Avoiding Maternal Mortality

Montana Perinatal Association
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*Number of maternal deaths per 100,000 live births. The term “ratio” is used instead of rate because the numerator excludes some maternal deaths that were not related to live births and thus were not included in the denominator.
Amnesty International has called on US President Barack Obama to tackle soaring rates of maternal mortality and pregnancy-related complications.
Maternal Mortality – HCA

- Death rate: 6.5/100,000 (includes non-maternal deaths)
- 17% preventable by health care provider actions
- 11% preventable by patient/non-medical personnel actions
- 72% not preventable given current state of knowledge

3 situations that are both common and potentially fixable.
- Post-cesarean PE
- Hypertensive crisis / Hypertension related pulmonary edema
- Postpartum hemorrhage

3 Protocols based on 2000-2006 data
- Universal VTE prophylaxis for cesarean delivery (ACOG/SMFM followed 3 years later)
- Development of protocol for management of postpartum hemorrhage – focus on recognition, appropriate personnel attendance and blood/component replacement. Did not address specific steps and time frames for hemorrhage control.

HYPERTENSIVE CRISIS

The following protocol should be initiated if the systolic blood pressure is ≥ 160 mmHg or the diastolic blood pressure is ≥ 110 mmHg.

- Notify physician
- Administer hydralazine, 5 mg IV over 2 minutes
- Repeat blood pressure in 15 minutes
- If either blood pressure threshold is still exceeded, administer hydralazine 10 mg IV over 2 minutes.
- Repeat blood pressure in 15 minutes
- If either blood pressure threshold is still exceeded, administer labetalol, 20 mg IV over 2 minutes
- Repeat blood pressure in 15 minutes
- If either blood pressure threshold is still exceeded, administer labetalol 40 mg IV over 2 minutes and obtain emergency maternal/fetal medicine, internal medicine or anesthesia consultation regarding blood pressure control.

Did they work?

Comparison of data: 2000-2006 vs. 2007-2012
N= 1.2 million in each group
Death rate 6.4/100,000 births
**HCA Delivery Demographics**

<table>
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<tr>
<td>Medicaid + Private Pay</td>
<td>48</td>
<td>43</td>
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</tbody>
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**Maternal Mortality**

- Post-cesarean PE deaths: $15.2 \rightarrow 2.2$ (p=0.038)
- Pre-eclampsia deaths: $10.3 \rightarrow 2.3$ (p=0.02)
  
  No deaths due to in-hospital intracranial hemorrhage. (From #1 to #11)

- per million

We left “when to give which drugs, how often, and how long to wait before operation” up to clinical judgment.

**Maternal Mortality**

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- Pre-eclampsia deaths: $10.3 \rightarrow 2.33$ (p=0.02)
  
  No deaths due to in-hospital intracranial hemorrhage or pulmonary edema.

- No impact at all on deaths from postpartum hemorrhage
  - Indecision
  - Placenta accreta in tertiary centers.

- per million

We left “when to give which drugs, how often, and how long to wait before operation” up to clinical judgment.

Do currently trained clinicians have sufficient experience with life-threatening hemorrhage to utilize judgment?
Management of Uterine Atony?

- Give 600 mcg cytotec
- Wait 5 minutes
- Give 250 mcg hemabate
- Wait 5 minutes
- Give 250 mcg hemabate
- ...........
- Do a hysterectomy

10 Clinical Diamonds for preventing maternal death

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- Angiographic embolization is not for acute, massive hemorrhage
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- Angiographic embolization is not for acute, massive hemorrhage
- Maternal Cardiac Disease ➔ MFM Consult

10 Clinical Diamonds for preventing maternal death

- Atony medication x2 ➔ MD at bedside
- Postpartum hemorrhage is not a diagnosis!
- Hemorrhage + Oliguria ➔ Lasix
- Prior cesarean + Previa ➔ Tertiary Center

10 Clinical Diamonds for preventing maternal death

- Atony medication x2 ➔ MD at bedside
- Postpartum hemorrhage is not a diagnosis!
- Hemorrhage + Oliguria ➔ Lasix
- Prior cesarean + Previa ➔ Tertiary Center
- Use a state of the art massive transfusion protocol
Maternal Mortality
Causal Relationship to Cesarean Delivery

- Deaths – vaginal birth: 0.2/100,000
- Deaths – cesarean birth: 2/100,000

Annual deaths in U.S. due to cesarean: 20
With VTE prophylaxis: 5 – and statistical difference disappears.

Maternal Mortality
Conclusions

- Preventable maternal deaths continue to occur.
- Cesarean deliveries are a negligible contributor to the maternal death rate in the U.S.
- Adherence to 10 “Clinical Diamonds” will avoid most preventable maternal deaths.