Data Compilation for the WHO Global Survey of Mode of Delivery and Maternal and Perinatal Outcomes

by

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Acknowledgement and Endorsement

This report has been written by me and has not received any previous academic credit at this or any other institution.

I would like to thank Mr. John Fahey and Dr. Grace Paterson for their guidance and useful suggestions.

Malak Barayan
Executive Summary

Although in many circumstances, caesarean birth is chosen by the health care provider to improve maternal and/or neonatal outcomes, the procedure is generally connected with increased incidences of mortality or morbidity for both mother and infant. Nevertheless, the exploding numbers of c-sections in both developing and developed countries necessitates the need to reexamine the circumstances surrounding caesarean birth outcomes.

The WHO is conducting a global survey of mode of delivery and maternal and perinatal outcomes that aims to enhance and improve maternal and neonatal outcomes through informed and appropriate use of cesarean section. This project focused on data collected from April 1, 2008 to March 31, 2009 from hospitals recording 1000 or more births annually. The survey consists of eight categories: personal data of the women, reproductive history, current pregnancy, labour and delivery, neonatal data, caesarean section, neonatal outcome, and maternal outcome.

To commence work on the project, a data mart was created by Nova Scotia Reproductive Care Program (RCP). In addition to the given data mart, access to the 12th edition of the Nova Scotia Atlee Perinatal Database (NSAPD) Coding Manual, the 10th revision of International Statistical Classification of Diseases and Related Health Problems (ICD-10-CA), and the Canadian Classification of Health Interventions (CCI) was provided in order to do the mapping between the WHO variables and the codes.

The project went through two steps:

The first step, involving manual searching to find the appropriate mapping between the variable and the code sources, was a chance to explore and learn about the RCP coding system, ICD-10-CA, and CCI. The second step, using SAS to create an SAS data set that answers the survey questions, provided an opportunity to learn about new SAS functions beyond the statistical analysis functions.

In the process, 73 variables were mapped directly and 75 variables were mapped indirectly. Lumping two or more codes was one of the ways to answer the survey questions. Some variables are mapped but the variables are defined differently by WHO and NSAPD. Some variables mapped to codes but there are no recorded cases in the NSAPD. Other variables are not captured in the database. The answers to some questions contain identifiable data. In order to maintain confidentiality and privacy, some answers that breach the patient privacy and confidentiality were modified or removed, depending on the joint data access committee’s decision. A joint data access committee will ensure that no unique identifier is released. Also, any type of data which can be used to identify individuals will not be released. Moreover, the investigators should commit to using a secure system for data management and analysis to ensure confidentiality and privacy. For further protection, the investigator should commit to a joint data access committee pre-submission review of publication.

The final product of this project was a SAS data set that answers the WHO global survey questions and will enable the researchers and investigators to perform the required research and
investigations about the informed and appropriate use of cesarean section in order to improve maternal and neonatal outcomes.
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1. Introduction

1.1 Background

The significant increase in the number of caesarean births and the impact this has on health care costs as well as on adverse maternal and perinatal outcomes is raising serious concerns within the health care community. Statistics indicate that the rise in caesarean birth rates is due to obstetric interventions along with changes in maternal demographics such as age, obesity, and multiple pregnancies. There are also indications that some caesarean sections (c-sections) are being performed solely upon the request of the mothers. Despite this marked increase in c-sections, the frequency of the procedure varies widely according to obstetrician, perinatal care facility and geographic location.

By linking together with the World Health Organization’s (WHO) global network and taking part in the WHO Global Survey of Mode of Delivery and Maternal and Perinatal Outcomes, Canada can acquire necessary and pertinent data to appropriately advise health care workers and families, while at the same time gaining access to and compiling data from a high-income nation for an international exercise in benchmarking. This collaboration ensures Canadian researchers a place in similar world-wide research initiatives going forward, and will also provide data for any follow-up investigations regarding mothers and their newborns in Canada.

Globally, caesarean births are today 10 times as frequent as they were in the 1970s, growing from just over 5% 40 years ago to more than 50% now (Bailit, Love, & Mercer, 2004; Belizán, Althabe, Barros, & Alexander, 1999; Dobson, 2001; Hamilton, Martin, & Sutton, n.d.; Health Canada, 2003). This significant growth in the demand for the procedure has occurred despite there being little to no evidence of an increase in birth-related emergencies. In Canada alone, caesarean deliveries have jumped from 5.2% in 1969 to 23.7% in 2002, with a further increase of almost 3% between 2002 and 2004 (Canadian Institute for Health Information, 2005; Nair, 1991). Interestingly, there are strong regional differences in caesarean rates (Liu, Rusen, Joseph, Liston, Kramer, Wen, & Kinch, 2004). Unlike natural (vaginal) birth, caesarean birth occasions increased maternal mortality as well as morbidity, which has prompted concern from the health care community (Allen, O’Connell, Liston, & Baskett, 2003; Harper, Byington, Espeland, Naughton, Meyer, & Lane, 2003). In response to this concern, certain features of labour management have been studied, with an eye to lowering the number of caesarean birth rates. Specifically, early amniotomy (either alone or in combination with oxytocin) to augment labour, along with one-on-one nursing have not proven successful in lowering the incidence of c-sections (Fraser, Marcoux, Moutquin, Christen, & The Canadian Early Amniotomy Study Group, 1993; Frigoletto, Lieberman, Lang, Cohen, Barss, Ringer, & Datta, 1995; Hodnett, Lowe, Hannah, Willan, Stevens, Weston, Ohlsson, Gafni, Muir, Myhr, & Stremler, 2002).

For women choosing or having to give birth by c-section, some common significant complications include major puerperal infection, thromboembolic events and hemorrhage (Koroukian, 2004; D. P. Van, H. M. Van, Mulder, 2003). Incidence of postpartum hysterectomy and rates of re-admittance to hospital are also higher in frequency among women who get c-sections as opposed to those who deliver vaginally (Zelop, & Heffner, 2004). Higher perinatal mortality and neonatal morbidity rates have likewise been unfortunate outcomes connected to
Caesarean births, while maternal morbidities like short-term urinary incontinence have actually been reduced through c-sections (Press, Klein, & Dadelszen, 2006; Wax, Cartin, Pinette, & Blackstone, 2004). However, in one study of planned caesarean birth versus planned vaginal birth, almost no variations were noted between the two sub-groups with regards to urinary or fecal incontinence, pelvic pain, sexual functioning or postpartum depression (Hannah et al., 2004).

In Canada, the number of c-sections is likely impacted by factors as diverse as changes in individuals, health care and private care providers, institutions, and even regions. The extent to which these and other factors impact maternal, fetal and neonatal choices and care requires further research. Accordingly, a national survey on maternal, fetal, and neonatal delivery outcomes is the best way to clarify the information and data, leading to the creation of appropriate perinatal health policy recommendations for governments across all levels as well as health care providers, women and their babies.

**1.2 Project Goal**

Even though, in many circumstances, caesarean birth is chosen by the health care provider to improve maternal and/or neonatal outcomes, the procedure is generally connected with increased incidences of mortality or morbidity for both mother and infant. Nevertheless, the exploding numbers of c-sections in both developing and developed countries necessitates the need to reexamine the circumstances surrounding caesarean birth outcomes. The ultimate long-term goal of this study is to enhance and improve maternal, fetal, and neonatal outcomes through informed and appropriate use of cesarean section.
2. Description of the Organization

2.1 Background

The Reproductive Care Program of Nova Scotia (RCP) is a provincial program of the Nova Scotia Department of Health and Wellness. The program is supported by the Department of Obstetrics and Gynaecology and the Department of Pediatrics at Dalhousie University. The RCP was established in 1973 with the objective of supporting health care facilities, hospitals and community-based health professionals to improve overall initiatives and provide optimal health for women, infants and families (Reproductive Care Program of Nova Scotia, 2011).

According to their mission statement, the RCP’s primary goal is to “promote and advocate for excellence in reproductive/perinatal and newborn health as well as evidence-informed practice. [They] provide leadership and support through practice guidelines and standards, education, research, and high quality data collection and analysis” (Reproductive Care Program of Nova Scotia, 2011).

2.2 RCP Activities

The program’s activities include clinical and health information initiatives, as outlined in the following:

1. RCP clinical activities include conducting perinatal surveys and providing educational workshops for healthcare professionals. Activities also include site visits and involvement in administrative or clinical issues, mortality and morbidity reviews, continuous medical/nursing education, and developing clinical practice guidelines for prenatal care (Reproductive Care Program of Nova Scotia, 2011).

2. RCP health information activities include maintaining coding system as well as the quality, integrity, and security of data in the Nova Scotia Atlee Perinatal Database (NSAPD). In addition, RCP provides standardized reports, site visits to help in data queries, annual reports, and database linkages (Reproductive Care Program of Nova Scotia, 2011).

2.3 Nova Scotia Atlee Perinatal Database

Administration duties pertaining to the Nova Scotia Atlee Perinatal Database (NSAPD) are carried out by the RCP. Since 1988, the NSAPD Database, which is expansive and comprehensive in scope, has recorded information on all pregnancies and births occurring in Nova Scotia. It includes information on maternal and newborn diagnoses, procedures, interventions, demographics and mortality. In addition to being comprehensive, the Database is kept highly confidential through stringent data management policies (Reproductive Care Program of Nova Scotia, 2011).
3. Description of the Work Performed at the Organization

3.1 Job Description

The task was to compile data for a WHO-initiated project on maternal health services, comparing cesarean-section rates and outcomes amongst various countries worldwide.

3.2 Role and Responsibilities

The purpose was to extract (or build) the appropriate data corresponding to WHO survey variables (APPENDIX A) and to form an SAS data set. Each column in that data set was to answer a survey question.

3.3 Objectives

The internship objectives include:

1. Appropriate mapping between code sources and variables.
2. Familiarity with ICD-10-CA and other nosological systems.
3. Familiarity with elementary data management methodology and associated software SAS.

3.4 Overview

This project focused on data collected from April 1, 2008, to March 31, 2009, from hospitals recording 1000 or more births annually. The survey consists of 8 categories: personal data of the women, reproductive history, current pregnancy, labour and delivery, neonatal data, caesarean section, neonatal outcome, and maternal outcome (Reproductive Care Program of Nova Scotia, 2011).

To commence work on the project, a data mart was created by RCP. A data mart is “a specific, subject-oriented, repository of data designed to answer specific questions for a specific set of users” (Open Source Analytics, 2011). A data mart is different from a data warehouse, in that a data mart usually holds one subject area only while a data warehouse holds multiple subject areas. Some data marts for neonatal data focus on Rh compatibility or congenital anomalies; however, the NSAPD holds general information on many subject areas. As well, a data mart normally contains summarized data, unlike a data warehouse, which always holds very detailed information. (This does not imply, however, that a data mart cannot hold detailed data.) Finally, a data mart focuses on integrating information from one subject area or set of source systems, whereas a data warehouse works to integrate all data sources (nModal Solutions Inc., 2011).
In addition to the given data mart, access to the 12th edition of the NSAPD Coding Manual (released in April 1, 2008), the 10th revision of International Statistical Classification of Diseases and Related Health Problems (ICD-10-CA), and the Canadian Classification of Health Interventions (CCI) was provided. The project went through two main steps:

1. A manual search of the code sources to locate one-to-one mapping between WHO variables and the code sources. Nursing knowledge facilitated this search process. A MSW document was used to record the variable, corresponding code, description of the code according to the code source, and notes (APPENDIX B).
2. The use of SAS to extract and build the mapped data (APPENDIX C).

During this process, 73 variables were mapped directly and 75 variables were mapped indirectly.

### 3.4.1 Derived Variables

Some questions in the survey ask about variables that do not directly match any available code. In such situations, the answer was derived from two or more codes in order to answer the question or match of that variable. For example:

**Question:** Does the mother have a chronic respiratory condition?

**Answer:** R023_00100, R023_00200, and R023_00400.

These three codes represent chronic respiratory conditions which are asthma, cystic fibrosis, and other significant pulmonary diseases, respectively. It is necessary to lump the three codes to answer the question because there is no single code that includes all three chronic respiratory conditions. Therefore, lumping all codes representing chronic respiratory conditions will form the answer to one question.

### 3.4.2 Inconsistency In Defining Variables

Some variables are defined differently by WHO and NSAPD. For example, according to WHO, severe anemia is Hb<7g/l, while for NSAPD, the same condition is Hb<10g/l.

### 3.4.3 Null Cases

While some questions ask about variables that are directly mapped with codes, there are null cases in the database. For example, one question asks about vescico-vaginal / recto-vaginal fistula, whose codes are N82.0 / N82.3, but there are no recorded cases in the NSAPD for N82.0.

### 3.4.4 Variables Not Captured in the Database

Some questions ask about variables that are not captured in the NSAPD Database. These variables include antenatal visits, IVF information, and maternal infection upon admission to the labour ward.
4. Discussion on How the Work Relates to Health Informatics

Working with ICD-10-CA practically is much different than working with it theoretically as in MHI program. During the program, the author learned about ICD-9 and ICD-10 coding system but she did not do any project using them. In this working experience, the focus was on areas which deal specifically with maternal and child health. This added to the author’s knowledge and provided a chance to learn about maternal and child codes in depth. The opportunity to do practical work with the CCI was also helpful, as this provided an opportunity to deal with an additional nosological system. The author found this internship a unique experience since it provided the opportunity to deal with special coding system invented and only used by RCP.

NSAPD has been collecting data since 1988, a circumstance which makes their coding system much richer than ICD-10-CA for perinatal diagnosis, which only started expanding their contributions to maternal and child health codes much later. Another reason why NSAPD’s coding system is better in perinatal care is its focus on maternal and infant health outcomes.

Although SAS was introduced in the Statistic course, building a SAS data set was a new thing to learn during the internship. Doing many project during the MHI program prepared the author for real project in the future. Time management and prioritizing tasks are skills gained from previous projects in addition to the IT Project Management course.


5. Discussion of a Problem and the Corresponding Solution

5.1 Privacy and Confidentiality

When data is needed for maternal or child health research, permission to access the data must be obtained. After permission to access the data is given, investigators should use the data with no individual, caregiver, or institution identification unless specifically required for their project, with appropriate approvals. A joint data access committee will ensure that no unique identifier is released. Also, any type of data which can be used to identify individuals, such as address or birth date and time, will not be released. Moreover, the investigators should commit to using a secure system for data management and analysis to ensure confidentiality and privacy. For further protection, the investigator should commit to a joint data access committee pre-submission review of publication (Reproductive Care Program of Nova Scotia, 2011).

The answers to some questions contain identifying information, defined as “information that identifies an individual or for which it is reasonably foreseeable in the circumstances that it could be utilized, either alone or with other information, to identify an individual” (Government of Nova Scotia, 2010). The identifying information includes information related to:

- Race, national or ethnic origin, colour, or religion.
- Age, marital status, educational level of the individual.
- Medical, criminal or employment history of the individual.
- Any identifying number.
- The address, fingerprints or blood type of the individual (Canada, 2010).
- Health care provider and the identification of the health care provider to the individual.
- Payments and eligibility for health care or coverage for health care.
- Donation of any body part or body substance of the individual (Government of Nova Scotia, 2010)

Providing such information is considered a breach of patient confidentiality and privacy.

5.2 Solutions for Privacy Issue

In order to maintain confidentiality and privacy, some answers, such as birth weight, will be modified by, for instance, rounding this variable to the nearest integer. Other answers, such as postal codes, might be modified or removed, depending on the committee’s decision.

5.3 Methods of Protecting Tabular Data

In tabular data, the nonpublishable cells are called risky cells because of the risk of statistical disclosure. There are three types of these cells: small counts, dominance, and complementary suppression (OECD Glossary of Statistical Terms, 2005).

5.3.1 Suppression
One of the common ways of protecting risky cells is suppression. The primary suppression method is to replace the value of the risky cell with a symbol. If one cell is suppressed, at least one other cell in that row or column should also be suppressed to avoid calculating the suppressed cell by subtraction from the marginal total. This is called secondary suppression (OECD Glossary of Statistical Terms, 2005).

### 5.3.2 Controlled Tabular Adjustment

Controlled tabular adjustment is a method to protect tabular data by replacing the risky cells with the nearest safe values or adjusting other cells to restore the table additivity (OECD Glossary of Statistical Terms, 2005).

### 5.3.3 Random Rounding

Random rounding is a protective method that reduces the amount of data loss associated with suppression. In random rounding, cell values are randomly rounded up or down. Setting up the rounding mechanism will produced unbiased rounded results (OECD Glossary of Statistical Terms, 2005).

### 5.3.4 Threshold Rule

When applying the threshold rule in tabular data, a cell is defined to be sensitive if the number of observations is less than a specified number. The RCP requires at least five observations in a cell (OECD Glossary of Statistical Terms, 2005).
6. Conclusion

This project was conducted through two stages. The first step, manual searching for the appropriate code for each variable, was a chance to explore and learn about the RCP coding system, ICD-10-CA, and CCI. The second step, using SAS to create an SAS data set that answers the survey questions, provided an opportunity to learn about new SAS functions beyond statistical analysis functions. The final product was an SAS data set that answers the WHO global survey questions. It will enable stakeholders to perform required research and investigations about the informed and appropriate use of cesarean section in order to improve maternal and neonatal outcomes. Gaining knowledge and experience, accomplishing the project, and achieving the stated objectives are the expected and achieved outcome from the internship.
7. Recommendations

Some questions in the survey cannot be answered directly. Since some questions require the lumping of two or more codes in order to be answered, having a dependent code for some of these variables (i.e., variables that are important or might be used frequently) would be beneficial for future projects. Also, capturing some variables that are not currently captured in the database may be useful in furthering research aims.

Planning data pooling during the design phase of epidemiologic studies will facilitate combining analyses, as the studies being combined are similar in design. This method is already used by the International Agency for Research on Cancer for a number of studies (Friedenreich, 1993).

This is a relatively new method. As more pooled analyses are performed, the influence of methodological factors will be better understood. This will increase the awareness and improve the standards of conducting and reporting the epidemiological studies (Friedenreich, 1993).
References


APPENDIX A

Variables for Data Collection – World Health Organization Global Survey

Personal data of the women
- marital status (single, partnered)
- age in years
- total number of years attended school (provide, if possible)
- Pre-pregnancy weight or initial pre-natal weight
- Height of the woman (cm)

Reproductive history
- gravida (including current pregnancy)
- parity (excluding current delivery)
- previous surgery on uterus and cervix (no/yes)
- history of previous caesarean section? (no/yes)
- history of previous myomectomy? (no/yes)

Current pregnancy
- has the subject been diagnosed as HIV positive (N/Y)
- during pregnancy or while in labour, did the mother have any of the following: (N/Y to each)
  - PROM
  - PIH
  - chronic hypertension
  - pre-eclampsia
  - eclampsia
  - cardiac/renal diseases
  - chronic respiratory conditions
  - low uterine ht for gestational age
  - diabetes mellitus
  - severe anemia (Hb<7g/l)
  - vaginal bleeding in 2nd half of pregnancy
  - pyelonephritis or urinary infection
  - any genital ulcer disease
  - condyloma acuminata
  - other medical conditions
  - any condition suggesting HIV/AIDS
  - thalasseimia – collect if possible
- did antenatal visits occur? (N/Y)

Labour and Delivery
- Was women transferred for delivery? (N/Y)
- If referred, from where/by whom:
  - secondary care
• Total # neonates delivered (include stillbirths <=20 weeks)
• Onset of labour:
  o spontaneous
  o induced
  o no labour
• If induced, PRIMARY indications for induction (N/Y):
  o fetal death
  o IUGR
  o fetal distress
  o multiple pregnancy
  o PROM
  o chorioamnionitis
  o vaginal bleeding
  o pre-eclampsia/ eclampsia
  o post-term (>42 wks)
  o elective induction
  o other pregnancy complication
  o other maternal medical complication
  o unknown
• If induced, OTHER indications for induction (N/Y):
  o fetal death
  o IUGR
  o fetal distress
  o multiple pregnancy
  o PROM
  o chorioamnionitis
  o vaginal bleeding
  o pre-eclampsia/ eclampsia
  o post-term (>42 wks)
  o elective induction
  o other pregnancy complication
  o other maternal medical complication
  o unknown
• If induced, method (N/Y for each):
  o oxytocin
  o misoprostol
  o other prostaglandin
  o sweeping membranes
  o artificial rupture/ amniotomy
  o mechanical
• Who performed delivery/or performed section/laporotomy? (PLEASE RECORD WHAT IS AVAILABLE):
  o OB/GYN specialist
- resident
- general surgeon
- GP
- nurse
- midwife
- paramedic
- med student

- Anaesthesia/analgesia during labor:
  - no analgesia/anaesthesia
  - epidural
  - spinal
  - injectable analgesic
  - epidural/spinal together
  - alternative method
  - general

- Type of anaesthesia/analgesia during delivery or c-section:
  - No anaesthesia
  - epidural
  - spinal
  - general
  - epidural/spinal together
  - local
  - nitric oxide
  - narcotic

- Who gave anaesthesia/analgesia during delivery or c-section? (assuming that anaest/obgyn was local):
  - anaesthesiologist
  - OB/GP
  - resident MD in training
  - paramedic/nurse anaesthetic
  - nurse/midwife
  - anaesthetist technician
  - other

Maternal outcome
- Did the woman receive antibiotics during her admission episode? (N/Y)
- Did the woman have a diagnostic code for infection? (N/Y to each)
  - antenatally
  - at admission to labour ward
  - during or immed after vag delivery
  - prophylactic before c-section
  - immediately after c-section
  - any other time postnatally
- Was there any uterotonic for the treatment of postpartum hemorrhage?*
  *(Standard procedure in Canada; assumption made as being YES.)
- Did the patient receive a blood transfusion?
• Was there any indication of a blood transfusion: If cannot provide, please try and provide post-partum hemorrhage requiring transfusion with assumptions being made.
  - postpartum hemorrhage

Further info:
• 3rd/4th degree perineal laceration
• hysterectomy
• vescico-vaginal/recto-vaginal fistula
• admission of mother to ICU/SCU
• maternal status at discharge or at 8th day postpartum:
  o alive
  o dead
  o alive but referred to higher level of care
• date of maternal discharge, transfer or death (dd/mm/yy)
• anaesthetic complications
• obstetric shock
• cardiac arrest
• acute renal failure
• intraoperative trauma
• in-hospital wound infection
• obstetric wound hematoma
• length of hospital stay (using ICD-10 Ca codes)

Neonatal Data
• if multiple birth, birth order
• date of delivery (dd/mm/yy)
• best obstetric estimate of age at delivery (in completed wks)
• fetal presentation at delivery: cephalic, breech, other
• final mode of/assistance for delivery: spontaneous, forceps, vacuum, elective c-sect (no labour), emergency c-sect (no labour), intrapartum c-sect, assisted breech or breech extraction, internal version and extraction, laparotomy for uterus rupture,
• status at birth: alive, fresh stillbirth, macerated stillbirth
• Apgar score at 5 min
• birthweight
• HC (cm)
• sex (F, M)
• congenital malformation (N/Y)

Caesarean section
• If caesarean section, PRIMARY indications:
  o suspected fetal growth impairment
  o fetal distress
  o pre-eclampsia/eclampsia
  o gestational age 41 completed weeks or more
3rd trimester vaginal bleeding
- cephalopelvic disproportion/dystocia/failure to progress/failed vacuum or forceps
- multiple pregnancy
- uterine rupture
- postmortem c-sect
- breech or other malpresentation
- previous c-section
- failed induction
- tubal ligation/sterilization
- maternal request
- HIV
- genital herpes/extensive condyloma
- other obstetric complication
- other fetal indication
- other maternal medical condition
- previous uterine surgery
- unknown

- If caesarean section, OTHER indications:
  - suspected fetal growth impairment
  - fetal distress
  - pre-eclampsia/eclampsia
  - gestational age 41 completed weeks or more
  - 3rd trimester vaginal bleeding
  - cephalopelvic disproportion/dystocia/failure to progress/failed vacuum or forceps
  - multiple pregnancy
  - uterine rupture
  - postmortem c-section
  - breech or other malpresentation
  - previous c-section
  - failed induction
  - tubal ligation/sterilization
  - maternal request
  - HIV
  - genital herpes/extensive condyloma
  - other obstetric complication
  - other fetal indication
  - other maternal medical condition
  - previous uterine surgery
  - unknown

**Neonatal outcome**
- admission to ICU/SCU
  - Yes/No—no ventilated, yes-ventilated
- If yes, total # days spent in intensive/special care unit (up to 7 completed days).
Newborn status at discharge: alive and well, alive with obstetric trauma, alive but referred to higher level care, dead within 24 h, dead after 24 h of birth.
- Was breastfeeding initiated? (N/Y)
- Date of neonatal discharge?
- Requirement for any form of assisted ventilation?

Further info:
- Birth injury? (fractured clavicle, skull, or long bone, or nerve injury [palsy])
- Hypoxic ischemic encephalopathy?
- Meconium aspiration?

**Additional Variables Added for Canadian Collection:**

**Labour and Delivery**
- Type of anaesthesia/analgesia during delivery or c-section:
  - Nitrous Oxide
  - Narcotic

**Maternal Outcome:**
- Anaesthetic Complications
- Obstetric Shock
- Cardiac Arrest
- Acute Renal Failure
- Intraoperative Trauma
- In-hospital wound infection
- Obstetric Wound Hematoma
- Antenatal visit present in first trimester (No/Yes)
- Episiotomy (No/Yes)
- If episiotomy, what type: median, mediolateral or unknown

**Fetal/Neonatal Outcome:**
- Requirements for any form of assisted ventilation (CPCP or intubation)
  1=Fractured Clavicle, 2=Skull Fracture, 3=Long bone Fracture, 4=Nerve Injury (palsy)
- Hypoxic ischemic encephalopathy
- Meconium aspiration
- Was any IVF information recorded?
- Postal Code
- Time of Birth (hh:mm)
### APPENDIX B

**Personal Data of the Women**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>Marital Status</td>
<td>DLMrStat</td>
<td>To be looped to single or partnered only</td>
</tr>
<tr>
<td>Age in Years</td>
<td>Mother's Age</td>
<td>DMMatAge</td>
<td>To be rounded to years</td>
</tr>
<tr>
<td>Total No. of Years Attended School</td>
<td>Highest Level of Education</td>
<td>Educat</td>
<td>To be calculated according to the highest educational level</td>
</tr>
<tr>
<td>Pre-pregnancy Weight</td>
<td>Pre-Pregnancy Weight - kg</td>
<td>DLPREPWt</td>
<td>Unit not specified</td>
</tr>
<tr>
<td>Height of the Woman</td>
<td>Mother's Height (cm)</td>
<td>DLHeight</td>
<td></td>
</tr>
<tr>
<td>Postal Code</td>
<td>Postal Code</td>
<td>DLPSTCOD</td>
<td></td>
</tr>
</tbody>
</table>

#### Reproductive history

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravid</td>
<td># of Pregnancies, Including the Present One</td>
<td>DLGravid</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td># of Pregnancies, Excluding the Present, with &gt;= 500g Birth</td>
<td>DLPara</td>
<td>What about birth with &lt; 500g</td>
</tr>
<tr>
<td>Previous surgery on uterus and cervix (n/y)</td>
<td>Previous Gynecological Surgery</td>
<td>DLPrvSrg</td>
<td>We can’t tell which type of surgery she had. The answer with no/yes will be inaccurate.</td>
</tr>
<tr>
<td>History of previous caesarean section (n/y)</td>
<td># Previous C-Sections</td>
<td>DLPrvCS</td>
<td>If 0 will be no. if &gt;0 will be yes</td>
</tr>
<tr>
<td>History of previous myomectomy (n/y)</td>
<td>Previous Gynecological Surgery</td>
<td>DLPrvSrg</td>
<td>We can’t tell which type of surgery she had. The answer with no/yes will be inaccurate.</td>
</tr>
</tbody>
</table>

#### Current pregnancy

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the subject been diagnosed as HIV positive? (n/y)</td>
<td>MATERNAL CARRIER STATES AND/OR CHRONIC INFECTION DURING PREGNANCY- HIV/Acquired Immune Deficiency Syndrome</td>
<td>R002 400</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have PROM? (n/y)</td>
<td>Hours from Rupture of Membranes to Delivery (longest) Hours from Onset of Labour to Delivery (longest)</td>
<td>DMRoMDel DMSt1Del</td>
<td>DMSt1Del &gt; DMRoMDel = no DMSt1Del &lt; DMRoMDel = yes</td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have PIH? (n/y)</td>
<td>Gestational Hypertension (combines mild and severe) OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY- Gestational (pregnancy-induced) hypertension without significant proteinuria. Includes Gestational hypertension NOS,</td>
<td>MO13 MO14 R014 500</td>
<td>combines mild and severe</td>
</tr>
</tbody>
</table>
### Mild Preeclampsia

- **Mild preeclampsia.**
- Gestational (pregnancy-induced) hypertension with significant proteinuria. Includes HELLP syndrome (hemolysis/elevated liver enzymes/low platelets)

### Pre-existing Hypertension

- **During pregnancy or in labour, did the mother have chronic hypertension?** (n/y)
- **Pre-existing Hypertension**
- **OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY-**
- Pre-existing hypertension complicating pregnancy, childbirth and the puerperium.
- Pre-existing hypertensive disorder with superimposed proteinuria

### Gestational Hypertension

- **During pregnancy or in labour, did the mother have pre-eclampsia?** (n/y)
- **Gestational Hypertension (combines mild and severe)**
- **OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY-**
- Gestational (pregnancy-induced) hypertension without significant proteinuria. Includes
- Gestational hypertension NOS, Mild preeclampsia.
- Gestational (pregnancy-induced) hypertension with significant proteinuria. Includes HELLP syndrome (hemolysis/elevated liver enzymes/low platelets)

### Eclampsia

- **During pregnancy or in labour, did the mother have eclampsia?** (n/y)
- **Eclampsia**

### Cardiovascular Disease

- **During pregnancy or in labour, did the mother have cardiac/renal disease?** (n/y)
- **HEART DISEASE CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY-**
  - Arrhythmia
  - Congenital heart disease
  - Cardiac Arrest
  - Coronary artery disease
  - Endocarditis
  - Myocardial infarction
  - Prolapsed mitral valve
  - Cardiomyopathy
  - Myocarditis

**I exclude:**

- 600 History of heart disease or surgery
- 1300 Valve prosthesis
<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary hypertension</td>
<td>1100</td>
</tr>
<tr>
<td>Rheumatic heart disease</td>
<td>1200</td>
</tr>
<tr>
<td>Wolff Parkinson’s White Syndrome</td>
<td>1400</td>
</tr>
<tr>
<td>Other acquired cardiac diseases</td>
<td>1500</td>
</tr>
<tr>
<td>Thromboembolic Disease</td>
<td>1600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal calculus</td>
<td>200</td>
</tr>
<tr>
<td>Chronic glomerulonephritis</td>
<td>300</td>
</tr>
<tr>
<td>Hydronephrosis</td>
<td>500</td>
</tr>
<tr>
<td>Nephropathy</td>
<td>600</td>
</tr>
<tr>
<td>Nephrotic syndrome</td>
<td>700</td>
</tr>
<tr>
<td>Polycystic kidney disease</td>
<td>800</td>
</tr>
<tr>
<td>Chronic renal disease, type undetermined</td>
<td>1200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Renal agenesis</td>
<td></td>
</tr>
<tr>
<td>1100 Renal transplant</td>
<td></td>
</tr>
<tr>
<td>1300 Urinary tract Infection</td>
<td></td>
</tr>
<tr>
<td>100 Acute pyelonephritis</td>
<td></td>
</tr>
<tr>
<td>400 Previous episode of acute pyelonephritis during current pregnancy</td>
<td></td>
</tr>
<tr>
<td>900 Chronic pyelonephritis</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>100</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>200</td>
</tr>
<tr>
<td>Other significant pulmonary diseases</td>
<td>400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 Pneumonia, antepartum</td>
<td></td>
</tr>
<tr>
<td>300 Pulmonary edema</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal care for restricted fetal growth</td>
<td>O36.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-existing diabetes mellitus, Type 1</td>
<td>900</td>
</tr>
<tr>
<td>Pre-existing diabetes mellitus, Type 2</td>
<td>1000</td>
</tr>
<tr>
<td>Pre-existing diabetes mellitus of other specified type present when became pregnant during this pregnancy</td>
<td>1100</td>
</tr>
<tr>
<td>Pre-existing diabetes mellitus, of unspecified type present when became pregnant during this pregnancy</td>
<td>1200</td>
</tr>
<tr>
<td>Diabetes mellitus arising in pregnancy. Includes Gestational diabetes</td>
<td>1300</td>
</tr>
<tr>
<td>Diabetes mellitus in pregnancy, unspecified</td>
<td>1400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Diabetes mellitus arising in pregnancy. Includes Gestational diabetes</td>
<td></td>
</tr>
<tr>
<td>1100 Diabetes mellitus in pregnancy, unspecified</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Code/Description</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Have severe anemia? (Hb&lt;7g/l)</td>
<td>(n/y)</td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have vaginal bleeding in 2nd half of pregnancy? (n/y)</td>
<td>Antepartum haemorrhage premature separation of placenta [abruptio placentae] placenta praevia</td>
</tr>
<tr>
<td>Pregnancy Anemia</td>
<td>1500</td>
</tr>
<tr>
<td>Our is (Hb&lt;10g/l)</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have pyelonephritis or urinary infection? (n/y)</td>
<td>RENAL DISEASE CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY- Acute pyelonephritis Previous episode of acute pyelonephritis during current pregnancy Chronic pyelonephritis Urinary tract Infection</td>
</tr>
<tr>
<td>Maternal carrier states and/or chronic infection during pregnancy</td>
<td>R002</td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have any genital ulcer disease? (n/y)</td>
<td>Papillomavirus as the cause of diseases classified to other chapters</td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have other medical conditions? (n/y)</td>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have any condition suggesting HIV/AIDS? (n/y)</td>
<td>Nonspecific lymphadenitis Other interstitial pulmonary diseases Acute lymphadenitis Cachexia</td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have thalasseimia? (n/y)</td>
<td>BLOOD DYSCRASIAS CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY/POSTPARTUM PERIOD- Thalassemia</td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>During pregnancy or in labour, did the mother have any condition suggesting HIV/AIDS? (n/y)</td>
<td>Nonspecific lymphadenitis Other interstitial pulmonary diseases Acute lymphadenitis Cachexia</td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium</td>
<td></td>
</tr>
<tr>
<td>Did antenatal visits occur? (N/Y)</td>
<td>Blank</td>
</tr>
<tr>
<td>Was any IVF information recorded?</td>
<td>Blank</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Was women transferred for delivery? (n/y)</td>
<td>ADMIITTED FROM: Mother’s location immediately prior to admission.</td>
</tr>
<tr>
<td>If referred, from where/by whom: secondary</td>
<td>2 digit provincial code number for the regional hospitals:</td>
</tr>
<tr>
<td>care</td>
<td>11 = 'Aberdeen'</td>
</tr>
<tr>
<td></td>
<td>14 = 'South Shore'</td>
</tr>
<tr>
<td></td>
<td>18 = 'Colchester'</td>
</tr>
<tr>
<td></td>
<td>30 = 'Cumberland'</td>
</tr>
<tr>
<td></td>
<td>43 = &quot;St. Martha's&quot;</td>
</tr>
<tr>
<td></td>
<td>56 = 'Western Regional'</td>
</tr>
<tr>
<td></td>
<td>67 = 'Valley Regional'</td>
</tr>
<tr>
<td></td>
<td>73, 87 = 'C.B. Regional'</td>
</tr>
<tr>
<td>If referred, from where/by whom: primary</td>
<td>blank</td>
</tr>
<tr>
<td>health care</td>
<td></td>
</tr>
<tr>
<td>If referred, from where/by whom: home/</td>
<td>blank</td>
</tr>
<tr>
<td>community</td>
<td></td>
</tr>
<tr>
<td>If referred, from where/by whom: other</td>
<td>blank</td>
</tr>
<tr>
<td>Total # neonates delivered (including</td>
<td># of Pregnancies, Excluding the Present, with non-viable foetus</td>
</tr>
<tr>
<td>stillbirths &lt;=20 weeks)</td>
<td></td>
</tr>
<tr>
<td>Onset of labour: spontaneous</td>
<td>LABOUR: Initiation of labour</td>
</tr>
<tr>
<td></td>
<td>Spontaneous onset of labour (does not include augmentation of labour)</td>
</tr>
<tr>
<td>Onset of labour: induced</td>
<td>LABOUR: Initiation of labour</td>
</tr>
<tr>
<td></td>
<td>Artificial induction of labour (does not include augmentation of labour)</td>
</tr>
<tr>
<td>Onset of labour: no labour</td>
<td>LABOUR: Initiation of labour</td>
</tr>
<tr>
<td></td>
<td>No labour prior to delivery (e.g. elective repeat Csection)</td>
</tr>
<tr>
<td>If induced, PRIMARY indications for</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>induction (n/y): fetal death</td>
<td>Intrauterine death</td>
</tr>
<tr>
<td>If induced, PRIMARY Indications for</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>induction (n/y): IUGR</td>
<td>Fetal growth restriction</td>
</tr>
<tr>
<td></td>
<td>Fetal Growth Retardation</td>
</tr>
<tr>
<td>If induced, PRIMARY indications for induction (n/y):</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>fetal distress</td>
<td>(Possible) fetal distress; low planning score</td>
</tr>
<tr>
<td>PROM</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>PROM with Chorioamnionitis</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>vaginal bleeding</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>hypertension/eclampsia</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>post-term (&gt;42 wks),</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>elective induction</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>other pregnancy complication</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>other maternal medical complication</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>If induced, PRIMARY indications for induction (n/y): unknown</td>
<td>INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>If induced, method (n/y): oxytocin</td>
<td>Oxytocin induction</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Oxytocin</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Oxytocin</td>
</tr>
<tr>
<td></td>
<td>Both, Oxytocin</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Oxytocin</td>
</tr>
<tr>
<td>If induced, method (n/y): misoprostol</td>
<td>Prostaglandin (administration):</td>
</tr>
<tr>
<td></td>
<td>Intracervical</td>
</tr>
<tr>
<td></td>
<td>Vaginal</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Prostaglandin</td>
</tr>
<tr>
<td></td>
<td>Vaginal/Cervical</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Prostaglandin</td>
</tr>
<tr>
<td></td>
<td>Vaginal/Cervical</td>
</tr>
<tr>
<td></td>
<td>Both, Prostaglandin Vaginal/Cervical</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Prostaglandin Vaginal/Cervical</td>
</tr>
<tr>
<td>If induced, method (n/y): other prostaglandin</td>
<td>Prostaglandin (administration):</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Prostaglandin Oral</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Prostaglandin Oral</td>
</tr>
<tr>
<td></td>
<td>Both, Prostaglandin Oral</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Prostaglandin Oral</td>
</tr>
<tr>
<td>If induced, method (n/y): sweeping membranes</td>
<td>Other Specified Agents</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Other specified agents</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Other specified agents</td>
</tr>
<tr>
<td></td>
<td>Both, Other specified agents</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Other specified agents</td>
</tr>
<tr>
<td>If induced, method (n/y): artificial rupture/ amniotomy</td>
<td>Artificial rupture of membranes, if clearly stated to induce labour</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Artificial Rupture of Membranes, if clearly stated to induce labour</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Artificial Rupture of Membranes, if clearly stated to induce labour</td>
</tr>
<tr>
<td></td>
<td>Both, Artificial Rupture of Membranes, if clearly stated to induce labour</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Artificial Rupture of Membranes, if clearly stated to induce labour</td>
</tr>
<tr>
<td>If induced, method (n/y): mechanical</td>
<td>Cervical catheter</td>
</tr>
<tr>
<td></td>
<td>Inpatient, Cervical catheter</td>
</tr>
<tr>
<td></td>
<td>Outpatient, Cervical catheter</td>
</tr>
<tr>
<td></td>
<td>Both, Cervical catheter</td>
</tr>
<tr>
<td></td>
<td>Unspecified, Cervical catheter</td>
</tr>
<tr>
<td>Who performed</td>
<td>p.specialty</td>
</tr>
<tr>
<td>anaesthesia/analgesia during labor:</td>
<td>ANAESTHESIA DURING LABOUR ONLY</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>no analgesia/anaesthesia</td>
<td>ANAESTHESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td>epidural</td>
<td>ANAESTHESIA DURING LABOUR ONLY</td>
</tr>
<tr>
<td></td>
<td>Epidural – Single Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Catheter with Intermittent Drug Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Infusion of Drug (CIEA)</td>
</tr>
<tr>
<td></td>
<td>Epidural – Patient Controlled Epidural Analgesia (PCEA)</td>
</tr>
<tr>
<td></td>
<td>ANAESTHESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>Epidural – Single Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Catheter with Intermittent Drug Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Infusion of Drug (CIEA)</td>
</tr>
<tr>
<td></td>
<td>Epidural – Patient Controlled Epidural Analgesia (PCEA)</td>
</tr>
<tr>
<td>Anaesthesia (PCEA)</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Analgesia/analgesia during labor: spinal</td>
<td></td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR ONLY</strong></td>
<td>R011</td>
</tr>
<tr>
<td>Spinal Anaesthesia</td>
<td>900</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR AND DELIVERY</strong></td>
<td>R010</td>
</tr>
<tr>
<td>Spinal Anaesthesia</td>
<td>900</td>
</tr>
<tr>
<td>Analgesia</td>
<td>R008</td>
</tr>
<tr>
<td>No details</td>
<td></td>
</tr>
<tr>
<td>Many types, via IM, IV and unknown</td>
<td></td>
</tr>
<tr>
<td>The timing is prior to delivery</td>
<td></td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR ONLY</strong></td>
<td>R011</td>
</tr>
<tr>
<td>Spinal/Epidural double needle</td>
<td>1000</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR AND DELIVERY</strong></td>
<td>R010</td>
</tr>
<tr>
<td>Spinal/Epidural double needle</td>
<td>1000</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR ONLY</strong></td>
<td>R011</td>
</tr>
<tr>
<td>Entonox (Nitronox)</td>
<td>100</td>
</tr>
<tr>
<td>Other specified Anaesthesia (e.g. Acupuncture, Hypnotism Neuroleptic)</td>
<td>1100</td>
</tr>
<tr>
<td>Pudendal</td>
<td>800</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR AND DELIVERY</strong></td>
<td>R010</td>
</tr>
<tr>
<td>Entonox (Nitronox)</td>
<td>100</td>
</tr>
<tr>
<td>Other specified Anaesthesia (e.g. Acupuncture, Hypnotism Neuroleptic)</td>
<td>1100</td>
</tr>
<tr>
<td>Pudendal</td>
<td>800</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR ONLY</strong></td>
<td>R011</td>
</tr>
<tr>
<td>General Anaesthesia</td>
<td>600</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR AND DELIVERY</strong></td>
<td>R010</td>
</tr>
<tr>
<td>General Anaesthesia</td>
<td>600</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING DELIVERY ONLY</strong></td>
<td>R012</td>
</tr>
<tr>
<td>Entonox (Nitronox)</td>
<td>100</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING LABOUR AND DELIVERY</strong></td>
<td>R010</td>
</tr>
<tr>
<td>Entonox (Nitronox)</td>
<td>100</td>
</tr>
<tr>
<td>Analgesia</td>
<td>R008</td>
</tr>
<tr>
<td>Hypermorphine HCl (Dilaudid)</td>
<td>1300-2400</td>
</tr>
<tr>
<td>Meperidine (Demerol)</td>
<td>100-1200</td>
</tr>
<tr>
<td>Morphine (Opium/Pantopon)</td>
<td>4900-6000</td>
</tr>
<tr>
<td>Nalbuphine (Nubain)</td>
<td>7300-8400</td>
</tr>
<tr>
<td>Pentazocine (Talwin)</td>
<td>12100-13200</td>
</tr>
<tr>
<td>Sublimaze (Fentanyl)</td>
<td>2500-3600</td>
</tr>
<tr>
<td><strong>ANAESTHESIA DURING DELIVERY ONLY</strong></td>
<td>R012</td>
</tr>
<tr>
<td>No R012</td>
<td></td>
</tr>
<tr>
<td>No R010</td>
<td></td>
</tr>
<tr>
<td>Type of anaesthesia/analgesia during delivery or c-section:</td>
<td>ANAESTHESIA DURING DELIVERY ONLY</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>epidural</td>
<td>Epidural – Single Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Catheter with Intermittent Drug Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Infusion of Drug (CIEA)</td>
</tr>
<tr>
<td></td>
<td>Epidural – Patient Controlled Epidural Analgesia (PCEA)</td>
</tr>
<tr>
<td></td>
<td>ANALGESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>Epidural – Single Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Catheter with Intermittent Drug Administration</td>
</tr>
<tr>
<td></td>
<td>Epidural – Continuous Infusion of Drug (CIEA)</td>
</tr>
<tr>
<td></td>
<td>Epidural – Patient Controlled Epidural Analgesia (PCEA)</td>
</tr>
<tr>
<td>spinal</td>
<td>ANALGESIA DURING DELIVERY ONLY</td>
</tr>
<tr>
<td></td>
<td>Spinal Anaesthesia</td>
</tr>
<tr>
<td></td>
<td>ANALGESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>Spinal Anaesthesia</td>
</tr>
<tr>
<td>general</td>
<td>ANALGESIA DURING DELIVERY ONLY</td>
</tr>
<tr>
<td></td>
<td>General Anaesthesia</td>
</tr>
<tr>
<td></td>
<td>ANALGESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>General Anaesthesia</td>
</tr>
<tr>
<td>epidural/spinal together</td>
<td>ANALGESIA DURING DELIVERY ONLY</td>
</tr>
<tr>
<td></td>
<td>Spinal/Epidural double needle</td>
</tr>
<tr>
<td></td>
<td>ANALGESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>Spinal/Epidural double needle</td>
</tr>
<tr>
<td>local</td>
<td>ANALGESIA DURING DELIVERY ONLY</td>
</tr>
<tr>
<td></td>
<td>Pudendal</td>
</tr>
<tr>
<td></td>
<td>ANALGESIA DURING LABOUR AND DELIVERY</td>
</tr>
<tr>
<td></td>
<td>Pudendal</td>
</tr>
<tr>
<td>narcotic</td>
<td>Analgesia</td>
</tr>
<tr>
<td></td>
<td>Hyromorphine HCl (Dilaudid)</td>
</tr>
<tr>
<td></td>
<td>Meperidine (Demerol)</td>
</tr>
<tr>
<td></td>
<td>Morphine (Opium/Pantopon)</td>
</tr>
<tr>
<td></td>
<td>Nalbuphine (Nubain)</td>
</tr>
<tr>
<td></td>
<td>Pentazocine (Talwin)</td>
</tr>
<tr>
<td></td>
<td>Sublimaze (Fentanyl)</td>
</tr>
</tbody>
</table>

Who gave anesthesia/analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) anaesthesiologist, Analgesia during delivery or c-section Yes No Only anaesthesiologist give anesthesia Only nurse give analgesia review all
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | OB/GP | OB | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | No |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | resident MD in training | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | No |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | paramedic/nurse anaesthetic | paramedic | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | No |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | nurse/midwife | nurse | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | Yes |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | anaesthetist technician | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | No |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) | other | Anaesthesia during delivery or c-section | Analgesia during delivery or c-section | No | No |

**Maternal outcome**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the woman receive antibiotics during admission episode? (n/y)</td>
<td>ANTIBIOTIC THERAPY Antibiotics administered during a delivered admission.</td>
<td>R007</td>
<td></td>
</tr>
</tbody>
</table>
Antibiotics may be given at any time during the delivered admission: Antepartum, Intrapartum or Post-Partum. If antibiotics administered. If no antibiotics administered

<table>
<thead>
<tr>
<th>Did the woman have a diagnostic code for infection?: (n/y)</th>
<th>MATERNAL CARRIER STATES AND/OR CHRONIC INFECTION DURING PREGNANCY</th>
<th>Y leave blank</th>
<th>No details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the woman have a diagnostic code for infection?: (n/y)</td>
<td>blank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the woman have a diagnostic code for infection?: (n/y) during or immed after vag delivery</td>
<td>Pyrexia during labour, not elsewhere classified</td>
<td>O75.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other infection during labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infection of obstetric surgical wound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other infection of genital tract following Delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urinary tract infection following delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other genitourinary tract infections following delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyrexia of unknown origin following Delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other specified puerperal infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>METHOD OF DELIVERY</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIMETHOD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the woman have a diagnostic code for infection?: (n/y) prophylactic before c-section</td>
<td>Antibiotics Administered during antepartum period</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>METHOD OF DELIVERY</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIMETHOD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CSN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the woman have a diagnostic code for infection?: (n/y) immediately after c-section</td>
<td>Puerperal sepsis, delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other puerperal infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infection of obstetric surgical wound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivered, with mention of postpartum complication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We can’t tell if it was prophylactic or not. We can’t tell if its in the very late antepartum period. I assumed they don’t need to know about the infection codes.
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>ICD-10 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other infection of genital tract following Delivery Delivered, with mention of postpartum complication Urinary tract infection following delivery Delivered, with mention of postpartum complication Other genitourinary tract infections following delivery Delivered, with mention of postpartum complication Pyrexia of unknown origin following Delivery Delivered, with mention of postpartum complication Other specified puerperal infections Delivered, with mention of postpartum complication</td>
<td>O86.1 O86.102 O86.2 O86.202 O86.3 O86.302 O86.4 O86.402 O86.8 O86.802</td>
</tr>
</tbody>
</table>

**METHOD OF DELIVERY**

<table>
<thead>
<tr>
<th>Method</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-section</td>
<td>CSN</td>
</tr>
</tbody>
</table>

Did the woman have a diagnostic code for infection: (n/y) any other time postnatally?

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>ICD-10 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puerperal sepsis, delivered, with mention of postpartum complication Puerperal sepsis, postpartum condition or complication Other puerperal infections Infection of obstetric surgical wound Other infection of genital tract following Delivery Urinary tract infection following delivery Other genitourinary tract infections following delivery Pyrexia of unknown origin following Delivery Other specified puerperal infections</td>
<td>O85.002 O85.004 O86 O86.0 O86.1 O86.2 O86.3 O86.4 O86.8</td>
</tr>
</tbody>
</table>

Was there any uterotonic for the treatment of postpartum hemorrhage? (*Standard procedure in Canada; assumption made as being YES.*)

<table>
<thead>
<tr>
<th>Reason for Maternal Blood Transfusion</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia in Pregnancy</td>
<td>100</td>
</tr>
<tr>
<td>Antepartum Hemorrhage</td>
<td>200</td>
</tr>
<tr>
<td>Intrapartum Hemorrhage</td>
<td>300</td>
</tr>
<tr>
<td>Postpartum Hemorrhage</td>
<td>400</td>
</tr>
</tbody>
</table>

Did the patient receive a blood transfusion? Sas statement using or

<table>
<thead>
<tr>
<th>Reason for Maternal Blood Transfusion</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia in Pregnancy</td>
<td>100</td>
</tr>
<tr>
<td>Antepartum Hemorrhage</td>
<td>200</td>
</tr>
<tr>
<td>Intrapartum Hemorrhage</td>
<td>300</td>
</tr>
<tr>
<td>Postpartum Hemorrhage</td>
<td>400</td>
</tr>
<tr>
<td>Condition</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3rd/4th degree perineal laceration</td>
<td>Perineal laceration during delivery Third degree perineal laceration during Delivery Fourth degree perineal laceration during delivery</td>
</tr>
<tr>
<td>hysterectomy</td>
<td>Excision total, uterus and surrounding structures</td>
</tr>
<tr>
<td>Vescico-vaginal/rectovaginal fistula</td>
<td>Vescovaginal fistula Fistula of vagina to large intestine</td>
</tr>
<tr>
<td>admission of mother to ICU/SCU</td>
<td>MOTHER DISCHARGED TO Immediate Destination of Mother on Discharge from Delivery Admission QE II</td>
</tr>
<tr>
<td>maternal status at discharge or at 8th day postpartum: alive</td>
<td>MOTHER DISCHARGED TO Immediate Destination of Mother on Discharge from Delivery Admission</td>
</tr>
<tr>
<td>maternal status at discharge or at 8th day postpartum: dead</td>
<td>MOTHER DISCHARGED TO Immediate Destination of Mother on Discharge from Delivery Admission Maternal death Obstetric death of unspecified cause</td>
</tr>
<tr>
<td>maternal status at discharge or at 8th day postpartum: alive but referred to higher level of care</td>
<td>MOTHER DISCHARGED TO Immediate Destination of Mother on Discharge from Delivery Admission IWK Grace</td>
</tr>
<tr>
<td>date of maternal discharge, transfer, or death (dd/mm/yy)</td>
<td>DISCHARGE DATE Delivery Admission Discharge Date</td>
</tr>
<tr>
<td>antenatal visit present in first trimester (n/y)</td>
<td>Blank</td>
</tr>
<tr>
<td>anaesthetic complications</td>
<td>COMPLICATIONS OF ANESTHESIA Blood Patching Toxic Intravenous Injection (systemic reaction) Epi-catheter Intravenous Accidental Dural Tap Total Spinal Anesthesia Prolonged Epidural Block High Epidural/Subdural Block Foot Drop Epidural Hematoma Epidural Abscess Spinal Cord Lesion Aspiration Pneumonitis Cardiac Arrest Post-dural Puncture Headache Paraesthesia Hypotension Back Pain Failed Intubation for General Anesthetic</td>
</tr>
<tr>
<td>obstetric shock</td>
<td>Shock during or following labour and</td>
</tr>
<tr>
<td>Delivery</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>cardiac arrest</td>
<td>HEART DISEASE</td>
</tr>
<tr>
<td></td>
<td>THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY</td>
</tr>
<tr>
<td></td>
<td>Cardiac Arrest</td>
</tr>
<tr>
<td></td>
<td>Cardiac arrest</td>
</tr>
<tr>
<td>acute renal failure</td>
<td>Acute renal failure</td>
</tr>
<tr>
<td></td>
<td>Postpartum acute renal failure</td>
</tr>
<tr>
<td>intraoperative trauma</td>
<td>During surgical operation</td>
</tr>
<tr>
<td>in-hospital wound infection</td>
<td>Infection of obstetric surgical wound</td>
</tr>
<tr>
<td>obstetric wound hematoma</td>
<td>Haematoma of obstetric wound</td>
</tr>
<tr>
<td>length of hospital stay (using ICD-10 Ca codes)</td>
<td>ADMISSION DATE</td>
</tr>
<tr>
<td></td>
<td>ADMISSION TIME</td>
</tr>
<tr>
<td></td>
<td>DISCHARGE DATE</td>
</tr>
<tr>
<td></td>
<td>DISCHARGE TIME</td>
</tr>
<tr>
<td>episiotomy (No/Yes)</td>
<td>Episiotomy (most serious)</td>
</tr>
<tr>
<td>If episiotomy, what type?: median, mediolateral or unknown</td>
<td>Episiotomy type</td>
</tr>
<tr>
<td></td>
<td>Not done</td>
</tr>
<tr>
<td></td>
<td>Medio-lateral</td>
</tr>
<tr>
<td></td>
<td>Midline</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
</tr>
</tbody>
</table>

**Neonatal Data**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>If multiple birth, birth order</td>
<td>BIRTH ORDER # of Fetuses</td>
<td>BTBrthOr DLNUMFET</td>
<td></td>
</tr>
<tr>
<td>Date of delivery (dd/mm/yy)</td>
<td>DATE OF INFANT’S BIRTH</td>
<td>BrthDate</td>
<td></td>
</tr>
<tr>
<td>Time of birth</td>
<td>TIME OF INFANT’S BIRTH</td>
<td>BTBrthDT</td>
<td></td>
</tr>
<tr>
<td>Best obstetric estimate of age at delivery (in completed wks):</td>
<td>best obstetric estimate of gestational age</td>
<td>GA_OBS</td>
<td></td>
</tr>
<tr>
<td>Fetal presentation at delivery: cephalic, breech,</td>
<td>POSITION AT DELIVERY CEPHALIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brow</td>
<td>BOW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Face</td>
<td>FAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertex (includes LOA, ROA, OT, ROT, LOT, OA, Transverse)</td>
<td>VTX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Persistent occiput posterior (ROP, LOP, OP)</td>
<td>POP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREECH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breech, other or unspecified</td>
<td>BCH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frank breech</td>
<td>FRB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Footling breech</td>
<td>FTB</td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>CPD</td>
<td>OTHER</td>
<td>CPD</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------</td>
<td>----------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Compound presentation</td>
<td></td>
<td>Shoulder presentation</td>
<td>SHL</td>
</tr>
<tr>
<td>Transverse lie</td>
<td></td>
<td>Transverse lie</td>
<td>TLI</td>
</tr>
<tr>
<td>UNKNOWN</td>
<td></td>
<td>UNKNOWN</td>
<td>999</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>final mode of assistance  for delivery: spontaneous, forceps, vacuum, elective c-sect (no labour), emergency c-sect (no labour), intrapartum c-sect, assisted breech or breech extraction, internal version and extraction, laporotomy for uterus rupture</th>
<th>METHOD OF DELIVERY</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spontaneous vaginal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forceps</td>
<td>Highest forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lowest forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forceps to after-coming head (Breech – vaginal delivery only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low or mid forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low outlet forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vacuum followed by forceps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vacuum followed by vacuum vaginal delivery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vacuum extraction, malstrum extraction</td>
</tr>
<tr>
<td></td>
<td>ELECTIVE C-SECT (NO LABOUR)</td>
<td></td>
</tr>
<tr>
<td>LABOUR: Initiation of labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No labour prior to delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section with forceps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section with vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section with vacuum and forceps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed forceps or failed trial of forceps followed by C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed forceps followed by C-section with forceps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempted forceps and vacuum followed by C-section using forceps and/or vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum followed by C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum followed by forceps and then C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempted vacuum followed by C-section using forceps and/or vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMERGENCY C-SECT (NO LABOUR)</td>
<td></td>
<td>Blank</td>
</tr>
<tr>
<td>INTRAPARTUM C-SECT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cervical dilatation prior to C-section</td>
<td></td>
<td>CDILCS</td>
</tr>
<tr>
<td>C-section with forceps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section with vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section with vacuum and forceps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed forceps or failed trial of forceps followed by C-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed forceps followed by C-section</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please update the spilling 4 cm or more
with forceps
Attempted forceps and vacuum followed by C-section using forceps and/or vacuum
Vacuum followed by C-section
Vacuum followed by forceps and then C-section
Attempted vacuum followed by C-section using forceps and/or vacuum
ASSISTED BREECH OR BREECH EXTRACTION
Assisted breech
Breech extraction (Vaginal delivery only)
Podalic version and extraction (Do not use for Csection)
INTERNAL VERSION AND EXTRACTION
LAPAROTOMY FOR UTERUS RUPTURE
Other rupture of uterus before onset of labour
Other rupture of uterus during labour
Surgical repair, postpartum of obstetric laceration of corpus uteri
UNKNOWN METHOD OF DELIVERY

status at birth: alive, fresh stillbirth, macerated stillbirth
OUTCOME OF INFANT
Alive
Stillbirth
BEFORE OR DURING LABOUR
Apgar score at 5 min
APGAR SCORE AT 5 MINUTES
birthweight
BIRTH WEIGHT
HC (cm)
Head circumference at birth
sex (F, M)
SEX
Female
Male
Ambiguous
congenital malformation (N/Y)
Major anomalies

Caesarean Section

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>If caesarean section, PRIMARY indications: suspected fetal growth impairment</td>
<td>primary indication for csection fetal growth restriction (retardation)</td>
<td>IndicCSI FGT</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: fetal distress</td>
<td>Fetal distress</td>
<td>FDS</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: pre-eclampsia/eclampsia</td>
<td>Hypertensive disorders</td>
<td>HTD</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications:</td>
<td>Reason for induction is postdate</td>
<td></td>
</tr>
<tr>
<td>Gestational Age 41 completed weeks or more</td>
<td>Reason for csection is failed induction</td>
<td>4</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Postdates</td>
<td>Abruptio Placenta</td>
<td>APL</td>
</tr>
<tr>
<td>Failed Induction</td>
<td>Dystocia (Cephalopelvic disproportion, (C.P.D), Failure-to-progress, Maternal exhaustion, Cervical Stenosis POP, OP)</td>
<td>DYS</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: 3rd trimester vaginal bleeding</td>
<td>Multiple Pregnancy</td>
<td>MTP</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: Cephalopelvic disproportion/ dystocia/failure to progress/ failed vacuum or forceps</td>
<td>Suspected/imminent uterine rupture</td>
<td>SUR</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: 3rd trimester vaginal bleeding</td>
<td>Postmortem C-section</td>
<td>PMC</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: Cephalopelvic disproportion/ dystocia/failure to progress/ failed vacuum or forceps</td>
<td>Malpresentation Transverse Lie Breech</td>
<td>MLP TLI BCH</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: previous c-section</td>
<td>Failed Induction</td>
<td>FID</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: previous c-section</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: maternal request</td>
<td>Maternal choice</td>
<td>MAT</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: maternal request</td>
<td>Human Immunodeficiency Virus</td>
<td>HIV</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: maternal request</td>
<td>Maternal herpes simplex infection</td>
<td>HSV extensive condyloma will be blank</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications: maternal request</td>
<td>Other Obstetrical Conditions Prolonged rupture of membranes Prolapased cord Placenta previa Abruptio placenta Isoimmunization</td>
<td>OCC PRM PLC PLP APL ISO</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications other fetal indication</td>
<td>Other Fetal Conditions</td>
<td>OFC</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Other Fetal Conditions</td>
<td>Suspected Fetal Anomaly</td>
<td>SFA</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications other maternal medical condition</td>
<td>Advanced Maternal Age</td>
<td>AMA</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Diseases of the cervix</td>
<td>DBT</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications previous uterine surgery</td>
<td>Uterine surgery, previous</td>
<td>UTS</td>
</tr>
<tr>
<td>If caesarean section, PRIMARY indications unknown</td>
<td>Unknown</td>
<td>999</td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: suspected fetal growth impairment</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: fetal distress</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: pre-eclampsia/eclampsia</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: gestational age 41 completed weeks or more</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: 3rd trimester vaginal bleeding</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: cephalopelvic disproportion/ dystocia/failure to progress/ failed vacuum or forceps</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: multiple pregnancy</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: uterine rupture</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: postmortem c-sect</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: breech or other malpresentation</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: previous c-section</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>OTHER indications: failed induction</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: tubal ligation/sterilization</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: maternal request</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: maternal request</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: other obstetric complication</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: other maternal medical condition</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: previous uterine surgery</td>
<td>Blank</td>
<td></td>
</tr>
<tr>
<td>If caesarean section, OTHER indications: unknown</td>
<td>Blank</td>
<td></td>
</tr>
</tbody>
</table>

**Neonatal outcome**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Code</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission to ICU/SCU: No/Yes-not ventilated, yes-ventilated</td>
<td>SCN ADMISSION MODE OF VENTILATION Intermittent mandatory ventilation (IMV) Synchronized mandatory ventilation (SIMV) Pressure support (PS) Continuous positive airway pressure (CPAP) High frequency Oscillatory ventilation (HFOV) Positive pressure ventilation (PPV) ventilation respiratory</td>
<td>BTSCNASDCR 100 200 300 400 500 600 1_1GZ31</td>
<td></td>
</tr>
<tr>
<td>If yes, total # days spent in intensive/special care unit (up to 7 completed days)</td>
<td>Total length of stay in SCN during birth admission (days)</td>
<td>BTSCNASDCR 082</td>
<td></td>
</tr>
<tr>
<td>newborn status at discharge: alive and well, alive with obstetric trauma</td>
<td>none of the following LVD + R082</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alive with obstetric trauma, alive but referred to higher level care, dead within 24 h, dead after 24 h of birth</td>
<td>alive but referred to higher level care dead within 24 h dead after 24 h of birth</td>
<td>LVD + BTSCNAAdm LVD + DISCHARGE TO 86 BTDethDT- BTBrthDT BTDethDT- BTBrthDT</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>date of neonatal discharge</td>
<td>INFANT’S DISCHARGE DATE</td>
<td>BTDschDT</td>
<td></td>
</tr>
<tr>
<td>requirement for any form of assisted ventilation</td>
<td>MODE OF VENTILATION ventilation respiratory</td>
<td>R071 I_1GZ31</td>
<td></td>
</tr>
<tr>
<td>birth injury (fractured clavicle, skull, or long bone, or nerve injury (palsy))</td>
<td>TRAUMA Fracture Clavicle Fracture Skull Long bone: Fracture Femur Fracture Humerus OTHER SPECIFIC</td>
<td>R082 100 600 200 300 R084</td>
<td></td>
</tr>
<tr>
<td>hypoxic ischemic encephalopathy</td>
<td>Hypoxic ischaemic encephalopathy of newborn</td>
<td>P91.6</td>
<td></td>
</tr>
<tr>
<td>meconium aspiration</td>
<td>PERSISTENT FETAL CIRCULATION/PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN Meconium aspiration</td>
<td>R058 400</td>
<td></td>
</tr>
<tr>
<td>Was breastfeeding initiated? (n/y)</td>
<td>breastfeeding at discharge</td>
<td>BRSTFDIS</td>
<td></td>
</tr>
<tr>
<td>Date of neonatal discharge</td>
<td>Discharge date</td>
<td>BTDschD8</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

options fmtsearch = ( format ) ;

data Personal_Data_of_the_Women
   ( drop =
     DLMrStat
     DMMatAge
     Educat
     DLPrePWt
     DLHeight
     DLPSTCOD )
;
set Nsapd.Monster
   ( keep =
     DLMrStat /*only single or partnered*/
     DMMatAge /*in years*/
     Educat /*transfer to equal no. of years*/
     DLPrePWt /*in kg*/
     DLHeight /*in cm*/
     DLPSTCOD /*confidential*/
     DLDschD8
     BIRTHID /*primary key*/ )
;
   if ( DLMrStat = 2 ) OR ( DLMrStat = 6 ) then
      MaritalStatus = 'Partnered'
   ;
else MaritalStatus = 'Single'
;
   label MaritalStatus = "Marital status as single or partnered"
;
   MothersAge = int ( DMMatAge )
;
   label MothersAge = "Mother's age in years"
;
   if ( Educat = 1 ) then
      YearsAttendedSchool = '10'
   ;
   if ( Educat = 2 ) then
      YearsAttendedSchool = '12'
   ;
   if ( Educat = 3 ) then
      YearsAttendedSchool = '14'
   ;
   if ( Educat = 4 ) then
      YearsAttendedSchool = '16'
   ;
if ( Educat = 5 ) then
  YearsAttendedSchool = '18'
;
if ( Educat = 6 ) then
  YearsAttendedSchool = '22'
;
if ( Educat = 7 ) then
  YearsAttendedSchool = '22'
;
if ( Educat = . ) or ( Educat = 99 ) then
  YearsAttendedSchool = '.
;
label YearsAttendedSchool = "No. of years attended school"
;
Pre_pregnancyWeight = DLPrePWt
;
lbl Pre_pregnancyWeight = "Initial prenatal weight in kg"
;
MothersHeight = DLHeight
;
lbl MothersHeight = "Mother's hight in cm"
;
PostalCode = DLPSTCOD
;
lbl PostalCode = "Postal code"
;
BirthID = BIRTHID
;
lbl BIRTHID = "Birth ID"
;
run

proc print data = Personal_Data_of_the_Women ( obs = 10 )
;
run
;

options fmtsearch = ( format )
;
data Reproductive_History
  ( drop =
    DLGravid
    DLPara
    DLPrvSrg
  )
;
DLPrvCS )
;
LENGTH BIRTHID Gravida Parity 8
;
LENGTH HxSurgeryOnUterusAndCervix HxC_section Hxmyomectomy $ 50
;
set Nsapd.Monster
( keep =
   DLGravid
   DLPara /*this excludes births with < 500g*/
   DLPrvSrg /* this is not limited to uterus and cervix surgery, and myomectomy */
   DLPrvCS /*from the no. we can say y/n*/
   DLDschD8
   BIRTHID /*primary key*/ )
;
Gravida = DLGravid
;
label Gravida = "No. of Pregnancies including the Present One"
;
Parity = DLPara
;
label Parity = "No. of pregnancies excluding the present one, with >= 500g birth"
;
if ( DLPrvSrg = 'N' ) then
   HxSurgeryOnUterusAndCervix = 'No'
;
else if (DLPrvSrg = 'Y' ) then
   HxSurgeryOnUterusAndCervix = 'Yes'
;
label HxSurgeryOnUterusAndCervix = "Previous gynecological surgery including previous surgery on uterus and cervix"
;
if ( DLPrvCS = 0 ) then
   HxC_section = 'No'
;
else if ( DLPrvCS >= 1 ) then
   HxC_section = 'Yes'
;
label HxC_section = "Previous C-section"
;
if ( DLPrvSrg = 'N' ) then
   Hxmyomectomy = 'No'
;
else if ( DLPrvSrg = 'Y' ) then
   Hxmyomectomy = 'Yes'
; label Hxmyomectomy = "Previous gynecological surgery including previous myomectomy"
;
run
;

proc print data= Reproductive_History ( obs = 10 )
;
run
;

options fmtsearch = ( format )
;
data Current_Pregnancy
( drop =
   R002_00400
   DMSt1Del DMRoMDel
   MO13 MO14 R014_00500 R014_00600
   MO10 MO11 R014_00700 R014_00800
   MO15
   R018_00100 R018_00200 R018_00300 R018_00400 R018_00500 R018_00700
   R018_00800 R018_00900 R018_01000 R018_01100 R018_01200 R018_01400
   R018_01500 R018_01600
   R020_00200 R020_00300 R020_00500 R020_00600 R020_00700 R020_00800
   R020_01200
   R023_00100 R023_00200 R023_00400
   MO365
   R014_00900 R014_01000 R014_01100 R014_01200 R014_01300 R014_01400
   R014_01500
   MO46 MO45 MO44
   R020_00100 R020_00400 R020_00900
   R020_01300
   R002_00300 R002_00600
   MB977
   MO98 MO99
   R022_01000 )
;
LENGTH BIRTHID 8
;
LENGTH HIV PROM PIH_ICD PIH_ATLEE ChronicHypertension_ICD
ChronicHypertension_ATLEE Pre_eclampsia_ICD Pre_eclampsia_ATLEE Eclampsia
CardiacDisease RenalDisease ChronicRespiratoryCondition
LowUterineHighForGestationalAge DiabetesMellitus Anemia VaginalBleeding
Pyelonephritis UrinaryInfection GenitalUlcerDisease CondylomaAcuminate
OtherMedicalConditions ConditionsSuggestingHIV Thalasseimia AntenatalVisits
IVFInformation $ 50

49
set Nsapd.Monster
    ( keep =
        R002_00400
        DMSt1Del DMRoMDel
        MO13 MO14 R014_00500 R014_00600
        MO10 MO11 R014_00700 R014_00800
        MO15
        R018_00100 R018_00200 R018_00300 R018_00400 R018_00500 R018_00700
        R018_00800 R018_00900 R018_01000 R018_01100 R018_01200 R018_01400
        R018_01500 R018_01600
        R020_00200 R020_00300 R020_00500 R020_00600 R020_00700 R020_00800
        R020_01200
        R023_00100 R023_00200 R023_00400
        MO365
        R014_00900 R014_01000 R014_01100 R014_01200 R014_01300 R014_01400
        R014_01500 /*Hb<10g/l not Hb<7g/l*/
        MO46 MO45 MO44
        R020_00100 R020_00400 R020_00900
        R020_01300
        R002_00300 R002_00600
        MB977
        MO98 MO99
        R022_01000
        DLDschD8
        BIRTHID /*primary key*/
    )

    if ( R002_00400 = 0 ) then
        HIV = 'No'
    ;
    else HIV = 'Yes'
    ;
    label HIV = "HIV/acquired immune deficiency syndrome"
    ;
    if ( DMSt1Del > DMRoMDel ) then
        PROM = 'No'
    ;
    else if ( DMSt1Del < DMRoMDel )then
        PROM = 'Yes'
    ;
    label PROM = "Premature rupture of membranes";
    if ( MO13 = 0 ) and ( MO14 = 0 )then
        PIH_ICD = 'No'
    ;
    else PIH_ICD = 'Yes'
label PIH_ICD = "Gestational hypertension ( combines mild and severe )"

if ( R014_00500 = 0 ) and ( R014_00600 = 0 ) then
    PIH_ATLEE = 'No'
else PIH_ATLEE = 'Yes'

label PIH_ATLEE = "Gestational hypertension without significant proteinuria ( Includes gestational hypertension NOS, and Mild preeclampsia ). Gestational hypertension with significant proteinuria ( Includes HELLP syndrome )"

if ( MO10 = 0 ) and ( MO11 = 0 ) then
    ChronicHypertension_ICD = 'No'
else ChronicHypertension_ICD = 'Yes'

label ChronicHypertension_ICD = "Pre-existing hypertension"

if ( R014_00700 = 0 ) and ( R014_00800 = 0 ) then
    ChronicHypertension_ATLEE = 'No'
else ChronicHypertension_ATLEE = 'Yes'

label ChronicHypertension_ATLEE = "Pre-existing hypertension complicating pregnancy, childbirth and the puerperium. Pre-existing hypertensive disorder with superimposed proteinuria"

if ( MO13 = 0 ) and ( MO14 = 0 ) then
    Pre_eclampsia_ICD = 'No'
else Pre_eclampsia_ICD = 'Yes'

label Pre_eclampsia_ICD = "Gestational hypertension ( combines mild and severe )"

if ( R014_00500 = 0 ) and ( R014_00600 = 0 ) then
    Pre_eclampsia_ATLEE = 'No'
else Pre_eclampsia_ATLEE = 'Yes'

label Pre_eclampsia_ATLEE = "Gestational hypertension without significant proteinuria ( Includes Gestational hypertension NOS, Mild preeclampsia ). Gestational hypertension with significant proteinuria ( Includes HELLP syndrome )"

if ( MO15 = 0 ) then
    Eclampsia = 'No'
else Eclampsia = 'Yes'
else Eclampsia = "Eclampsia"
endif

if sum ( of R018_00100, R018_00200, R018_00300, R018_00400, R018_00500, R018_00700, R018_00800, R018_00900, R018_01000, R018_01100, R018_01200, R018_01400, R018_01500, R018_01600 ) = 0 then
    CardiacDisease = 'No'
else CardiacDisease = 'Yes'
endelse

label CardiacDisease = "Arrhythmia, Congenital heart dis, Cardiac Arrest, CAD, Endocarditis, MI, Prolapsed mitral valve, Cardiomyopathy, Myocarditis, Pulmonary HTN, Rheumatic heart dis, Wolff Parkinson’s White Syn, Other acquired cardiac dis, Thromboembolic dis"
endif

if sum ( of R020_00200, R020_00300, R020_00500, R020_00600, R020_00700, R020_00800, R020_01200 ) = 0 then
    RenalDisease = 'No'
else RenalDisease = 'Yes'
endelse

label RenalDisease = "Renal calculus, Chronic glomerulonephritis, Hydronephrosis, Nephropathy, Nephrotic syndrome, Polycystic kidney disease, Chronic renal disease, type undetermined"
endif

if sum ( of R023_00100, R023_00200, R023_00400 ) = 0 then
    ChronicRespiratoryCondition = 'No'
else ChronicRespiratoryCondition = 'Yes'
endelse

label ChronicRespiratoryCondition = "Asthma, Cystic fibrosis, Other significant pulmonary diseases"
endif

if ( MO365 ) = 0 then
    LowUterineHighForGestationalAge = 'No'
else LowUterineHighForGestationalAge = 'Yes'
endelse

label LowUterineHighForGestationalAge = "Maternal care for restricted fetal growth"
endif

if sum ( of R014_00900, R014_01000, R014_01100, R014_01200, R014_01300, R014_01400 ) = 0 then
    DiabetesMellitus = 'No'
else DiabetesMellitus = 'Yes'
endelse

label DiabetesMellitus = "Diabetes mellitus, Gestational diabetes"
else DiabetesMellitus = 'Yes'
;
label DiabetesMellitus = "Pre-existing DM Type 1/Type 2. Pre-existing DM of other specified/unspecified type present during this pregnancy. DM arising in pregnancy (Includes Gestational diabetes). DM in pregnancy, unspecified"
;
if ( R014_01500 = 0 ) then
    Anemia = 'No'
;
else Anemia = 'Yes'
;
label Anemia = "Anemia in pregnancy (Hb < 10g/l)"
;
if sum ( of MO46, MO45, MO44 ) = 0 then
    VaginalBleeding = 'No'
;
else VaginalBleeding = 'Yes'
;
label VaginalBleeding = "Antepartum haemorrhage, Premature separation of placenta, Placenta praevia (not limited to 2nd half of pregnancy)"
;
if sum ( of R020_00100, R020_00400, R020_00900 ) = 0 then
    Pyelonephritis = 'No'
;
else Pyelonephritis = 'Yes'
;
label Pyelonephritis = "Acute pyelonephritis, Previous episode of acute pyelonephritis during current pregnancy, Chronic pyelonephritis"
;
if ( R020_01300 = 0 ) then
    UrinaryInfection = 'No'
;
else UrinaryInfection = 'Yes'
;
label UrinaryInfection = "Urinary tract infection"
;
if sum ( of R002_00300, R002_00600 ) = 0 then
    GenitalUlcerDisease = 'No'
;
else GenitalUlcerDisease = 'Yes'
;
label GenitalUlcerDisease = "Herpes simplex, Syphilis"
;
if ( MB977=0 ) then
    CondylomaAcuminate = 'No'
;
else CondylomaAcuminate = 'Yes'
;
label CondylomaAcuminate = "Papillomavirus as the cause of diseases"
;
if sum ( of MO98, MO99 ) = 0 then
    OtherMedicalConditions = 'No'
;
else OtherMedicalConditions = 'Yes'
;
label OtherMedicalConditions = "Maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium. Other maternal diseases complicating pregnancy, childbirth and the puerperium"
;
ConditionsSuggestingHIV = ''
;
label ConditionsSuggestingHIV = "No available information"
;
if ( R022_01000 = 0 ) then
    Thalasseimia = 'No'
;
else Thalasseimia = 'Yes'
;
label Thalasseimia = "Thalassemia"
;
AntenatalVisits = .
;
label AntenatalVisits = "No available information"
;
IVFInformation = .
;
label IVFInformation = "No available information"
;
run
;

proc print data = Current_Pregnancy ( obs = 10 )
;
run
;

options fmtsearch = ( format )
;
data Temporary_Labour_And_Delivery
    ( drop = DLADMFRM DLABORTS )
LABOUR
DMINDUCT
R009_00300 R009_01000 R009_01700 R009_02400
R009_00500 R009_01200 R009_01900 R009_02600
R009_00400 R009_01100 R009_01800 R009_02500
R009_00600 R009_01300 R009_02000 R009_02700
R009_00100 R009_00800 R009_01500 R009_02200
R009_00200 R009_00900 R009_01600 R009_02300
DLDocTyp
R011 R010
R011_00200 R011_00300 R011_00400 R011_00500 R010_00200 R010_00300
R010_00400 R010_00500
R011_00900 R010_00900
R008
R011_01000 R010_01000
R011_00100 R011_01100 R011_00800 R010_00100 R010_01100 R010_00800
R011_00600 R010_00600
R012
R012_00200 R012_00300 R012_00400 R012_00500
R012_00900
R012_00600
R012_00700
R012_00100
R008_01300--R008_02400 R008_00100--R008_01200 R008_04900--R008_06000
R008_07300--R008_08400 R008_12100--R008_13200 R008_02500--R008_03600 )
;
LENGTH BIRTHID 8
;
LENGTH TransferredDelivery ReferredFrom ReferredBy $ 50
;
LENGTH NonViableFoetus 8
;
LENGTH OnsetOfLabour PIndiForInduc_FetalDeath PIndiForInduc_IUGR
PIndiForInduc_FetalDistress PIndiForInduc_MultiplePregnancy
PIndiForInduc_PROM PIndiForInduc_Chtioamnionitis
PIndiForInduc_VaginalBleeding PIndiForInduc_PreeclampsEclamp
PIndiForInduc_PostTerm PIndiForInduc_ElectiveInduction
PIndiForInduc_OthPregCompli PIndiForInduc_OthMatMedCompli
PIndiForInduc_Unknown OIndiForInduc_FetalDeath OIndiForInduc_IUGR
OIndiForInduc_FetalDistress OIndiForInduc_MultiplePregnancy
OIndiForInduc_PROM OIndiForInduc_Chtioamnionitis
OIndiForInduc_VaginalBleeding OIndiForInduc_PreeclampsEclamp
OIndiForInduc_PostTerm OIndiForInduc_ElectiveInduction
OIndiForInduc_OthPregCompli OIndiForInduc_OthMatMedCompli
OIndiForInduc_Unknown InducMethod_Oxytocin InducMethod_Misoprostan
InducMethod_OtherProstaglandin InducMethod_SweepingMembranes
InducMethod_ArtiRuptureAmniotomy InducMethod_Mechanical DeliveryPerformer AnaesAnalInLabor AnaesAnalInDelOrCsec AnaesthesiaProvider AnalgesiaProvider

$ 50

; set Nsapd.Monster
( keep =
  DLADMFRM
  DLABORTS
  LABOUR
  DMINDUCT
  R009_00300 R009_01000 R009_01700 R009_02400
  R009_00500 R009_01200 R009_01900 R009_02600
  R009_00400 R009_01100 R009_01800 R009_02500
  R009_00600 R009_01300 R009_02000 R009_02700
  R009_00100 R009_00800 R009_01500 R009_02200
  R009_00200 R009_00900 R009_01600 R009_02300
  DLDocTyp
  R011 R010
  R011_00200 R011_00300 R011_00400 R011_00500 R010_00200 R010_00300
  R010_00400 R010_00500
  R011_00900 R010_00900
  R008
  R011_01000 R010_01000
  R011_00100 R011_01000 R011_00800 R010_00100 R010_01100 R010_00800
  R011_00600 R010_00600
  R012
  R012_00200 R012_00300 R012_00400 R012_00500
  R012_00900
  R012_00600
  R012_00700
  R012_00100
  R008_01300--R008_02400 R008_00100--R008_01200 R008_04900--R008_06000
  R008_07300--R008_08400 R008_12100--R008_13200 R008_02500--R008_03600
  BIRTHID /*primary key*/ )

; if ( DLADMFRM = 0 )then
  TransferredDelivery = 'No'
; else TransferredDelivery = 'Yes'
; label TransferredDelivery = "Women transferred from another healthcare facility"
; ReferredFrom = ''
; label ReferredFrom = "Place prior to transfer"
ReferredBy =''
;
label ReferredBy = "By whom the women was referred"
;
NonViableFoetus = DLABORTS
;
label NonViableFoetus = "No of Pregnancies, excluding the Present, with non-viable foetus. Include stillbirths <=20 weeks"
;
if ( LABOUR = 'S' ) then
    OnsetOfLabour = 'Spontaneous'
;
if ( LABOUR = 'I' ) then
    OnsetOfLabour = 'Induced'
;
if ( LABOUR = 'N' ) then
    OnsetOfLabour = 'No labour'
;
label OnsetOfLabour = "Initiation of labour"
;
if ( DMINDUCT = 10 ) then
    PIndiForInduc_FetalDeath = 'Yes'
;
else PIndiForInduc_FetalDeath = 'No'
;
label PIndiForInduc_FetalDeath = "Primary indication for induction of labour: Intrauterine death"
;
if ( DMINDUCT = 2 ) then
    PIndiForInduc_IUGR = 'Yes'
;
else PIndiForInduc_IUGR = 'No'
;
label PIndiForInduc_IUGR = "Primary indication for induction of labour: Fetal growth restriction"
;
if ( DMINDUCT = 9 ) then
    PIndiForInduc_FetalDistress = 'Yes'
;
else PIndiForInduc_FetalDistress = 'No'
;
label PIndiForInduc_FetalDistress = "Primary indication for induction of labour: Possible fetal distress; low planning score"
;
if ( DMINDUCT = 17 ) then
    PIndiForInduc_MultiplePregnancy = 'Yes'
; else PlndiForInduc_MultiplePregnancy = 'No'
;
label PlndiForInduc_MultiplePregnancy = "Primary indication for induction of labour: Multiple pregnancy"
;
if ( DMINDUCT = 5 ) then
    PlndiForInduc_PROM = 'Yes'
;
else PlndiForInduc_PROM = 'No'
;
label PlndiForInduc_PROM = "Primary indication for induction of labour: Premature rupture of membranes without Chorioamnionitis"
;
if ( DMINDUCT = 6 ) then
    PlndiForInduc_Cholioamnionitis = 'Yes'
;
else PlndiForInduc_Cholioamnionitis = 'No'
;
label PlndiForInduc_Cholioamnionitis = "Primary indication for induction of labour: Premature rupture of membranes with clinical Chorioamnionitis"
;
if ( DMINDUCT = 27 ) then
    PlndiForInduc_VaginalBleeding = 'Yes'
;
else PlndiForInduc_VaginalBleeding = 'No'
;
label PlndiForInduc_VaginalBleeding = "Primary indication for induction of labour: Vaginal Bleeding"
;
if ( DMINDUCT = 12 ) or ( DMINDUCT = 22 ) then
    PlndiForInduc_PreeclampEclamp= 'Yes'
;
else PlndiForInduc_PreeclampEclamp = 'No'
;
label PlndiForInduc_PreeclampEclamp = "Primary indication for induction of labour: Hypertension/Seizure"
;
if ( DMINDUCT = 4 ) then
    PlndiForInduc_PostTerm = 'Yes'
;
else PlndiForInduc_PostTerm = 'No'
;
label PlndiForInduc_PostTerm = "Primary indication for induction of labour: Post Dates >42 weeks"
if ( DMINDUCT = 1 ) or ( DMINDUCT = 26 ) then
   PIndiForInduc_ElectiveInduction = 'Yes'
;
else PIndiForInduc_ElectiveInduction = 'No'
;
lable PIndiForInduc_ElectiveInduction = "Primary indication for induction of
labour:Elective/Maternal Request"
;
if DMINDUCT in ( 15,23,3,14,16,7,18,19 ) then
   PIndiForInduc_OthPregCompli = 'Yes'
;
else PIndiForInduc_OthPregCompli = 'No'
;
lable PIndiForInduc_OthPregCompli = "Primary indication for induction of labour:other
pregnancy complication including Fetal Anomaly, Macrosomia, Diabetes, Oligohydramnios,
Polyhydramnios, Isoimmunization, PUPP/Cholestatic jaundice"
;
if DMINDUCT in ( 8,21,25,20 ) then
   PIndiForInduc_OthMatMedCompli = 'Yes'
;
else PIndiForInduc_OthMatMedCompli = 'No'
;
lable PIndiForInduc_OthMatMedCompli = "Primary indication for induction of labour: other
maternal medical complication including Hx Precipitate Labour, Previous IUFD/poor obst., Hx
Advanced Maternal Age, Thromobocytopenia"
;
if ( DMINDUCT = 24 ) then
   PIndiForInduc_Unknown = 'Yes'
;
else PIndiForInduc_Unknown = 'No'
;
lable PIndiForInduc_Unknown = "Primary indication for induction of labour:No indication
given"
;
OIndiForInduc_FetalDeath = ''
;
lable OIndiForInduc_FetalDeath = "No available information"
;
OIndiForInduc_IUGR = ''
;
lable OIndiForInduc_IUGR = "No available information"
;
OIndiForInduc_FetalDistress = ''
;
lable OIndiForInduc_FetalDistress = "No available information"
IndiForInduc_MultiplePregnancy = ''
;
label IndiForInduc_MultiplePregnancy = "No available information"
;
IndiForInduc_PROM = '
;
label IndiForInduc_PROM = "No available information"
;
IndiForInduc_Chorioamnionitis = '
;
label IndiForInduc_Chorioamnionitis = "No available information"
;
IndiForInduc_VaginalBleeding = '
;
label IndiForInduc_VaginalBleeding = "No available information"
;
IndiForInduc_Preeclampsia = '
;
label IndiForInduc_Preeclampsia = "No available information"
;
IndiForInduc_PreeclampsiaEclampsia = '
;
label IndiForInduc_PreeclampsiaEclampsia = "No available information"
;
IndiForInduc_PostTerm = '
;
label IndiForInduc_PostTerm = "No available information"
;
IndiForInduc_ElectiveInduction = '
;
label IndiForInduc_ElectiveInduction = "No available information"
;
IndiForInduc_OthPregCompli = '
;
label IndiForInduc_OthPregCompli = "No available information"
;
IndiForInduc_OthMatMedCompli = '
;
label IndiForInduc_OthMatMedCompli = "No available information"
;
if sum ( of R009_00300, R009_01000, R009_01700, R009_02400 ) = 0 then
  InducMethod_Oxytocin = 'No'
;
else InducMethod_Oxytocin = 'Yes'
;
label InducMethod_Oxytocin = "Method of induction is Oxytocin"
if sum ( of R009_00500, R009_01200, R009_01900, R009_02600 ) = 0 then
    InducMethod_Misoprostol = 'No'
else InducMethod_Misoprostol = 'Yes'
label InducMethod_Misoprostol = "Method of induction is Prostaglandin administration (Intracervical, Vaginal)"

if sum ( of R009_00400, R009_01100, R009_01800, R009_02500 ) = 0 then
    InducMethod_OtherProstaglandin = 'No'
else InducMethod_OtherProstaglandin = 'Yes'
label InducMethod_OtherProstaglandin = "Method of induction is Prostaglandin administration (Oral)"

if sum ( of R009_00600, R009_01300, R009_02000, R009_02700 ) = 0 then
    InducMethod_SweepingMembranes = 'No'
else InducMethod_SweepingMembranes = 'Yes'
label InducMethod_SweepingMembranes = "Method of induction is Other Specified induction method"

if sum ( of R009_00100, R009_00800, R009_01500, R009_02200 ) = 0 then
    InducMethod_ArtiRuptureAmniotomy = 'No'
else InducMethod_ArtiRuptureAmniotomy = 'Yes'
label InducMethod_ArtiRuptureAmniotomy = "Method of induction is Artificial rupture of membranes if clearly stated to induce labour"

if sum ( of R009_00200, R009_00900, R009_01600, R009_02300 ) = 0 then
    InducMethod_Mechanical = 'No'
else InducMethod_Mechanical = 'Yes'
label InducMethod_Mechanical = "Cervical catheter"

if ( DLDocTyp = 'G' ) then
    DeliveryPerformer = 'Obstetrician/Gynaecologist'
if ( DLDocTyp = 'S' ) then
    DeliveryPerformer = 'General surgeon'
if ( DLDocTyp = 'F' ) then
    DeliveryPerformer = 'General/Family Practitioner'
;
if ( DLDocTyp = 'W' ) then
    DeliveryPerformer = 'Midwife'
;
label DeliveryPerformer = "Who performed delivery, C-section, or laporotomy"
;
if sum ( of R011, R010 ) = 0 then
    AnaesAnaInLabor = 'No analgesia/anaesthesia'
;
if sum ( of R011_00200, R011_00300, R011_00400, R011_00500, R010_00200,
    R010_00300, R010_00400, R010_00500 ) > 0 then
    AnaesAnaInLabor = 'Epidural'
;
if sum ( of R011_00900, R010_00900 ) > 0 then
    AnaesAnaInLabor = 'Spinal'
;
if ( R008 = 1 ) then
    AnaesAnaInLabor = 'Injectable analgesic'
;
if sum ( of R011_01000, R010_01000 ) > 0 then
    AnaesAnaInLabor = 'Epidural/Spinal together'
;
if sum ( of R011_00100, R011_01100, R011_00800, R010_00100, R010_01100,
    R010_00800 ) > 0 then
    AnaesAnaInLabor = 'Alternative method'
;
if sum ( of R011_00600, R010_00600 ) > 0 then
    AnaesAnaInLabor = 'General'
;
label AnaesAnaInLabor = "Anaesthesia/analgesia during labor only or during labor and
delivery"
;
if sum ( of R012, R010 ) = 0 then
    AnaesAnaInDelOrCsec = 'No analgesia/anaesthesia'
;
if sum ( of R012_00200, R012_00300, R012_00400, R012_00500, R010_00200,
    R010_00300, R010_00400, R010_00500 ) > 0 then
    AnaesAnaInDelOrCsec = 'Epidural'
;
if sum ( of R012_00900, R010_00900 ) > 0 then
    AnaesAnaInDelOrCsec = 'Spinal'
;
if sum ( of R012_00600, R010_00600 ) > 0 then
    AnaesAnaInDelOrCsec = 'General'
if sum ( of R012_00900, R010_01000 ) > 0 then
  AnaesAnalInDelOrCsec = 'Epidural/Spinal together'
if sum ( of R012_00700, R010_00800 ) > 0 then
  AnaesAnalInDelOrCsec = 'Local'
if sum ( of R012_00100, R010_00100 ) > 0 then
  AnaesAnalInDelOrCsec = 'Nitronox'
if sum ( of R008_01300--R008_02400, R008_00100--R008_01200,
    R008_04900--R008_06000, R008_07300--R008_08400, R008_12100--R008_13200,
    R008_02500--R008_03600 ) > 0 then
  AnaesAnalInDelOrCsec = 'Narcotic analgesia'
label AnaesAnalInDelOrCsec = "Anaesthesia/analgesia during delivery only or labour and
delivery"
if sum ( of R011, R010 = 0 or ( R008 = 1 ) or sum ( of R011_00100,
    R011_01100, R008_00800, R010_00100, R010_01100, R010_00800 ) = 0 or sum (of
    R012, R010 ) = 0 or sum ( of R012_00100, R010_00100 ) = 0 or sum ( of
    R008_01300--R008_02400, R008_00100--R008_01200, R008_04900--R008_06000,
    R008_07300--R008_08400, R008_12100--R008_13200, R008_02500--R008_03600 ) =
    0 then
  AnaesthesiaProvider = ''
else AnaesthesiaProvider = 'Anaesthesiologist'
label AnaesthesiaProvider = "Who gave anesthesia during delivery or c- section"
AnalgesiaProvider = ''
label AnalgesiaProvider = "Who gave analgesia during delivery or c- section"
run

proc sort data= Nsapd.Admfrm out= Referral
  by BIRTHID
run

data Labour_And_Delivery
  ( drop =
DLADMFRM
FAC_TYPE )
;
merge Work.Temporary_Labour_And_Delivery Work.Referral
;
by BIRTHID
;
if ( FAC_TYPE = . ) then
    ReferredFrom = 'Home/Community'
;
if ( FAC_TYPE = 1 ) then
    ReferredFrom = 'Primary health care'
;
if ( FAC_TYPE = 2 ) then
    ReferredFrom = 'Secondary care'
;
if ( FAC_TYPE = 3 ) then ReferredFrom = 'Other'
;
run
;

proc print data = Labour_And_Delivery ( obs = 10 )
;
run
;

options fmtsearch = ( format )
;
data Maternal_Outcome
( drop =
    R007
    R002
    DIMETHOD
    MO752 MO753 MO752 MO860 MO86002 MO861 MO86102 MO862 MO86202 MO863
    MO86302 MO864 MO86402 MO868
    R007_00100
    MO85002 MO86 MO86802
    MO85004
    R027_00100 R027_00200 R027_00300 R027_00400
    MO702 MO703
    M_1RM89
    MN823
    DLToHosp
    MO95
    R013
    MO751

64
LENGTH BIRTHID 8
;
LENGTH AntibioticInAdmission InfAntenataly InfAtAdmisToLabourWard
InfDuringOrImmedPostVagDel ProphylacticPreCsec InfImmedPostCsec
InfAnyOtherTimePostnatally Uterotonic BloodTransfusion
IndiForBloodTransfusion PerinealLaceration Hysterectomy VaginalFistula
AdmissionOfMotherToICU MatDisStat_Alive MatDisStat_Dead
MatDisStat_RefToHigherLevelCare $ 50
;
LENGTH DateOfMatDisOrTransOrDeath 8
;
LENGTH AntenatalVisiFirstTrimester AnaestheticComplications ObstetricShock
CardiacArrest AcuteRenalFailure IntraoperativeTrauma InHospitalWoundInf
ObstetricWoundHematoma $ 50
;
LENGTH LengthOfStayInHospital 8
;
LENGTH Episiotomy EpisiotomyType $ 50
;
set Nsapd.Monster
( keep =
R007
R002
DIMETHOD
MO752 MO753 MO752 MO860 MO86002 MO861 MO86102 MO862 MO86202
MO863
MO86302 MO864 MO86402 MO868
R007_00100
MO85002 MO86 MO86802
MO85004
R027_00100 R027_00200 R027_00300 R027_00400
MO702 MO703
M_1RM89
MN823
DLToHosp
DLDschD8
MO95
R013

if ( R007 = 0 ) then
AntibioticInAdmission = 'No'
else AntibioticInAdmission = 'Yes'
label AntibioticInAdmission = "Antibiotic administration"
if ( R002 = 0 ) then
InfAntenatally = 'No'
else InfAntenatally = 'Yes'
label InfAntenatally = "Maternal carrier states and/or chronic infection during pregnancy"
InfAtAdmisToLabourWard = ' '
label InfAtAdmisToLabourWard = "Infection at admission to labour ward"
if ( DIMETHOD = 'SPT' ) then
do
if sum ( of MO752, MO753, MO860, MO86002, MO861, MO86102, MO862, MO86202, MO863, MO86302, MO864, MO86402, MO868 ) = 0 then
InfDuringOrImmedPostVagDel = 'No'
else InfDuringOrImmedPostVagDel = 'Yes'
end
label InfDuringOrImmedPostVagDel = "Infection during or immediately after vaginal delivery"
if ( DIMETHOD = 'CST' ) then
do
if ( R007_00100 = 0 ) then
    ProphylacticPreCsec = 'No'
else ProphylacticPreCsec = 'Yes'
end

label ProphylacticPreCsec = "Antibiotics administered during antepartum period"

if ( DIMETHOD = 'CST' ) then
    do
        if sum ( of MO85002, MO86, MO860, MO86002, MO861, MO86102, MO862, MO86202, MO863, MO86302, MO864, MO86402, MO868, MO86802 ) = 0 then
            InfImmedPostCsec = 'No'
        else InfImmedPostCsec = 'Yes'
    end

label InfImmedPostCsec = "Infection immediately after c-section"

if sum ( of MO85002, MO85004, MO86, MO860, MO861, MO862, MO863, MO864, MO868 ) = 0 then
    InfAnyOtherTimePostnatally = 'No'
else InfAnyOtherTimePostnatally = 'Yes'

label InfAnyOtherTimePostnatally = "Infection any other time postnatally"

Uterotonic = 'Yes'

label Uterotonic = "Uterotonic for the treatment of postpartum hemorrhage. it is a standard procedure in Canada"

if sum ( of R027_00100, R027_00200, R027_00300, R027_00400 ) = 0 then
    BloodTransfusion = 'No'
else BloodTransfusion = 'Yes'

label BloodTransfusion = "The patient receive blood transfusion"

if ( R027_00100 = 1 ) then
    IndiForBloodTransfusion = 'Anemia in Pregnancy'

if ( R027_00200 = 1 ) then
IndiForBloodTransfusion = 'Antepartum Hemorrhage'

if ( R027_00300 = 1 ) then
    IndiForBloodTransfusion = 'Intrapartum Hemorrhage'

if ( R027_00400 = 1 ) then
    IndiForBloodTransfusion = 'Postpartum Hemorrhage'

label IndiForBloodTransfusion = "Reason for maternal blood transfusion"

if sum ( of MO702, MO703 ) = 0 then
    PerinealLaceration = 'No'

else PerinealLaceration = 'Yes'

label PerinealLaceration = "3rd or 4th degree perineal laceration during delivery"

if ( M_1RM89 = 0 ) then
    Hysterectomy = 'No'

else Hysterectomy = 'Yes'

label Hysterectomy = "Excision total uterus and surrounding structures"

if ( MN823 = 0 ) then
    VaginalFistula = 'No'

else VaginalFistula = 'Yes'

label VaginalFistula = "Rectovaginal fistula only, no information available for vesicovaginal fistula"

if ( DLToHosp = 85 ) then
    AdmissionOfMotherToICU = 'Yes'

else AdmissionOfMotherToICU = 'No'

label AdmissionOfMotherToICU = "Admission of mother to ICU"

if ( DLToHosp = -9 ) then
    MatDisStat_Alive = 'No'

else MatDisStat_Alive = 'Yes'

label MatDisStat_Alive = "Maternal status at discharge is alive"
if ( DLToHosp = -9 ) or ( MO95 > 0 ) then
  MatDisStat_Dead = 'Yes'
else MatDisStat_Dead = 'No'
label MatDisStat_Dead = "Maternal status at discharge is dead"

if ( DLToHosp = 86 ) then
  MatDisStat_RefToHigherLevelCare = 'Yes'
else MatDisStat_RefToHigherLevelCare = 'No'
label MatDisStat_RefToHigherLevelCare = "Maternal status at discharge is alive but referred to higher level of care which is IWK Grace"

DateOfMatDisOrTransOrDeath = DLDschD8
format DateOfMatDisOrTransOrDeath ddmmyy10.
label DateOfMatDisOrTransOrDeath = "Date of mother discharge from hospital"

AntenatalVisiFirstTrimester = ''
label AntenatalVisiFirstTrimester = "Antenatal visit present in first trimester"

if ( R013 = 0 ) then
  AnaestheticComplications = 'No'
else AnaestheticComplications = 'Yes'
label AnaestheticComplications = "Complications of anesthesia"

if ( MO751 = 0 ) then
  ObstetricShock = 'No'
else ObstetricShock = 'Yes'
label ObstetricShock = "Shock during or following labour and delivery"

if ( R018_00300 = 0 ) and ( MI46 = 0 ) then
  CardiacArrest = 'No'
else CardiacArrest = 'Yes'
label CardiacArrest = "Cardiac arrest excluding cardiac arrest as a complication of anaesthesia"
if ( MN17 = 0 ) and ( MO904 = 0 ) then
  AcuteRenalFailure = 'No'
else AcuteRenalFailure = 'Yes'
label AcuteRenalFailure = "Acute renal failure, Postpartum acute renal failure"
if ( MY600 = 0 ) then
  IntraoperativeTrauma = 'No'
else IntraoperativeTrauma = 'Yes'
label IntraoperativeTrauma = "Trauma during surgical operation"
if ( MO860 = 0 ) then
  InHospitalWoundInf = 'No'
else InHospitalWoundInf = 'Yes'
label InHospitalWoundInf = "Hospital acquired Infection of obstetric surgical wound"
if ( MO902 = 0 ) then
  ObstetricWoundHematoma = 'No'
else ObstetricWoundHematoma = 'Yes'
label ObstetricWoundHematoma = "Haematoma of obstetric wound"
LengthOfStayInHospital = DLDschD8 - DLadmsD8
label LengthOfStayInHospital = "Time from the maternal admission to maternal discharge"
if ( EPISIOT = 'ND' )then Episiotomy = 'No'
else Episiotomy = 'Yes'
label Episiotomy = "Episiotomy done"
if ( EPISIOT = 'ML' ) then
  EpisiotomyType = 'Mediolateral'
if ( EPISIOT = 'MD' ) then
  EpisiotomyType = 'Midline'
label EpisiotomyType = "Episiotomy type if it is done"
; run; run;

proc print data = Maternal_Outcome (obs=10); run;

options fmtsearch = ( format );
data Neonatal_Data
(drop =
    DLNUMFET BTTbrthOr
    BrthDate
    BTTbrthDT
    GA_OBS
    POSATDEL
    METHODEL LABOUR CDILCS
    BTOUOUTCOM TimeOfD
    BIRTHWT
    HC_BIRTH
    BTSEX
    MAJOR_Anom )
;
    LENGTH BIRTHID 8
    ;
    LENGTH BirthOrder $ 30
    ;
    LENGTH DateOfDelivery TimeOfBirth BestObstetricEstimateOfAgeAtDel 8
    ;
    LENGTH FetalPresentationAtDelivery FinalModeOfAssistanceForDelivery
    InfantStatusAtBirth $ 30
    ;
    LENGTH Apgar5 BirthWeight HeadCircumference 8
    ;
    LENGTH Sex CongenitalMalformation $ 30
    ;
    set Nsapd.Monster
    ( keep =
        DLNUMFET BTTbrthOr
        BrthDate
        BTTbrthDT
        GA_OBS
        POSATDEL
        METHODEL LABOUR CDILCS

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DATA;
  BOUTCOME TimingofD
  APGAR5
  BIRTHWT
  HC_BIRTH
  BTSEX
  MAJOR_Anom
  DLDschD8
  BIRTHID /*primary key*/
  if ( DLNUMFET > 1 ) and ( BTBrthOr = 1 ) then
    BirthOrder = 'First'
  ;
  if ( DLNUMFET > 1 ) and ( BTBrthOr = 2 ) then
    BirthOrder = 'Second'
  ;
  if ( DLNUMFET > 1 ) and ( BTBrthOr = 3 ) then
    BirthOrder = 'Third'
  ;
  if ( DLNUMFET > 1 ) and ( BTBrthOr = 4 ) then
    BirthOrder = 'Fourth'
  ;
  label BirthOrder = "Birth order in multiple birth"
  ;
  DateOfDelivery = BrthDate
  ;
  format DateOfDelivery ddmmyy10.
  ;
  label DateOfDelivery = "Date of infant’s birth"
  ;
  TimeOfBirth = timepart (BTBrthDT)
  ;
  format TimeOfBirth hhmm.
  ;
  label TimeOfBirth = "Time of infant’s birth"
  ;
  if ( GA_OBS < 20 ) or ( GA_OBS > 44 ) then
    BestObstetricEstimateOfAgeAtDel = .
  ;
  BestObstetricEstimateOfAgeAtDel = int ( GA_OBS )
  ;
  label BestObstetricEstimateOfAgeAtDel = "Best obstetric estimate of gestational age at
delivery in completed weeks"
  ;
  if ( POSATDEL = 'BOW' ) or ( POSATDEL = 'FAC' ) or ( POSATDEL = 'VTX' ) or
  ( POSATDEL = 'POP' ) then
    FetalPresentationAtDelivery = 'Cephalic'
if ( POSATDEL = 'BCH' ) or ( POSATDEL = 'FRB' ) or ( POSATDEL = 'FTB' ) then FetalPresentationAtDelivery = 'Breech'

if ( POSATDEL = 'CPD' ) or ( POSATDEL = 'SHL' ) or ( POSATDEL = 'TLI' ) then FetalPresentationAtDelivery = 'Other'

if ( POSATDEL = '999' ) then FetalPresentationAtDelivery = 'Unknown'

label FetalPresentationAtDelivery = "Infant position at delivery"

if ( METHODEL = 'SPT' ) then FinalModeOfAssistanceForDelivery = 'Spontaneous vaginal'

if ( METHODEL = 'ACH' ) or ( METHODEL = 'HIF' ) or ( METHODEL = 'LMF' ) or ( METHODEL = 'LOF' ) or ( METHODEL = 'MIF' ) or ( METHODEL = 'VAF' ) then FinalModeOfAssistanceForDelivery = 'Forceps'

if ( METHODEL = 'FVV' ) or ( METHODEL = 'VEX' ) then FinalModeOfAssistanceForDelivery = 'Vacuum'

if ( LABOUR = 'N' ) and ( METHODEL in ( 'CSF','CSV','CSC','CSN','FAF','FCF','FVC','VAC','VFC','VCV' ) ) then FinalModeOfAssistanceForDelivery = 'Elective c-section, no labour prior to delivery'

if ( CDILCS > 3 ) and METHODEL in ( 'CSF','CSV','CSC','CSN','FAF','FCF','FVC','VAC','VFC','VCV' ) then FinalModeOfAssistanceForDelivery = 'Intrapartum c-section'

if METHODEL in ( 'ABR','BRE','PVE' ) then FinalModeOfAssistanceForDelivery = 'Assisted breech or breech extraction'

label FinalModeOfAssistanceForDelivery = "Final successful mode of delivery"

if ( BTOUTCOM = 'LVD' ) then InfantStatusAtBirth = 'Alive'

if ( TimngofD = 'AA' ) or ( TimngofD = 'IP' ) then InfantStatusAtBirth = 'Fresh stillbirth'

if ( TimngofD = 'BA' ) then InfantStatusAtBirth = 'Macerated stillbirth'

label InfantStatusAtBirth = "Infant status at birth"

Apgar5 = APGAR5
label Apgar5 = "Apgar score at 5 min"
;
BirthWeight = BIRTHWT
;
label BirthWeight = "Infant's birth weight"
;
HeadCircumference = HC_BIRTH
;
label HeadCircumference = "Head circumference at birth"
;
if ( BTSEX = 'F' ) then
   Sex = 'Female'
;
if ( BTSEX = 'M' ) then
   Sex = 'Male'
;
label Sex = "Infant's sex"
;
if ( MAJOR_Anom = 0 ) then
   CongenitalMalformation = 'No'
;
else CongenitalMalformation = 'Yes'
;
label CongenitalMalformation = "Major anomalies"
;
run
;

proc print data = Neonatal_Data ( obs = 10 )
;
run
;

options fmtsearch = ( format )
;
data Caesarean_Section
(drop =
   IndicCS1
   DMINDUCT )
;
LENGTH BIRTHID 8
;
LENGTH PlndiForCsect_SusFetalGrowthImp PlndiForCsect_FetalDistress
PlndiForCsect_PreeclamEclamp PlndiForCsect_Postdate PlndiForCsect_VaginalBleeding
PlndiForCsect_Dystocia PlndiForCsect_MultiplePregnancy PlndiForCsect_UterineRupture

set Nsapd.Monster
( keep =
  IndicCS1
  DMINDUCT
  DLDschD8
  BIRTHID /*primary key*/ )
;
if ( IndicCS1 = 'FGT' ) then
  PlndiForCsect_SusFetalGrowthImp = 'Yes'
;
else PlndiForCsect_SusFetalGrowthImp = 'No'
;
label PlndiForCsect_SusFetalGrowthImp = "Primary indication for c-section: fetal growth restriction"
;
if ( IndicCS1 = 'FDS' ) then
  PlndiForCsect_FetalDistress = 'Yes'
;
else PlndiForCsect_FetalDistress = 'No'
;
label PlndiForCsect_FetalDistress = "Primary indication for c-section: fetal distress"
;
if ( IndicCS1 = 'HTD' ) then
  PlndiForCsect_PreeclamEclamp = 'Yes'
;
else PIndiForCSect_PreeclamEclamp = 'No'
;
label PIndiForCSect_PreeclamEclamp = "Primary indication for c-section: Hypertensive disorders"
;
if ( DMINDUCT = 4 ) and ( IndicCS1 = 'FID' ) then PIndiForCSect_Postdate = 'Yes'
else PIndiForCSect_Postdate = 'No'
;
label PIndiForCSect_Postdate = "Primary indication for c-section: gestational age 41 completed weeks or more"
;
if ( IndicCS1 = 'APL' ) then PIndiForCSect_VaginalBleeding = 'Yes'
else PIndiForCSect_VaginalBleeding = 'No'
;
label PIndiForCSect_VaginalBleeding = "Primary indication for c-section: Abruptio Placenta, 3rd trimester vaginal bleeding"
;
if ( IndicCS1 = 'DYS' ) then
  PIndiForCSect_Dystocia = 'Yes'
else PIndiForCSect_Dystocia = 'No'
;
label PIndiForCSect_Dystocia = "Primary indication for c-section: Dystocia (Cephalopelvic disproportion, (C.P.D), Failure-to-progress, Maternal exhaustion, Cervical Stenosis POP, OP)"
;
if ( IndicCS1 = 'MTP' ) then
  PIndiForCSect_MultiplePregnancy = 'Yes'
else PIndiForCSect_MultiplePregnancy = 'No'
;
label PIndiForCSect_MultiplePregnancy = "Primary indication for c-section: Multiple Pregnancy"
;
if ( IndicCS1 = 'SUR' ) then
  PIndiForCSect_UterineRupture = 'Yes'
else PIndiForCSect_UterineRupture = 'No'
;
label PIndiForCSect_UterineRupture = "Primary indication for c-section: Suspected/imminent uterine rupture"
;
if ( IndicCS1 = 'PMC' ) then
  PIndiForCSect_PostmortemCsect = 'Yes'
;
else PIndiForCSect_PostmortemCsect = 'No'
;
label PIndiForCSect_PostmortemCsect = "Primary indication for c-section: Postmortem C-section"
;
if IndicCS1 in ( 'MLP', 'TLI', 'BCH' ) then
  PIndiForCSect_Malpresentation = 'Yes'
;
else PIndiForCSect_Malpresentation = 'No'
;
label PIndiForCSect_Malpresentation = "Primary indication for c-section: Malpresentation, Transverse Lie, Breech"
;
if ( IndicCS1 = 'PCS' ) then
  PIndiForCSect_PreviousCsect = 'Yes'
;
else PIndiForCSect_PreviousCsect = 'No'
;
label PIndiForCSect_PreviousCsect = "Primary indication for c-section: previous c-section"
;
if ( IndicCS1 = 'FID' ) then
  PIndiForCSect_FailedInduction = 'Yes'
;
else PIndiForCSect_FailedInduction = 'No'
;
lable PIndiForCSect_FailedInduction = "Primary indication for c-section: failed induction"
;
PIndiForCSect_TubalLigation = ' ' 
;
lable PIndiForCSect_TubalLigation = "Primary indication for c-section: Tubal ligation/sterilization(no available information)"
;
if ( IndicCS1 = 'MAT' ) then
  PIndiForCSect_MaternalRequest = 'Yes'
;
else PIndiForCSect_MaternalRequest = 'No'
;
lable PIndiForCSect_MaternalRequest = "Primary indication for c-section: Maternal choice"
;
if ( IndicCS1 = 'HIV' ) then
  PIndiForCSect_HIV = 'Yes'
;
else PIndiForCSect_HIV = 'No'
;
lable PIndiForCSect_HIV = "Primary indication for c-section: Human Immunodeficiency Virus"
if ( IndicCS1 = 'HSV' ) then
    PIndiForCSEct_GenitalHerpes = 'Yes'
else PIndiForCSEct_GenitalHerpes = 'No'

label PIndiForCSEct_GenitalHerpes = "Primary indication for c-section: Maternal herpes simplex infection (no available information in extensive condyloma)"

if IndicCS1 in ( 'OCC','PRM','PLC','PLP','APL','ISO' ) then
    PIndiForCSEct_OtherObstetCondi = 'Yes'
else PIndiForCSEct_OtherObstetCondi = 'No'

label PIndiForCSEct_OtherObstetCondi = "Primary indication for c-section: Other Obstetrical Conditions, Prolonged rupture of membranes, Prolapsed cord, Placenta previa, Abruption placenta, Isoimmunization"

if ( IndicCS1 = 'OFC' ) or ( IndicCS1 = 'SFA' ) then
    PIndiForCSEct_OtherFetalIndi = 'Yes'
else PIndiForCSEct_OtherFetalIndi = 'No'

label PIndiForCSEct_OtherFetalIndi = "Primary indication for c-section: Other Fetal Conditions, Suspected Fetal Anomaly"

if IndicCS1 in ( 'AMA','DBT','CXD' ) then
    PIndiForCSEct_OtherMatMedCondi = 'Yes'
else PIndiForCSEct_OtherMatMedCondi = 'No'

label PIndiForCSEct_OtherMatMedCondi = "Primary indication for c-section: other maternal medical condition (Advanced Maternal Age, Diabetes, Diseases of the cervix)"

if ( IndicCS1 = 'UTS' ) then
    PIndiForCSEct_PreUterineSurgery = 'Yes'
else PIndiForCSEct_PreUterineSurgery = 'No'

label PIndiForCSEct_PreUterineSurgery = "Primary indication for c-section: previous uterine surgery"

if ( IndicCS1 = '999' ) then
    PIndiForCSEct_Unknown = 'Yes'
else PIndiForCSEct_Unknown = 'No'
label OIndiForCSect_Malpresentation = "Other indication for c-section: Malpresentation, Transverse Lie, Breech"

label OIndiForCSect_PreviousCsect = "Other indication for c-section: previous c-section"

label OIndiForCSect_FailedInduction = "Other indication for c-section: failed induction"

label OIndiForCSect_TubalLigation = "Other indication for c-section: Tubal ligation/sterilization (no available information)"

label OIndiForCSect_MaternalRequest = "Other indication for c-section: Maternal choice"

label OIndiForCSect_HIV = "Other indication for c-section: Human Immunodeficiency Virus"

label OIndiForCSect_GenitalHerpes = "Other indication for c-section: Maternal herpes simplex infection (no available information in extensive condyloma)"

label OIndiForCSect_OtherObstetCondi = "Other indication for c-section: Other Obstetrical Conditions, Prolonged rupture of membranes, Prolapsed cord, Placenta previa, Abruption placenta, Isoimmunization"

label OIndiForCSect_OtherFetalIndi = "Other indication for c-section: Other Fetal Conditions, Suspected Fetal Anomaly"

label OIndiForCSect_OtherMatMedCondi = ""
label OIndiForCsect_OtherMatMedCondi = "Other indication for c-section: other maternal medical condition (Advanced Maternal Age, Diabetes, Diseases of the cervix)"
;
OIndiForCsect_PreUterineSurgery = ''
;
label OIndiForCsect_PreUterineSurgery = "Other indication for c-section: previous uterine surgery"
;
OIndiForCsect_Unknown = ''
;
label OIndiForCsect_Unknown = "Other indication for c-section: Unknown"
;
run;
;
proc print data = Caesarean_Section (obs = 10)
;
run;
;
options fmtsearch = (format)
;
data Neonatal_Outcome
(drop =
   BTSCNAdm
   R071_00100 R071_00200 R071_00300 R071_00400 R071_00500 R071_00600 I_1GZ31
   BTSCNLOS
   BTOUTCOM R082 BTSCNAdm BTDethDT BTBrthDT
   BTDschD8
   R071 I_1GZ31
   R082_00100 R082_00600 R082_00200 R082_00300 R082_00400 R084
   IP916
   R058_00400
   BRSTFDIS )
;
   LENGTH BIRTHID 8
;
   LENGTH SCUAdmission SCU_NoVentilation SCU_Ventilation $ 30
;
   LENGTH LengthOfStayInSCU_UpTo7 LengthOfStayInSCU_MoreThan7 8
;
   LENGTH NewbornStatAtDisc $ 50
;
   LENGTH DateOfNeonatalDisc 8
;
LENGTH RequireAssiVentilation BirthInjury HypoxicIschemicEncephalopathy MeconiumAspiration BreastfeedingInitiated $ 30
;
set Nsapd.Monster
(keep =
  BTSCNAdm
 R071_00100 R071_00200 R071_00300 R071_00400 R071_00500 R071_00600
 I_1GZ31
  BTSCNLOS
 BTOUTCOM R082 BTSCNAdm BTDethDT BTBrthDT
 BTDschD8
 R071 I_1GZ31
 R082_00100 R082_00200 R082_00300 R082_00400 R082_00500 R082_00600
 IP916
 R058_00400
 BRSTFDIS
 DLDschD8
 BIRTHID /*primary key*/ )
;
if ( BTSCNAdm = 0 ) then
  SCUAdmission = 'No'
;
else SCUAdmission = 'Yes'
;
label SCUAdmission = "SCN admission"
;
if ( BTSCNAdm > 0 ) and ( sum ( of R071_00100, R071_00200, R071_00300, R071_00400,
 R071_00500, R071_00600, I_1GZ31 ) = 0 ) then
  SCU_NoVentilation = 'Yes'
;
if ( BTSCNAdm > 0 ) and ( sum ( of R071_00100, R071_00200, R071_00300, R071_00400,
 R071_00500, R071_00600, I_1GZ31 ) > 0 ) then
  SCU_NoVentilation = 'No'
;
label SCU_NoVentilation = "SCN admission without respiratory ventilation"
;
if ( BTSCNAdm > 0 ) and ( sum ( of R071_00100, R071_00200, R071_00300, R071_00400,
 R071_00500, R071_00600, I_1GZ31 ) = 0 ) then
  SCU_Ventilation = 'No'
;
if ( BTSCNAdm > 0 ) and ( sum ( of R071_00100, R071_00200, R071_00300, R071_00400,
 R071_00500, R071_00600, I_1GZ31 ) > 0 ) then
  SCU_Ventilation = 'Yes'
;
label SCU_Ventilation = "SCN admission with respiratory ventilation"
if ( 0 <= BTSCNLOS < 8 ) then
    LengthOfStayInSCU_UpTo7 = BTSCNLOS

label LengthOfStayInSCU_UpTo7 = "Total length of stay in SCN during birth admission up to 7 days"

if ( BTSCNLOS > 7 ) then
    LengthOfStayInSCU_MoreThan7 = BTSCNLOS

label LengthOfStayInSCU_MoreThan7 = "Total length of stay in SCN during birth admission more than 7 days"

if ( BTOUTCOM = 'LVD' ) then
    NewbornStatAtDisc = 'Alive and well'

if ( BTOUTCOM = 'LVD' ) and ( R082 > 0 ) then
    NewbornStatAtDisc = 'Alive with obstetric trauma'

if ( BTOUTCOM = 'LVD' ) and ( BTSCNAdm > 0 ) then
    NewbornStatAtDisc = 'Alive but referred to higher level care'

if ( BTOUTCOM = 'END' ) and ( BTDethDT - BTBrthDT < 2 ) then
    NewbornStatAtDisc = 'Dead within 24 h of birth'

if BTOUTCOM in ( 'END','LND','IND' ) and ( BTDethDT - BTBrthDT > 1 ) then
    NewbornStatAtDisc = 'Dead after 24 h of birth'

label NewbornStatAtDisc = "Newborn status at discharge"

DateOfNeonatalDisc = BTDschD8

format DateOfNeonatalDisc ddmmyy10.

label DateOfNeonatalDisc = "Date of neonatal discharge"

if ( R071 > 0 ) or ( _1GZ31 > 0 ) then
    RequireAssisVentilation = 'Yes'

else RequireAssisVentilation = 'No'

label RequireAssisVentilation = "Requirement for any form of assisted ventilation"

if sum ( of R082_00100, R082_00600, R082_00200, R082_00300, R084 ) = 0 then
    BirthInjury = 'No'
else BirthInjury = 'Yes'
;
label BirthInjury = "Trauma: fracture clavicle, skull, long bone(femur,humerus),other specific neurological findings"
;
if ( IP916 = 0 ) then
   HypoxicIschemicEncephalopathy = 'No'
;
else HypoxicIschemicEncephalopathy = 'Yes'
;
label HypoxicIschemicEncephalopathy = "Hypoxic ischaemic encephalopathy of newborn"
;
if ( R058_00400 = 0 ) then
   MeconiumAspiration = 'No'
;
else MeconiumAspiration = 'Yes'
;
label MeconiumAspiration = "Meconium aspiration"
;
if ( BRSTFDIS = 'N' ) then
   BreastfeedingInitiated = 'No'
;
else BreastfeedingInitiated = 'Yes'
;
label BreastfeedingInitiated = "Breastfeeding at discharge"
;
run
;

proc print data = Neonatal_Outcome ( obs = 10 )
;

data NSAPD.WHO_Survey
   merge Work.Personal_Data_of_the_Women Work.Reproductive_History
      Work.Current_Pregnancy
            Work.Caesarean_Section Work.Neonatal_Outcome
   ;
      by BIRTHID
;
   where '31MAR2008'D < DLDschD8 < '01APR2009'D
;
   run
;