Summary of Birth Certificate Data Collection Challenges: Lessons Learned from Ohio and Other States

A. **Ohio Hospital Data Quality Project**

In April and May, 2010 the Ohio Department of Health, Office of Vital Statistics (ODH/VS) conducted sixteen site visits to maternity hospitals focused on gestational age calculations, number of prenatal visits, and data collection practices documented in the birth certificate. Each facility was asked to provide three pre-defined medical charts for review to compare to the information that had been entered into the Integrated Perinatal Health Information System (IPHIS).¹

**Data Discrepancy**

Site visits at these Ohio maternity hospitals showed that seven out of the sixteen facilities had at least one discrepancy between the medical record and the information entered into the IPHIS application. It could not be determined whether this forty-four percent inaccuracy rate was due to human keying error or from data collection.

**Mother’s Worksheet and Facility Worksheet Use**

In 2004, ODH/VS issued a Mothers Worksheet ² and a Facility Worksheet ² to all Ohio maternity hospitals. These worksheets are designed to assist the birth certificate abstractor to obtain key data elements required for the IPHIS application. The majority of surveyed hospitals used the Mother’s Worksheet ² to capture demographic data. Approximately half of the sites did not use the Facility Worksheet provided. Sites that chose not to use the ODH/VS worksheets reported either creating their own worksheet or using a worksheet derived from their facility’s Electronic Health Record (EHR.)

**Data Quality**

Data quality and the skill level of the staff members who were gathering the IPHIS application information at the surveyed hospitals seemed to be correlated. Facilities that used statistical or nursing staff, as opposed to medical records clerks, had more complete and accurate data. Medical records clerks shared that they had not received any formal education on the collection of data. Many would simply enter an “unknown” code rather than seek out the missing information.

Incorrect data were discovered related to the number of maternal prenatal visits as well as the gestational age of the newborn. Accurately determining the number of prenatal visits and gestational age of the newborn may be comprised by internal procedures at some hospitals.¹

**Complexity of Data Collection**

Staff at surveyed facilities reported the need to access as many as five different databases and/or charts to obtain required IPHIS application information. EHR systems were available in most surveyed hospitals. However, EHRs were often not fully utilized, user skill level was reportedly inadequate and inter-system incompatibility issues existed.¹
B. National Birth Certificate Findings

The National Center for Health Statistics (NCHS) has studied the process of birth certificate data recording as well as the birth data itself to develop model law for national vital statistics gathering and use. States that clearly reported challenges and responses to those challenges are briefly summarized below. The full states’ reports are referenced for further study.

- **California Findings** – Data quality is impacted by both missing and unlikely values. California took a two pronged approach to improvement. 1.) They tracked and contacted the hospitals with the highest percentages of missing data for maternal ethnicity, education and date of last menstrual period (LMP). Training was offered to the birth clerks at these institutions. CHS (California Center for Health Statistics) also held regional trainings for birth clerks throughout the state. 2.) Unlikely values presented a difference challenge from missing values. The system has a quality check alerting the clerk to an unlikely value, but this can be bypassed by the user. They utilize Federal data cleaning algorithms (the Kotelchuck algorithm) to impute unlikely birth weights and gestational age for values outside of acceptable boundaries.

- **North Carolina Findings** – New approaches in which nurses collaborate with birth registrars are recommended to improve the accuracy and completeness of the clinical information on the Facility Worksheet. Nurses are best suited educationally and via job expectations to access all the required data in the medical record. Nurses are presumably already familiar with their patients’ histories and, therefore, may be able to provide much of the information more efficiently.

- **Washington Findings** – The Center for Health Statistics, Washington State Department of Health published “Why Quality Data is Important and Help to Improve Your Data” as a guide for hospitals to interpret the NCHS Report. Of particular interest were the sections “Percent Unknown Compared by State,” “Percent Unknown Over Time,” and “Graph of Average Percent Unknown Compared to the State.” The guide also discussed the importance of the quality of this data well as the ramifications of “unknown” fields. A concrete example of loss of project funding was iterated. An interesting addition to this state’s report was a section describing four categories of the Birth Worksheet in layman’s terms.

- **Minnesota Findings** – The Minnesota Department of Health considers additional medical training for birth certificate clerks to be a best practice for birth data reporting. Tutorials for data submission are available on their web site for birth certificate clerks and other hospital staff.

- **Kansas Findings** – Two hospitals were studied for birth certificate entry documentation accuracy. The state’s report identified the following areas for improvement:
  1. **Form Design and Knowledge** – Improvement in design of the forms for collecting and submitting birth certificate information and knowledge of the hospital’s birth data entry process would enable the department to more accurately collect essential public health information.
  2. **Worksheet Retention** - Retaining the worksheet as a data collection tool and requiring it to be maintained in the medical record would improve documentation accuracy. Since worksheets are the sole source for validating some birth event information, Certified Health Education Specialist (CHES) guidance to birth clerks should be revised. Hospitals should be told to retain the worksheets.
  3. **Birth Certificate Training** - Improve the quantity and quality of birth clerk training. Birth clerks desire training. It must be provided in a quality manner and on a regional basis to help ensure data quality and facilitate a smooth transition to a new web enabled birth registration process. Regional trainings will enable some hospitals to send additional clerks to such sessions. Inclusion of training information within the web-based system will be important.
4. **Mother’s Input** - Use information from the mother for some certificate data when it is not available in the medical record within the time period the mother is in the hospital. Birth clerks should be discouraged from reporting information provided by the mother that contradicts available medical records. Telephone survey results indicate mothers occasionally provide information that contradicts the medical record. A birth clerk at one of the hospitals where records were reviewed reportedly said birth clerks may occasionally change information to satisfy the mother.

5. **Electronic Health Record location** - The implementation of a browser-based EHR at hospitals should be accompanied by advice that the system be located in the birthing unit and operated by a birth clerk assigned to that unit. This will maximize the likelihood of obtaining the most accurate birth event information and assure greater timeliness in reporting the event.

6. **Computerized Edits** - Computerized edit checks and validation programs should be enhanced to identify data anomalies. Edit checks of incoming data from hospitals should be enhanced.

7. **Hospital Record Surveys** - Additional hospital record surveys should be conducted. Surveys should include hospitals that retain worksheets to better assess accuracy for data elements.

C. **Ohio Perinatal Quality Collaborative (OPQC)**

- The initial phase of the Ohio Perinatal Quality Collaborative (OPQC) 39 week scheduled delivery project was completed in 2010. In 2012, OPQC will further the project impact through the 39 Week dissemination project. OPQC and ODH/VS will collaborate to spread lessons learned about decreasing the number of scheduled births prior to 39 weeks gestation without medical indication and improve the accuracy and timeliness of OPQC study related birth certificate data elements.
- Jennifer Bailit, MD, MPH summarized the initial OPQC project and provided an initial needs discussion of the dissemination and spread project.
  1. Quality of the data varies by hospital.
  2. Clinical data on the birth certificate is suspect.
  3. Monthly differences between chart abstraction and birth certificates averages 10.1 percent, with a range of zero to 34.6 percent at individual OPQC sites. Two hospitals had average differences between chart abstraction and birth certificate data of less than five percent. Those hospitals were not identified in the paper.
  4. Birth certificate data has many advantages to use for population assessment; steps to insure accuracy of birth certificate data should be pursued.
  5. Next steps identified by OPQC include: determining the quality of the birth certificate data captured and identify/document best practices.
- Beena Kamath, MD, et al. described the use of the quality improvement science, particularly the benefit of small tests of change, as a means to improve the accuracy of birth certificate data. A brief summary of the four phases of the study is found below.

**Phase I: Completing the EHR**

- Most common causes of incomplete EHR were:
  - first ultrasound was not sent from OB office
  - LMP or first ultrasound dates were often missing
  - EDD was calculated by the OB without supporting data
  - Weekend nurses were not noticing missing data since PDSA test cycles occurred on weekdays
• Effective interventions
  o Algorithms developed to flag incomplete charts, contact OB providers and teach OB residents that
dating criteria must be in History and Physical
  o Target weekend nurses for specialized education and empowerment to spread teaching to colleagues
  o Empowered nursing staff to document why EMR cannot be filled out to identify process issues
  o History forms requested from OB Community Providers if EMR incomplete
  o Presented information on sentinel events and completion of EMR at OB/GYN staff meetings
  o Identified community practices that are “low performers”

Phase II: Process of EHR transmission by community OB

• Effective Interventions
  o New standardized H&P was developed which contained all necessary EHR data points
  o Nurses empowered to contact OB providers if data were missing or EDD/GA dates conflicted between
  prenatal record and hospital H&P
  o Safety benefits of accurate EHR were emphasized peer to peer

Phase III: Real Time Auditing

• Nursing supervisors began real time auditing for incomplete EHR with nurses calling providers for verifying data
• Pregnancy card was created to be given to each pregnant women by OB provider to be carried with her
  throughout pregnancy
  o Contained vital information about pregnancy including tested data points

Phase IV: Real Time Auditing Continued and Expanded to High Risk Groups

• Lessons learned
  o Every phase showed improvement in number of completed EHR
  o Greatest impact:
    • Real time auditing
    • Standardized H&P

Key Elements to Success

• Committed front line and high achieving nursing staff were essential to spread the change
• Daily data collection and real time audit providing immediate feedback led to greatest improvement
• Nurses were empowered to alert physicians when clinical management was being dictated by an incorrectly
calculated gestational age, preventing premature delivery
• Community OB providers continue to need more attention to find ways to correctly transmit EDD/GA data to
  hospitals
• More work needs to be done to verify that birth certificate data accurately reflect EHR
References


Susan Ford, RN and Beth White MSN, CNS 1/20/12
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