Importance of Accurate Birth Certificate Data

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PHSIS
Administrative Uses of Data

- The data collected through the registration of vital events is used to help many other agencies within the state.

- Examples:
  - Birth data are submitted to SSA;
  - Birth data are provided to the SC Department of Social Services regarding paternity acknowledgments;
  - Used to evaluate the perinatal regionalization system;
Birth Outcomes Initiative (BOI)

- BOI is an effort by the SC Department of Health and Human Services (SCDHHS), South Carolina Hospital Association, SC DHEC, March of Dimes, Blue Cross Blue Shield of SC and over 100 stakeholders to improve the health outcomes for newborns.

- The Initiative launched in July 2011.

- Core objective: Elimination of elective inductions for non-medically indicated deliveries prior to 39 weeks gestation
BOI Reports

- BOI sends quarterly reports to hospital’s CEOs.

- The reports use the following variables from birth certificate:
  - Obstetric estimate of gestation
  - Birthweight
  - Method of delivery – including trial of labor
  - Previous cesarean deliveries
  - Prenatal care – first visit, total number of visits
  - Previous live births, other outcomes
Collaborative Improvement & Innovation Network (CoIIN) to Reduce Infant Mortality

- CoIIN is a public-private partnership to reduce infant mortality and improve birth outcomes.
- SC is among the 19 states who participate in CoIIN.
- Core objectives:
  - Reduce elective deliveries at less than 39 weeks gestation
  - Promote smoking cessation among pregnant women
- Relies heavily on birth certificate data
CoILN Reports

- The following variables from birth certificate are used:
  - Obstetric estimate of gestation, Birthweight
  - Risk factors in this pregnancy – diabetes, hypertension, previous preterm/poor pregnancy births/outcomes, etc.
  - Onset of labor – premature rupture, etc.
  - Characteristics of labor and delivery – non-vertex presentation, fetal intolerance
  - Method of delivery – including trial of labor
  - Congenital anomalies
  - Smoking during each trimester
Other National and State Initiatives

- March of Dimes – annual report card for each state
- Kids Count - a project of the Annie E. Casey Foundation, is a national and state-by-state effort to track the well-being of children
- SC Campaign to Prevent Teen Pregnancy – previous live births dates
- Academic research projects - in state, national
- National Center for Health Statistics (NCHS)
SC Birth Data Quality Study Overview

- **Objective** - Develop a study protocol to determine how closely information on the birth certificate matches information recorded in the medical record

- **Basic design**
  - Independently abstract medical records for information collected on the birth certificate
  - Compare abstracted information with information captured on the birth certificate
Collaborative Effort

- Resources needed to conduct a data quality study
  - Staff to abstract records
  - Abstraction tool
  - Database to collect abstracted information
  - Cooperation of facilities to allow abstraction of their medical records

- Through collaboration with the National Center for Health Statistics (NCHS) and the South Carolina Hospital Association (SCHA), we were able to complete the study
Collaborative Effort

- **NCHS Support**
  - Provided financial support for data collection system and two experienced abstractors to sample records and abstract information from medical records for comparison

- **SCHA Support**
  - Facilitated contact with hospitals to obtain approval for the study
Study Design

- 4 hospitals representing a mix of characteristics
  - Number of deliveries
  - Frequency of quality issues (e.g. missing items, timeliness)
  - Geographic location (rural vs. urban)
  - Perinatal level
  - Medical record type (electronic/paper/combination)

- 600 births (150 from each hospital)

- Random sample of births occurring between October 2010 and March 2011
Results
Definitions

- **Agreement** (Continuous/Non-Check Box Items) – The percentage of all births for which the values reported on the birth certificate and in the medical records agree (excludes records for which values are unknown).

- **Sensitivity** (Dichotomous/Check-Box Items) – The percentage of births with a condition indicated on the medical record that was also reported on the birth certificate (excludes records for which values are unknown).
Definitions

Sensitivity/Agreement scale:
90.0 - 100% = high
75.0 - 89.9% = substantial
60.0 - 74.9% = moderate
40.0 - 59.9% = low
<40% = extremely low
# Items with High Sensitivity/Agreement

<table>
<thead>
<tr>
<th>Item</th>
<th>Sensitivity/Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant living at time of report</td>
<td>100%</td>
</tr>
<tr>
<td>Number of previous live births now dead</td>
<td>99%</td>
</tr>
<tr>
<td>Route and method of delivery-cesarean</td>
<td>98%</td>
</tr>
<tr>
<td>Fetal presentation-Cephalic</td>
<td>98%</td>
</tr>
<tr>
<td>Route and method of delivery-vaginal/spontaneous</td>
<td>98%</td>
</tr>
<tr>
<td>Date last normal menses began (month)</td>
<td>96%</td>
</tr>
<tr>
<td>Epidural or spinal anesthesia during labor</td>
<td>96%</td>
</tr>
<tr>
<td>Number of previous live births now living</td>
<td>96%</td>
</tr>
<tr>
<td>NICU admission</td>
<td>95%</td>
</tr>
<tr>
<td>Date of last prenatal care visit (month)</td>
<td>93%</td>
</tr>
<tr>
<td>Obstetric estimate of gestation at delivery</td>
<td>92%</td>
</tr>
<tr>
<td>Date of last live birth (month)</td>
<td>91%</td>
</tr>
<tr>
<td>Infant breastfed at discharge</td>
<td>91%</td>
</tr>
<tr>
<td>Birthweight (grams)</td>
<td>90%</td>
</tr>
</tbody>
</table>
Items with Low and Extremely Low Sensitivity/Agreement

<table>
<thead>
<tr>
<th>Item</th>
<th>Sensitivity/Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes-Gestational</td>
<td>58%</td>
</tr>
<tr>
<td>Premature rupture of the membranes</td>
<td>56%</td>
</tr>
<tr>
<td>Hypertension-Gestational</td>
<td>50%</td>
</tr>
<tr>
<td>Total number of prenatal care visits</td>
<td>48%</td>
</tr>
<tr>
<td>Precipitous Labor</td>
<td>47%</td>
</tr>
<tr>
<td>Steroids for fetal lung maturation prior to delivery</td>
<td>42%</td>
</tr>
<tr>
<td>Hypertension-Prepregnancy</td>
<td>39%</td>
</tr>
<tr>
<td>Moderate/heavy meconium staining</td>
<td>32%</td>
</tr>
<tr>
<td>Previous Preterm Births</td>
<td>22%</td>
</tr>
<tr>
<td>Fetal intolerance of labor</td>
<td>12%</td>
</tr>
</tbody>
</table>
Agreement for Obstetric Estimate of Gestation

- Gestation (exact): 92%
- Gestation (+/- 1 week): 98%
- Percent Preterm (< 37 weeks): 95%
Agreement for Birthweight

- Birthweight (exact): 90%
- Birthweight (+/- 25 grams): 97%
- Percent Low Birthweight (<2500 grams): 96%
- Percent Very Low Birthweight (<1500 grams): 100%
Agreement for Number of Prenatal Visits

Number of Visits (exact) - 48%
Number of Visits (+/- 2 visits) - 84%

Agreement for Exact Number of Prenatal Visits by Hospital

- Hospital 1: 70%
- Hospital 2: 31%
- Hospital 3: 65%
- Hospital 4: 27%
Conclusions
Summary

- This study provides valuable insight into the quality of the revised medical/health birth data.

- Several frequently used variables showed good quality.
  - Obstetrical estimate of gestation
  - Birthweight
  - Cesarean delivery

- Large differences in data quality by:
  - Item
  - Hospital
Summary

- Some variables are better than expected and some are worse than expected.

- Results by hospital suggest that some very poorly performing items may be responsive to improvement efforts.

- Other poorly performing items may require substantial effort to achieve even moderate quality.

*Overall - There is need for improvement.*
Acknowledgments

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