Shifting Patient Safety into High Gear

Boston, MA, November 16, 2012
Lessons from Obstetrics

Roxane Gardner, MD, DSc | CRICO
Peter Bernstein, MD | Montefiore Medical Center
Eyal Ephrat, MD | MedCPU
Obstetrical services have a higher cost per claim.

National Landscape: Primary Responsible Services

CBS N=17,124 coded professional liability cases asserted 1/1/07–12/31/11.
Total incurred includes reserves on open cases and payments on closed cases.


Medicine includes: General Medicine and Medicine Subspecialties (Cardiology, Dermatology, Endocrinology, Gastroenterology, Genetics, Geriatrics, Hematology, Hospitalist, Immunology and Allergy, Infectious Disease, Oncology (Medical), Nephrology, Neurology, Physical Medicine/Rehabilitation, Pulmonary Disease, Rheumatology).

Other includes: Dentistry/Oral Surgery, Allied Health, Non-clinical, and Pharmacy.
Obstetrics-related Malpractice Data

937 cases | $522M total incurred
2007–2011
(cases with obstetrics or midwifery as primary responsible service)
Frequency of OB cases declining
Assert Year vs. Loss Year in OB Cases

CBS N=937 coded professional cases asserted 1/1/07–12/31/11 with Obstetrics or Midwifery as primary responsible service.

*14 OB cases occurred prior to 2000.

Severity Scale: High= Death, Permanent Grave, Permanent Major or Permanent Significant
Medium= Permanent Minor, Temporary Major or Temporary Minor
Low= Temporary Insignificant, Emotional Only or Legal Issue Only
CBS N=937 coded professional liability cases asserted 1/1/07–12/31/11 with Obstetrics or Midwifery as primary responsible service. Total Incurred=reserves on open cases and payments on closed cases.

Severity Scale: High= Death, Permanent Grave, Permanent Major or Permanent Significant
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55% involved a high-severity injury
Injury Severity in OB Cases

**PERCENT OF CASES**
- High 55%
- Med 29%
- Low 16%

**PERCENT OF TOTAL INCURRED**
- High 88%
- Med 6%
- Low 6%
Intrauterine hypoxia & birth asphyxiation = 20%

Top Final Diagnoses in OB Cases

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th># CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrauterine hypoxia and birth asphyxiation</td>
<td>191</td>
</tr>
<tr>
<td>Complications of birth; puerperium affecting management of mother</td>
<td>109</td>
</tr>
<tr>
<td>Brachial plexus Injury</td>
<td>93</td>
</tr>
<tr>
<td>Other perinatal conditions</td>
<td>74</td>
</tr>
<tr>
<td>Anxiety state</td>
<td>66</td>
</tr>
<tr>
<td>Complications mainly related to pregnancy</td>
<td>39</td>
</tr>
<tr>
<td>Other complications</td>
<td>37</td>
</tr>
<tr>
<td>Foreign body accidentally left during procedure</td>
<td>32</td>
</tr>
<tr>
<td>Other birth trauma</td>
<td>30</td>
</tr>
<tr>
<td>Intrauterine death</td>
<td>25</td>
</tr>
<tr>
<td>Puncture/laceration during procedure</td>
<td>24</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>21</td>
</tr>
</tbody>
</table>

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# Top Contributing Factors in OB Cases

A case will often have multiple factors identified. CBS N=937 coded professional liability cases asserted 1/1/07–12/31/11 with Obstetrics or Midwifery as primary responsible service.

## Top Clinical Judgment Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>% Cases*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Judgment</td>
<td>69%</td>
</tr>
<tr>
<td>Communication</td>
<td>30%</td>
</tr>
<tr>
<td>Technical Skill</td>
<td>29%</td>
</tr>
<tr>
<td>Administrative</td>
<td>21%</td>
</tr>
<tr>
<td>Documentation</td>
<td>20%</td>
</tr>
<tr>
<td>Supervision</td>
<td>13%</td>
</tr>
<tr>
<td>Clinical Systems</td>
<td>12%</td>
</tr>
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## Top Communication Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>% Cases*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication among providers regarding patient’s condition</td>
<td>129</td>
</tr>
<tr>
<td>Communication between patient/family &amp; provider—other</td>
<td>48</td>
</tr>
<tr>
<td>Communication between patient/family &amp; provider—language barrier</td>
<td>34</td>
</tr>
<tr>
<td>Inadequate informed consent for other treatment options</td>
<td>26</td>
</tr>
</tbody>
</table>

## Top Technical Skill Factors

<table>
<thead>
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<th>Factor</th>
<th>% Cases*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible technical problem</td>
<td>135</td>
</tr>
<tr>
<td>Poor technique, other</td>
<td>53</td>
</tr>
<tr>
<td>Retained foreign body</td>
<td>33</td>
</tr>
<tr>
<td>Improperly utilized equipment</td>
<td>28</td>
</tr>
</tbody>
</table>
Labor & Delivery was the top location
Top Locations in OB Cases

- Labor and Delivery: 655 cases
- Physician Office/Clinic: 148 cases
- Other Inpatient Units: 35 cases
- Operating Room: 34 cases
- Non-insured Site: 27 cases

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Case Study
Case Study

- Mother, G2P1 at 37.5 weeks, admitted at 8:00p for induction of labor due to pre-eclampsia.
- Past medical history: congenital deafness, obesity, hypertension, and poorly controlled diabetes.
- A Sign Language interpreter was present at her pre-natal visits, and during delivery.
- Evaluation on admission was notable for complaints of mild headaches; no visual changes or abdominal pain.
  - BP=160/100
  - Cervix=4cm/80% effaced/-2 station
  - 2-3+ pedal edema
  - 3+ proteinuria
  - FHR=140 baseline with moderate variability (Category I tracing)
Case Study (cont’d)

8:45p: oxytocin induction began, BP=155/95

11:45p: cervix=7cm/100% effaced; epidural placed

12:00a: exam notable for:
  BP=183/99
  cervix=8cm dilated/100% effaced; rupt. membranes, clear fluid
  FHR=140 baseline w/minimal variability
  IV fluids of D10 w/Insulin initiated to stabilize glucose levels

1:10a: bolus of MgS04 administered due to risk for seizures (platelet count=97K)

2:30a: cervix fully dilated and began to push
Case Study (cont’d)

3:15a: episiotomy performed; head delivered, ob applied traction and encountered shoulder dystocia
Ob rotated the anterior shoulder to the oblique position
3:20a: female infant delivered (8lbs 3oz) Apgars 8/9
Case Study (cont’d)

- Infant immediately noted to have decreased movement of left arm and bruising on left arm
- Diagnosed with left Erb’s Palsy
- Record review notable for:
  - RN documentation that McRobert’s maneuver was applied at 3:17a during delivery, but this note appeared to be inserted after the fact, between lines of entry
  - Ob documented the mother’s legs were “up,” but no specific reference to McRobert’s maneuver or application of suprapubic pressure was written in the delivery note; a dictated note was not performed
Case Study (cont’d)

• Infant received physical therapy but had continued problems with her left shoulder.

• 10 months later:
  • Reconstructive surgery was performed on her left shoulder

• One year later:
  • Patient continued to have weakness in her left shoulder and favors right-sided activities and motions

• Physical therapy is on-going, needed for strengthening and
  • maintaining flexibility of the left shoulder and arm
What are the key issues that led to this adverse outcome?
Case Study (cont’d)

Contributing Factors

• Management and treatment of the patient prior to and during labor

• Communication
  • between providers
  • between patient, family and providers
  • language barrier-related issues

• Technical performance of delivery complicated by shoulder dystocia

• Documentation
Shifting Patient Safety into High Gear

Lessons from Obstetrics

Peter Bernstein, MD, MPH
Professor of Clinical Obstetrics & Gynecology and Women’s Health, Albert Einstein College of Medicine/Montefiore Medical Center
Creating a Culture of Patient Safety: Shoulder Dystocia

- Planning or Anticipation
- Recognition
- Team function
- Patient follow up
- Documentation

Shoulder Dystocia

Improved Patient Outcomes
OB QI Initiatives

• In house coverage requirements
• Team Training
• Multidisciplinary Obstetrical Emergency Simulation
• Patient Safety Officers/Nurses
• Documentation Guidelines
• Audit and Feedback
• Communication with Neonatology
Best Practices for Obstetrics

Admission Note
- Latent phase — within 12 hours
- Active phase — within 4 hours
- Include history, exam, fetal assessment, plan of care and EFW

Progress Notes
- Latent phase — every 8 hours
- Active phase — every 4 hours
- Stage 2, nullipara — within first 2 hours and then hourly
- Multipara — within first hour and then hourly
- Include labor progress, FH monitor findings, interventions, and plan of care

Attending Coverage
- Primary or covering attending must be in-house and readily available for patients:
  - in labor
  - receiving oxytocin
  - with epidural
- Covering attending will:
  - act on behalf of primary attending in an emergency
  - document at beginning and end of coverage period
- Primary attending must come in immediately when called by covering attending

Oxytocin Use
- When initiating — document need based on evaluation and assessment
- Document agreement between covering and primary attendings to start oxytocin
- Continuous fetal monitoring required
- Latent phase — reassess and document every 8 hours
- Active phase — reassess and document every 2 hours
- Discontinue for non-reassuring FHR

Suspected Macrosomia
- Recommend C/S for:
  - EFW > 4500 grams in diabetic mothers
  - EFW > 5000 grams in non-diabetic mothers

Best Practices for Obstetrics

Refusal of Treatment
- Document when patient refuses C/S or any recommended procedure

Operative Vaginal Delivery
- Do not attempt if:
  - EFW > 4000 grams in diabetic mothers
  - EFW > 4500 grams in non-diabetic mothers
- Pre-op requirements:
  - instrumentation privileges
  - OR availability, if C/S necessary
  - examined for position
  - station at least +2
  - cervix fully dilated
  - pelvis clinically adequate
  - analgesia adequate
  - bladder empty
- Use forceps or vacuum — NOT both
- Perform vacuum delivery only after 34 weeks
- Limit to 3 pop-offs or complete lack of descent
- Document:
  - pre-op requirements met
  - delivery procedure in detail
  - pop-offs, if applicable

VTOL/VBAC
- Document risk/benefit discussion and consent
- Use special caution for patients:
  - with unknown scar
  - unregistered to the institution
  - whose records are unavailable
- Contraindications:
  - prior upper segment incision
  - prior T-incision
  - prior uterine rupture or dehiscence
  - clinician assessment of inadequate pelvis

Management of Twins
- Inability to monitor second twin precludes trial of labor
- Must deliver in OR

Elective Deliveries
-Singletons — not before 39 weeks without FLM results
-Twins — not before 38 weeks without FLM results
Team Training

• Based on the Principles of Crew Resource Management (CRM)

• Adapted from the Military and the Aviation Industry

• Principles include:
  • Resource management
  • Communication
  • Briefing, debriefing, and leadership strategies
  • Error reduction techniques, including workload management, mutual support and cross-monitoring
Why Communication?

- The overwhelming majority of untoward events involve communication failure
- Somebody knows there’s a problem but can’t get everyone in the same movie
- The clinical environment has evolved beyond the limitations of individual human performance
Medical Simulation
Benefits of Medical Simulation

• Safe environment - mistakes don’t have a cost
• Trainee focus
• Allow for controlled exposure to rare scenarios
• Provides “hands-on” experiential learning
• Unique opportunity for team-training
• Reproducible, standardized, and objective
• Allows for debriefing of practice
•Increases public trust
Obstetric Simulation: What?

- Technical Maneuvers
  - Normal delivery, shoulder dystocia, breech vaginal delivery, operative vaginal delivery

- Knowledge and Application
  - Eclampsia, PPH, maternal code

- Communication
  - Shoulder dystocia, 2 challenge rule
  - All emergencies
Obstetric Simulation: What?

- Team Preparedness and Team Function
  - Shoulder dystocia, eclampsia, PPH, vaginal breech
  - All emergencies
- Documentation
  - Shoulder dystocia, eclampsia, operative vaginal delivery
Montefiore Sim Experience

• Over 800 simulations completed
  • Participants include: MDs (Attendings and Residents), CNMs, Physician Assistants, RNs
  • Multidisciplinary (OB, Anesthesia, Peds, Nursing)
  • Crew Resource Management and Team Training Principles Applied
  • Has been well received
Simulations Improve Physician Performance: Shoulder Dystocia

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6 items)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>3.5(1.2)</td>
<td>4.9(1.0)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Attending</td>
<td>3.6(1.6)</td>
<td>4.9(1.1)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Maneuvers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4 items)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>3.3(0.9)</td>
<td>3.9(0.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>Attending</td>
<td>3.8(0.5)</td>
<td>3.9(0.3)</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Overall Performance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5 pt. scale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>2.4(1.0)</td>
<td>3.8(0.9)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Attending</td>
<td>3.4(0.9)</td>
<td>4.1(0.7)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

n = 43 attendings, 28 residents
Goffman 2008
Simulations Improve MD Performance: Eclampsia

<table>
<thead>
<tr>
<th></th>
<th>LS (median, IQR)</th>
<th>SS (median, IQR)</th>
<th>SLS (median, IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline maternal score (max 21)</td>
<td>11.0 (7.5-13.00)</td>
<td>10 (8.3-13.5)</td>
<td></td>
</tr>
<tr>
<td>Post-education maternal score (max 21)</td>
<td>12.0 (9.0-15.0)</td>
<td>15.0 (12.0-18.5)*</td>
<td>15.5 (14.0-16.8)*</td>
</tr>
<tr>
<td>Baseline eclampsia score (max 30)</td>
<td>11.0 (8.5-11.0)</td>
<td>13 (9.5-16.5)</td>
<td></td>
</tr>
<tr>
<td>Post-education eclampsia score (max 30)</td>
<td>16.0 (13.0-19.0)</td>
<td>19.0 (16.0-22.0)</td>
<td>19.0 (17.3-20.8)*</td>
</tr>
</tbody>
</table>

p<0.05 Compared to LS
Fisher AJOG 2010
40% reduction in median decision-delivery interval for cord prolapse

Siassakos et al BJOG 2009
Obstetric Simulation: *The Evidence*

Before and after a required, annual, one-day course for all staff of emergency drills and FHR tracing interpretation

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>5 min Apgar ≤ 6 n (rate per 10,000)</td>
<td>73 (86.6)</td>
<td>49 (44.4)</td>
<td>0.51 (0.35-0.74)</td>
</tr>
<tr>
<td>HIE n (rate per 10,000)</td>
<td>23 (27.3)</td>
<td>15 (13.6)</td>
<td>0.50 (0.26-0.95)</td>
</tr>
<tr>
<td>Moderate/severe HIE n (rate per 10,000)</td>
<td>16 (19.0)</td>
<td>11 (10.0)</td>
<td>0.53 (0.24-1.13)</td>
</tr>
</tbody>
</table>

Draycott et al, *BJOG*, 2006
Importance of Clear and Complete Documentation

- Improved communication between members of the team
- Standardized forms and Electronic Records can encourage better documentation
- Can encourage attending physician involvement
- Can mandate better documentation, e.g.
  - Nursing won’t start oxytocin unless appropriate note written in chart
- Medical Malpractice Cases often significantly compromised just because of poor documentation
  - Reduce conflicts in the medical record
  - Neonatology initiative to document findings only
Non-Spontaneous Delivery Note

Date of Delivery: ____________________________
Type of Delivery: ____________________________
Ammiotic Fluid: ____________________________
Episiotomy: □ No □ Yes Type: ____________________________
Birth weight: ___________ g
Sex: □ Boy □ Girl □ Ambiguous
Newborn Transported to: ____________________________
Apgar scores: ___________ 1 min. ___________ 5 min. ___________ 10 min.
□ NICU □ Wall Baby Unit
Newborn Examination: Injury □ No □ Yes Describe: ____________________________
Placenta: □ Spontaneous □ Manual □ Exspoused
Estimated Blood Loss: ___________ ml
Laceration/Extension: □ Yes □ No Describe: ____________________________
Indication (check and describe):
□ Potential fetal compromise (bradycardia, decelerations, abruption)
Describe: ____________________________
□ Arrest of Labor □ in the second stage
Describe: ____________________________
□ Prolonged second stage
Describe: ____________________________
□ Maternal (exhaustion, cardiac, neurologic disorder)
Describe: ____________________________
□ Other
Describe: ____________________________

OPERATIVE VAGINAL DELIVERY TYPE: □ Does not apply
Verbal consent obtained from patient: □ Yes □ No
Instrument Used – Note only one instrument
□ Forceps type: ____________________________
□ Vacuum type: ____________________________
Outlet □ Low □ Mid
Position of fetal head at application: ____________________________
Time of application: ____________________________
Station of fetal head at application: ____________________________
Newborn delivery time: ____________________________
Number of pulls (contractions): ____________________________
Placental delivery time: ____________________________
Shoulder Dystocia Note: □ Does not apply
Time of delivery of fetal head: ____________________________
Anterior shoulder - □ Right or □ Left
Time of delivery of infant: ____________________________

Maneuvers Used (Numbers in order performed) Note – Fundal pressure should not be used:
□ Mc Robers
□ Suprapubic pressure
□ Episiotomy: Type: ____________________________
□ Rotation (Rubin or Woods screw)
□ Delivery of the posterior arm
□ Gaskin all-fours
□ Fracture of clavicle
□ Zavanneli (oesophageal replacement) – Dictated operative report required

Newborn examination of extremities
□ Symmetric Moro
□ Deficit describe: □ Right or □ Left

Events of delivery reviewed with patient □ Yes □ No
Other Comments: ____________________________

Pediatrics Staff Present: □ Yes □ No
Obstetric Staff Present
Attending: ____________________________
□ CNM
Resident: ____________________________
□ Other
CNM/Resident/PA Name (Print) ____________________________
CNM/Resident/PA Signature / Credentials ____________________________
Date: _________ Time: _________

ATTENDING PHYSICIAN’S NAME (PRINT) ____________________________
ATTENDING SIGNATURE / CREDENTIALS ____________________________
Date: _________ Time: _________
Audit and Feedback of Guidelines

• Random sample of deliveries each quarter
• Charts reviewed by trained FOJP staff (4 FTE)
• Extensive and robust electronic database for reviews
• Analysis and feedback at the department and physician level
  • Persistent poor documentation jeopardizes provider privileges
• Analyze the data to determine future areas for quality improvement
Best Practices for Obstetrics

Admission Note
- **Latent phase** — within 12 hours
- **Active phase** — within 4 hours
- Include history, exam, fetal assessment, plan of care and EFW

Progress Notes
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Elective Deliveries
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Composite Note (CN) Score

0–100 scale

• 10 indicators: 0–10 points for each indicator based on % adherence

• Admission note: 10 points each
  • History
  • Exam
  • Fetal Assessment
  • Plan of Care
  • Estimated Fetal Weight (EFW)
Composite Note (CN) Score
0–100 scale

• Admission Notes On Time: 10 points
• Progress Notes: 10 points each
  • Assessment of fetal well-being and fetal heart rate
  • Progress of labor
  • Plan of care
• Progress Notes On Time: 10 points
• Cutoff point for the CN Score was the bottom 10% of Physicians
Admission Note Requirements

• For patients in the latent phase of labor, an attending should enter an admission note within 8 hours of admission

• For patients in the active phase of labor, an attending should enter an admission note within 4 hours of admission

• Estimated fetal weight must be documented in the admission note
Montefiore’s Weiler Campus CN Score
# Best Practices: Neonatal Care

## Suspected Brachial Plexus Injury (BPI) Evaluation and Management Form

<table>
<thead>
<tr>
<th>Date</th>
<th>Admission</th>
<th>Discharge</th>
<th>BPI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Left</td>
<td>Right</td>
<td>Erb's</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>Right</td>
<td>Klumpke</td>
</tr>
<tr>
<td></td>
<td>Palsy</td>
<td>Parents</td>
<td></td>
</tr>
</tbody>
</table>

**Typical Clinical Findings**

- **Erb's**
  - Shoulder abduction
  - Shoulder external rotation
  - Elbow flexion
  - Supination
  - Wrist & finger extension
  - Biceps reflex
  - Grasp reflex
  - Moro reflex
  - Hand movement
  - Sensory

- **Klumpke**

**Comments:**

- Pain assessment: Pain: Present
- Comfort care: Yes, No
- Pain medication: Yes, No

**Imaging**

- Clavicles & Chest X-Ray
- Upper Extremity X-Ray
- Other

**Recommendations/Consults/Referrals**

- Primary Care Follow Up Telephone
- Appointment Date and Time
- Peds Neurology Consult Date/Time Name O I N H
- Orthopedic Consult Date/Time Name O I N H
- PT / OT Consult Date/Time Name Yes No
- Patient Safety Officer Notified Yes No
- Monte Home Care Referral Yes No
- Early Intervention Referral EIP Child Find Referral Yes No

**Legend:**

- : Increase
- : U: Unchanged
- : I: Inpatient
- : H: HMO (Referral by Primary Care Provider)
- : O: Outpatient
- : NN: Not needed
Patient Safety Nurse

- Organizes simulation program/patient safety course
- Conducts chart audits
- Participates in QI meetings
- Educates providers on Best Practices and Team Training principles
- Connects with families with poor outcomes (in particular those with families whose babies have neurologic deficits) to ensure appropriate follow up.
Lessons from Obstetrics

MedCPU

Eyal Ephrat, MD | MedCPU

Shifting Patient Safety into High Gear
Ms. Jones, G2P1 at 37.5 weeks, was admitted to the hospital at 8pm for induction of labor due to preeclampsia.
<table>
<thead>
<tr>
<th>Admission 8:00pm</th>
<th>· Pt. admitted to the hospital for induction of labor due to preeclampsia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR</td>
<td>Failure to document severity of Preeclampsia as indication for induction</td>
</tr>
<tr>
<td>ERROR</td>
<td>Failure to document birth weight of her earlier delivery, and whether there were any complications</td>
</tr>
<tr>
<td>ERROR</td>
<td>Failure to document severity of her obesity</td>
</tr>
<tr>
<td>ERROR</td>
<td>Failure to perform anesthesia consult on admission; no documentation that one done antenatally</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8:00pm</th>
<th>· BP: 160/100</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR</td>
<td>Failure to initiate treatment w/ antihypertensives at this point if sustained</td>
</tr>
<tr>
<td>ERROR</td>
<td>Failure to initiate treatment w/ magnesium sulfate at this point if sustained; pt qualified as severe preeclampsia</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8:45pm</td>
<td>• Oxytocin induction began</td>
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<tr>
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</tr>
<tr>
<td>12:00am</td>
<td>• BP = 183/99</td>
</tr>
<tr>
<td></td>
<td>• Cervix = 8cm dilated/100% effaced; ruptured membranes, clear fluid</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1:10am</td>
<td>• a bolus of MgS04 was administered due to risk for seizures (platelet count = 97K)</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>2:30am</td>
<td>- Cervix fully dilated and began to push</td>
</tr>
<tr>
<td>3:15am</td>
<td>- Episiotomy performed and the head delivered the head&lt;br&gt;Obstetrician applied traction and encountered shoulder dystocia</td>
</tr>
<tr>
<td>3:20am</td>
<td>- Female infant delivered, Apgars 8/9, wt = 8 lbs 3 oz</td>
</tr>
</tbody>
</table>

- OB MD documented mother’s legs were “up” but no specific reference to McRobert’s maneuver or application of Suprapubic pressure was written in the delivery note; dictation not performed<br>error: poor documentation of mandatory items following SD.
DATE: 12/29/2010 13:45

REASON FOR CONSULTATION: Acute myocardial infarction.

HISTORY OF PRESENT ILLNESS: The patient is a 51-year-old without significant past medical history on no medication. He is a heavy smoker who comes to the Emergency Room with 2 days of chest pain. The patient started to have pain sometime on Saturday during the day. It was in her chest radiating up to her neck as it also hurt to breathe. This persisted for the next 2 days. She called her friend Monday morning, brought her to the Emergency Room. She is complaining of ongoing chest pain which she feels is similar to her presenting pain; however, it hurts to move or to take deep breaths as it goes up to her neck and jaw. It is a little better sitting forward. She has not had any of this discomfort prior to the onset on Saturday.

Her risk factors are she smokes at least 1 pack a day. She was young and question whether she has hypertension, but she is not treated. She has no diabetes from looking in her record on SRS. She did have an elevated LDL of 150 back in 2007 and is not on treatment and drinks at least moderate alcohol. Her son and friend were with her when I examined the patient. She was clearly in some distress and complaining of his discomfort. Difficult to get a good complete history since the patient is in distress.

Her CK-MB and troponin I were 3173, 98.8 and 58.7, respectively, BUN 23, creatinine 1.3, AST 607, ALT 53, alkaline phosphatase 130. Her white count 18.5, hemoglobin 15.4, hematocrit 45.9. Her MCV 108.6, increased absolute neutrophil count of 16%, normal INR and electrocardiogram showed inferior myocardial infarction with ST depression of up to 2 mm, particularly in V3, 4 and 5. Chest x-ray showed what appeared to be cardiomegaly without congestive heart failure.

On exam, her blood pressure was in 180/70, her pulse 104. Skin was warm and dry. She appeared in some distress. Neck was supple. Carotid: No bruits. No jugular venous distention. Lungs were clear. She had normal heart sounds with what appeared to be a gallop rhythm and a 2/6 systolic murmur at the apex. Point of maximal impulse was somewhat displaced laterally. Abdomen was soft. Extremities, she had good peripheral pulses, no cyanosis, clubbing, or edema. A stat echocardiogram done showed a very extensive inferior, posterior and lateral areas of akinesis; her anterior wall contracting normally. She had moderate mitral regurgitation, mild-to-moderate tricuspid regurgitation with an elevated pulmonary artery pressure estimate probably around 50 and there was no significant pericardial effusion.

ASSSESSMENT AND PLAN: This is a 51-year-old who has had an extensive inferior posterior lateral myocardial infarction and moderate mitral regurgitation as a consequence. She is not in heart failure and apparently her myocardial infarction began on Saturday and is ongoing. Whether her pain is now all infarct pericardotomy syndrome or ongoing ischemia is unclear. She says pain is the same although there is a pleuritic component. She does have ongoing ischemic ST depression of up to 2 mm, which could represent posterior infarct. At this point, I would proceed to cardiac catheterization and recommendations will be pending the results.

Discharge Plan:
1) beta blocker c lopressor 50mg PO BID
2) Start Cardiac diet
3) Follow up 3 months
4) Lipid profile

Dictated by: Dr Cardiology, MD
The Data Challenge: Unstructured Clinical Data

Percent of Clinical Data (by Category)
Entered Only in Free Text

- Test: 85%
- Counseling/Impression: 79%
- Problems: 78%
- Allergy: 74%
- Vaccine: 36%
- Medications: 20%
- Lab: 20%
- Vital signs: 15%
Incomplete Data = Incomplete Analytics

Incomplete Data for:

- Accurately **Prompting** for Care Quality Control and Standardization
- Standardizing Patient Information Across Network
- Meaningful Analytics
- Care Coordination
The MedCPU Advisor™

+ Floats on top ANY EMR system (EMR Agnostic)
+ Reads in real-time all patient information
  + Reading from the organization’s EMR screen (using MSAA Reading technology)
  + Consuming from organization’s Interface Engine (HL7)
The MedCPU Advisor™

- Converts narrative/free text notes to highly accurate discrete data, in real-time
- Revolutionary **Medical Text Processor**
- Also collects all structured fields entries
- Functions as accurate **Data Agent** for the organization
The MedCPU Advisor™

- Robust Clinical Decision Support Engine
- Best Practice Plug-Ins Library

Decision Support Engine

- ER
- MU
- CQM
- OB
- Stroke
- Spine

ER

Asthma

Readmissions Reduction

ACO

PCMH

Home Health

Diabetes
The patient smokes; not drinking or using alcohol. No use of drugs.

Medical History:

The patient has Myasthenia Gravis

Family History:

Mother: Diabetes Mellitus

Main Complaint:
The patient arrived for induction of labor and trail of vaginal birth after Cesarean (VBAC)

12:45 On physical exam:
  T: 98; HR: 98; BP: 120/80; R: 12
  PV: 1cm; 10%; -2; hard consistency; posterior position; cephalic; Intact membranes; no vaginal bleeding.
  Contractions: 0/10min;
  FHR: 140, reactive; accelerations; no decelerations.
  Weight: 150 lbs; Height: 5’ 5” (165 cm)

13:05 Plan:
  We’ll admit for a planned VBAC and follow-up closely
  Admit to L&D for induction

The physician makes a critical decision

The MedCPU Advisor™ Button floats on the screen and continuously “reads” the chart
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14:05 Cervidil placed

Items complied with, disappear from the deviation list

A LIFE THREATENING ERROR is made

MedCPU

Contraindication
Dinoprostone (Cervidil/Prostin) is CONTRAINDIATED
Uterine scar. The American College of OB/GYN discourages the use of prostaglandins for cervical ripening or induction of labor for patients attempting VBAC

A LIFE SAVING ALERT is presented
Items complied with, disappear from the deviation list
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The Hospital EMR

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14:05 Cervidil removed

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Physician reverts back from erroneous action
Mother: Diabetes Mellitus

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Patient SAVED

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