Revisions to the North Carolina Birth Certificate and Their Impact on Tracking Maternal and Infant Health Data

by
Kathleen A. Jones-Vessey

Approximately every 10 to 15 years, standards for collecting statistical information on U.S. birth certificates are revised. These revised standards specify the data fields collected on birth certificates and information that should be reported to the Vital Statistics Cooperative Program (VSCP). These standards serve as a model to ensure that birth data are collected and reported in a uniform and comparable manner across the United States. The latest revision to the U.S. Standard Birth Certificate, finalized in 2003, was devised by an advisory panel of experts which included representatives from the National Center for Health Statistics (NCHS), the Centers for Disease Control and Prevention (CDC), state vital registration and statistics executives, researchers and a variety of interested data user organizations, such as the American Medical Association (AMA) and the American Congress of Obstetricians and Gynecologists (ACOG).¹²

From 1988 to 2010, the statistical information collected on North Carolina’s birth certificates were based on the 1989 U.S. Standard Birth Certificate and entered into a DOS-based electronic birth certificate (EBC) registration system. The magnitude of the changes required to meet the 2003 revised birth certificate standards necessitated that North Carolina develop a more sophisticated birth registration system. After years of complex system development, in August 2010, the North Carolina’s Vital Records office launched the web-based “Vital Records Automation System” (VRAS) in delivery hospitals across the state. VRAS was designed to improve the timeliness of birth registration and Vital Statistics data dissemination as well as to implement the 2003 U.S. certificate standards.

Many of the data fields captured on the 2003 revised birth certificate are modified or new. The purpose of this report is to describe the new or modified information collected on the 2003 revised version of the birth certificate and highlight any significant differences with the data fields captured on the previous version of the birth certificate.

New Fields Collected on the North Carolina Birth Certificate

- **Facility and Attendant NPI [Items 31 and 32]:**
  As part of the Health Insurance Portability and Accountability Act of 1995 (HIPAA), identifying information on health care providers are collected by the Centers for Medicare and Medicaid Services.
(CMS) and each provider is given a unique 10 digit National Provider Identifier (NPI). The revised birth certificate now includes NPI for the attendant as well as the facility where the delivery took place. The inclusion of NPI on the new birth certificate will facilitate linkage of the birth file with other healthcare databases.

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**Items 31 and 32**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.</td>
<td>FACILITY ID. (NPI)</td>
</tr>
<tr>
<td>32.</td>
<td>ATTENDANT'S NAME, TITLE, AND NPI NAME:</td>
</tr>
</tbody>
</table>

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- **Pre-pregnancy Height and Weight [Items 36 and 37]:** Obesity is a growing epidemic in North Carolina. According to the 2010 North Carolina Behavioral Risk Factor Surveillance System survey, over half (55%) of North Carolina women of childbearing age are classified as overweight or obese based on their Body Mass Index (BMI). Women who are obese during pregnancy may be at increased risk for a Cesarean section (C-section) delivery, longer hospital stays after delivery, gestational hypertension and diabetes, fetal death and birth defects. The previous version of the certificate recorded information regarding weight gain during pregnancy. However, without knowing pre-pregnancy weight and height, it was impossible to determine if the amount of weight gained during pregnancy was appropriate. As a result of increasing rates of obesity among women of childbearing age, current guidelines suggest that women who are overweight or obese going into pregnancy may not need to gain as much weight as women with normal BMI's. The revised birth certificate collects information on the mother’s height, pre-pregnancy weight and weight at delivery. Using this data, weight gained during pregnancy can be computed and BMI can be calculated. This information will be used to report population-level information regarding obesity and the percentage of women gaining the appropriate amount of weight during pregnancy.

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- **Women, Infants and Children (WIC) During Pregnancy [Item 39]:** WIC is a federal program that provides supplemental food, healthcare referrals and nutrition education for low-income pregnant, breastfeeding and postpartum women, and infants and children up to age 5 who are at nutritional risk. Prenatal WIC participation has been found to be associated with improved birth outcomes for disadvantaged women. The revised birth certificate includes a field for capturing whether the mother received WIC food for herself during pregnancy. Since 1988, the State Center for Health Statistics (SCHS) staff have performed an annual match of birth certificate data with state WIC records to gather information on this population. WIC information collected from the revised birth certificate will be compared with the matched data in order to assess the completeness of this data.

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- **Payment for Delivery [Item 43]:** The revised birth certificate includes a field for capturing the principal source of payment for the delivery. Categories include private insurance, Medicaid, self-pay, and other (specified) insurance. Since 1988, North Carolina SCHS staff have matched all resident birth records with North Carolina Division of Medical Assistance Medicaid claims and enrollment files in order to determine deliveries paid by Medicaid. SCHS will use this matched...
data to compare with this information collected on the birth certificate in order to assess the completeness of this data.

- **Mother’s Medical Record Number [Item 45]:** The birth certificate is used as a basis for a variety of surveillance programs, including immunizations, newborn screening and birth defects. The addition of mother’s medical record number will facilitate data linkage with other health records, as well as ensure that maternal hospital records can be accessed without difficulty.

- **Gestational Diabetes [Item 46]:** The previous version of the birth certificate included a checkbox for maternal diabetes in the medical history section. However, there was no way to determine if the diabetes was pre-existing or developed during the pregnancy. In order to address this, the revised birth certificate now includes two separate fields for recording diabetes in the “Pregnancy Risk Factors” section. The first collects information for mothers who had diabetes prior to pregnancy. The second field is for mothers that developed high blood sugar during pregnancy (known as “gestational diabetes”). Mothers with gestational diabetes are at increased risk for birth injury, C-section delivery, high blood pressure during pregnancy and Type II (adult onset) diabetes in the future. Infants born to mothers with gestational diabetes are at increased risk for low birth weight and infant death.\(^{11,12}\)

- **Fertility Treatments [Item 46]:** The revised birth certificate now collects information regarding whether the pregnancy resulted from infertility treatment(s). This information is recorded through two separate fields. The first is a field for the use of fertility enhancing drugs, artificial insemination or intrauterine insemination. The second field is for the use of assisted reproductive technology such as in vitro fertilization (IVF) or gamete intrafallopian transfer (GIFT). Pregnancies achieved through infertility treatments may be at increased risk for multiple pregnancies which in turn, may place the mother at increased risk of complications, as well as greater risk of preterm, low birth weight and infant death.\(^{13,14}\) Utilizing data collected from the revised birth certificate, the State Center for Health Statistics will be able to assess the impact of fertility treatments on maternal and infant outcomes in North Carolina.

- **Previous Cesarean Section [Item 46]:** Cesarean sections have risen throughout the United States over the last decade.\(^{15}\) Women who have had prior C-sections are more likely to have another with subsequent deliveries. On the previous version of the birth certificate, the only method for determining whether a mother had a previous C-section was via the method of delivery (vaginal after C-section or repeat C-section). The revised birth certificate now includes an indicator for whether a mother had previous C-section(s) and for recording the number of previous C-sections.

- **Infections During Pregnancy [Item 47]:** The revised birth certificate includes a new section focusing on maternal infections present and/or treated during pregnancy. Specifically, it captures information on the following communicable diseases: gonorrhea, syphilis, chlamydia and hepatitis (B and C). Additionally, North Carolina
chose to add a field for recording testing for the Hepatitis B surface antigen (HBsAG)—including the test date and test results. Infants born to mothers with Hepatitis B infections are more likely to be born low birth weight and/or premature.\textsuperscript{16}

The U.S. Preventive Task Force has concluded that HBV screening reduces perinatal transmission of HBV and recommends that all pregnant women be tested for HBV infection during their first prenatal visit.\textsuperscript{17} North Carolina Division of Public Health staff will use this information to assess whether HBV screening is taking place, as well as to determine the prevalence of prenatal infections.

- **Maternal Morbidity [Item 52]:** Another new section included on the revised birth certificate focuses on maternal complications associated with labor and delivery. This section includes fields for recording whether the mother required a transfusion, had a severe perineal laceration, ruptured uterus, unplanned hysterectomy, admission to the intensive care unit or an unplanned operating room procedure following delivery. None of this information was collected on the previous version of the certificate. Maternal labor and delivery complications can increase the costs associated with labor and delivery and may also put the mother at increased risk for postpartum complications and even death.\textsuperscript{18}

- **NICU Admission [Item 57]:** The “Abnormal Conditions of the Newborn” section of the revised birth certificate now includes a field for whether or not the infant was admitted to the Neonatal Intensive Care Unit (NICU). This information has never been available at the state level and will allow Division of Public Health staff to determine the percentage of North Carolina newborns that require higher levels of care after delivery and might be at risk for morbidity, developmental delays and infant death.

- **Infant Death [Item 60]:** Infant mortality is considered one of the most important indicators of population health and well-being.\textsuperscript{19} In order to better understand the factors associated with infant death, the State Center for Health Statistics routinely matches all infant deaths with their matching birth certificate. Most infant deaths occur within the first few hours or days of life. In order to track infant deaths more quickly, the revised birth certificate now includes a field for recording whether the infant was living at the time the birth certificate was filed.
• **Breastfeeding at Discharge [Item 61]:** The U.S. Preventive Service Task Force concludes that there are “substantial health benefits for children and adequate evidence that breastfeeding provides moderate health benefits for women.” The Task Force recommends that interventions be put in place to support the initiation, duration and exclusivity of breastfeeding.\(^\text{20}\) Promoting breastfeeding is also a national public health priority. Healthy People 2020 includes several objectives related to increasing the proportion of infants who are breastfed.\(^\text{21}\) In an effort to track the prevalence of breastfeeding initiation, the revised birth certificate now records whether the newborn was being breastfed at hospital discharge. This data will allow North Carolina public health programs to track statewide, population-level, breastfeeding initiation rates for the first time.

**Modified Fields Collected on the North Carolina Birth Certificate**

In addition to new fields, the 2003 standard birth certificate also modified many of the existing demographic and medical information collected on the birth certificate. In many cases, these changes make comparisons between data collected under the previous version of the certificate and data collected under the revised certificate not comparable. Below are a list of fields which were modified with the revised birth certificate:

• **Birthweight [Item 17]:** On the previous version of the certificate birthweight was collected in pounds and ounces. On the revised certificate birthweight can be reported in grams or pounds and ounces.

<table>
<thead>
<tr>
<th>Item 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. BIRTHWEIGHT (grams preferred, specify unit)</td>
</tr>
<tr>
<td>□ grams □ lb/oz</td>
</tr>
</tbody>
</table>

• **Mother’s and Father’s Race\(^*\) [Items 20 and 21]:** Prior to the 2003 revision, the race field on the birth certificate was open-ended and asked for the “Color or Race“ of both the mother and the father. The revised certificate does not mention color, specifies 15 discrete racial categories plus a category for “other,” and allows for the selection of more than one race.\(^\text{22,23}\) The 2003 revised birth certificate ethnicity reporting standards meet the race reporting standards defined by the Office of Management and Budget (OMB) in 1997.\(^\text{24}\) One additional change in race coding has also occurred. The National Center for Health Statistics (NCHS) population data sources do not include multiple race categories, therefore NCHS creates a crosswalk that “bridges” these multiple race categories back to a single race through imputation for the purposes of calculating consistent Vital Statistics rates.\(^\text{25}\) As part of this bridging process, race recorded for those of

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**Items 20 and 21**

<table>
<thead>
<tr>
<th>20. FATHER’S RACE (Check one or more races to indicate what the father considers himself to be)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ White</td>
</tr>
<tr>
<td>□ Black or African American</td>
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<tr>
<td>□ American Indian or Alaska Native (Name of the enrolled or principal tribe)</td>
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<tr>
<td>□ Asian Indian</td>
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<tr>
<td>□ Chinese</td>
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<tr>
<td>□ Filipino</td>
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<tr>
<td>□ Japanese</td>
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<tr>
<td>□ Other Asian</td>
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<tr>
<td>□ Vietnamese</td>
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<tr>
<td>□ Other Asian (Specify)</td>
</tr>
<tr>
<td>□ Native Hawaiian</td>
</tr>
<tr>
<td>□ Guamanian or Chamorro</td>
</tr>
<tr>
<td>□ Samoan</td>
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<tr>
<td>□ Other Pacific Islander</td>
</tr>
<tr>
<td>□ Other (Specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>21. MOTHER’S RACE (Check one or more races to indicate what the mother considers herself to be)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ White</td>
</tr>
<tr>
<td>□ Black or African American</td>
</tr>
<tr>
<td>□ American Indian or Alaska Native (Name of the enrolled or principal tribe)</td>
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</tr>
<tr>
<td>□ Other Pacific Islander</td>
</tr>
<tr>
<td>□ Other (Specify)</td>
</tr>
</tbody>
</table>
Hispanic ethnicity has also been modified. Under race coding specifications for the previous version of the birth certificate, if a mother or father reported their race as “Hispanic,” NCHS guidelines typically stipulated that their race be classified as white. Under the 2003 revised race coding standards, the majority of Hispanics are now classified as “other races.”

Due to this change in race coding for Hispanics, all reports based on North Carolina birth data will now be required to combine race/ethnicity (e.g., Non-Hispanic white, Non-Hispanic black, Hispanic, etc.).

- **Mother’s and Father’s Ethnicity** [Items 25 and 28]: Race and ethnicity are recorded in two separate fields on both versions of the birth certificate. On the previous version of the birth certificate, ethnicity was a “yes/no” field that was followed by a separate question which specified the origin for those indicating that they were Hispanic. On the revised birth certificate, ethnicity and origin are recorded in the same field. The 2003 revised birth certificate ethnicity reporting standards meet the race and ethnicity reporting standards defined by the Office of Management and Budget (OMB) in 1997. The order of the race and ethnicity questions were also modified. Prior to generating the birth certificate, the mother is given a worksheet to fill out that includes demographic questions, such as race and ethnicity. On the mother’s worksheet, the ethnicity question is now asked prior to the race question, in an effort to improve the reporting of race for Hispanics.

- **Mother’s and Father’s Education** [Items 26 and 29]: The previous version of the birth certificate captured education levels by asking for the years of schooling completed. However, this method did not necessarily reflect degrees or diplomas received. To address this problem, the 2003 revision instead breaks secondary education into separate fields (8th grade or less, 9–12th grade, high school graduate or GED) and allows for reporting of specific degrees received (Associate, Bachelor’s, Master’s or Doctorate). Since education information is collected very differently on the two versions of the certificates, this field is not considered comparable across the two certificate revisions.

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**Items 25 and 28**

25. FATHER OF HISPANIC ORIGIN? (Check the box that best describes whether the father is Spanish/Hispanic/Latino. Check the “No” box if father is not Spanish/Hispanic/Latino)
- No, not Spanish/Hispanic/Latino
- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, other Spanish/Hispanic/Latino (Specify) ………………………………………

28. MOTHER OF HISPANIC ORIGIN? (Check the box that best describes whether the mother is Spanish/Hispanic/Latina. Check the “No” box if mother is not Spanish/Hispanic/Latina)
- No, not Spanish/Hispanic/Latina
- Yes, Mexican, Mexican American, Chicana
- Yes, Puerto Rican
- Yes, Cuban
- Yes, other Spanish/Hispanic/Latina (Specify) ………………………………………

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* In North Carolina, in cases where the mother was unmarried at the time of delivery, paternity must be established before the father’s information can be collected on the birth certificate. In 2010, 42 percent of all North Carolina births were to unwed mothers and 40 percent of these were missing father’s information on the birth certificate. For this reason, any demographic information collected for the father on the birth certificate (such as age, race, ethnicity, education and birth place) has a high rate of non-random missing data and is not suitable for analysis.
• **Place of Birth [Item 30]:** The previous version of the certificate recorded information on place of birth which included hospital, freestanding birth center, clinic/doctor's office, residence and other (specified). When deliveries occurred at a residence, it was difficult to determine whether the home birth was planned or unanticipated.\(^\text{27}\) To remedy this, the revised birth certificate changes the “residence” checkbox to “home birth” and includes a field for indicating whether the home birth was planned or not. Research indicates that unplanned home births have higher rates of adverse maternal and infant outcomes.\(^\text{28,29}\) Information regarding planned and unplanned home births in conjunction with information on the attendant at delivery will allow us to examine North Carolina home births in more detail.

• **Attendant [Item 32]:** The delivery attendant was recorded on both the 1989 and the 2003 standard certificates. The previous version of the certificate included the following attendant categories: Medical Doctor (M.D.), Doctor of Osteopathy (D.O.), Certified Nurse Midwife (C.N.M.), Other Midwife, and Other specified. The only change made to this field was the addition of “Certified Midwife” (C.M.) to the “Certified Nurse Midwife” (C.N.M.) checkbox. The revised certificate now includes: “C.N.M/C.M.” in the same checkbox. The American College of Nurse Midwives recommended this change because the licensing for both C.N.M.’s and C.M.’s are the same.\(^\text{27}\) This field will be used to better assess trends in delivery attendants over time, particularly the rise in CNM-attended deliveries. In 1990, C.N.M.’s attended 1.7 percent of North Carolina resident births, compared with 11 percent of all births in 2010.\(^\text{30,31}\)

• **Maternal Transfer [Item 33]:** Both versions of the standard certificate report whether the mother was transferred prior to delivery, as well as the hospital of transfer. However the revised birth certificate added the stipulation: “for maternal medical or fetal indications for delivery.”

• **Prenatal Care [Items 34a, 34b and 35]:** The previous version of the certificate included a field for capturing the month that a mother initiated prenatal care. The revised certificate now asks for the complete date of the first prenatal care visit (month/day/year). The advisory group that made recommendations for the 2003 revised birth certificate felt that collecting the specific date care began would yield more accurate prenatal care data.\(^\text{27}\) The accuracy of this field is important as early initiation of prenatal care can help identify health conditions and risk factors which might impact the health of both the mother and infant.\(^\text{32,33}\)
• **Weight at Delivery [Item 38]:** The previous version of the certificate recorded information regarding weight gain during pregnancy. The revised birth certificate now collects information on the mother’s height and pre-pregnancy weight which are used in conjunction with the mother’s weight at delivery to calculate weight gained during pregnancy to determine if the mother gained the appropriate amount of weight during pregnancy. Research suggests that excessive weight gain during pregnancy leads to an increased risk of pregnancy complications, Cesarean section delivery and longer hospital stays after delivery.\(^{34}\)

• **Other Pregnancy Outcomes [Item 41]:** Both versions of the birth certificate report whether the mother had prior fetal deaths, abortions or miscarriages. The previous version of the birth certificate reported the number of “other terminations (spontaneous and induced at any time after conception).” The revised birth certificate reports the number of “other pregnancy outcomes (spontaneous or induced losses or ectopic pregnancies).”

• **Cigarette Smoking [Item 42]:** Smoking during pregnancy may put women at increased risk for vaginal bleeding, placental problems, miscarriage and stillbirth. Infants born to mothers who smoked during pregnancy are more likely to have certain birth defects, be born premature and/or low birthweight and die from Sudden Infant Death Syndrome (SIDS).\(^{35,36}\) The previous version of the birth certificate included a “yes/no” checkbox regarding tobacco use during pregnancy and a separate field for recording the average number of cigarettes smoked per day. However, there was no means to determine whether the mother smoked prior to becoming pregnant or whether she ceased smoking at some point during her pregnancy. Research suggests that smoking cessation during pregnancy can reduce the incidence of low birth weight and hospital associated costs.\(^{37,38}\) The revised birth certificate includes fields for recording smoking status three months before pregnancy as well as during each trimester of pregnancy. This method of collecting smoking information on the revised birth certificate was selected based on research which determined that this was the most effective way to gather accurate maternal smoking behavior.\(^{39,40}\) Given the substantial changes in how this field is defined, the National Center for Health Statistics does not consider this field to be comparable with data collected through the previous version of the certificate.\(^{41}\)

- **Previous Preterm Birth [Item 46]:** On the previous version of the birth certificate, there was a checkbox in the “Medical History for this Pregnancy” section for “previous preterm or small-for-gestational-age infant.” The revised certificate reports this in the “Risk Factors for This Pregnancy” section as: “previous preterm birth” and includes a separate check box for “other previous poor pregnancy outcome (includes perinatal death, small-for-gestational age/intrauterine growth restricted birth).”

• **Hypertension [Item 46]:** The previous version of the certificate included check-boxes in the “Medical History for this Pregnancy” section for chronic hypertension, pregnancy-related hypertension and eclampsia. The revised certificate reports hypertension in the “Risk Factors for This Pregnancy” section and labels them as prepregnancy (chronic), gestational (PIH, preeclampsia) and eclampsia.
Onset of Labor [Item 49]: The information collected in the “Onset of Labor” section of the revised birth certificate were previously collected in the “Events of Labor and Delivery” section of the previous version of the birth certificate.

Characteristics of Labor and Delivery [Item 50]: Induction of labor and meconium were previously collected in the obstetrical procedures section of the previous version of the birth certificate. “Non-vertex presentation” was collected as “breech/malpresentation” in the “events of labor and delivery” section of the previous version of the birth certificate. “Clinical chorioamnionitis diagnosed during labor” was collected as “febrile >100°F or 38°C” on the previous version of the birth certificate.

Method of Delivery [Item 51]: The previous version of the certificate included a checkbox for method of delivery which had fields for vaginal, vaginal birth after C-section, Primary C-section, Repeat C-section, forceps and vacuum deliveries (certifiers could check all that applied). The revised certificate includes additional information regarding fetal presentation (cephalic, breech, other), whether forceps delivery was attempted and unsuccessful, whether vacuum delivery was attempted but unsuccessful and whether a trial of labor was attempted prior to Cesarean section delivery. C-section deliveries have risen 37 percent from 22.9 percent of resident births in 1990 to 31.4 percent in 2010.30,31
• **Fetal Presentation at Birth [Item 51]:** The previous version of the birth certificate included a field for recording breech/malpresentation in the “events of labor and delivery section.” The revised certificate provides greater specificity regarding whether the child was cephalic, breech or other. Cesarean section delivery is typically recommended in cases of fetal malpresentation.\(^\text{42,43}\) This information will be used to assess birth and method of delivery outcomes for infants born after fetal malpresentation in North Carolina.

• **Obstetric Estimate of Gestation [Item 54]:** The previous version of the birth certificate labeled this field as “clinical estimate of gestation.”

![Item 54]

**Item 54**

54. OBSTETRIC ESTIMATE OF GESTATION: ___________________________ (completed weeks)

• **Apgar Score [Item 55]:** The Apgar score is a method for quickly assessing the overall health of a newborn right after delivery. The Apgar ranks newborn health with regard to skin color/complexion, reflexes, muscle tone, breathing and pulse rate. Newborns are typically assessed within minutes after birth. The previous version of the certificate recorded both one and five minute Apgar scores. Research has concluded that one minute Apgar scores alone are not a valid predictor of an infant’s future outcome. Five minute Apgar scores have been determined to be better predictors of neonatal risk and mortality. Low Apgar scores at five minutes should be repeated every five minutes up to 20 minutes.\(^\text{44}\) As a result of this research, the revised birth certificate standard now records a five minute Apgar and only records the Apgar at 10 minutes if the five minute Apgar score was low (defined as less than six).

![Item 55]

**Item 55**

55. APGAR SCORE:

- Score at 5 minutes: ___________________________
- If 5 minute score is less than 6, Score at 10 minutes: ___________________________

• **Abnormal Conditions of the Newborn [Item 57]:** The label for this section changed from “Conditions of the Newborn” to “Abnormal Conditions of the Newborn.” The previous version of the birth certificate included two categories for assisted ventilation: 1) <30 minutes and 2) \(\geq\) 30 minutes. The revised birth certificate has two different categories: 1) ventilation required immediately following delivery and 2) ventilation required for more than six hours. The previous version of the birth certificate included a checkbox for seizures. The revised birth certificate changed this to “seizures or serious neurologic dysfunction.” The previous version of the birth certificate included a checkbox for birth injury. The revised birth certificate modifies this checkbox to: “significant birth injury” and includes examples of what this might include.

![Item 57]

**Item 57**

57. ABNORMAL CONDITIONS OF THE NEWBORN

(Check all that apply)

- Assisted ventilation required immediately following delivery
- Assisted ventilation required for more than six hours
- NICU admission
- Newborn given surfactant replacement therapy
- Antibiotics received by the newborn for suspected neonatal sepsis
- Seizure or serious neurologic dysfunction
- Significant birth injury (skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention)
- None of the above

• **Congenital Anomalies [Item 58]:** Research suggests that congenital anomalies have not been reliably recorded on past revisions to birth certificates.\(^\text{45,46}\) In an effort to improve reporting, the Advisory Panel that devised the specifications for the 2003 birth certificate revision carefully examined deficiencies in how congenital anomalies were captured on prior certificates. According to the Advisory Panel, the 2003 revised certificate only includes anomalies that meet the following criteria: “1) the anomaly is diagnosable within the first 24 hours following birth using widely available conventional diagnostic techniques, 2) occurrence will indicate the need for a specific public health initiative, 3) occurrence serves as a potential marker for teratogen exposure, 4) occurrence in live borns is affected by prenatal diagnosis or management and 5) postnatal outcome is
heavily impacted by access to tertiary or quaternary care resources.” Congenital anomaly information identified on the revised birth certificate will be compared to the North Carolina Birth Defects Monitoring Program registry data to assess if the accuracy of congenital anomaly data collected through the revised birth certificate improves as a result of these reporting changes. Specific modifications to this section include the following:

The previous version of the birth certificate had a checkbox for “anencephalus” and the revised birth certificate changes this to “anencephaly.” The previous version of the birth certificate had a checkbox for “spina bifida/meningocele” and the revised birth certificate changes this to “meningomyelocele/spina bifida.” The previous version of the birth certificate had a checkbox for “heart malformations” and the revised birth certificate changes this to “cyanotic congenital heart disease.” The previous version of the birth certificate had a checkbox for “diaphragmatic hernia” and the revised birth certificate changes this to “congenital diaphragmatic hernia.” The previous version of the birth certificate had a checkbox for “omphalocele/gastrochisis” and the revised birth certificate separates these into two separate fields “omphalocele” and “gastrochisis.” The previous version of the birth certificate had a checkbox for “polydactyly/syndactyly/adactyly” and the revised birth certificate modifies this to just “limb reduction defect (excluding congenital amputation and dwarfing syndromes).” The previous version of the birth certificate had a checkbox for “cleft lip/palate” and the revised birth certificate separates these into two fields “cleft lip with or without cleft palate” and “cleft palate alone.” The previous version of the birth certificate had a checkbox for “Down’s syndrome” and the revised birth certificate includes this, but further specifies “karyotype confirmed” and “karyotype pending.” The previous version of the birth certificate had a checkbox for “other chromosomal anomalies.” The revised birth certificate also has “suspected chromosomal disorder,” and additionally specifies “karyotype confirmed” and “karyotype pending.” The revised birth certificate has a checkbox for hypospadias. On the previous version of the birth certificate this information may have been collected via two different checkboxes, one for “malformed genitalia” and another for “other urogenital anomalies.”

### Item 58

**58. CONGENITAL ANOMALIES OF THE NEWBORN**

(Leave blank if none)

☐ Anencephaly
☐ Meningomyelocele/Spina bifida
☐ Cyanotic congenital heart disease
☐ Congenital diaphragmatic hernia
☐ Omphalocele
☐ Gastrochisis
☐ Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
☐ Cleft Lip with or without Cleft Palate
☐ Cleft Palate alone
☐ Down Syndrome
  ☐ Karyotype confirmed
  ☐ Karyotype pending
☐ Suspected chromosomal disorder
  ☐ Karyotype confirmed
  ☐ Karyotype pending
☐ Hypospadias
☐ None of the anomalies listed above

### Item 59

**59. WAS INFANT TRANSFERRED WITHIN 24 HOURS OF DELIVERY?**

☐ Yes ☐ No

IF YES, NAME OF FACILITY INFANT TRANSFERRED TO:

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- **Infant Transfer (Item 59):** Both versions of the birth certificate include fields for reporting if the infant was transferred to another facility. The revised birth certificate further specifies whether it was “within 24 hours of delivery.”

### Fields that have been Eliminated with the 2003 Revision

- **Alcohol Use During Pregnancy:** The previous version of the birth certificate included an indicator for whether the mother consumed alcohol during pregnancy as well as the average number of alcoholic drinks consumed per week during pregnancy. Prior research with the 1989 revision to the North Carolina birth certificate data indicated that this field was not reliably reported. Other research confirmed substantial underreporting and inconsistency with prenatal drinking reported on national health surveys. Based on this research, the Advisory Panel that created the specifications for the 2003 birth certificate revision concluded that: “it is not feasible to get quality data on the birth certificate because of the stigma attached to alcohol use during pregnancy.” The Advisory
panel recommended that this data be obtained from national health surveys, such as the Pregnancy Risk Assessment Monitoring System (PRAMS).  

- **Medical History**: Based on Advisory Panel recommendations, several maternal conditions were eliminated from this section of the certificate (in the 2003 revision, this section was relabeled “Risk Factors in this Pregnancy”). Conditions that did not meet the following criteria were eliminated: 1) clearly defined clinically, 2) collectable at least 90 percent of the time, 3) evidence-based, 4) useful for research (public health and clinical) purposes, 5) potential to effect pregnancy outcome, and 6) required by legal statute. Using this criteria, the following maternal conditions were eliminated: anemia, cardiac disease, acute or chronic lung disease, genital herpes, hydramnios/obligohydramnios, hemoglobinopathy, incompetent cervix, previous infant 4000+ grams, renal disease, Rh sensitization and uterine bleeding.

- **Events of Labor and Delivery**: Based on Advisory Panel recommendations, this section of the certificate was also significantly modified (in the 2003 revision, this section was relabeled “Characteristics of Labor and Delivery”). The Advisory Panel recommended that the following fields be eliminated from the 2003 revised birth certificate: meconium moderate or heavy, abruption placenta, placenta previa, other excessive bleeding, seizures during labor, dysfunctional labor, cord prolapse, anesthetic complications and fetal distress.

- **Conditions of the Newborn**: The Advisory Panel recommended removal of newborn conditions from the birth certificate: 1) that are not easily diagnosed within the first 24 hours following delivery, 2) which do not have high associations with adverse neonatal and long-term outcomes and 3) markers for utilization of costly technological resources. Based on this criteria, the following newborn conditions were removed from the revised birth certificate: anemia, fetal alcohol syndrome, hyaline membrane disease/RDS and meconium aspiration syndrome.

- **Congenital Anomalies**: As outlined in the congenital anomalies modifications section above, the Advisory panel determined that many of the congenital anomalies reported on the previous version of the birth certificate were not reliably reported. As a result, the following congenital anomaly fields are no longer collected on the 2003 revised birth certificate: hydrocephalus, microcephalus, other central nervous system anomalies, other circulatory/respiratory anomalies, rectal atresia/stenosis, tracheo-esophageal fistula/esophageal atresia, other gastrointestinal anomalies, renal agenesis, other urogenital anomalies, club foot, other musculoskeletal/integumental anomalies and other chromosomal anomalies.

- **Other Specified Diagnoses and Conditions**: The previous version of the birth certificate collected additional diagnostic information in the “other specified” fields of the medical history, obstetric procedures, events of labor and delivery, conditions of the newborn and congenital anomalies of child sections. The revised birth certificate has eliminated these free text fields because they do not result in uniform data that can be coded and utilized by states.

**New and Modified Fields Collected for Legal and Vital Registration Purposes**

Some additional fields that are not necessary for medical or health research, but are helpful for legal and vital registration purposes have also been added or modified on the revised birth certificate. Below is a list of these fields:

- Mother Last Name (Current and Prior to First Marriage) [Items 9a and 9c];
- For Unmarried mothers, whether a paternity acknowledgement was signed in the hospital [Item 22].

**Reporting Data Based on the Revised Birth Certificate in North Carolina**

In 2010, North Carolina’s Vital Records office began implementing a new birth registration based on the 2003 revised birth certificate standard. Training in the
new web-based birth registration system was rolled out in August 2010, hospital by hospital. By the end of 2010, all hospitals in the state were transmitting birth data to the state Vital Records office through the new registration system. As a result of this staggered implementation, North Carolina birth data were collected under both the 1989 and the 2003 birth certificate standards in 2010. Therefore, the State Center for Health Statistics was unable to publish any data from the new or modified fields for 2010 births. Fields that were not comparable across the two certificate revisions, such as maternal smoking, prenatal care and congenital anomalies were left blank in the 2010 birth file and were not reported in the 2010 Vital Statistics reports. Beginning in 2011, birth data were collected solely under the revised U.S. Standard Certificate, therefore, 2011 will represent the first full year of revised birth certificate data that North Carolina’s State Center for Health Statistics will publish. Researchers and other data users of North Carolina birth data will need to be careful not to compare trends in certain key public health indicators, such as prenatal care, race, smoking and maternal education levels, across the two revisions.

References


