</tr>
<tr>
<td>▪ 651.21 QUADRUPLE PREG-DELIVER</td>
</tr>
<tr>
<td>▪ 651.31 TWINS W FETAL LOSS-DEL</td>
</tr>
<tr>
<td>▪ 651.41 TRIPLETS W FET LOSS-DEL</td>
</tr>
<tr>
<td>▪ 651.51 QUADS W FETAL LOSS-DEL</td>
</tr>
<tr>
<td>▪ 651.61 MULT GES W FET LOSS-DEL</td>
</tr>
<tr>
<td>▪ 651.71 MULT GEST-FET REDUCT DEL</td>
</tr>
<tr>
<td>▪ 651.81 MULTI GESTAT NEC-DELIVER</td>
</tr>
<tr>
<td>▪ 651.91 MULT GESTATION NOS-DELIV</td>
</tr>
</tbody>
</table>
### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 652.01 UNSTABLE LIE-DELIVERED
- 652.61 MULT GEST MALPRES-DELIV
- 655.01 FETAL CNS MALFORM-DELIV
- 655.11 FETAL CHROMOSO ABN-DELIV
- 655.31 FET DAMG D/T VIRUS-DELIV
- 655.41 FET DAMG D/T DIS-DELIVER
- 655.51 FET DAMAG D/T DRUG-DELIV
- 655.61 RADIAT FETAL DAMAG-DELIV
- 655.81 FETAL ABNORM NEC-UNSPEC

### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 656.01 FETAL-MATERNAL HEM-DELIV
- 656.11 RH ISOIMMUNIZAT-DELIVER
- 656.21 ABO ISOIMMUNIZAT-DELIVER
- 656.31 FETAL DISTRESS-DELIVERED
- 656.41 INTRAUTER DEATH-DELIVER
- 656.51 POOR FETAL GROWTH-DELIV
- 657.01 POLYHYDRAMNIOS-DELIVERED
- 658.01 OLIGOHYDRAMNIOS-DELIVER
### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- 656.51 POOR FETAL GROWTH-DELIV
- 657.01 POLYHYDRAMNIOSES-DELIVERED
- 658.01 OLIGOHYDRAMNIOSES-DELIVER
- 658.11 PREM RUPT MEMBRAN-DELIV
- 658.21 PROLONG RUPT MEMB-DELIV
- 658.41 AMNIOTIC INFECTION-DELIV
- 659.71 ABN FTL HRT RATE/RHY-DEL
- 663.01 CORD PROLAPSE - DELIVERED
- 663.51 VASA PREVIA-DELIVERED
- 665.01 PRELABOR RUPT UTERUS - DEL
- V08 ASYMP HIV INFECTN STATUS

### Conditions possibly justifying elective delivery prior to 39 weeks gestation

- V23.5 PREG W POOR REPRODUCT HX
- V27.1 DELIVER-SINGLE STILLBORN
Common Barriers to Implementation

- Included in your handouts:
  - The State of California in collaboration with the California Maternal Quality Care Collaborative (CMQCC) and the March of Dimes have shared a presentation that each facility might use to help work through common barriers.
  - Concern for stillbirth

What Have Intervention Studies Observed for the Risk of Stillbirth?

<table>
<thead>
<tr>
<th>Intervention Study</th>
<th>Total Population Studied</th>
<th>Stillbirth Rate Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oshiro (2009)(^1)</td>
<td>160,394</td>
<td>Decline during intervention period</td>
</tr>
<tr>
<td>Clark (2010)(^2)</td>
<td>433,551</td>
<td>No change during the intervention period</td>
</tr>
<tr>
<td>Ehrenthal (2011)(^3)</td>
<td>24,028 (&gt;37 wk only)</td>
<td>Increase noted at 37 and 38 wks</td>
</tr>
<tr>
<td>Benedetti (2012)(^4)</td>
<td>505,445 (&gt;37 wk only)</td>
<td>No change during the intervention period</td>
</tr>
</tbody>
</table>

\(^1\) Obstet Gynecol 2009;113:804–11
\(^2\) Am J Obstet Gynecol 2010;203:449.e1-6
\(^3\) Obstet Gynecol 2011;118:1047–55
\(^4\) Obstet Gynecol 2012;119:656–7
Increased Infant Mortality (birth to 1 year) for Babies Born at 37/38wks Gestation Compared to 39wks or Greater

<table>
<thead>
<tr>
<th>Study</th>
<th>Relative Risk compared to 39 wks</th>
<th>Absolute Increase per 1,000 births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhang (2009)(^1) (US cohort, 1995-2001)</td>
<td>37wk: 1.75 38wk: 1.25</td>
<td>37wk: 1.0 38wk: 0.3</td>
</tr>
<tr>
<td>Donovan (2010)(^2) (Ohio 2003-2005)</td>
<td>37wk: 1.9 38wk: 1.4</td>
<td>37wk: 1.8 38wk: 0.8</td>
</tr>
<tr>
<td>Reddy (NICHD)(2011)(^3) (NCHS US 1995-2001)</td>
<td>37wk: 1.9 38wk: 1.4</td>
<td>37wk: 2.0 38wk: 0.5</td>
</tr>
<tr>
<td>Altman (2012)(^4) (Sweden 1983-2006)</td>
<td>37wk: 2.1 38wk: 1.4</td>
<td>37wk: 1.6 38wk: 0.5</td>
</tr>
</tbody>
</table>

Results are quite consistent and show higher rates of observed infant mortality at 37/38 weeks than predicted for fetal mortality.

---

Risk of Stillbirth and Infant Death Stratified by Gestational Age

- Melissa G. Rosenstein, MD, Yvonne W. Cheng, MD, PhD, Jonathan M. Snowden, PhD, James M. Nicholson, MD, MSCE, and Aaron B. Caughey, MD, PhD

- **OBJECTIVE:** To estimate the multiple dimensions of risk faced by pregnant women and their health care providers when comparing the risks of stillbirth at term with the risk of infant death after birth

- Obsetrics & Gynecology Vol 120, No 1, July 2012, pg 76-82
Risk of Stillbirth and Infant Death Stratified by Gestational Age

METHODS: This is a retrospective cohort study that included all nonanomalous, term deliveries in the state of California from 1997 to 2006 (N3,820,826). The study compared infant mortality rates after delivery at each week of term pregnancy with the rates of a composite fetal–infant mortality that would occur after expectant management for 1 additional week.

RESULTS: The risk of stillbirth at term increases with gestational age from 2.1 per 10,000 ongoing pregnancies at 37 weeks of gestation up to 10.8 per 10,000 ongoing pregnancies at 42 weeks of gestation. At 38 weeks of gestation, the risk of expectant management carries a similar risk of death as delivery, but at each later gestational age, the mortality risk of expectant management is higher than the risk of delivery (39 weeks of gestation: 12.9 compared with 8.8 per 10,000; 40 weeks of gestation: 14.9 compared with 9.5 per 10,000; 41 weeks of gestation: 17.6 compared with 10.8 per 10,000).
Risk of Stillbirth and Infant Death Stratified by Gestational Age

![Graph showing risk of stillbirth and infant death stratified by gestational age.]

Table 3. Comparative Risks of Stillbirth, Infant Death, and Expectant Management by Gestational Age

<table>
<thead>
<tr>
<th>Gestational Age (wk)</th>
<th>Stillbirth Risk</th>
<th>Infant Death Risk</th>
<th>Expectant Management Risk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Referent</td>
<td>Referent</td>
<td>Referent</td>
</tr>
<tr>
<td>38</td>
<td>1.3 (1.2–1.4)</td>
<td>1.2 (1.1–1.3)</td>
<td>1.3 (1.2–1.4)</td>
</tr>
<tr>
<td>39</td>
<td>1.8 (1.5–1.8)</td>
<td>Referent</td>
<td>Referent</td>
</tr>
<tr>
<td>40</td>
<td>2.0 (1.8–2.2)</td>
<td>1.1 (0.9–1.2)</td>
<td>2.1 (1.8–2.4)</td>
</tr>
<tr>
<td>41</td>
<td>2.9 (2.6–3.2)</td>
<td>1.2 (1.1–1.4)</td>
<td>1.4 (1.2–1.6)</td>
</tr>
<tr>
<td>42</td>
<td>5.1 (4.4–6.0)</td>
<td>1.3 (1.1–1.5)</td>
<td>Referent</td>
</tr>
</tbody>
</table>

Data are relative risk (95% confidence interval).
* Expectant management risk = risk of stillbirth at the gestational age + risk of infant death at the next gestational age week.
Risk of Stillbirth and Infant Death Stratified by Gestational Age

Table 4. Causes of Infant Death by Gestational Age, 37–42 Weeks

<table>
<thead>
<tr>
<th>Gestational Age (wk)</th>
<th>37</th>
<th>38</th>
<th>39</th>
<th>40</th>
<th>41</th>
<th>42</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIDS</td>
<td>133</td>
<td>210</td>
<td>274</td>
<td>234</td>
<td>121</td>
<td>121</td>
<td>1,073</td>
</tr>
<tr>
<td>Accidents</td>
<td>64</td>
<td>114</td>
<td>129</td>
<td>125</td>
<td>70</td>
<td>26</td>
<td>523</td>
</tr>
<tr>
<td>Related to labor and delivery</td>
<td>73</td>
<td>79</td>
<td>96</td>
<td>109</td>
<td>60</td>
<td>33</td>
<td>455</td>
</tr>
<tr>
<td>Infection</td>
<td>40</td>
<td>79</td>
<td>107</td>
<td>92</td>
<td>60</td>
<td>20</td>
<td>267</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>24</td>
<td>34</td>
<td>42</td>
<td>30</td>
<td>11</td>
<td>6</td>
<td>175</td>
</tr>
<tr>
<td>Cardiac</td>
<td>22</td>
<td>22</td>
<td>20</td>
<td>24</td>
<td>17</td>
<td>7</td>
<td>112</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>13</td>
<td>19</td>
<td>26</td>
<td>28</td>
<td>13</td>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>13</td>
<td>13</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Missing</td>
<td>10</td>
<td>23</td>
<td>90</td>
<td>66</td>
<td>41</td>
<td>12</td>
<td>252</td>
</tr>
<tr>
<td>Total</td>
<td>414</td>
<td>753</td>
<td>961</td>
<td>921</td>
<td>547</td>
<td>193</td>
<td>3,879</td>
</tr>
</tbody>
</table>

SIDS, sudden infant death syndrome. Data are n (% of n).

Risk of Stillbirth and Infant Death Stratified by Gestational Age

Table 5. Relative and Absolute Risks of Expectant Management Compared With Delivery at 37–41 Weeks of Gestation

<table>
<thead>
<tr>
<th>Gestational Age (wk)</th>
<th>Relative Risk of Expectant Management Compared With Delivery (95% CI)</th>
<th>Absolute Risk Difference Between Expectant Management and Delivery/10,000 (95% CI)</th>
<th>No. Needed to Deliver at This Gestational Age to Prevent a Single Excess Death (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>0.87 (0.77–0.97)</td>
<td>-1.04 (–1.29 to –0.99)</td>
<td>9,042 (15,587–314,456)</td>
</tr>
<tr>
<td>38</td>
<td>0.61 (0.50–1.20)</td>
<td>1.14 (0.03–3.18)</td>
<td>4,147 (20,014–3,101)</td>
</tr>
<tr>
<td>39</td>
<td>1.47 (1.32–1.65)</td>
<td>4.10 (3.23–4.57)</td>
<td>1,829 (1,032–2,228)</td>
</tr>
<tr>
<td>40</td>
<td>1.68 (1.42–1.71)</td>
<td>5.47 (4.39–6.44)</td>
<td>1,697 (1,214–2,083)</td>
</tr>
<tr>
<td>41</td>
<td>1.93 (1.47–2.34)</td>
<td>6.79 (5.32–8.24)</td>
<td>1,476 (1,214–1,888)</td>
</tr>
</tbody>
</table>

CI, confidence interval.
### Risk of Stillbirth and Infant Death Stratified by Gestational Age

CONCLUSION: Infant mortality rates at 39, 40, and 41 weeks of gestation are lower than the overall mortality risk of expectant management for 1 week.

### Induction and cervical ripening for elective deliveries 39 – 41 weeks (new)

1a) The facility has adopted evidence based cervical ripening protocols utilizing the Bishop Score according to ACOG, AWHONN guidelines that include:

1b) No cervical ripening for elective deliveries

1c) Consider analyzing primary c-section rates in relation to Bishop scores
Risk of Cesarean delivery with elective induction of labor at term in nulliparous women

- **Conclusion:** Elective induction of labor is associated with a significantly increased risk of cesarean delivery in nulliparous women. Avoiding labor induction in settings of unproved benefit may aid efforts to reduce the primary cesarean delivery rate.
- (Obstet Gynecol 1999;94:600–7. © 1999 by The American College of Obstetricians and Gynecologists.)
- Stacy T Seyb MD  Northwestern

Elective induction of labor as a risk factor for Cesarean delivery among low-risk women at term

- **Conclusion:** Elective induction significantly increased the risk of cesarean delivery for nulliparas, and increased in hospital pre delivery time and costs.
- Arthur Maslow DO, MsC  Tacoma
Labor progression and risk of Cesarean delivery in electively induced nulliparas

**CONCLUSION:** The pattern of labor progression differs substantially for women with an electively induced labor compared with those with spontaneous onset of labor. Furthermore, elective induction in nulliparous women with an unfavorable cervix has a high rate of labor arrest and a substantially increased risk of cesarean delivery.


Anjel Vahratian NICHD  
*Level of evidence II-2*

Bishop score and risk of Cesarean delivery after induction of labor in nulliparous women

**CONCLUSION:** Compared with spontaneous onset of labor, medical and elective induction of labor in nulliparous women at term with a single fetus in cephalic presentation is associated with an increased risk of cesarean delivery, predominantly related to an unfavorable Bishop score at admission.


Francis PJM Vrouwenraets MD Netherlands  
*Level of evidence II-2*
Labor induction and the risk of a Cesarean delivery among nulliparous women at term

**CONCLUSION:** Labor induction is significantly associated with a cesarean delivery among nulliparous women at term for those with and without medical or obstetric complications. Reducing the use of elective labor induction may lead to decreased rate of cesarean delivery for a population.

*(Obstet Gynecol 2010;116:35–42)*

**Deborah B. Ehrenthal MD, Delaware**

*Level of Evidence II*

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Term labor induction compared with expectant management

**CONCLUSION:** Labor induction is associated with increased cesarean risk whether using a week-to-week comparison group or an expectant group that includes women the same week or beyond that of the index induction, even after adjustment for parity, high-risk factors, and demographic variables. Although the magnitude of increased risk for a given woman undergoing induction is not large, women nonetheless should be informed of this increased risk.

*(Obstet Gynecol 2010;115:70–6)*

**J. Christopher Glantz, University of Rochester**

*Level of evidence II*
### Elective induction compared with expectant management in nulliparous women with a favorable cervix

- **CONCLUSION:** For nulliparous women with a favorable cervix, elective labor induction has a similar chance of resulting in cesarean delivery as expectant management, although it appears to result in an increase in resource use.

  - *(Obstet Gynecol 2010;116:601–5)*
  - *Sarah Osmundson MD Northwestern*
    - Level of evidence II

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### Elective induction compared with expectant management in nulliparous women with an unfavorable cervix

- **CONCLUSIONS:** For nulliparous women with an unfavorable cervix, elective labor induction increased utilization of labor and delivery resources but did not result in other significant differences in most clinical outcomes.

  - *(Obstet Gynecol 2011;117:583–7)*
  - *Sarah Osmundson MD Northwestern*
    - Level of Evidence II
Comparing the second stage in induced and spontaneous labor

- **CONCLUSION**: Among women who reach full dilation, labor proceeds similarly regardless of induction status. Induced nulliparas may have an increased risk of hemorrhage and cesarean delivery.
- *(Obstet Gynecol 2010;116:606–11)*
- *Vanitha Janakiranen, Mass General*

Outcomes of Pregnancy Beyond 37 Weeks of Gestation

- **CONCLUSION**: Poor pregnancy outcomes vary with gestational age. Post term pregnancy and induced labor are prognostic factors for poor outcome.
- *(Obstet Gynecol 2006;108:500–8)*
- *Runa Heimstal*

*Level of evidence II*
Summary – Elective Induction at Term

- There are no prospective randomized control trials that compare induction of labor with unfavorable cervix versus expectant management in low risk women at 39 & 40 weeks that measure maternal & neonatal outcomes
- Current data would support an increase: C/S rate, maternal complication & cost with induction at 39 & 40 weeks with unclear neonatal benefit for low risk women with an unfavorable cervix

Introduction to Perinatal Bundles: Maternal, Fetal and Uterus Assessments

Dr. Phillip N. Rauk, Maternal-Fetal Medicine, Fairview Health Services, Minneapolis
Bundle Science

- A bundle is a group of evidence-based interventions related to a disease or care process that, when executed together, result in better outcomes than when implemented individually.
- All components of the bundle must be met to achieve the desired better outcome.

Quality Care in Obstetrics
Addressing Harm Using Bundles

- **The Bundle Science**
  - Individual components supported by evidence based practice/professional guidelines
  - Required to be performed for “every patient, every time”
  - Bundle compliance measured by fulfilling all parts of the bundle, process metrics
  - Focus on system processes and standardization for both nursing and providers
The Four Advanced IHI Perinatal Bundles for 2014-2015 from IHI*

**Non-Medically Indicated Induction**
- Gestational age $\geq 39$ weeks
- Normal fetal status per NICHD tiers
- Pelvic exam prior to the start of Oxytocin
- Recognition and management of tachysystole

**Medically Indicated Induction**
- Appropriate Medical Indication
- Normal fetal status per NICHD tiers
- Pelvic exam prior to the start of Oxytocin
- Recognition and management of tachysystole
- Documentation of estimated fetal weight

**Augmentation**
- Documentation of estimated fetal weight
- Normal fetal status (per NICHD tiers)
- Pelvic exam prior to the start of Oxytocin
- Recognition and management of tachysystole

**Vacuum**
- Alternative labor strategies considered
- Prepared patient (consent)
- High probability of success (position, station, EFW)
- Maximum application time and number of pop-offs predetermined
- Cesarean and resuscitation teams available

*IHI – Institute for Healthcare Improvement

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**Estimated Fetal Weight**

- **Estimated Fetal Weight** – This assessment is important to defining any risk for delivery for the perinatal team, esp. shoulder dystocia risk.

- Generally estimates of fetal weight based on ultrasound or Leopold Maneuvers are within 10-15% of birthweight. Most importantly an LGA may be identified by these methods.
NICHD Nomenclature

Standardizing Terminology in Intrapartum EFM

2008 Workshop Guidelines

NICHD Standard Definitions – Baseline Fetal Heart Rate

- Approximate mean FHR rounded to 5 BPM
- Document as a Single Number
- Identified over a 10 minute timeframe with 2 minute minimum, does not need to be continuous
- Excludes accelerations, decelerations, marked variability, and segments of baseline differing by >25 bpm
- Bradycardia < 110 bpm for > 10 minutes
- Tachycardia > 160 bpm > 10 minutes
**NICHD Standard Definitions – Baseline FHR Variability**

- Irregular fluctuation in baseline FHR of 2 cycles per minute or more quantitated as amplitude
  - Absent Undetectable
  - Minimal ≤ 5 bpm
  - Moderate 6-25 bpm
  - Marked > 25 bpm

**Pelvic Exam**

- The pelvic exam establishes a clear plan for induction of labor and also assists with decisions related to augmentation of labor
- This assessment can be made by any qualified member of the perinatal team
Terminology to describe uterine activity

- A. Normal: \( \leq 5 \) ctx in 10 minutes averaged over 30 minutes
- B. Tachysystole: > 5 ctx in 10 minutes averaged over 30 minutes
- C. Characteristics of uterine contractions:
  - Tachysystole should be qualified as to the presence or absence of FHR decelerations.
  - The term tachysystole applies to both spontaneous and stimulated labor.
    (The response will depend on whether the contractions are spontaneous or stimulated)
  - The terms hyperstimulation and hypercontractility are not defined and should be abandoned.

- Other factors such as duration, intensity and relaxation time must also be considered
Vacuum Bundle

- Alternative labor strategies considered
- Prepared patient
  - Informed consent discussed and documented
- High probability of success
  - EFW, fetal position and station known
- Maximum application time and number of pop-offs predetermined
- Exit strategy available
  - Cesarean and resuscitation team available

Pop-Offs

- “Pop-offs” are defined as a sudden complete detachment of the vacuum from the head with a rapid loss of pressure from the green zone to zero pressure.
- The number of “pop-offs” correlates with birth trauma, ranging from abrasions to subgaleal hemorrhage
- Generally > 3 increases the risk for birth injury
Maximum Pulls

- A pull is defined as use of traction during each contraction not the number of pulls within each contraction.
- There is no clear definition of the maximum pulls that should be attempted before the procedure is abandoned.
- Most experts feel up to 3-4 pulls is appropriate if progression in descent is noted with each subsequent pull.
- Failure to abandon the procedure when progress has not occurred is associated with an increase in birth trauma.

Application Time

- There is limited data on application time.
- Longer application times are associated with an increased risk for failure and for neonatal morbidities.
- Most experts believe that consistent with other guidelines in the use of vacuum (i.e maximum pulls and progress) that 10 – 20 minutes is appropriate and that failure of any descent after 10 minutes predicts a high rate of failure.
Other Considerations

- Poor technique also affects maternal and neonatal morbidity and mortality
  - Improper application both with respect to placement on the head and station/position
  - Lack of training and credentials to perform the procedure
  - Use of a rocking motion or rotation
  - Inattention to number of “pop-offs” and pulls

Trial of Labor after Previous Cesarean Section
“These VBAC guidelines emphasize the need for thorough counseling of benefits and risks, shared patient-doctor decision making, and the importance of patient autonomy. Moving forward, we need to work collaboratively with our patients and our colleagues, hospitals and insurers to swing the pendulum back to fewer cesareans and more reasonable VBAC rates.”

Richard N. Waldman MD, President of the College

And those hospitals that lack “immediately available” staff should develop a clear process for gathering them quickly and all hospitals should have a plan in place for managing emergency uterine ruptures, however rarely they may occur, Dr. Grobman added.
The following are selection criteria useful in identifying candidates for VBAC:

1) One previous low transverse cesarean delivery should be counseled on VBAC and offered TOLAC.
2) Women with 2 prior LTCS are candidates for TOLAC.
3) Women with 1 prior LTCS and twins may attempt a VBAC.
4) Induction of labor for maternal/fetal reasons is acceptable.
5) A previous unknown scar is a candidate for TOLAC.
6) External version may occur if patient is candidate for TOLAC.
7) Epidural may be used for TOLAC.
8) Misoprostil should not be used for cervical ripening.

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**Level C – Consensus and Clinical Opinion**

A trial of labor after previous cesarean delivery should be undertaken at facilities capable of emergency deliveries.

The College recommends TOLAC be undertaken in facilities with staff immediately available to provide emergency care.

When resources for immediate cesarean delivery are not available, the College recommends that health care providers and patients considering TOLAC discuss the hospital’s resources. Respect for patient autonomy supports that patients should be allowed to accept increased levels of risk...
Key Points

- Strict adherence to contraindications to VBAC attempt
- Proper counseling on both short- and long-term risk and benefits
- Providing a safe environment to conduct a trial of labor
- Selection of patients with a high success rate

Probability of TOLAC Success Calculator

http://www.bsc.gwu.edu/mfmu/vagbirth.html
variables include age, BMI, ethnicity, prior vaginal delivery, prior VBAC, and potential recurrent indication for cesarean section

http://www.bsc.gwu.edu/mfmu/vagbrth2.html
variables include age, BMI, ethnicity, prior vaginal delivery, prior VBAC, indication for prior C/S, EGA, HTN disorder, cervical exam, and labor induction

I understand that I have had one or more prior cesarean deliveries.

I understand that I have the option of undergoing an elective repeat cesarean delivery or attempting a vaginal birth after cesarean (VBAC), also known as a trial of labor after a cesarean delivery (TOLAC).

I understand that approximately 65% of women who attempt a TOLAC will successfully deliver vaginally. My success rate may be lower or higher than this number. We have discussed that because of my personal circumstances, my chance of a successful vaginal delivery may be greater than or less than 65%.

I understand that a TOLAC carries a lower risk to me than a cesarean delivery. The benefits to me, of a successful VBAC are decreased blood loss, and a quicker, easier recovery.

I understand that there is 0.5-1% risk of a uterine rupture in patients who are good candidates to attempt TOLAC. If my uterus ruptures during my TOLAC, I understand there may not be sufficient time to operate and prevent death or permanent brain injury to my baby.

The risks to me, should rupture of the uterus occur, include but are not limited to hysterectomy (loss of uterus), blood transfusion, infection, injury to internal organs (bowel, bladder, ureter), blood coagulation problems or death.

I understand that a successful VBAC may help avoid future maternal consequences of multiple cesarean deliveries such as hysterectomy, bowel or bladder injury, blood transfusion and abnormal development of the placenta (placenta previa and accreta).

I understand that if I choose to attempt a TOLAC and end up having a cesarean delivery during labor, I have a greater risk of having complications than if I had an elective repeat cesarean delivery.

I have been explained the type of neonatal resuscitation and surgical resources of the hospital at which I will deliver.

I understand that during my TOLAC the use of pitocin to make my uterus contract may be necessary to assist me in to deliver vaginally. The risks of this medication have been discussed with me.

I have read or have had read to me all the above information and I understand it. I have had all of my questions answered and I have received all the information I need to make an informed choice.

☐ “I choose to attempt a trial of labor after cesarean delivery”
☐ “I choose to have an elective repeat cesarean delivery”
Program history

- Initial efforts to decrease unnecessary C sections
- Led to discussion of early elective delivery
- Led to evidence based childbirth program
Evidence based childbirth program

- Hospitals attest to:
  - Hard stop policy
    - Medical indication
    - By review other medical or non medical exceptions
    - Locally developed set of indications
  - Internal quality review of all planned deliveries under 39 weeks
  - Consistent efforts to estimate gestational age by 20 weeks
  - Patient/ family education
- Hospital to report aggregate results
- Non-participating hospitals report results by patient
- NO non-payment policy

Evidence based childbirth program

- Success
  - Quickly over 90% of births
  - All but one birthing hospital
- Success triggered a suspension of reporting of results
- Results still reported via the Hospital engagement network
  - Decrease from 2.08% to 0.25%
So...what is a medical indication?

- Population health perspective
  - Medical indications on the birth certificate
  - Joint commission’s PCO-1 measure
    ○ Contrast of these two
- Other medical indications
- Combination of factors that may combine to be an indication

Concern raised about the potential for increase in stillbirth

- Consideration for further investigation requested of the Legislature
- Commitment to collaboratively address and monitor
- Caution regarding rigid adherence to any “list”
A model for collaborative work

- Issue of importance and relevance to health outcomes
- Clear evidence base
- Integration of sentinel measures at the “macro” level
- Clinically and practice-specific process and measures at the local level
  - Local measures stay local and are used for quality improvement
- Available feedback of results

10 Minute Stretch Break
11:50 a.m. – Noon
Don’t log off. If you need to dial in again, the number is 1-800-791-2345 code 11076
Hypertensive Emergencies and Eclampsia Updates for Perinatal Safety Roadmap

Presentation Information compiled and developed by Sandra L Hoffman RNC-EFM MS
The Mother Baby Center ANW – Allina Health/Children’s

Presenter – Mary Goering MPH, RN Clinical Practice Coordinator
United Hospital – Allina Health/Children’s

CMQCC Preeclampsia Toolkit

Perinatal Roadmap Considerations

1a) Protocol for early detection of hypertensive emergencies based on ACOG

1b) CMQCC algorithm readily available

1c) Protocol for safe administration of Magnesium Sulfate for prevention and management of seizures

1d) Consider early recognition tools such as CMQCC PERT

1e) Process that provides immediate access to medications for hypertensive emergencies and preeclampsia

1f) Process to support collaboration between ED and OB departments in identifying, evaluating and treating Pre-eclamptic and eclamptic patients
Improving Health Care Response to Preeclampsia: A California Quality Improvement Toolkit

Funding for the development of this toolkit was provided by:
Federal Title V block grant funding from the California Department of Public Health; Maternal, Child and Adolescent Health Division and Stanford University.

Executive Summary:
Hypertension in Pregnancy

American College of Obstetricians and Gynecologists

Obstet Gynecol 2013;122:1122-31
Diagnosis Criteria for Preeclampsia

Blood pressure
- Greater than or equal to 140 mm Hg systolic or greater than or equal to 90 mm Hg diastolic on two occasions at least 4 hours apart after 20 weeks of gestation in a woman with a previously normal blood pressure.
- Greater than or equal to 160 mm Hg systolic or greater than or equal to 110 mm Hg diastolic, hypertension can be confirmed within a short interval (minutes) to facilitate timely antihypertensive therapy.

Proteinuria
- Greater than or equal to 300 mg per 24-hour urine collection (or this amount extrapolated from a timed collection).
- Protein/creatinine ratio greater than or equal to 0.3*.
- Dipstick reading of 1+ (used only if other quantitative methods not available).

Or in the absence of proteinuria, new-onset hypertension with the new onset of any of the following:

- Thrombocytopenia: Platelet count less than 100,000/microliter.
- Renal insufficiency: Serum creatinine concentrations greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease.
- Impaired liver function: Elevated blood concentrations of liver transaminases to twice normal concentration.
- Pulmonary edema.
- Cerebral or visual symptoms.

*Each measured as mg/dL.


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Diagnosis of Severe Preeclampsia

- Systolic blood pressure of 160 mm Hg or higher, or diastolic blood pressure of 110 mm Hg or higher on two occasions at least 4 hours apart while the patient is on bed rest (unless antihypertensive therapy is initiated before this time).
- Thrombocytopenia: Platelet count less than 100,000/microliter.
- Impaired liver function as indicated by abnormally elevated blood concentrations of liver enzymes (twice normal concentration), severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by alternative diagnoses, or both.
- Progressive renal insufficiency: Serum creatinine concentration greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease.
- Pulmonary edema.
- New-onset cerebral or visual disturbances.

Emergent Therapy for Acute-Onset, Severe Hypertension During Pregnancy and the Postpartum Period

**ABSTRACT:** Acute-onset, severe systolic hypertension, severe diastolic hypertension, or both can occur in pregnant women or women in the postpartum period. Introducing standardized, evidence-based clinical guidelines for the management of patients with preeclampsia and eclampsia has been demonstrated to reduce the incidence of adverse maternal outcomes. Individuals and institutions should have mechanisms in place to initiate the prompt administration of medication when a patient presents with a hypertensive emergency. Once the hypertensive emergency is treated, a complete and detailed evaluation of maternal and fetal well-being is needed with consideration of, among many issues, the need for subsequent pharmacotherapy and the appropriate timing of delivery.

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**Key Clinical Pearl**

Controlling blood pressure is the optimal intervention to prevent deaths due to stroke in women with preeclampsia.

Over the last decade, the UK has focused QI efforts on aggressive treatment of both systolic and diastolic blood pressure and has demonstrated a reduction in deaths.
Hypertensive Emergency Definition  
(ACOG Committee Opinion No. 623, Feb 2015) 

Acute onset severe systolic (greater than or equal to 160 mmHg); severe diastolic (greater than or equal to 110 mmHg) hypertension; or both, that is accurately measured using standard techniques and is persistent for 15 minutes or more

Risk of stroke is felt to be correlated with maximum systolic pressure (CMQCC Preeclampsia Toolkit)
Preeclampsia Toolkit BP Treatment Recommendations

<table>
<thead>
<tr>
<th>Systolic  ≥ 160</th>
<th>Diastolic  ≥ 110</th>
<th>Repeat BP and treat within 60 minutes (ideally ASAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥155</td>
<td>≥105-110</td>
<td>Alternative triggers*</td>
</tr>
</tbody>
</table>

These recommendations apply to all forms of hypertension in pregnancy:

Gestational HTN - Preeclampsia - Severe Preeclampsia


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Hypertensive Medication Administration Oral v. IV

- IV Labetalol
  - Onset: 2-5 min
  - Peak: 5 min
- IV Hydralazine
  - Onset: 5-20 min
  - Peak: 15-30 min
- PO Labetalol:
  - Onset: 20 min-2 hrs
  - Peak: 1-4 hrs
- PO Nifedipine
  - Onset: 5-20 min*
  - Peak: 30-60 min

*PO: oral not sublingual nifedipine, onset of action is 15-30 minutes depending on the reference source.


http://www.uspharmacists.com/content/feature/1444/c27112
Hypertensive Medication Administration

Oral versus IV

- First line therapy recommendations for acute treatment of critically elevated BP in pregnant women (160/105-110) are with either IV labetalol or hydralazine.
- In the event that acute treatment is needed in a patient without IV access oral nifedipine may be used (10 mg) and may be repeated in 30 minutes.
- PO (oral) nifedipine appears equally as efficacious as IV labetalol in correcting severe BP elevations.
- Oral labetalol would be expected to be less effective in acutely lowering the BP due to its’ slower onset to peak and thus should be used only if nifedipine is not available in a patient without IV access.


Protocol for Labetalol Treatment

LABETALOL:

Threshold Blood Pressure:
Systolic 160 OR Diastolic 105-110

Target Blood Pressure:
140-150 - 90-100

If BP above threshold:
Give 20 mg IV over 2 minutes.
Repeat BP in 10 minutes

BP above threshold after 10 min:
40 mg IV over 2 minutes. Repeat BP in 10 minutes

If BP above threshold after 10 min:
80 mg IV over 2 minutes. Repeat BP in 10 minutes

BP above threshold: repeat 80mg over 10 minutes to maximum dose of 220 mg

If No IV Access:
Give Oral Labetalol 200 mg
Check BP in 30 minutes; if above
threshold, labetalol 200 mg dose

OR

If No IV access:
Give PO Nifedipine 10 mg
Check BP in 30 minutes; if above
threshold, repeat PO nifedipine 10 mg

Hydralazine: 10mg over 2 minutes

Switch TO:

Seek Consultation:
(Maternal-Fetal Medicine, Critical Care, Anesthesia, Internal Medicine)

Adapted from ACOG Committee Opinion #514. (1) MPH, Critical Care, Anesthesia, Internal Medicine; (2) Bhanes H, Goid R, Omari E, Tan P. Oral nifedipine versus intravenous labetalol for acute blood pressure control in hypertensive emergencies of pregnancy: a randomized trial. BJOG 2012;119:79-85.
**ACOG Protocol for Hydralazine Treatment**

**HYDRAZINE**

**Threshold Blood Pressure**
- Systolic 160 or Diastolic 105-110

**Target Blood Pressure**
- 140-160 or 90-100

- If BP above threshold:
  - 5 mg or 10 mg IV over 2 minutes.
  - Repeat BP in 20 minutes
- If BP above threshold:
  - 10 mg IV over 2 minutes.
  - Repeat BP in 20 minutes
- If BP above threshold:
  - Switch to Labetalol 20 mg IV over 2 minutes.
  - Repeat BP in 30 minutes
- If BP above threshold:
  - Labetalol 40 mg IV over 2 min.
  - Repeat BP in 30 minutes

- Hydralazine: 5-10 mg doses IV every 15-20 minutes until desired response is achieved
- Emergency Consultation
  - (MFM, Critical Care, Anesthesia, Internal Medicine)

ACOG Committee Opinion #514, 2011; ACOG Practice Bulletin #93, Reaffirmed 2012.

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**Vital Signs and Assessments**

- Remain with the patient for a period of time after treating hypertensive emergencies to monitor responses

- Once BP thresholds are achieved, repeat BP every 10 min x 1 hour, then every 15 min x 1 hr, then every 30 min for 1 hour, then every hour for 4 hours

- Does the patient have headache (describe location and symptoms), visual changes, epigastric or upper right quadrant changes? Chest pain, SOB?
Magnesium Sulfate in the Management of Preeclampsia

**Magpie Trial Collaboration Group.** Do women with pre-eclampsia, and their babies, benefit from magnesium sulfate?

- 58% reduction in seizures
- 45% reduction in maternal death*
- 33% reduction in placental abruption

*The 45% reduction in maternal death is not statistically significant but clinically important.


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Magnesium Sulfate

- Primary effect is via CNS depression
- Improves blood flow to CNS via small vessel vasodilation
- Blood pressure after magnesium infusion:
  - 6 gm loading then 2 gm/hr.

<table>
<thead>
<tr>
<th>Group</th>
<th>sBP mm Hg</th>
<th>sBP 30 min</th>
<th>sBP 120 min</th>
<th>dBP mm Hg</th>
<th>dBP 30 min</th>
<th>dBP 120 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>145 ±10</td>
<td>143 ±13</td>
<td>141 ±14</td>
<td>87 ±10</td>
<td>79 ±9</td>
<td>82 ±9</td>
</tr>
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</table>

**Magnesium sulfate should not be considered an antihypertensive medication**

### Recommendations for Women Who Should Be Treated With Magnesium

<table>
<thead>
<tr>
<th></th>
<th>Preeclampsia without severe features</th>
<th>Severe Preeclampsia</th>
<th>Eclampsia</th>
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<tbody>
<tr>
<td>ACOG</td>
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<td>SOGC</td>
<td>X*</td>
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<tr>
<td>CMQCC</td>
<td>X*</td>
<td>X</td>
<td>X</td>
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<tr>
<td>WHO</td>
<td>X</td>
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*ACOG Executive Summary, 2013: for preeclampsia without severe features, it is suggested that magnesium sulfate not be administered universally for the prevention of eclampsia.

*Should be considered: Numbers needed to treat (NNT) = 109 for “mild”, 63 for “severe”

### Key Clinical Pearl

- Magnesium sulfate therapy for seizure prophylaxis should be administered to any patients with:
  - Severe Preeclampsia
  - Preeclampsia with “severe features” i.e., subjective neurological symptoms (headache or blurry vision), abdominal pain, epigastric pain AND
  - should be considered in patients with mild preeclampsia (preeclampsia without severe features)
Eclampsia
Care and Assessments

Key Clinical Pearl

Algorithms for acute treatment of severe hypertension and eclampsia should be readily available or preferably posted in all clinical areas that may encounter pregnant women.
Eclampsia: Observations from 67 recent cases

- 67 cases of eclampsia managed over 4 years
- 1:310 deliveries
- 21% had no proteinuria
- 21% had no DBP in excess of 90 mmHg
- 37% of first eclamptic seizures occurred postpartum
- 16% of first eclamptic seizures occurred late postpartum (3-11 days postpartum)


Eclampsia: Maternal-Perinatal Outcome In 254 Consecutive Cases

- 254 consecutive cases of eclampsia over 12 years
- 83,720 deliveries, for an incidence of one in 330
- 49 patients (19%) did not have proteinuria
- 58 patients (23%) did not have hypertension
- 73 occurred postpartum, half of which occurred >48 hours after delivery
- Over half of postpartum cases, (40 cases/16%) occurred in the late postpartum period
- 18 of these 40 cases were normotensive; all 18 had symptoms of headache or visual disturbance

Clinical Symptoms Prior to Eclampsia

- Persistent occipital or frontal “thunderclap” headaches (50% of patients)
- Visual changes (spots, blurred, partial or total loss of vision, blurred or double vision, visual field defects, photophobia) (19%)
- Epigastric or URQ pain (19%)

Ankle clonus is also a common finding
Of note: Recent data from a large series of eclamptic women-up to 40% have no premonitory signs/symptoms prior to convulsions

Eclampsia

- **Seizures (tonic/clonic)** are almost always self limiting and seldom last more than 3-4 min (usual duration 60-75 seconds).
- **Phase 1** lasts 15-20 sec and usually begins with facial twitching, the body becomes rigid, leading to generalized muscular contractions.
- **Phase 2** lasts about 60 sec starting in the jaw, moves to the muscles of the face and eyelids then spreads throughout the body. A coma or period of unconsciousness lasts for a variable period after phase 2. A period of hyperventilation occurs after the tonic/clonic seizure-this compensates for the respiratory and lactic acidosis that develops during the apneic phase.
**Nursing Actions**

- Witnessed seizure: call for help, maintain patent airway and prevent aspiration
- **Roll pt to left side to prevent aspiration**, side rails up and pad- try to prevent trauma
- Oxygen, place pulse oximeter, frequent BP and pulse checks
- IV access, Manage severe hypertension
- Prevent recurrent seizures-Magnesium sulfate
- Evaluate for prompt delivery if still pregnant

**Treatment of Convulsions**

- **Drug of choice: magnesium sulfate** (contraindicated in myasthenia gravis)

- **Loading dose-4-6 gm over 15 min**, followed by maintenance of 2 gm/hr (if patellar reflex present, resps >12/min, and urine output >100 mL in 4 hrs)

- **Recurrent convulsion-additional bolus of 2 gm over 5-7 min.**
If 2 Magnesium sulfate boluses are not sufficient to control seizures...

- **Midazolam** (versed) 1-2 mg IV (can repeat in 5-10 minutes) –OR-

- **Lorazepam** (ativan) 4 mg IV over 2-5 min (can repeat in 5-15 minutes to maximum of 8 mg in 12 hours) –OR-

- **Diazepam** (valium) 5-10 mg IV slowly (can repeat every 15 minutes up to 30 mg) –OR-

- **Phenytoin** (dilantin) 1000mg IV over 20 min.

- Monitor respirations and BP, ECG, and signs of magnesium toxicity. Phenytoin may cause QRS or QT prolongation

CMQCC Eclampsia Algorithm 12/30/13
Maternal Morbidity and Mortality: Preeclampsia

About 8 Preeclampsia Related Mortalities/2007 in CA

Near Misses: 380/year (ICU admissions)

40-50x

400-500x

Serious Morbidity: 3400/year (prolonged postpartum length of stay)

Source: 2007 Al-California Rapid Cycle Maternal/Infant Database for CA Births. CMQCC
QUESTIONS?

References

- ACOG Committee Opinion No. 623, Emergent Therapy for Acute Onset, Severe Hypertension During Pregnancy and the Postpartum Period, Feb 2015
- American College of Obstetrics and Gynecology (ACOG) Executive Summary: Hypertension in Pregnancy; Obstet Gynecol 2013;122: 1122-31
- ACOG Task Force Summary: Hypertension in Pregnancy, 2013
- August, P. Management of hypertension in pregnant and postpartum women. UpToDate, Lockwood CJ (Ed) UpToDate, Waltham, MA. (Accessed April 14, 2015)
- California Maternal Quality Care Collaborative (CMQCC)-Improving Healthcare Response to Preeclampsia: A California Quality Improvement Toolkit @ www.comqcc.org
Obstetric Hemorrhage, VTE Prevention, Peri-Operative Infection Prevention

Dr. Kathleen Pfleghaar, St. Cloud Hospital Perinatal Clinic


Peri-operative infection prevention strategies-MN slashing SSI bundle

- **Showering/bathing**
  - Shower or bathe with either soap or antiseptic agent, once the evening before and once the morning of the procedure
  - Antiseptic solution to the operative site in preop area
  - Hospitalized patients- antiseptic shower, bath or full body wipe prior to surgery
Peri-operative infection prevention strategies-MN slashing SSI bundle

- **Post operative wound care**
  - Sterile surgical dressings left intact for 24-48 hrs
  - Use sterile gloves and dressings for changes
  - Educate patients on hand hygiene and have hygiene products available at the bedside

- **Closing trays** for class II (clean contaminated) or higher, use clean instruments, water and gloves/gowns for wound closure. Prebrief.

Peri-operative infection prevention strategies-MN slashing SSI bundle

- **Antibiotic dosing**
  - Use weight based dosing given within 60 minutes of incision
  - Redose if procedure lasts longer than two half lives of the drug
  - Redose if blood loss >1500 cc

- **Glycemic control**
  - Maintain blood glucose levels <200 mg/dl
Peri-operative infection prevention strategies-MN slashing SSI bundle

- **Normothermia**
  - Maintain body temp $\geq 36 \, ^\circ C$ or $96.8 \, ^\circ F$ pre op, intra op and post op

- **OR traffic**
  - Reduce unnecessary traffic


VTE Prevention

- **ACOG recommends pneumatic compression devices** be placed prior to c/section in all patients that are not already receiving thromboprophylaxis

- **Some patients may require thromboprophylaxis using pneumatic compression devices and UFH or LMWH**

- **If using UFH or LMWH, most patients will benefit from continuing therapy post partum**

# Obstetric Hemorrhage Safety Bundle

- Council on Patient Safety in Women’s Health Care  
  [www.safehealthcareforeverywoman.org](http://www.safehealthcareforeverywoman.org)
- California Maternal Quality Care Collaborative  
  [www.cmqcc.org/ob_hemorrhage](http://www.cmqcc.org/ob_hemorrhage)
- The AWHONN Postpartum Hemorrhage Project  
  [www.pphproject.org](http://www.pphproject.org)

<table>
<thead>
<tr>
<th>Readiness</th>
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</thead>
<tbody>
<tr>
<td>Recognition</td>
</tr>
<tr>
<td>Response</td>
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<tr>
<td>Reporting/Systems Learning</td>
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**Obstetric Hemorrhage Safety Bundle-Readiness**

- Hemorrhage cart
- Immediate access to hemorrhage medications
- Immediate access to tamponade devices
- Establish a response team-who to call for help
- Establish massive and emergency release transfusion protocols (including type O neg/uncrossmatched
- Unit education on protocols; drills with debriefs
  - Involve all departments: OB, nursing, anesthesia, blood bank, lab, OR, support personnel, IT/EMR

**Obstetric Hemorrhage Safety Bundle-Readiness**

- **Hemorrhage cart-should be on each unit; OR, delivery, PACU, post partum**
  - Quick access to emergency supplies
  - Refrigerator for meds
  - Establish necessary items and par levels
  - Label drawers/compartments
  - Include checklists
  - Develop process for checking and restocking
  - Educate nursing and OB provider staff
Obstetric Hemorrhage Safety Bundle-Readiness

- **Example Hemorrhage cart for the OR**
  - IV start
    - 16 g angiocaths
    - Blood draw tubes-red top, blue top, striped top
  - IV pressure bags
  - Foley with urometer
  - Bakri balloon
    - 500 cc fluid for filling
    - Bag for drainage collection

- **Example Hemorrhage cart for the OR (cont)**
  - Kerlex roll
  - Vaginal pack
  - Instruments: curettes, retractors, ring forceps x 4, tissue forceps x 2; long needle holder
  - Laminated diagram
    - B-Lynch technique
    - Modified B-Lynch technique
      - Sutures: #1 Vicryl x 2; #1 Monocryl, 36” long on curved 90mm blunt needle
Obstetric Hemorrhage Safety Bundle-Readiness

B-Lynch Suture

FIGURE 1 B-Lynch suture
The B-Lynch suture as seen from the anterior uterine wall.


Obstetric Hemorrhage Safety Bundle-Readiness

Modified B-Lynch (Hayman)

FIGURE 2 Hayman suture
The Hayman suture passes directly from the anterior uterine wall through the posterior uterine wall. Two to four longitudinal sutures can be placed. Two longitudinal sutures are pictured in this figure. A transverse cornicotomic suture also can be placed, if needed, to control bleeding from the lower uterine segment.

Obstetric Hemorrhage Safety Bundle-Readiness
Pereira Sutures

Assessment of hemorrhage risk (prenatal, on admission, intrapartum and postpartum)

Measurement of cumulative blood loss (as quantitative as possible)

Active management of the 3rd stage of labor with oxytocin
**Obstetric Hemorrhage Safety Bundle - Recognition**

## Assessment of hemorrhage risk

- **Pregnancy/Admission**
  - **Low risk** - no prior uterine incision, singleton, no known bleeding disorder, no hx of PPH, ≤ 4 prior vaginal births
  - **Moderate risk** - prior c/s or uterine surgery, multiple gestation, > 4 prior vaginal births, chorioamnionitis, hx of PPH, large fibroids
  - **High risk** - placenta previa, low lying placenta, suspected placenta accreta, percreta or increta, HCT <30 AND other risk factors, platelets < 100K, active bleeding on admit, known coagulopathy

## Assessment of hemorrhage risk

- **Intrapartum**
  - Prolonged second stage, prolonged oxytocin use, active bleeding, chorioamnionitis, magnesium sulfate therapy

- **Third stage/postpartum**
  - Vacuum or forceps-assisted birth
  - Cesarean birth (especially urgent/emergent c/s)
  - Retained placenta
Obstetric Hemorrhage Safety Bundle - Recognition

- **Measurement of cumulative blood loss**
  - Routine QBL: goal is not a “perfect” number
  - Inaccuracies due to amniotic fluid, urine, clots mixed with fluid in drapes. With intact membranes: term est. AFV-normal=700mL; oligo=300mL and poly=1400 mL
  - **Earlier recognition** of excessive blood loss and improved communication
  - **Avoids delay** in management of excessive blood loss

- **Active management of the third stage of labor; use after delayed cord clamping**
  - Oxytocin 10-40 units/500-1000 mL IV infusion titrated to maintain uterine tone OR oxytocin 10 units IM when no IV access
### Obstetric Hemorrhage Safety Bundle - Response

- **Unit-standard, stage-based OB hemorrhage management plan with checklists**
- **Stage 0**: All births-Routine Measures; active management of the third stage

### Obstetric Hemorrhage Safety Bundle - Response

- **Stage 1**: QBL >500 mL (vaginal) or >1000 mL (c/s) or HR >110, BP<85/45, O2 sat <95%; AND STILL BLEEDING
  - Notify OB provider, charge RN and Anesthesia
  - Establish 16g IV
  - Rapid infusion of IV oxytocin 10-40 IU/500-1000 mL at ≥ 500 mL/hr titrated to response
Stage 1 (continued)
- Vigorous fundal massage
- Choose a standard second line agent; Methergine® 0.2 mg IM, Cytotec® 600 mcg orally or 800 mcg sublingually, Hemabate® 250 mcg IM or intramyometrially
- VS including O2 sat every 5 minutes
- QBL
- Administer O2 to keep sats >95%

Stage 1 (continued)
- Empty bladder-place Foley with urometer
- T & C for 2 units PRBCs
- Keep patient warm
Obstetric Hemorrhage Safety Bundle-Response

- **Stage 2:** QBL 1000-1500 mL with CONTINUED BLEEDING or vital sign instability
  - OB provider at bedside; 2nd OB or MFM and anesthesia called to assist
  - Charge RN assign recorder and runner, call Radiology to prepare for IR, if available, and call for 2nd anesthesiologist
  - Notify Rapid Response Team
  - Assign a 2nd RN to communicate with blood bank and offer family support

Obstetric Hemorrhage Safety Bundle-Response

- **Stage 2 (continued)**
  - Prepare for procedures: balloon tamponade, selective embolization, laceration repair, B-Lynch suture
  - Administer 3rd uterotonic
  - Move to OR
  - Transfuse 2 units PRBCs using blood warmer; request blood bank to thaw 1 FFP
Stage 2 (continued)

- Start a second IV
- Order labs: STAT CBC/platelets, chem 12, coag panel and ABG
- QBL
- Announce vital signs

Stage 3: STILL BLEEDING and EBL >1500 mL or > 2 u PRBCs given or VS unstable or suspect DIC

- Activate massive transfusion protocol
  - Transfuse aggressively
  - Near 1:1 ratio PRBC:FFP
  - Rapid use of FFP may be as important as ratio
  - 1 platelet pheresis pack per 4-6 units PRBC
- Invasive surgical techniques
- Mobilize help: Advanced surgeon (gyn, gyn onc)
Obstetric Hemorrhage Safety Bundle-Response

- **Stage 3 (continued)**
  - Announce VS and cumulative blood loss
  - Prevent hypothermia, acidemia and hypocalcemia
  - Apply sequential compression stockings to LE
  - Repeat labs every 30-60 minutes
  - Once stable: consider ICU

Obstetric Hemorrhage Safety Bundle-Reporting/Systems Learning

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of serious hemorrhages for system issues-transfusions ≥4 units PRBCs or transfer to ICU
- Monitor outcomes and process metrics in perinatal quality improvement (QI) committee
**Safe Sleep Practices**

Kathleen Fernbach BSN, RN, PHN

Public health nurse and Director of the Minnesota Sudden Infant Death Center a public - private partnership between the Minnesota Department of Health and Children’s Hospitals and Clinics of Minnesota. In addition to providing direct service to bereaved families, Fernbach has conducted multidisciplinary training programs both nationally and statewide. Fernbach served on the MN Dept. of Health’s task force which developed *Infant Death Investigation Guidelines*, the standard now followed by Minnesota medical examiners; is a member of the state Child Mortality review team, designed curricula for training child care providers, developed training for public health nurses and serves on the Twin Cities *Healthy Start Executive Committee.*

Nationally, Fernbach is past president of the Association of SIDS and Infant Mortality Programs, consulted with the Maternal Child Health Bureau (MCHB) to develop recommendations for model infant mortality programs, partnered with Indian Health Service and the National Institute of Child Health and Human Development to develop community driven strategies to reduce the risk of SIDS and chaired several national conferences. In 2003, the Minnesota Department of Health awarded Fernbach the Betty Hubbard MCH Leadership award.

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**Preventing Sudden Unexpected Infant Death:**

*Modeling and Promoting Best Practices in the Hospital Setting*

April 30, 2015

MHA Road Map to Perinatal Safety

Kathleen Fernbach BSN, RN, PHN

Director, MN SID Center

Minnesota SID Center
Perinatal Roadmap for Safety

The facility promotes safe sleep practices by:

1) Modeling & teaching safe sleep practices per NIH & CDC Safe Sleep campaign

2) Providing patient/ family education on prevention of newborn falls

Power of Modeling Best Practice

SIDS Rate and Sleep Position, 1988-2009

Trends in Sudden Unexpected Infant Death by Cause, 1990-2013 - CDC
Sudden Unexpected Infant Deaths (SUID)

- Occur suddenly and unexpectedly
- Have no obvious cause of death prior to investigation

CDC Reports - 2013

- 3434 Sudden Unexpected Infant Deaths (SUID)
- Of these, @ 1575 certified as SIDS
- Unintentional sleep-related suffocation deaths, unknown cause & SIDS most reported type of SUID

Lessons Learned!
Same safe sleep strategies can reduce/prevent all
AAP 2011 Policy Statement

SIDS and Other Sleep Related Infant Deaths:

Expansion of Recommendations for a Safe Infant Sleeping Environment


Minnesota SID Center

AAP Level A Recommendations

- Back to sleep for every sleep
- Use a firm sleep surface—a firm crib mattress covered by a tight fitting sheet
- Room sharing without bed sharing
- Keep soft objects & loose bedding out of sleep area
- Breastfeed
- Regular prenatal care
- Avoid smoke exposure during pregnancy & after birth
- Consider offering a pacifier at bedtime & naptime (once breastfeeding is well established)
- Avoid overheating
- Do not use home cardiorespiratory monitors as a strategy to reduce SIDS
- Expand national campaign to include focus on safe sleep campaign to reduce the risk of all sleep related infant deaths

Minnesota SID Center
Safe to Sleep Campaign
2012 Forward

SAFE TO SLEEP

What To Do to Lower Risk

1. Back to sleep for every sleep
Modeling Best Practice

- Place baby on back for sleep as soon as baby ready for bassinet
- Side sleeping is not acceptable
- No evidence that side sleeping clears airway of amniotic fluid

What To Do to Lower Risk

2. Use a safety approved crib with a firm sleep surface covered by a tight fitting sheet
Modeling Best Practice

- Ask family what plans are for where baby will sleep at home
- Safe crib, play yard, bassinet that meet safety standards – reinforce & praise use
- CPSC Crib Safety Information Center
- Local Cradle of Hope for Cribs or check with public health nurse agency

What To Do to Lower Risk

3. Keep soft objects, toys and loose bedding out of sleep area – no bumpers

Consider wearable blanket for warmth
Modeling Best Practice

- No stuffed toys in bassinet
- No blankets
- Wearable blanket
What To Do to Lower Risk

4. Room – sharing without bed sharing for the first 6 mos.

No bedsharing with siblings or adults

What To Do to Lower Risk

- Bring to bed for feeding or to comfort, return to crib when parent ready to sleep.
- Sleep in crib in parents’ room the first 6 mos.
- **Never** sleep with baby on a sofa or recliner.
Modeling Best Practice

- Do not co-bed twins – no research has established benefit

- Instruct parents not to sleep with baby - explain safety issues (risk of suffocation & falls). If mtr. has baby in bed and becomes drowsy should place baby in bassinet

- Instruct other family members not to sleep with baby in bed, while holding on chair or fold out couch

Modeling Best Practice

- If nurse observes mtr. or family members asleep/drowsy with baby nurse should intervene and place baby in bassinet

- Diminished arousal influenced by fatigue, pain medication, cold medicines, antidepressants, sleep aids etc.

- Reinforce safety through room sharing not bed sharing
What To Do to Lower Risk

5. Breastfeed for at least 6 mos.

Protective effect of partial or exclusive breastfeeding was statistically significant

What You Can Do

- Know safe sleep recommendations & educate staff
- Institutionalize a safe sleep policy that is consistent with best practices
- Promote and model – Hospital staff influence parent practices and can reduce sleep related infant deaths
- Leadership - Be a safe infant sleep champion
- Hold each other accountable for following safe sleep
Addendum

The following slides offer more in depth information about what is presented above
Breakdown of Sudden Unexpected Infant Death by Cause, 2013 - CDC

2012 MN Data

24 SIDS or SUID certified as SIDS

- 18 Unsafe sleep environment
- 2 On back in crib
- 4 Unknown

Minnesota SID Center
2012 MN Data

14 Certified Asphyxia

15 Certified Undetermined/No Anatomic Cause

All in unsafe sleep environments
Bed sharing, sofa, adult bed with pillows comforter, 3 breastfeeding while bed sharing

Hazards of Bed Sharing

Hazard up to one year
Greatest for infants<12 wks. of age

- Tappen, et al July 2005 *Journal of Pediatrics*
- Carpenter, et al 2004 *Lancet*
Hazards of Bed Sharing

Combined datasets from 5 major case control studies

- When baby is breastfed and under 3 mos., there is a five fold increase in risk of infant death when bed sharing with non-smoking parents and the mother has not taken alcohol or drugs

- A substantial reduction in infant deaths if parents avoided bed sharing

Carpenter, R et al, BMJ, 2013

AAP Recommendations

No evidence that any bed sharing in hospital or home is safe

No evidence that devices make bed sharing safe and are not recommended
Swaddling

May be used for calming – not for sleep, not a strategy to reduce SIDS

AAP Rationale re: Swaddling

- Tight swaddling may decrease protective arousal, reduce lung capacity & increase URIs, exacerbate hip dysplasia, increase risk of overheating

- Loose swaddling poses risk of strangulation, head covering

- Insufficient research evidence to advocate routine swaddling
Swaddle Caution for Parents

- Don’t do past 4-6 wks. of age when baby becomes more active
- **Never** place swaddled baby on tummy or side
- If swaddle becomes undone, remove
- Be careful that swaddle is not too tight as to restrict respirations or hip movement – fit two fingers width between chest and swaddle

Modeling Best Practice Breastfeeding

- Support and assist both parents in breastfeeding
- Utilize lactation consultants
- Provide resources for breastfeeding support & guidance after discharge
- Praise effort
Cradle of Hope
Crib resource

For information about a Cradle of Hope site in your area, go to MDH website, search “Positive Alternatives”

http://www.health.state.mn.us/divs/cfh/program/paa/

Safe to Sleep Campaign

For more information, contact

- MN SID Center
- NICHD website, Safe to Sleep Campaign
  http://www.nichd.nih.gov/sts
Wrap Up

- Wrap up
- Thank you to our presenters
- Adjourn