Exploring the 2003 Revision of the U.S. Standard Certificate of Live Births:
Results of cognitive interviews conducted in state one of four
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1. Introduction

This report documents findings from the first part of a larger study whose purpose is to understand how select medical and health items on the Facility Worksheet for the 2003 Revision of the U.S. Standard Certificate of Live Birth are collected. The study was designed to take place in four states in different parts of the country and with different experiences in using the revised certificate of live births. This report focuses on the first state in which data collection took place, referred to as "State 1". [1]

This is a study of how hospitals in State 1 structure the task of collecting data on live births, as well as how hospital personnel go about completing this task. Cognitive interviews were conducted with the birth certificate worksheet used most commonly across the state. This form is NOT the standard recommended worksheet, but was cognitively tested because it is the worksheet actually used by hospitals and birth information specialists. Time constraints made impossible the exploration of all items on the form. Instead, attention was given to those items most sensitive to rate changes associated with the 2003 birth certificate revision. Data collection focused on the Medical and Health Information portion of the form. Issues for other items (such as mother's maiden name and place of birth) are reported only to the extent that the discussion was initiated by the respondents (not the interviewer). Interviews took place with hospital employees who are responsible for completing the state form and for transmitting data on-line to the Electronic Birth Certificate (EBC) system. Typically these are birth information specialists or birth clerks.

The next section briefly describes the qualitative methodology of cognitive interviewing, including the procedure for sampling interview respondents, the data collection method, and analysis plan. The third section of the report presents a summary of general findings, followed by a more detailed item-by-item analysis.

[1] The names of all states are witheld in order to protect confidentiality.

2. Methodology

Sampling and Respondent Demographics

Testing took place in June, 2009 and a total of 14 interviews were conducted. Respondents were selected with a purposive sample in mind. The goal of a purpose sample is *not* to obtain a statistically representative sample. Instead, respondents were chosen who are responsible for completing the birth certificate worksheet and for transmitting the information to the EBC.[2] Additionally, respondents were required to have been doing the job for six months or more.

Table 1 provides a breakdown of some respondent characteristics.[3] Birth clerks tended to be over 40 years old (64%), have a high school diploma as their highest level of educational attainment (86%), and be in their current job for 5 years or less (50%).

Table 1: Demographic summary of respondents (N = 14)

	Total	Percent
Respondent Age		
Under 40	5	36%
40 and Over	9	64
Education		
HS	4	29
Some college, no degree	8	57
Associate's degree	2	14
Bachelor's degree or higher	0	0
Years in current job		
5 or less	7	50
6-10	2	14
More than 10	5	36

Respondents were recruited through their workplace. A flyer was placed in various hospital newsletters and a letter of invitation was sent to hospital personnel to identify the birth clerks and request their participation in the study. Prior to participation, respondents were screened over the telephone in order to confirm that they met the criteria for inclusion.

[2] Although many job titles exist for this occupation, this report will heretofore refer to respondents as "birth clerks" for ease of reference.

[3] Only one of the 14 respondents was male. To ensure confidentiality, all respondents are referred to in the feminine (she/her).

At the time of the interview, respondents filled out paperwork whereby they agreed to the interview being audio-taped. The interviewer then explained the purpose of NCHS, described the study, and told respondents the manner in which the interview would be conducted. After these introductory remarks, the interviewer asked about the process by which the birth certificate worksheet is completed in each respondent's hospital, including the respondent's role in this process. This was followed by item-specific probes designed to reveal respondents' interpretation of the item, the source of information for the item, and the ease with which they acquire the information necessary to complete it. Interviews were designed to last 60 minutes and a $75 token of appreciation was given to respondents at the conclusion of the interview. Because it was necessary to speak specifically and exclusively with personnel responsible for completing the birth certificate worksheet (i.e., birth clerks), remuneration was higher than the standard rate of $40.

Data Collection

Cognitive interviewing, as a qualitative methodology, offers the ability to understand the process by which respondents complete the birth certificate worksheet used by hospitals in State 1. It is a method that allows the researcher to collect detailed information on how the form is being completed from start to finish and respondents' understandings of their role in the process. Interviews usually began with a discussion of how the worksheet is envisioned to be completed in that hospital, followed by an explanation of how the form actually *is* filled out. Respondents were prompted to discuss any problems they encounter in completing the worksheet and how they resolve these problems.

Additionally, the method allows the researcher to uncover birth clerks' interpretations of items on the birth certificate worksheet. This is important to the extent that their interpretation of the item shapes the type of information they seek to collect, where they get this information, and how they decide to record the information on the form. In the second part of the interview, the interviewer and respondent discussed specific items on the birth certificate worksheet. The interviewer probed respondents for their understanding of what the item was asking, where they get the information for this item, and any problems they have in tracking this information down.

Method of Analysis

Data analysis proceeded according to the grounded theory approach which does *not* aim to test existing hypotheses, but instead generates explanations of how respondents complete the birth certificate worksheet. The goal is to produce explanations that are closely tied to the empirical data. The process of analysis is a constant comparison of data in several steps. The first step occurs within the interview as the interviewer attempts to understand how one respondent has come to understand, process and then fill out an item on the form. The second step in analysis occurs once the interview is over, and is a systematic comparison of items and processes *across* all interviews. This level of comparative analysis reveals patterns in the way birth clerks complete the birth certificate worksheet.

3. Background

A primary goal of the 2003 revision of the US Certificate of Live Birth was the improvement of data quality. To encourage collection of data from the best and most appropriate sources, CDC's National Center for Health Statistics (NCHS), in collaboration with the National Association of Public Health Statistics and Information Systems (NAPHSIS), developed two standardized worksheets. The US Standard "Mother's Worksheet" was developed to collect specific information (e.g, name, age, birthplace, tobacco use) directly from the mother via interview or by the mother completing the worksheet herself. The US standard "Facility Worksheet" was created to be used by hospital staff (e.g., the attendant at birth or birth registration specialist) to collect information from the mother's and infant's medical records. The Department of Health in State 1, as have all jurisdictions which have implemented the revised birth certificates, developed state-specific worksheets based on the U.S. standards but modified to meet individual state needs.

Although based on the U.S. standard worksheets, the form developed by State 1 differs from the U.S. standard worksheets in several important ways. Briefly, the form consists of two pages, neither of which is labeled as the portion for the mother or the facility to complete. The first page of the birth form includes most, but not all, of the information on the standard mother's worksheet (i.e., primarily legal and demographic information). The second page of the form includes information which is recommended to be collected by the mother (e.g., smoking during pregnancy, WIC), and the medical and health information to be completed by the birth clerk based on the medical records, or by an appropriate clinician (i.e., the labor and delivery nurse or the attendant at birth).

Another important way in which the birth form in State 1 differs from the U.S. standard worksheet is that it includes several items which are not included on the standard (e.g. head circumference). Also, interviews with the birth clerks suggested that some edit procedures in the Electronic Birth Certificate (EBC) may not be consistent with the national recommendations for electronic systems.

4. Results

Differences in who completes the birth form

All of the hospitals represented in State 1 used the same version of the worksheet to collect the birth certificate information. The way hospitals structure the job has an important impact on how information was recorded. Three models for filling out the form (both pages 1 and 2) are identified:

Model A: The entire form (including both pages) is filled out by the birth clerk alone based on maternal interviews and medical record reviews. (n=2)

Model B: The entire form is filled out by some combination of the birth clerk and mothers, doctors and/or nurses. (n=3)

Model C: The entire form is filled out by someone other than the birth clerk, including mothers, doctors and nurses. (n=9)

In every model the birth clerk is responsible for collecting the birth certificate worksheet and entering the data into the EBC system, for which she alone has a user name and password. However, there was no consistent pattern in the degree of responsibility the mothers or the birth clerks are given for completing the form. The level of responsibility for the mother ranges from filling out only page 1, to filling out page 1 and part of page 2 (the mother's statistical information section and newborn's statistical information section), to filling out the entire form. Additionally, in two cases the mother alone is responsible for filling out the entire form. On the other hand, some hospitals structure the task in a way that gives responsibility to the birth clerk for some or all of the items on the birth certificate form.

A couple of birth clerks reported that their hospitals have a system in place in which nurses entered information such as labor and delivery notes into a computer program that is accessible by the birth clerk. The information is organized such that the computer printout (referred to as the "computer worksheet") makes it easy to access the information birth clerks need to complete the form.

Training and where to find help

Most respondents reported that they had no formal training in how to complete the birth form. Six respondents reported that if they needed help with an item they call the state vital records offices. Others ask a nurse or doctor, or consulted OB/GYN medical reference books or Google.

Four respondents reported that they used the national standard "Facility Guidebook for Completing the US Certificate of Live Birth and Report of Fetal Death," but other clerks did not know that the Guidebook exists. The guidebook was developed to help hospitals report this information accurately and includes definitions, instructions, key words and suggested sources for items, but most birth clerks do not use it.

The lack of training and use of the guidebook is shown in the following example. One birth clerk reported that for the longest time she checked "assisted ventilation" under "Characteristics of labor and deliver" if she saw that the baby was administered any oxygen at all. At some point a co-worker picked up on this and told her it was incorrect to include those cases. Only at that point did the respondent think to check the guidebook to confirm that those cases should not be included.

Availability of medical records

Birth clerks reported that access to the medical records was not a problem. Respondents reported that they have access to a wide variety of medical records, such as the baby's hospital chart, the mother's chart, the prenatal record, the labor & delivery summary, doctors' and/or nurse's notes and dictation, the face sheet and admittance record, and any other documents that becomes part of a patient's medical record. These documents are rarely missing.

Incomplete information

However, an important finding of this research is that while the records may be available, they may not always be complete or the information recorded may not be presented using the same language as that used on the birth certificate worksheet. This poses difficulties. Birth clerks sometimes need to choose between recording an item as missing or sorting through and interpreting a variety of sources in order to accurately complete the missing information. An example is "assisted ventilation" under the abnormal conditions of the newborn section. Respondents have to decide what should count as assisted ventilation because the information is not presented in exactly the same way in the charts and on the form. (See item-by-item analysis below).

A variety of strategies are used by birth clerks when information is incomplete. One strategy is to simply ignore the item and leave it blank. For example, one respondent said that she doesn't know what the "obstetric procedures" item is, and always leaves it blank. The majority of clerks (9 of 14), however, feel it's better to figure out an answer and fill in *something* rather than leave an item missing altogether. Some commented that they have been doing the job for a long time and have come to know some medical terms and procedures, so they can figure some things out. Even so, one respondent said that this section is especially difficult when complications are present. She has to look in many sources to get answers, including the dictation delivery notes, the labor and delivery summary, and the nurses' progress notes.

Every respondent said that where others (mothers, nurses or physicians) are responsible for completing the form, it comes to them with either some specific items blank or entire sections of information left incomplete. When this happens, especially for the checkbox items, it is difficult for them to know whether the information has actually been reviewed or not. That is, the lack of response could mean "none of the above" or it could mean "unknown". Some respondents gave examples of how an item left unchecked can mean different things. It can mean no, the condition wasn't present or it could mean it wasn't even considered by the medical staff when filling out the form, (especially when the "none of the above" option is left unchecked). For most respondents it is impractical to check every item that has been left blank, so some will only correct obvious mistakes. For example, one respondent said that if she sees the "spontaneous" box checked for vaginal delivery AND the box checked for cesarean delivery, she will refer to the medical records and make the appropriate change.

All respondents working under the model in which clinicians were responsible for reporting the medical and health information indicated that doctors and nurses rarely, if ever, fill this section out completely or accurately. Several respondents said that their hospital recognizes this problem, but so far none have been able to find an effective solution to it. These birth clerks report no improvement from 2003 to the present time in the rate at which doctors and nurses complete the birth certificate worksheet. Respondents have no way of knowing why, but many assume it is because doctors and nurses already have a good deal of paperwork to complete and are not interested in doing more. This leaves the birth clerk with three choices: leave the items blank and enter "unknown," enter "none of the above", or try to find the information and complete the section themselves.

Five of the 14 respondents reported that they never attempted to find information where information was not complete. They entered "unknown" in the EBC system. For example, a couple of respondents said they have never seen "infertility treatment" item checked and have never reviewed the records themselves for this information. One respondent reported that the "obstetric procedures" item was always left blank. This suggests the possibility of undercounts (false negatives) on these items.

Another issue is with the item" Date of 1st prenatal visit." Some birth clerks reported that the "no prenatal care" box can be misinterpreted. In one hospital where the mother is responsible for completing the information, the birth clerk checks that box when the item has been left blank. To her the box means that no prenatal care was given. Nurses have also left these items blank and have written "no parental care." What they mean is that no prenatal care information was available, NOT that the mother never received prenatal care.

Respondents who did not have direct responsibility for gathering the birth certificate information indicated that it was not part of their formal job to fill in missing information. Those that do take it upon themselves to do so. There are various reasons why some respondents choose not to attempt to collect information when it is missing. Some respondents indicated that they do not do so because they are not concerned about page 2 of the state form. In their opinion, the information on page 1 is most important to the birth certificate itself. One respondent reported that someone in the state capital and home to the Department of Health told her that page 1 and page 2 are not related. The back is only for statistical purposes, while the front is directly related to the actual birth certificate. Another respondent also said she is not very concerned about items missing on page 2. If the mother doesn't fill it out, she lets it go. She said the first page is more important because it's the basis for the actual birth certificate. Another respondent also said that her decision to leave something blank is influenced by how critical it is to the birth certificate, and she believed page 1 is more important in that regard.

Another reason some respondents do not complete missing information is because they do not have any medical training and, as a result, some do not feel competent in completing the information. One respondent specifically said that she will not "guess" about an item because she has no medical training. Another said she would not want the responsibility for filling out the form because it should be done by a health care provider, especially the Medical and Health Information portion of the form. A third respondent said "I don't know if I should or shouldn't fill out missing information" because she's not a nurse and has no medical training.

A final reason why some respondents do not complete missing information is time. If someone else is responsible for filling out the form, the respondent may not have time to do it herself because she has other responsibilities. Completing the form involves tracking down medical records (one respondent would have to literally go to the medical records department to abstract the data – she would not be able to remove the records from that department). This is time they do not have because the task is not structured into their job description and daily routine.

The Use of "Logical estimation"

On the other hand, some respondents will attempt to complete missing information, even when it is not formally their job to do so. Many birth clerks do this by consulting the medical records. However, this is not always a straightforward process. In some cases, when an item is either not obviously stated in the medical records or is missing from the records altogether, the respondent makes a logical assumption as to what the answer would be based on other available and relevant information. One respondent referred to this as "putting two-and-two together" and another called it "estimating". I refer to this process as "logical estimation." Nine out of 14 respondents reported that they use logical estimates to one degree or another.

Examples of items for which logical estimation is used include:

Trial of labor: One respondent who says she uses the item "induction of labor" to tell her something about trial of labor, when trial of labor is not completed. That is, she looks to see if labor was induced in order to answer whether the mother had a trial of labor.

Date of last normal menses: This item is frequently missing from the medical records. To arrive at a logical estimation for this, one respondent will use the mother's expected date of delivery to calculate the date of her last period.

Total number of prenatal visits: Five respondents said that information for these items are often incomplete in the prenatal record where they are supposed to be. When the log of visits is incomplete, one respondent said she uses the date in date last visit and date of last normal menses to calculate the number of prenatal visits a woman had. She said the nurses told her the usual number of visits recommended for prenatal care, and that's how the respondent comes up with her estimate for total number of visits. One respondent reported that this is "always an estimate." She said this information is always missing and she fills it in according to what the nurses have told her is the typical number of prenatal visits for a normal pregnancy.

Some items in the medical/health information are not always easy to fill out. Birth clerks must first understand the meaning of an individual item (i.e., ascertain what it's asking for), then read, synthesize, and evaluate relevant information from the medical records before finally making a judgment on how to complete the item. In other words, in order to complete parts of this section, the respondent has to sometimes read through multiple documents in the medical record (e.g., the labor and delivery summary, the doctor's dictation, the nurses notes, etc.), evaluate what she sees, fit it into her interpretation of the item, and then decide how to answer. It is in these instances that items can be difficult to complete. Examples of items that require respondents to review several sources in the medical record include whether assisted ventilation was performed and whether a trial of labor was attempted prior to a Cesarean delivery. Adding to the difficulty is the fact that the highest degree attainted by the majority of respondents (12 of 14) is a high school diploma. Additionally, none of the respondents reported having any kind of medical training.

Cigarette smoking before and during pregnancy: When the number of cigarettes smoked at each trimester of pregnancy is not reported by the mother or clinician in the level of detail asked on

the form, respondents fill in a number that seems reasonable. For example, if "light smoker" is indicated in the record, one respondent will record 10 cigarettes a day. Another respondent also chooses 10 a day if she knows the mother smoked but doesn't know how much. To her, 10 cigarettes a day seem like a reasonable estimate. Note that asking the mother is not an option in the minds of these respondents. Not only are they unaware that this item should be completed by the mother, they would be unable to ask her even if they chose to do so. By the time they receive the form, the mother has been discharged from the hospital.

Incorrect information

A couple of respondents stated they sometimes see that items have been filled out incorrectly. That is, there are times when the medical records say something different from what the doctor or nurse marked – or failed to mark – on the birth certificate form. This creates a dilemma for respondents. Do they change what the medical provider checked or not? Some will change the answer if it appears absolutely clear to them that it is wrong. But if there is any doubt, they tend to leave it alone. On the other hand, others will routinely check for omissions and mistakes made by medical providers and change answers they believe are incorrect. Sometimes, however, it was hard to identify when respondents will and will not change what a doctor or nurse has checked. Respondents could not always coherently express the criteria they use to make this decision and there seemed to be no rhyme or reason to when they decided to edit the form. In other words, they had no set criteria for making changes to specific items, but instead operated on a case-by-case basis.

The Electronic Birth Certificates (EBC)

In addition to challenges in completing the form itself, respondents also experience occasional difficulties inputting data into the state system when they have only partial information. Some respondents indicated that the computer has a few "hard edit checks." When respondents have only partial information, these hard edit checks are conducive to data being estimated. Two respondents mentioned the previous cesarean item in the pregnancy section. If they check the previous cesarean box, the computer requires that they enter a number for how many previous cesareans have been performed. When this information is unknown, the computer will not allow them to proceed if they leave the item blank. As a result, the respondent has to choose between leaving it all as unknown or entering a fictitious number in order to move on. NOTE: while the U.S. standard specifications recommend allowing for an entry of "unknown", it is unclear whether or not this is the case in the EBC for State 1.

Respondents also reported that sometimes the computer displays a "soft edit check" when they enter a value that seems incorrect.[4] Date of last normal menses is an example of this. One respondent said that if a mother was on Depo Provera or had another baby shortly before the most recent baby, her last normal menses will have been longer ago than what seems correct. Soft edit checks are not problematic for the birth clerks because they allow the respondent to override the check and enter the value.

[4] A soft edit check is one where the computer asks the respondent to confirm her entry as correct before proceeding, but ultimately allows the entry to be made. In contrast, a hard edit check is one in which the computer will not accept the value being entered and will not allow the respondent to proceed without changing the value.

Item-by-Item Analysis of the birth certificate worksheet for State 1

The next section is a question-by-question analysis of the birth certificate worksheet used by State 1 as it was cognitively tested. It provides detailed results for each item tested, with findings related to the above discussion. Only those items for where specific information was addressed by the birth clerks are addressed. Items and issues specific to the form used by State 1 are shown in the final section of this report.

Mother's pre-pregnancy weight; Mother's weight at delivery

Some hospitals ask the mother to complete the Mother's Statistical Information section of the birth certificate form [the recommendation is that the mother complete the weight prior to pregnancy and the hospital complete the weight at delivery]. Two respondents said that mothers often don't see the difference between these two items and fill in the same number. When this happens, respondents will review the prenatal records and correct the numbers.

Not all hospitals give this to the mother to complete. When respondents are responsible for the item, they sometimes use more than one source. The prenatal record is one source, but they may also need to reference other records, such as the triage form or computer printout containing information from the mother's medical chart.

Did mother get WIC food for herself during pregnancy?

Two respondents expressed some difficulty with this item. It does tend to be filled out by the responsible party (i.e., mother or medical staff) [the recommendation is that the mother complete this item] and the information is available to the birth clerk if she's filling out the form. But this is not always the case. Two respondents said the nurses almost never answer it. One respondent looks in the prenatal record, and 60-70% of the time the information is there. However, if it's not there, she will look at item 46 and if Medicaid is checked off, she'll mark 'yes' on WIC. This is a good example of the respondent logically estimating information for a missing item. The second respondent uses the item on health insurance to decide how to answer this. If Medicaid has been checked on that item, this respondent will mark 'yes' to WIC.

Previous live births; Other pregnancy outcomes

Similar to items about weight, mothers do fill out these items but tend to get them confused and answer the same thing [the recommendation is that the hospital complete these items]. Even nurses have been reported to make mistakes here and include the newborn in the total count. Both scenarios require the birth clerk to correct mistakes. Generally they find this information in the prenatal record.

Another problem with these items is dates. Half of the respondents reported that many partial dates are given when mothers or nurses fill out the form. As one respondent put it, "nurses never like to put dates." Again, this requires the respondent to check the prenatal record. Sometimes the dates are incomplete in the prenatal record, forcing the respondent to fill in 9's for unknown.

Date of first prenatal care visit; date of last prenatal care visit; total number of prenatal visits for this pregnancy

One problem for item "date of 1st prenatal visit" is the interpretation of the "no prenatal care" box. One respondent checks that box when the item has been left blank by the mother. To her the box means that no prenatal care was given. Nurses have also left these items blank and have written "no parental care." What they mean is that no prenatal care information was available, NOT that they know for sure that the mother never received prenatal care.

A couple of other respondents noted that sometimes mothers (or nurses) will count visits that did not involve the doctor. One respondent commented that the guidebook specifically states that the visit must be with a doctor, not just a nurse. They report that the first visit will commonly be reported as the visit where the mother sees only the nurse to determine whether or not she is pregnant. In addition, telephone calls have been included as visits and respondents will have to correct this. One person notes that she thinks some visits do not get included. For example, she has seen lab work ordered that is not associated with an office visit. This does not make sense to her because there must have been a visit to the doctor for him to have ordered lab work. In this case she will provide a logical estimation and include a visit that is not explicitly marked.

Five respondents said that information for these items is often incomplete in the prenatal record where it is supposed to be. In these situations, respondents either report this as missing (9's), look in other places of the medical record (such as the nurses notes) or call the mother's OB to get an updated record. However, the last option usually takes a week or more and the respondent has 5 days after the mother has been discharged to file the birth certificate form with the state. This means the information is either late or missing. Three respondents noted that this phenomenon is more often seen from clinics that serve poor women or jail patients who receive inconsistent prenatal care at best.

Finally, total number of visits is often missing (when filled out by others) and might be logically estimated by respondents. Typically they count up the number of dates (visits) they see recorded on the prenatal record. However, when the log of visits is incomplete, one respondent said she uses the date of first and last prenatal visit to calculate the number of visits a woman had. She said the nurses told her the usual number of visits recommended for prenatal care, and that's how the respondent comes up with her estimate for total number of visits.

Date of last normal menses

Logical estimation was found for this item, for at least one case. The respondent said this information may be missing from the worksheet nurses fill out. When this happens she will calculate a date based on the mother's expected delivery date.

Another issue brought up by a birth clerk relates to the "soft edit check" imposed by the state's computer system as respondents are entering the information. If the date they enter seems odd in relation to the date of birth, the computer asks if the date has been entered correctly. Respondents reported that this happens because sometimes a mother may have been on Depo Provera, had a previous child just prior to the most recent baby, or was breastfeeding another

child. They see all these as reasons why the date of last normal menses may seem incorrect. Fortunately, the computer allows the respondent to override the edit check.

Principle source of payment for this delivery

Interviews showed that mothers sometimes were given responsibility for completing this item. The main problem with this item is the response categories which can be confusing to whoever is filling it out, mothers or respondents. Respondents know that some mothers are confused because they check more than one answer. Fortunately, this is not difficult to correct because the information is always available to the respondent, usually on the face sheet of the mother's chart.

However, some respondents expressed confusion themselves over the categories. One person did not know what private insurance meant and asked "does that mean no one else can use it?" Two others said that it was unclear what "other government" meant. One person does not even try to figure it out. She simply checks "other" and writes in the name of the insurance plan.

Obstetric estimate of gestation

This item was not extensively covered in the interviews. However, when asked about this item one respondent replied, "I have no idea what that means." As a result, she never fills this information out and it has never occurred to her to find out what it means. (This is a respondent who is not responsible for filling out the birth certificate form.) Two other respondents said they have to look in various places to try to find this information. Both said it can be hard to find.

Infant living at time of report?

This item was not covered extensively in the cognitive interviews. However, three respondents did comment that the term "at the time of report" was a source of confusion. For example, one respondent thought it meant at the time the doctor did his dictation. However, she saw in the guidebook that it meant "at the time the data is being entered" into the state system. Note that the guidebook was helpful in this situation. But with other questions she has, it has not occurred to her to seek help from the guidebook.

Is infant being breastfed?

This item was not covered extensively in the cognitive interviews. However, on three occasions respondents noted that there is some judgment involved in answering the question. One person questioned whether one try counts. If not one try, then how many? (At what point does the answer go from no to yes?) Another did not know if pumping counts. One mother wrote on the form only that she is pumping. The respondent wasn't sure if that was good enough to answer yes (is the state interested in knowing only that the infant is ingesting breast milk, or does it want to know that the bonding process is occurring too?).

Risk factors in this pregnancy

On this item, probing focused specifically on infertility treatment and previous cesareans.

Respondents commented that the infertility information is missing from both the birth certificate form (if filled out by others) and from the medical charts. Most respondents simply leave it blank, but some will use logical estimation. One birth clerk said she will look for "clues" to answer yes. In particular she looks for the words Clomid and IVF. Also, the prenatal record will show a list of problems that can indicate treatment for infertility. For example, problems like advanced age of the mother, number of attempts to get pregnant, and number of children can all tip her off. An older woman who has no children and who has tried several times to get pregnant will cause her to look for infertility treatments. She clearly has to evaluate the entire medical record if she's to discover that infertility treatments took place because it's not directly stated so. In fact, information relevant to all items in this section is never in one place according to the respondent.

The primary concern with the previous cesarean item is the apparent hard edit check. A couple of respondents noted that whether a mother had a previous cesarean cannot be checked without the number also being given and unknown was not an option. As a result, respondents are left to decide whether to "logically estimate" a number (of previous cesareans) or leave the entire item unknown.

One respondent said the information on whether the mother had a previous cesarean is on her computer printout, but it never lists how many previous cesareans the mother had. Because the computer won't let her proceed if she checked the box but left the number blank, she decides to un-check the box and leave it blank.

Finally, one respondent said this item (and others in this section) needs an "other-specify" like "infections present". This is because doctors and nurses frequently write notes on the form rather than check off the boxes. For example, one doctor wrote "advanced maternal age" but did not check any box. The respondent did not know what to do with this information and would have like to record it as an "other-specify."

Method of delivery

Unlike any other item in this section, this one was understood to be very important by every respondent. Even respondents that will leave most other items blank on the form will attempt to complete this one. One person said she knows it's important because the EBC system will not let her leave it blank. Others believe it's important and relevant to the birth certificate itself (unlike most other items on page 2) and that is why they make sure it is filled out.

Probing for this item occurred mostly for the "trial of labor" sub-question. On a few occasions, mothers are asked to fill out this section. Respondents clearly identify that mothers do not know how to complete these items. For example, mothers do not know what "spontaneous" means under vaginal delivery or what "cephalic" means under fetal presentation. To get around that problem, mothers often check "other," leaving birth clerks to figure out what to record.

Respondents must read and evaluate medical records in order to arrive at an answer. Nowhere in the medical records is it directly stated that "a trial of labor was attempted." The various sources that birth clerk report using for this information include the labor and delivery log book, the nurses' flow sheet, the delivery summary, or the doctor's dictation. One person said she looks at the induction of labor item to see if labor was induced. Another person said she looks to see if an epidural was given or if "failure to progress" is written in the records. Another person mentioned that if it says the cesarean was planned in the medical records she knows to mark 'no.' Conversely, if the delivery summary says that the mother was in labor a long time, the answer is 'yes.' Someone else states that most mothers schedule their cesareans, so if the information is not there, she will mark 'no' rather than 'unknown.'

Obstetric procedures

This item was not extensively covered in the cognitive interview. However, when asked about it one respondent said "I don't know what that is" and never fills it out. She said she always checks "none of the above" for this item. Another person commented that there is never anything to mark here and it is never filled out.

Abnormal conditions of the newborn

This item was not extensively covered in the cognitive interview, but two respondents said they were not sure what counts. One respondent said she used to check off the box if the baby was given any oxygen at all, but that someone told her that was incorrect. She then referred to the guidebook and she said that clarified it for her and now she only checks it if the baby was "bagged." Another respondent also said she is also not sure what to mark sometimes. When this is the case, she will ask a NICU nurse.

Onset of labor

One respondent mentioned a hard edit check problem with this item. She said that the computer won't allow her to check both boxes at the same time, but that sometimes both of those things happen. She ends up checking the second box because it's more serious and, therefore, more important statistically (in her estimation). [NOTE: if the case, this hard edit is not consistent with U.S. standard recommendations.]

Infections present and/or treated during this pregnancy

This item was not extensively covered in the cognitive interview. But a couple of respondents mentioned that they have to mark "other" quite a bit and fill in HPV. Additionally, this is another situation where the information is not always direct and the medical record has to be read and evaluated in order to arrive at an answer.

Cigarette smoking before and during pregnancy

In four hospitals birth clerks were responsible for trying to gather smoking information from the medical records (usually the prenatal record). Additionally this is an item where data were missing respondents sometimes logically estimate data. Three people reported that the records (usually the prenatal record or nurses' notes) will show whether or not a mother smoked, but will not indicate how much. One person said the note may only say that the mother smoked "twice a day." The respondent decided to answer 2 cigarettes a day, but it was unclear. Another respondent simply made up a number and put 10 cigarettes a day. Another respondent said sometimes mothers will put that they were "light smokers" and she's left to decide what to put. Interestingly, she also marks 10 cigarettes a day when more specific information is missing.

Each respondent logically estimated data because they reasoned it was better to capture the fact that the mother smoked than to mark the question as unknown.

Infant head circumference[5]

It was not possible to cover this item extensively in the cognitive interviews. However, there is some indication that the information is frequently missing when the form is filled out by someone other than the birth clerk. What's more, if the respondent is responsible for the item, the information can be hard to come by. At least one respondent estimates the data as a result. She found a formula that calculates head size when she inputs the baby's weight.

Issues related uniquely to State 1:

Two issues were consistently raised by respondents at the end of the interview. The first issue relates to requesting a social security number for the baby. Two respondents said that mothers leave this item blank because they don't know what it means. If this is left blank, birth clerks are instructed to mark 'no.' This is a problem because most mothers *do* end up wanting a social security number for their baby. Understanding this problem, another respondent will mark 'yes' when this item is left blank, despite instructions to the contrary.

The second issue identified by five respondents relates to the incompleteness of the worksheet for State 1. Specifically, when they enter information into the EBC system, there is a question asking whether the newborn received a Hepatitis B vaccination. This information is not required on the birth certificate worksheet, but birth clerks believe it should be there so that all the information they need for data entry is located in one place.

[5] This item is NOT included on the 2003 Revision of the U.S. Standard Certificate of Live Birth.