Elective Delivery Prior to 39 Weeks:
How we can work to lower this number to zero!

Adapted from slides by

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Original ACOG Guidelines
Late Preterm Deliveries & Early Term Deliveries

Original Guidelines for Confirmation of Term Gestation (ACOG 1988)

- Fetal heart tones have been documented for 20 weeks by nonelectronic fetoscope or for 30 weeks by Doppler.
- It has been 36 weeks since a positive serum or urine human chorionic gonadotropin pregnancy test was performed by a reliable laboratory.
- An ultrasound measurement of the crown-rump length, obtained at 6-12 weeks, supports a gestational age of at least 39 weeks.
- An ultrasound obtained at 13-20 weeks confirms the gestational age of at least 39 weeks determined by clinical history and physical examination.
- Amniocentesis and documentation of fetal maturity
Current ACOG Guidelines
Late Preterm Deliveries & Early Term Deliveries

- Current guidelines for Assessing Fetal Maturity (ACOG Prac Bull #97; August 2008)

- Fetal heart tones have been documented for 20 weeks by nonelectronic fetoscope or for 30 weeks by Doppler
- It has been 36 weeks since a positive serum or urine human chorionic gonadotropin pregnancy test was performed by a reliable laboratory.
- Ultrasound measurement at less than 20 weeks of gestation supports gestational age of 39 weeks or greater
- Amniocentesis and documentation of fetal maturity
Current ACOG Guidelines
Late Preterm Deliveries & Early Term Deliveries

- Current guidelines for Assessing Fetal Maturity (ACOG Prac Bull #97; August 2008)

  - Ultrasonography may be considered to confirm menstrual dates if there is a gestational age agreement within 1 week by crown–rump measurements obtained in the first trimester.

  - An ultrasound obtained in the second trimester at up to 20 weeks by multiple biometric parameters confirms the gestational age of at least 39 weeks within 10 days.
Are the guidelines appropriate? The Evidence

- Small retrospective data from various groups
- More detailed retrospective data sets
- Large retrospective cohort studies from detailed perinatal databases with specific cohort identities
- Very large cohort studies with clear inclusion and exclusion criteria more appropriate for the focused questions asked
Ventilator Usage By Weeks Gestation
Deliveries Without Complications 2000-2003

Percent

0.00% 0.25% 0.50% 0.75% 1.00% 1.25% 1.50% 1.75% 2.00%

Gestational Weeks

37th Week (8,001) 38th Week (18,988) 39th Week (33,185) 40th Week (19,601) 41st Week (4,505) 42nd Week (258)

1.19% 0.47% 0.25% 0.30% 0.47% 0.39%
Are the guidelines appropriate?
The Evidence

- 1284 elective cesarean deliveries
- Relative risks of pulmonary complication (TTN + RDS)

2.6 overall vs VD
5.85 for RDS vs VD

12.9 37+0-38+6 vs ≥ 39+0

Are the guidelines appropriate?
The Evidence

- **Delivery room care (n, %)**
  - Apgar 5 at 1 min: Elective CS 21 (1.6%), VD 13 (1.0%)
  - NICU admission: Elective CS 17 (1.3%), VD 8 (0.6%)*

- **RDS (n)**
  - 37 0–38 6 (wk): Elective CS 25, VD 2
  - 39 0–41 6 (wk): Elective CS 4, VD 3

*overall difference between the groups

Are the guidelines appropriate? The Evidence

- 13,258 Elective Sections
  - 35.8% less than 39 weeks
    - 29.5% at 38 wks
    - 6.3% at 37 wks

Are the guidelines appropriate?

The Evidence

- 13,258 Elective Sections
  - **35.8% less than 39 weeks**
    - 6.3% at 37 wks

- Primary outcome variable was a composite of neonatal death and any of several adverse events, including respiratory complications, treated hypoglycemia, newborn sepsis, and admission to the neonatal ICU

Are the guidelines appropriate? The Evidence

13,258 Elective Sections

<table>
<thead>
<tr>
<th>GA</th>
<th>37</th>
<th>38</th>
<th>39</th>
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</thead>
<tbody>
<tr>
<td>RR</td>
<td>2.1</td>
<td>1.5</td>
<td>1.0</td>
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Are the guidelines appropriate?
The Evidence

Are the guidelines appropriate? The Evidence

- More likely to be delivered at less than 39 weeks if:
  - Older
  - Thinner
  - Non-Hispanic White
  - Married
  - Diet controlled GDM
  - Non LGA fetus
  - INSURED

Late Preterm Deliveries & Early Term Deliveries

Are the guidelines appropriate?

- All term singleton live births in the US in 2003 (cephalic, no prior C/S, not pre or postterm)
- Gestational age at delivery by completed week from 37-41 weeks
- Outcomes: Primary C/S, OVD, febrile morbidity, macrosomia, neonatal injury, 5’ Apgar, HMD, MAS, mechanical ventilation > 30 minutes

Are the guidelines appropriate? The Evidence

- All term singleton live births in the US in 2003
- 2,527,766 deliveries

Are the guidelines appropriate? 
The Evidence

Are the guidelines appropriate?  
The Evidence

<table>
<thead>
<tr>
<th>GA (weeks)</th>
<th>37</th>
<th>38</th>
<th>39</th>
<th>40</th>
<th>41</th>
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<tbody>
<tr>
<td>POV OR</td>
<td>2.4</td>
<td>1.4</td>
<td>1.0</td>
<td>0.9</td>
<td>1.01</td>
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Wilminck et al. Neonatal outcome following elective cesarean section beyond 37 weeks of gestation: a 7-year retrospective analysis of a national registry. AJOG; 202:250
Are the guidelines appropriate? The Evidence

411,560 deliveries reviewed

<table>
<thead>
<tr>
<th>GA</th>
<th>Infant Mort Rate OR</th>
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<tbody>
<tr>
<td>37</td>
<td>1.9</td>
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<td>38</td>
<td>1.4</td>
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<td>39</td>
<td>1.0</td>
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Donovan et al. Infant death among Ohio resident infants born at 32-41 weeks of gestation. AJOG 2010;203:58.e1-5.
Are the guidelines appropriate?  
The Evidence

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<th>39</th>
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<tr>
<td>CP RR</td>
<td>1.9 (1.6-2.4)</td>
<td>1.3 (1.1-1.5)</td>
<td>1.1 (1.0-1.3)</td>
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<table>
<thead>
<tr>
<th>GA</th>
<th>40</th>
<th>41</th>
<th>42</th>
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<tbody>
<tr>
<td>CP RR</td>
<td>1 (Reference)</td>
<td>1.1 (1.0-1.2)</td>
<td>1.4 (1.2-1.6)</td>
</tr>
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</table>

Are the guidelines appropriate? The Evidence

Moster et al. Cerebral palsy among term and postterm births. *JAMA*. 2010;304(9):976-982. 1.68 million births, 37-44 weeks without congenital anomalies
Are the guidelines appropriate?

The ACOG guidelines written in 1988 and reaffirmed in 2008 appear appropriate for the state of the science.
Late Preterm Deliveries & Early Term Deliveries

- Why do we still see over one-third of elective deliveries performed prior to 39 completed weeks?
  - Pressure from patients
  - Individual experience not large enough to see a difference in outcome
  - Unfamiliarity with the new data
  - No strict hospital based guidelines
Late Preterm Deliveries & Early Term Deliveries

Current Interventions

- Educational programs
- Audit/feedback programs
- Quality improvement projects
- Visiting experts

...have limited impact on improving clinical care
Possible Solutions

Interventions aimed at systems improvement have a greater impact

- Patients under 39 weeks will not be scheduled for elective delivery “Hard Stop”

- Develop an elective delivery check list for use on L&D
Does It Work?

Ohio Perinatal Collaborative

reduced inappropriate early term deliveries prior to 39 weeks from 25% to <5%.

The Ohio Perinatal Quality Collaborative writing committee. A statewide initiative to reduce inappropriate scheduled births at 36+0-38+6 weeks’ gestation.
What is:
And what can be:
How?

- Identify and develop a set of specific and measurable changes that you can implement in order to achieve improvement in elective deliveries
NYSDOH Key Drivers

1. Awareness of risks/expected benefit of late preterm and early term delivery by patients and consumers

2. Dating criteria: optimal estimation of gestational age

3. Hospital and physician practice policies that facilitate ACOG criteria

4. Awareness of risks/expected benefit of late preterm and early term delivery by clinician

5. Culture of safety and improvement

NYSONQC  OB Expert Work Group Webinar– July 12, 2010
1. Awareness of risks/expected benefit of near-term delivery by patients and consumers

- Key Changes:
  - Inform consumers of risks/benefits of delivery < 39 weeks
  - Communicate to patient/clinic/hospital dating/ultrasound results
  - Promote need for early dating to practitioners and consumers
  - Public awareness campaign
2. Dating criteria: optimal estimation of gestational age

Key changes:

- Promote need for early dating to practitioners and consumers as appropriate
- Develop/Document criteria used to establish EDC
- Appropriate use of fetal maturity testing
- Empower nurses/schedulers to require dating criteria
- Create/Identify administrative support for authorization dispute re: dating
3. Hospital and physician practice policies that facilitate ACOG criteria

- **Key changes:**
  - Empower nurses/schedulers to require dating criteria
  - Document rationale and risk/benefit for scheduled deliveries at 36 1/7 to 38 6/7 weeks gestation
  - Document discussion with patient about the above
  - Both patient and MD sign consent statement for scheduled delivery between 36 1/7 to 38 6/7 weeks
  - Physician awareness campaign: what are the indications for scheduled delivery?
  - Maximize access to Delivery and OR for optimal scheduling
  - Facilitate scheduling policies that respect ACOG criteria
4. Awareness of risks and expected benefit of near-term delivery by clinician

Key changes:

- Prenatal caregivers receive feedback from postnatal caregivers about neonatal outcomes of scheduled deliveries
- Ensure complete and accurate handoffs Ob/OB and Ob/Peds
- Document discussion with patient about risks/benefit of late preterm/early term delivery
- Promote need for early dating to practitioners and consumers
5. Culture of safety and improvement

- Key changes:
  - Continuous monitoring of data and discussion of this effort in staff/division meetings
  - Post data-Project outcomes
  - Develop ways to include staff and physician input about communications and handoffs
  - Connect with organizational initiatives on safety and use existing approaches as possible
  - Empower nurses/schedulers to require dating criteria
  - Constant communication among multidisciplinary team
What do we need to do:

- Develop hospital-level measurement tools
  - Perform small tests of change in the hospital
  - Eventual result is widespread implementation of improvements in practices
  - Provide the methods for process improvement
  - Make it easy to comply
  - Work the change into current work flow

- Communicate

- Create the urgency
Late Preterm Deliveries & Early Term Deliveries

Summary:

- Late preterm/Early term delivery is increasing
- Early term deliveries have higher risk
- Inadvertent deliveries prior to confirmation of fetal maturity are a preventable part of this increase
- Validated guidelines exist for prevention
- Adherence to guidelines can reduce inadvertent late preterm/early term deliveries
- Gestational dating is key
- Hospital-specific system redesign and process improvement shows the largest impact on improvement
Late Preterm Deliveries & Early Term Deliveries

- Kamath et al. Neonatal outcomes after elective cesarean delivery OBGYN 2009;113:1231-8
- The ohio perinatal quality collaborative writing committee. A statewide initiative to reduce inappropriate scheduled births at 36+0-38+6 weeks’ gestation. 25% to <5%.
- Wilminck et al. Neonatal outcome following elective cesarean section beyond 37 weeks of gestation: a 7-year retrospective analysis of a national registry. Primary outcome 37-OR 2.4, 38-OR 1.4, 39-OR 1.0, 40-OR 0.9, 41-OR 1.01
- Donovan et al. Infant death among Ohio resident infants born at 32-41 weeks of gestation. IMR 37-OR 1.9, 38-OR 1.4, 39-OR 1.0. from 40-115,000 deliveries, total 411,560 reviewed.
- Moster et al. Cerebral palsy among term and postterm births. JAMA. 2010;304(9):976-982. 1.68 million births, 37-44 weeks without congenital anomalies. 37-1.9 (1.6-2.4), 38-1.3 (1.1-1.5), 39-1.1 (1.0-1.3), 40-1[Reference], 41-1.1 (1.0-1.2), 42-1.4 (1.2-1.6)