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

by

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In partial fulfillment of the requirements of the Master of Health Informatics Program, Dalhousie University

Report of Internship for the period May 09 –August 05, 2011

Date Submitted: August 22, 2011

## 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.

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# 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 10$^{th}$ 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 cord 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).

## *5.3.1Suppression*

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).

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## *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 2$^{nd}$ half of pregnancy
    - pyelonephritis or urinary infection
    - any genital ulcer disease
    - condyloma acuminate
    - 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

    - primary health care,
    - home/community
    - other,
- Total # neonates delivered (include stillbirths <=20 weeks)
- Onset of labour:
    - spontaneous
    - induced
    - no labour
- If induced, PRIMARY indications for induction (N/Y):
    - fetal death
    - IUGR
    - fetal distress
    - multiple pregnancy
    - PROM
    - chorioamnionitis
    - vaginal bleeding
    - pre-eclampsia/ eclampsia
    - post-term (>42 wks)
    - elective induction
    - other pregnancy complication
    - other maternal medical complication
    - unknown
- If induced, OTHER indications for induction (N/Y):
    - fetal death
    - IUGR
    - fetal distress
    - multiple pregnancy
    - PROM
    - chorioamnionitis
    - vaginal bleeding
    - pre-eclampsia/ eclampsia
    - post-term (>42 wks)
    - elective induction
    - other pregnancy complication
    - other maternal medical complication
    - unknown
- If induced, method (N/Y for each):
    - oxytocin
    - misoprostol
    - other prostaglandin
    - sweeping membranes
    - artificial rupture/ amniotomy
    - mechanical
- Who performed delivery/or performed section/laporotomy? (PLEASE RECORD WHAT IS AVAILABLE):
    - 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 anaesth/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:
    - alive
    - dead
    - 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, laporotomy 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:
    - 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-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
    - No/Yes-not 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**

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

**Reproductive history**

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

**Current pregnancy**

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

| | | | |
|---|---|---|---|
| | Mild preeclampsia.<br>Gestational (pregnancy-induced) hypertension with significant proteinuria. Includes HELLP syndrome (hemolysis/elevated liver enzymes/low platelets) | 600 | |
| During pregnancy or in labour, did the mother have chronic hypertension? (n/y) | Pre-existing Hypertension<br><br><br>OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY-<br>Pre-existing hypertension complicating pregnancy, childbirth and the puerperium.<br>Pre-existing hypertensive disorder with superimposed proteinuria | MO10<br>MO11<br><br>R014<br><br><br><br>700<br><br><br><br>800 | |
| During pregnancy or in labour, did the mother have pre-eclampsia? (n/y) | Gestational Hypertension (combines mild and severe)<br><br>OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY-<br>Gestational (pregnancy-induced) hypertension without significant proteinuria. Includes Gestational hypertension NOS, Mild preeclampsia.<br>Gestational (pregnancy-induced) hypertension with significant proteinuria. Includes HELLP syndrome (hemolysis/elevated liver enzymes/low platelets) | MO13<br>MO14<br><br>R014<br><br><br><br>500<br><br><br><br><br><br>600 | combines mild and severe |
| During pregnancy or in labour, did the mother have eclampsia? (n/y) | Eclampsia | MO15 | |
| During pregnancy or in labour, did the mother have cardiac/renal disease? (n/y) | <u>HEART DISEASE</u><br>CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY-<br>Arrhythmia<br>Congenital heart disease<br>Cardiac Arrest<br>Coronary artery disease<br>Endocarditis<br>Myocardial infarction<br>Prolapsed mitral valve<br>Cardiomyopathy<br>Myocarditis | R018<br><br><br><br><br>100<br>200<br>300<br>400<br>500<br>700<br>800<br>900<br>1000 | I exclude:<br><br><br><br><br>600 History of heart disease or surgery<br>1300 Valve prosthesis |

| | | | |
|---|---|---|---|
| | Pulmonary hypertension<br>Rheumatic heart disease<br>Wolff Parkinson's White Syndrome<br>Other acquired cardiac diseases<br>Thromboembolic Disease<br><br><u>RENAL DISEASE</u><br>CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY-<br>Renal calculus<br>Chronic glomerulonephritis<br>Hydronephrosis<br>Nephropathy<br>Nephrotic syndrome<br>Polycystic kidney disease<br>Chronic renal disease, type undetermined | 1100<br>1200<br>1400<br><br>1500<br>1600<br><br>R020<br><br><br><br><br>200<br>300<br>500<br>600<br>700<br>800<br>1200 | 1000 Renal agenesis<br>1100 Renal transplant<br>1300 Urinary tract Infection<br>100 Acute pyelonephritis<br>400 Previous episode of acute pyelonephritis during current pregnancy<br>900 Chronic pyelonephritis |
| During pregnancy or in labour, did the mother have chronic respiratory conditions? (n/y) | <u>PULMONARY DISEASE</u><br>CODE IF THE CONDITION IS OR WAS PRESENT DURING CURRENT PREGNANCY-<br>Asthma<br>Cystic fibrosis<br>Other significant pulmonary diseases | R023<br><br><br><br>100<br>200<br>400 | 500 Pneumonia, antepartum<br>300 pulmonary edema |
| During pregnancy or in labour, did the mother have low uterine ht for gestational age? (n/y) | Maternal care for restricted fetal growth | O36.5 | |
| During pregnancy or in labour, did the mother have diabetes mellitus? (n/y) | OTHER OBSTETRICAL CONDITIONS AFFECTING PREGNANCY-<br>Pre-existing diabetes mellitus, Type 1<br>Pre-existing diabetes mellitus, Type 2<br>Pre-existing diabetes mellitus of other specified type present when became pregnant during this pregnancy<br>Pre-existing diabetes mellitus, of unspecified type present when became pregnant during this pregnancy<br>Diabetes mellitus arising in pregnancy. Includes Gestational diabetes<br>Diabetes mellitus in pregnancy, unspecified | R014<br><br>900<br><br>1000<br><br>1100<br><br><br><br>1200<br><br><br><br>1300<br><br><br>1400 | |
| During pregnancy or in labour, did the mother | OTHER OBSTETRICAL CONDITIONS AFFECTING | R014 | |

| | | | |
|---|---|---|---|
| have severe anemia? (Hb<7g/l) (n/y) | PREGNANCY-<br>Anemia in Pregnancy | <br>1500 | <br>Our is (Hb<10g/l) |
| During pregnancy or in labour, did the mother have vaginal bleeding in 2nd half of pregnancy? (n/y) | Antepartum haemorrhage<br>premature separation of placenta [abruptio placentae]<br>placenta praevia | O46<br>O45<br><br>O44 | It could be in 2nd half of pregnancy or earlier or even later |
| During pregnancy or in labour, did the mother have pyelonephritis or urinary infection? (n/y) | RENAL DISEASE<br>CODE IF THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY-<br>Acute pyelonephritis<br>Previous episode of acute pyelonephritis during current pregnancy<br>Chronic pyelonephritis<br>Urinary tract Infection | R020<br><br><br><br>100<br>400<br><br>900<br>1300 | |
| During pregnancy or in labour, did the mother have any genital ulcer disease? (n/y) | MATERNAL CARRIER STATES AND/OR CHRONIC INFECTION DURING PREGNANCY-<br>Herpes Simplex<br>Syphilis | R002<br><br><br>300<br>600 | |
| During pregnancy or in labour, did the mother have condyloma acuminate? (n/y) | Papillomavirus as the cause of diseases classified to other chapters | B97.7 | |
| During pregnancy or in labour, did the mother have other medical conditions? (n/y) | Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium<br>Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium | O98<br><br><br><br>O99 | |
| During pregnancy or in labour, did the mother have any condition suggesting HIV/AIDS? (n/y) | Nonspecific lymphadenitis<br>Other interstitial pulmonary diseases<br>Acute lymphadenitis<br>Cachexia | 188<br>J84<br><br>L04<br>R64 | |
| During pregnancy or in labour, did the mother have thalasseimia? (n/y) | BLOOD DYSCRASIAS<br>CODE IS THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY/POSTPARTUM PERIOD-<br>Thalassemia | R022<br><br><br><br>1000 | |
| Did antenatal visits occur? (N/Y) | Blank | | |
| Was any IVF information recorded? | Blank | | |

**Labour and Delivery**

| Variable | Description | Code | Note |
|---|---|---|---|
| Was women transferred for delivery? (n/y) | ADMITTED FROM: Mother's location immediately prior to admission. | DLADMFRM | |
| If referred, from where/by whom: secondary care | 2 digit provincial code number for the regional hospitals:<br>11 = 'Aberdeen'<br>14 = 'South Shore'<br>18 = 'Colchester'<br>30 = 'Cumberland'<br>43 = "St. Martha's"<br>56 = 'Western Regional'<br>67 = 'Valley Regional'<br>73, 87 = 'C.B. Regional' | <br>ADMITTED FROM= 11<br>ADMITTED FROM= 14<br>ADMITTED FROM= 18<br>ADMITTED FROM= 30<br>ADMITTED FROM= 43<br>ADMITTED FROM= 56<br>ADMITTED FROM= 67<br>ADMITTED FROM= 73, 87 | Can't answer by whom |
| If referred, from where/by whom: primary health care | blank | | |
| If referred, from where/by whom: home/community | blank | | |
| If referred, from where/by whom: other | blank | | |
| Total # neonates delivered (including stillbirths <=20 weeks) | # of Pregnancies, Excluding the Present, with non-viable foetus | DLABORTS | |
| Onset of labour: spontaneous | LABOUR: Initiation of labour<br>Spontaneous onset of labour (does not include augmentation of labour) | S | Sas command to create 1 and 0 |
| Onset of labour: induced | LABOUR: Initiation of labour<br>Artificial induction of labour (does not include augmentation of labour) | I | Sas command to create 1 and 0 |
| Onset of labour: no labour | LABOUR: Initiation of labour<br>No labour prior to delivery (e.g. elective repeat Csection) | N | Sas command to create 1 and 0 |
| If induced, PRIMARY indications for induction (n/y): fetal death | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Intrauterine death | Intrauterine death = 10 | |
| If induced, PRIMARY Indications for induction (n/y): IUGR | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Fetal growth restriction | Fetal growth restriction = 2 | Fetal Growth Retardation |

| | | | |
|---|---|---|---|
| If induced, PRIMARY indications for induction (n/y): fetal distress | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>(Possible) fetal distress; low planning score | (Possible) fetal distress; low planning score = 9 | Poss. Fetal Dist/Low Pl.Sc |
| If induced, PRIMARY indications for induction (n/y): multiple pregnancy | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Multiple pregnancy | Multiple pregnancy=17 | |
| If induced, PRIMARY indications for induction (n/y): PROM | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Premature rupture of membranes without Chorioamnionitis | Premature rupture of membranes without Chorioamnionitis = 5 | PROM - no Chorioamnionitis |
| If induced, PRIMARY indications for induction (n/y): chorioamnionitis | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Premature rupture of membranes with clinical Chorioamnionitis | Premature rupture of membranes with clinical Chorioamnionitis = 6 | PROM with Chorioamnionitis |
| If induced, PRIMARY indications for induction (n/y): vaginal bleeding | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Vaginal Bleeding | Vaginal Bleeding = 27 | |
| If induced, PRIMARY Indications for induction (n/y): pre-eclampsia/ eclampsia | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Hypertension/ Seizure | Hypertension = 12<br>Seizure = 22 | |
| If induced, PRIMARY indications for induction (n/y): post-term (>42 wks), | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Post Dates | Post Dates= 4 | |
| If induced, PRIMARY indications for induction (n/y): elective induction | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>Elective<br>Maternal Request | Elective = 1<br>Maternal Request = 26 | Elective Induction |
| If induced, PRIMARY indications for induction (n/y): other pregnancy complication | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour | Fetal Anomaly =15<br>Macrosomia =23<br>Diabetes =3<br>Oligohydramnios =14<br>Polyhydramnios =16<br>Isoimmunization =7<br>PUPP / Cholestatic jaundice=18, 19 | |
| If induced, PRIMARY indications for induction (n/y): other maternal medical complication | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour | Hx Precipitate Labour =8<br>Previous IUFD/poor | |

| | | | |
|---|---|---|---|
| | | obst. Hx =21<br>Advanced Maternal Age =25<br>Thromobocytopenia =20 | |
| If induced, PRIMARY indications for induction (n/y): unknown | INDICATION FOR INDUCTION OF LABOUR: Reason for induction of labour<br>No indication given | No indication given =24 | |
| If induced, method (n/y): oxytocin | Oxytocin induction<br>Inpatient,Oxytocin<br>Outpatient, Oxytocin<br>Both, Oxytocin<br>Unspecified,Oxytocin | R009<br>300<br>1000<br>1700<br>2400 | |
| If induced, method (n/y): misoprostol | Prostaglandin (administration): Intracervical Vaginal<br>Inpatient,Prostaglandin<br>Vaginal/Cervica<br>Outpatient,Prostaglandin<br>Vaginal/Cervical<br>Both,Prostaglandin Vaginal/Cervical<br>Unspecified,Prostaglandin Vaginal/Cervical | R009<br>500<br>1200<br>1900<br>2600 | |
| If induced, method (n/y): other prostaglandin | Prostaglandin (administration): Oral<br>Inpatient,Prostaglandin Oral<br>Outpatient,Prostaglandin Oral<br>Both,Prostaglandin Oral<br>Unspecified,Prostaglandin Oral | R009<br>400<br>1100<br>1800<br>2500 | |
| If induced, method (n/y): sweeping membranes | Other Specified Agents<br>Inpatient, Other specified agents<br>Outpatient, Other specified agents<br>Both,Other specified agents<br>Unspecified,Other specified agents | R009<br>600<br>1300<br>2000<br>2700 | |
| If induced, method (n/y): artificial rupture/ amniotomy | Artificial rupture of membranes, if clearly stated to induce labour<br>Inpatient, ,Artificial Rupture of Membranes, if clearly stated to induce labour<br>Outpatient,Artificial Rupture of Membranes, if clearly stated to induce labour<br>Both, Artificial Rupture of Membranes, if clearly stated to induce labour<br>Unspecified, Artificial Rupture of Membranes, if clearly stated to induce labour | R009<br>100<br>800<br>1500<br>2200 | |
| If induced, method (n/y): mechanical | Cervical catheter<br>Inpatient, Cervical catheter<br>Outpatient, Cervical catheter<br>Both, Cervical catheter<br>Unspecified,Cervical catheter | R009<br>200<br>900<br>1600<br>2300 | |
| Who performed | p.specialty | DLDocTyp | |

| | | | |
|---|---|---|---|
| delivery/or performed section/laporotomy?: OB/GYN specialist | Obstetrician/Gynaecologist | G<br>DLDocTyp = G | |
| Who performed delivery/or performed section/laporotomy?: resident | Blank | | |
| Who performed delivery/or performed section/laporotomy?: general surgeon | p.specialty<br>Surgeon | DLDocTyp<br>S<br>DLDocTyp = S | |
| Who performed delivery/or performed section/laporotomy?: GP | p.specialty<br>General/Family Practitioner | DLDocTyp<br>F<br>DLDocTyp = F | |
| Who performed delivery/or performed section/laporotomy?: nurse | Blank | | |
| Who performed delivery/or performed section/laporotomy?: midwife | p.specialty<br>Mid-wife | DLDocTyp<br>W<br>DLDocTyp = W | |
| Who performed delivery/or performed section/laporotomy?: paramedic | Blnak | | |
| Who performed delivery/or performed section/laporotomy?: med student | Blank | | |
| anaesthesia/analgesia during labor:<br>no<br>analgesia/anaesthesia | ANAESTHESIA DURING LABOUR ONLY<br><br>ANAESTHESIA DURING LABOUR AND DELIVERY | R011<br><br>No R011<br>R010<br><br>No R010 | |
| anaesthesia/analgesia during labor:<br>epidural | ANAESTHESIA DURING LABOUR ONLY<br>Epidural – Single Administration<br>Epidural – Continuous Catheter with Intermittent Drug Administration<br>Epidural – Continuous Infusion of Drug (CIEA)<br>Epidural – Patient Controlled Epidural Analgesia (PCEA)<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Epidural – Single Administration<br>Epidural – Continuous Catheter with Intermittent Drug Administration<br>Epidural – Continuous Infusion of Drug (CIEA)<br>Epidural – Patient Controlled Epidural | R011<br><br>200<br>300<br><br>400<br><br>500<br><br>R010<br><br>200<br>300<br><br>400<br><br>500 | |

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| | Analgesia (PCEA) | | |
| anaesthesia/analgesia during labor: spinal | ANAESTHESIA DURING LABOUR ONLY<br>Spinal Anaesthesia<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Spinal Anaesthesia | R011<br>900<br>R010<br>900 | |
| anaesthesia/analgesia during labor: injectable analgesic | Analgesia | R008 | No details<br>Many types, via IM, IV and unknown<br>The timing is prior to delivery |
| anaesthesia/analgesia during labor: epidural/spinal together | ANAESTHESIA DURING LABOUR ONLY<br>Spinal/Epidural double needle<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Spinal/Epidural double needle | R011<br>1000<br>R010<br>1000 | |
| anaesthesia/analgesia during labor: alternative method | ANAESTHESIA DURING LABOUR ONLY<br>Entonox (Nitronox)<br>Other specified Anaesthesia (e.g. Acupuncture, Hypnotism Neuroleptic)<br>Pudendal<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Entonox (Nitronox)<br>Other specified Anaesthesia (e.g. Acupuncture, Hypnotism Neuroleptic)<br>Pudendal | R011<br>100<br>1100<br>800<br>R010<br>100<br>1100<br>800 | |
| anaesthesia/analgesia during labor: general | ANAESTHESIA DURING LABOUR ONLY<br>General Anaesthesia<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>General Anaesthesia | R011<br>600<br>R010<br>600 | |
| Type of anaesthesia/analgesia during delivery: Nitrous Oxide | ANAESTHESIA DURING DELIVERY ONLY<br>Entonox (Nitronox)<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Entonox (Nitronox) | R012<br>100<br>R010<br>100 | |
| Type of anaesthesia/analgesia during delivery: Narcotic | Analgesia<br>Hypromorphone HCI (Dilaudid)<br>Meperidine (Demerol)<br>Morphine (Opium/Pantopon)<br>Nalbuphine (Nubain)<br>Pentazocine (Talwin)<br>Sublimaze (Fentanyl) | R008<br>1300-2400<br>100-1200<br>4900-6000<br>7300-8400<br>12100-13200<br>2500-3600 | |
| Type of anaesthesia/analgesia during delivery or c-section: No anaesthesia | ANAESTHESIA DURING DELIVERY ONLY<br><br>ANAESTHESIA DURING LABOUR AND DELIVERY | R012<br>No R012<br>R010<br>No R010 | |

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| Type of anaesthesia/analgesia during delivery or c-section: epidural | ANAESTHESIA DURING DELIVERY ONLY<br>Epidural – Single Administration<br>Epidural – Continuous Catheter with Intermittent Drug Administration<br>Epidural – Continuous Infusion of Drug (CIEA)<br>Epidural – Patient Controlled Epidural Analgesia (PCEA)<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Epidural – Single Administration<br>Epidural – Continuous Catheter with Intermittent Drug Administration<br>Epidural – Continuous Infusion of Drug (CIEA)<br>Epidural – Patient Controlled Epidural Analgesia (PCEA) | R012<br>200<br>300<br>400<br>500<br>R010<br>200<br>300<br>400<br>500 | |
| Type of anaesthesia/analgesia during delivery or c-section: spinal | ANAESTHESIA DURING DELIVERY ONLY<br>Spinal Anaesthesia<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Spinal Anaesthesia | R012<br>900<br>R010<br>900 | |
| Type of anaesthesia/analgesia during delivery or c-section: general | ANAESTHESIA DURING DELIVERY ONLY<br>General Anaesthesia<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>General Anaesthesia | R012<br>600<br>R010<br>600 | |
| Type of anaesthesia/analgesia during delivery or c-section: epidural/spinal together | ANAESTHESIA DURING DELIVERY ONLY<br>Spinal/Epidural double needle<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Spinal/Epidural double needle | R012<br>900<br>R010<br>1000 | |
| Type of anaesthesia/analgesia during delivery or c-section: local | ANAESTHESIA DURING DELIVERY ONLY<br>Pudendal<br>ANAESTHESIA DURING LABOUR AND DELIVERY<br>Pudendal | R012<br>700<br>R010<br>800 | |
| Type of anaesthesia/analgesia during delivery or c-section: narcotic | Analgesia<br>Hypromorphone HCI (Dilaudid)<br>Meperidine (Demerol)<br>Morphine (Opium/Pantopon)<br>Nalbuphine (Nubain)<br>Pentazocine (Talwin)<br>Sublimaze (Fentanyl) | R008<br>1300-2400<br>100-1200<br>4900-6000<br>7300-8400<br>12100-13200<br>2500-3600 | |
| Who gave anesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local) anaesthesiologist, | Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | Yes<br>No | Only anaesthesiologist give anesthesia<br>Only nurse give analgesia review all |

| | | | |
|---|---|---|---|
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>OB/GP | OB<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section<br>GP<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | <br>No<br>No<br><br>No<br>No | |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>resident MD in training | Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | No<br>No | |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>paramedic/nurse anaesthetic | paramedic<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section<br>nurse anaesthetic<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | <br>No<br>No<br><br>No<br>Yes | |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>nurse/midwife | nurse<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section<br>Midwife<br>Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | <br>No<br>Yes<br><br>No<br>No | |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>anaesthetist technician | Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | No<br>No | |
| Who gave anaesthesia/ analgesia during delivery or c-section? (Assumption that anaesth/obgyn for local)<br>other | Anaesthesia during delivery or c-section<br>Analgesia during delivery or c- section | No<br>No | |

## Maternal outcome

| Variable | Description | Code | Note |
|---|---|---|---|
| Did the woman receive antibiotics during admission episode? (n/y) | ANTIBIOTIC THERAPY<br>Antibiotics administered during a delivered admission. | R007 | |

| | | | |
|---|---|---|---|
| | Antibiotics may be given at any time during the delivered admission: Antepartum, Intrapartum or Post-Partum.<br>If antibiotics administered.<br>If no antibiotics administered | <br><br><br>Y<br>leave blank | |
| Did the woman have a diagnostic code for infection?: (n/y) antenatally | MATERNAL CARRIER STATES AND/OR CHRONIC INFECTION DURING PREGNANCY | R002 | No details |
| Did the woman have a diagnostic code for infection?: (n/y) at admission to labour ward | blank | | |
| Did the woman have a diagnostic code for infection?: (n/y) during or immed after vag delivery | Pyrexia during labour, not elsewhere classified<br>Other infection during labour<br>Infection of obstetric surgical wound<br>Delivered, with mention of postpartum complication<br>Other infection of genital tract following Delivery<br>Delivered, with mention of postpartum complication<br>Urinary tract infection following delivery<br>Delivered, with mention of postpartum complication<br>Other genitourinary tract infections following delivery<br>Delivered, with mention of postpartum complication<br>Pyrexia of unknown origin following Delivery<br>Delivered, with mention of postpartum complication<br>Other specified puerperal infections<br>Delivered, with mention of postpartum complication<br>METHOD OF DELIVERY<br>Spontaneous vaginal | O75.2<br>O75.3<br>O75.2<br>O86.0<br>O86.002<br>O86.1<br>O86.102<br>O86.2<br>O86.202<br>O86.3<br>O86.302<br>O86.4<br>O86.402<br>O86.8<br>DIMETHOD<br>SPT | |
| Did the woman have a diagnostic code for infection?: (n/y) prophylactic before c-section | <u>Antibiotics</u> Administered during antepartum period<br>METHOD OF DELIVERY<br>C-section | R007<br>100<br>DIMETHOD<br>CSN | 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 |
| Did the woman have a diagnostic code for infection?: (n/y) immediately after c-section | Puerperal sepsis, delivered, with mention of postpartum complication<br>Other puerperal infections<br>Infection of obstetric surgical wound<br>Delivered, with mention of postpartum complication | O85.002<br>O86<br>O86.0<br>O86.002 | |

| | | | |
|---|---|---|---|
| | Other infection of genital tract following Delivery | O86.1 | |
| | Delivered, with mention of postpartum complication | O86.102 | |
| | Urinary tract infection following delivery | O86.2 | |
| | Delivered, with mention of postpartum complication | O86.202 | |
| | Other genitourinary tract infections following delivery | O86.3 | |
| | Delivered, with mention of postpartum complication | O86.302 | |
| | Pyrexia of unknown origin following Delivery | O86.4 | |
| | Delivered, with mention of postpartum complication | O86.402 | |
| | Other specified puerperal infections | O86.8 | |
| | Delivered, with mention of postpartum complication | O86.802 | |
| | METHOD OF DELIVERY | DIMETHOD | |
| | C-section | CSN | |
| Did the woman have a diagnostic code for infection: (n/y) any other time postnatally | Puerperal sepsis, delivered, with mention of postpartum complication | O85.002 | |
| | Puerperal sepsis, postpartum condition or complication | O85.004 | |
| | Other puerperal infections | O86 | |
| | Infection of obstetric surgical wound | O86.0 | |
| | Other infection of genital tract following Delivery | O86.1 | |
| | Urinary tract infection following delivery | O86.2 | |
| | Other genitourinary tract infections following delivery | O86.3 | |
| | Pyrexia of unknown origin following Delivery | O86.4 | |
| | Other specified puerperal infections | O86.8 | |
| Was there any uterotonic for the treatment of postpartum hemorrhage? (*Standard procedure in Canada; assumption made as being YES.*) | | yes | |
| Did the patient receive a blood transfusion? | REASON FOR MATERNAL BLOOD TRANSFUSION | R027 | Sas statement using or |
| | Anemia in Pregnancy | 100 | |
| | Antepartum Hemorrhage | 200 | |
| | Intrapartum Hemorrhage | 300 | |
| | Postpartum Hemorrhage | 400 | |
| Indication for blood transfusion: *If cannot provide, please try and provide post-partum hemorrhage requiring transfusion with assumptions being made* postpartum hemorrhage | REASON FOR MATERNAL BLOOD TRANSFUSION | R027 | |
| | Anemia in Pregnancy | 100 | |
| | Antepartum Hemorrhage | 200 | |
| | Intrapartum Hemorrhage | 300 | |
| | Postpartum Hemorrhage | 400 | |

| | | | |
|---|---|---|---|
| 3rd/4th degree perineal laceration | Perineal laceration during delivery<br>Third degree perineal laceration during Delivery<br>Fourth degree perineal laceration during delivery | O70<br>O70.2<br><br>O70.3 | |
| hysterectomy | Excision total, uterus and surrounding structures | 1.RM.89. | We don't care about the approach |
| Vescico-vaginal/recto-vaginal fistula | Vesicovaginal fistula<br>Fistula of vagina to large intestine | N82.0<br>N82.3 | |
| admission of mother to ICU/SCU | MOTHER DISCHARGED TO<br>Immediate Destination of Mother on Discharge from Delivery Admission<br>QE II | DLToHosp<br><br><br>85 | The only hospital with ICU is QE II<br>Admission to ICU is not available<br>Hosp9Fmt=85 |
| maternal status at discharge or at 8th day postpartum:<br>alive | MOTHER DISCHARGED TO<br>Immediate Destination of Mother on Discharge from Delivery Admission | DLToHosp | It could include anything except death |
| maternal status at discharge or at 8th day postpartum:<br>dead | MOTHER DISCHARGED TO<br>Immediate Destination of Mother on Discharge from Delivery Admission<br>Maternal death<br>Obstetric death of unspecified cause | DLToHosp<br><br><br>-9<br>O95 | Hosp9Fmt=-9 |
| maternal status at discharge or at 8th day postpartum:<br>alive but referred to higher level of care | MOTHER DISCHARGED TO<br>Immediate Destination of Mother on Discharge from Delivery Admission<br>IWK Grace | DLToHosp<br><br><br>86 | higher level of care is IWK<br>Hosp9Fmt=86 |
| date of maternal discharge, transfer, or death (dd/mm/yy) | DISCHARGE DATE<br>Delivery Admission Discharge Date | <br>DLDschD8 | |
| antenatal visit present in first trimester (n/y) | Blank | | |
| anaesthetic complications | COMPLICATIONS OF ANESTHESIA<br>Blood Patching<br>Toxic Intravenous Injection (systemic reaction)<br>Epi-catheter Intravenous<br>Accidental Dural Tap<br>Total Spinal Anesthesia<br>Prolonged Epidural Block<br>High Epidural/Subdural Block<br>Foot Drop<br>Epidural Hematoma<br>Epidural Abscess<br>Spinal Cord Lesion<br>Aspiration Pneumonitis<br>Cardiac Arrest<br>Post-dural Puncture Headache<br>Paraesthesia<br>Hypotension<br>Back Pain<br>Failed Intubation for General Anesthetic | R013<br>100<br><br><br>300<br>400<br>500<br>600<br>700<br>800<br>900<br>1000<br>1100<br>1200<br>1300<br>1400<br>1500<br>1600<br>1700<br>1800 | |
| obstetric shock | Shock during or following labour and | O75.1 | |

| | | | |
|---|---|---|---|
| | delivery | | |
| cardiac arrest | HEART DISEASE<br>THE CONDITION IS OR WAS PRESENT DURING THE CURRENT PREGNANCY<br>Cardiac Arrest<br>Cardiac arrest | <br>R018<br><br><br>300<br>I46 | Didn't include arrest as an anaesthetic complications |
| acute renal failure | Acute renal failure<br>Postpartum acute renal failure | N17<br>O90.4 | Since we capture mam's information only, we don't have to worry about other populations (they want exist) |
| intraoperative trauma | During surgical operation | Y60.0 | |
| in-hospital wound infection | Infection of obstetric surgical wound | O86.0 | We capture data during the admission so it would be hospital acquired infection |
| obstetric wound hematoma | Haematoma of obstetric wound | O90.2 | |
| length of hospital stay (using ICD-10 Ca codes) | ADMISSION DATE<br>ADMISSION TIME<br>DISCHARGE DATE<br>DISCHARGE TIME | | We can't use ICD-10 for this variable |
| episiotomy (No/Yes) | Episiotomy (most serious) | DMEPISIO | |
| If episiotomy, what type?: median, mediolateral or unknown | Episiotomy type<br>Not done<br>Medio-lateral<br>Midline<br>Unknown | EPISIOT<br>0<br>4<br>6<br>9 | |

**Neonatal Data**

| Variable | Description | Code | Note |
|---|---|---|---|
| If multiple birth, birth order | BIRTH ORDER<br># of Foetuses | BTBrthOr<br>DLNUMFET | |
| Date of delivery (dd/mm/yy) | DATE OF INFANT'S BIRTH | BrthDate | |
| Time of birth | TIME OF INFANT'S BIRTH | BTBrthDT | |
| Best obstetric estimate of age at delivery (in completed wks): | best obstetric estimate of gestational age | GA_OBS | |
| Fetal presentation at delivery: cephalic, breech, | POSITION AT DELIVERY<br><u>CEPHALIC</u><br>Brow<br>Face<br>Vertex (includes LOA, ROA, OT, ROT, LOT, OA, Transverse)<br>Persistent occiput posterior (ROP, LOP, OP)<br><u>BREECH</u><br>Breech, other or unspecified<br>Frank breech<br>Footling breech | <br><br>BOW<br>FAC<br>VTX<br><br>POP<br><br><br>BCH<br>FRB<br>FTB | |

| | | | |
|---|---|---|---|
| | OTHER | | |
| | Compound presentation | CPD | |
| | Shoulder presentation | SHL | |
| | Transverse lie | TLI | |
| | UNKNOWN | 999 | |
| 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 | METHOD OF DELIVERY | | |
| | SPONTANEOUS | | |
| | Spontaneous vaginal | SPT | |
| | FORCEPS | | |
| | Forceps to after-coming head (Breech – vaginal delivery only) | ACH | |
| | High forceps | HIF | |
| | Low-mid forceps | LMF | |
| | Low or outlet forceps | LOF | |
| | Mid forceps | MIF | |
| | Vacuum followed by forceps | VAF | |
| | VACUUM | | |
| | Attempted Forceps followed by vacuum vaginal delivery | FVV | |
| | Vacuum extraction, malstrum extraction | VEX | Please update the spilling |
| | ELECTIVE C-SECT (NO LABOUR) | | |
| | LABOUR: Initiation of labour | N | |
| | No labour prior to delivery | | |
| | C-section with forceps | CSF | |
| | C-section with vacuum | CSV | |
| | C-section with vacuum and forceps | CSC | |
| | C-section | CSN | |
| | Failed forceps or failed trial of forceps followed by C-section | FAF | |
| | Failed forceps followed by C-section with forceps | FCF | |
| | Attempted forceps and vacuum followed by Csection using forceps and/or vacuum | FVC | |
| | Vacuum followed by C-section | VAC | |
| | Vacuum followed by forceps and then C-section | VFC | |
| | Attempted vacuum followed by C-section using forceps and/or vacuum | VCV | |
| | EMERGENCY C-SECT (NO LABOUR) | Blank | |
| | INTRAPARTUM C SECT | | 4 cm or more |
| | cervical dilatation prior to C-section | CDILCS | |
| | C-section with forceps | CSF | |
| | C-section with vacuum | CSV | |
| | C-section with vacuum and forceps | CSC | |
| | C-section | CSN | |
| | Failed forceps or failed trial of forceps followed by C-section | FAF | |
| | Failed forceps followed by C-section | FCF | |

| | | | |
|---|---|---|---|
| | with forceps<br>Attempted forceps and vacuum followed by Csection using forceps and/or vacuum<br>Vacuum followed by C-section<br>Vacuum followed by forceps and then C-section<br>Attempted vacuum followed by C-section using forceps and/or vacuum<br>ASSISTED BREECH OR BREECH EXTRACTION<br>Assisted breech<br>Breech extraction (Vaginal delivery only)<br>Podalic version and extraction (Do not use for Csection)<br>INTERNAL VERSION AND EXTRACTION<br>LAPOROTOMY FOR UTERUS RUPTURE<br>Other rupture of uterus before onset of labour<br>Other rupture of uterus during labour<br>Surgical repair, postpartum of obstetric laceration of corpus uteri<br>UNKNOWN METHOD OF DELIVERY | FVC<br>VAC<br>VFC<br>VCV<br>ABR<br>BRE<br>PVE<br>blank<br>O71.08<br>O71.18<br>5.PC.80.JH<br>999 | |
| status at birth: alive, fresh stillbirth, macerated stillbirth | OUTCOME OF INFANT<br>Alive<br>Stillbirth<br>BEFORE OR DURING LABOUR | <br>LVD<br>FTD<br>TimngofD | |
| Apgar score at 5 min | APGAR SCORE AT 5 MINUTES | APGAR5 | |
| birthweight | BIRTH WEIGHT | BIRTHWT | |
| HC (cm) | Head circumference at birth | HC_BIRTH | |
| sex (F, M) | SEX<br>Female<br>Male<br>Ambiguous | BTSEX<br>F<br>M<br>A | |
| congenital malformation (N/Y) | Major anomalies | MAJOR_Anom | |

## Caesarean Section

| Variable | Description | Code | Note |
|---|---|---|---|
| If caesarean section, PRIMARY indications: suspected fetal growth impairment | primary indication for csection<br>fetal growth restriction (retardation) | IndicCSI<br>FGT | |
| If caesarean section, PRIMARY indications: fetal distress | Fetal distress | FDS | |
| If caesarean section, PRIMARY indications: pre-eclampsia/eclampsia | Hypertensive disorders | HTD | |
| If caesarean section, PRIMARY indications: | Reason for induction is postdate | | |

| | | | |
|---|---|---|---|
| gestational age 41 completed weeks or more | Postdates<br>Reason for csection is failed induction<br>Failed Induction | 4<br><br>FID | |
| If caesarean section, PRIMARY indications: 3rd trimester vaginal bleeding | Abruptio Placenta | APL | |
| If caesarean section, PRIMARY indications: Cephalopelvic disproportion/ dystocia/failure to progress/ failed vacuum or forceps | Dystocia (Cephalopelvic disproportion, (C.P.D), Failure-to-progress, Maternal exhaustion, Cervical Stenosis POP, OP) | DYS | |
| If caesarean section, PRIMARY indications: multiple pregnancy, | Multiple Pregnancy | MTP | |
| If caesarean section, PRIMARY indications: uterine rupture | Suspected/imminent uterine rupture | SUR | |
| If caesarean section, PRIMARY indications: postmortem c-sect | Postmortem C-section | PMC | |
| If caesarean section, PRIMARY indications: breech or other malpresentation | Malpresentation<br>Transverse Lie<br>Breech | MLP<br>TLI<br>BCH | |
| If caesarean section, PRIMARY indications: previous c-section | Previous C-section | PCS | |
| If caesarean section, PRIMARY indications: failed induction | Failed Induction | FID | |
| If caesarean section, PRIMARY indications: Tubal ligation/sterilization | Blank | | |
| If caesarean section, PRIMARY indications: maternal request | Maternal choice | MAT | |
| If caesarean section, PRIMARY indications HIV | Human Immunodeficiency Virus | HIV | |
| If caesarean section, PRIMARY indications genital herpes/ extensive condyloma | Maternal herpes simplex infection | HSV | extensive condyloma will be blank |
| If caesarean section, PRIMARY indications other obstetric complication | Other Obstetrical Conditions<br>Prolonged rupture of membranes<br>Prolapsed cord<br>Placenta previa<br>Abruption placenta<br>Isoimmunization | OCC<br>PRM<br><br>PLC<br>PLP<br>APL<br>ISO | |

| | | | |
|---|---|---|---|
| If caesarean section, PRIMARY indications other fetal indication | Other Fetal Conditions<br>Suspected Fetal Anomaly | OFC<br>SFA | |
| If caesarean section, PRIMARY indications other maternal medical condition | Advanced Maternal Age<br>Diabetes<br>Diseases of the cervix | AMA<br>DBT<br>CXD | |
| If caesarean section, PRIMARY indications previous uterine surgery | Uterine surgery, previous | UTS | |
| If caesarean section, PRIMARY indications unknown | Unknown | 999 | |
| If caesarean section, OTHER indications: suspected fetal growth impairment | Blank | | |
| If caesarean section, OTHER indications: fetal distress | Blank | | |
| If caesarean section, OTHER indications: pre-eclampsia/eclampsia | Blank | | |
| If caesarean section, OTHER indications: gestational age 41 completed weeks or more | Blank | | |
| If caesarean section, OTHER indications: 3rd trimester vaginal bleeding | Blank | | |
| If caesarean section, OTHER indications: cephalopelvic disproportion/ dystocia/failure to progress/ failed vacuum or forceps | Blank | | |
| If caesarean section, OTHER indications: multiple pregnancy | Blank | | |
| If caesarean section, OTHER indications: uterine rupture | Blank | | |
| If caesarean section, OTHER indications: postmortem c-sect | Blank | | |
| If caesarean section, OTHER indications: breech or other malpresentation | Blank | | |
| If caesarean section, OTHER indications: previous c-section | Blank | | |
| If caesarean section, | Blank | | |

| | | | |
|---|---|---|---|
| OTHER indications: failed induction | | | |
| If caesarean section, OTHER indications: tubal ligation/sterilization | Blank | | |
| If caesarean section, OTHER indications: maternal request | Blank | | |
| If caesarean section, OTHER indications: HIV | Blank | | |
| If caesarean section, OTHER indications: genital herpes/ extensive condyloma | Blank | | |
| If caesarean section, OTHER indications: other obstetric complication | Blank | | |
| If caesarean section, OTHER indications: other fetal indication | Blank | | |
| If caesarean section, OTHER indications: other maternal medical condition | Blank | | |
| If caesarean section, OTHER indications: previous uterine surgery | Blank | | |
| If caesarean section, OTHER indications: unknown | Blank | | |

**Neonatal outcome**

| Variable | Description | Code | Note |
|---|---|---|---|
| Admission to ICU/SCU: No/Yes-not ventilated, yes-ventilated | SCN ADMISSION<br>MODE OF VENTILATION<br>Intermittent mandatory ventilation (IMV)<br>Synchronized mandatory ventilation (SIMV)<br>Pressure support (PS)<br>Continuous positive airway pressure (CPAP)<br>High frequency Oscillatory ventilation (HFOV)<br>Positive pressure ventilation (PPV)<br>ventilation respiratory | BTSCNAdm<br>R071<br>100<br>200<br>300<br>400<br>500<br>600<br>I_1GZ31 | |
| If yes, total # days spent in intensive/special care unit (up to 7 completed days) | Total length of stay in SCN during birth admission (days) | BTSCNLOS | |
| newborn status at discharge: alive and well, | alive and well<br>alive with obstetric trauma | none of the following<br>LVD + R082 | |

| | | | |
|---|---|---|---|
| alive with obstetric trauma, alive but referred to higher level care, dead within 24 h, dead after 24 h of birth | alive but referred to higher level care<br>dead within 24 h<br>dead after 24 h of birth | LVD + BTSCNAdm<br>LVD + DISCHARGE TO 86<br>BTDethDT- BTBrthDT<br>BTDethDT- BTBrthDT | |
| date of neonatal discharge | INFANT'S DISCHARGE DATE | BTDschDT | |
| requirement for any form of assisted ventilation | MODE OF VENTILATION<br>ventilation respiratory | R071<br>I_1GZ31 | |
| birth injury (fractured clavicle, skull, or long bone, or nerve injury (palsy)) | TRAUMA<br>Fracture Clavicle<br>Fracture Skull<br>Long bone:<br>Fracture Femur<br>Fracture Humerus<br>OTHER SPECIFIC NEUROLOGICAL FINDINGS | R082<br>100<br>600<br><br>200<br>300<br>R084 | |
| hypoxic ischemic encephalopathy | Hypoxic ischaemic encephalopathy of newborn | P91.6 | |
| meconium aspiration | PERSISTENT FETAL CIRCULATION/PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN<br>Meconium aspiration | R058<br><br>400 | |
| Was breastfeeding initiated? (n/y) | breastfeeding at discharge | BRSTFDIS | |
| Date of neonatal discharge | Discharge date | BTDschD8 | |

## *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
;
   label Pre_pregnancyWeight = "Initial prenatal weight in kg"
;
   MothersHeight = DLHeight
;
   label MothersHeight = "Mother's hight in cm"
;
   PostalCode = DLPSTCOD
;
   label PostalCode = "Postal code"
;
   BirthID = BIRTHID
;
   label 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
```

```
;
   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'
;
   label Eclampsia = "Eclampsia"
;
   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'
;
   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"
;
   if sum ( of R020_00200, R020_00300, R020_00500, R020_00600, R020_00700,
   R020_00800, R020_01200 ) = 0 then
      RenalDisease = 'No'
;
   else RenalDisease = 'Yes'
;
   label RenalDisease = "Renal calculus,Chronic
glomerulonephritis,Hydronephrosis,Nephropathy,Nephrotic syndrome,Polycystic kidney
disease,Chronic renal disease,type undetermined"
;
   if sum ( of R023_00100, R023_00200, R023_00400 )= 0 then
      ChronicRespiratoryCondition = 'No'
;
   else ChronicRespiratoryCondition = 'Yes'
;
   label ChronicRespiratoryCondition = "Asthma,Cystic fibrosis,Other significant pulmonary
diseases"
;
   if ( MO365 =0 ) then
      LowUterineHighForGestationalAge = 'No'
;
   else LowUterineHighForGestationalAge = 'Yes'
;
   label LowUterineHighForGestationalAge = "Maternal care for restricted fetal growth"
;
   if sum ( of R014_00900, R014_01000, R014_01100, R014_01200, R014_01300,
   R014_01400) = 0 then
      DiabetesMellitus = 'No'
;
```

```
   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_Chorioamnionitis
  PIndiForInduc_VaginalBleeding PIndiForInduc_PreeclampEclamp
  PIndiForInduc_PostTerm PIndiForInduc_ElectiveInduction
  PIndiForInduc_OthPregCompli PIndiForInduc_OthMatMedCompli
  PIndiForInduc_Unknown OIndiForInduc_FetalDeath OIndiForInduc_IUGR
  OIndiForInduc_FetalDistress OIndiForInduc_MultiplePregnancy
  OIndiForInduc_PROM OIndiForInduc_Chorioamnionitis
  OIndiForInduc_VaginalBleeding OIndiForInduc_PreeclampEclamp
  OIndiForInduc_PostTerm OIndiForInduc_ElectiveInduction
  OIndiForInduc_OthPregCompli OIndiForInduc_OthMatMedCompli
  OIndiForInduc_Unknown InducMethod_Oxytocin InducMethod_Misoprostol
  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_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
         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 PIndiForInduc_MultiplePregnancy = 'No'
;
   label PIndiForInduc_MultiplePregnancy = "Primary indication for induction of
labour:Multiple pregnancy"
;
   if ( DMINDUCT = 5 ) then
      PIndiForInduc_PROM = 'Yes'
;
   else PIndiForInduc_PROM = 'No'
;
   label PIndiForInduc_PROM = "Primary indication for induction of labour:Premature rupture
of membranes without Chorioamnionitis"
;
   if ( DMINDUCT = 6 ) then
      PIndiForInduc_Chorioamnionitis = 'Yes'
;
   else PIndiForInduc_Chorioamnionitis  = 'No'
;
   label PIndiForInduc_Chorioamnionitis  = "Primary indication for induction of
labour:Premature rupture of membranes with clinical Chorioamnionitis"
;
   if ( DMINDUCT = 27 ) then
      PIndiForInduc_VaginalBleeding  = 'Yes'
;
   else PIndiForInduc_VaginalBleeding = 'No'
;
   label PIndiForInduc_VaginalBleeding = "Primary indication for induction of labour: Vaginal
Bleeding"
;
   if ( DMINDUCT = 12 ) or ( DMINDUCT = 22 ) then
      PIndiForInduc_PreeclampEclamp= 'Yes'
;
   else PIndiForInduc_PreeclampEclamp = 'No'
;
   label PIndiForInduc_PreeclampEclamp = "Primary indication for induction of
labour:Hypertension/Seizure"
;
   if ( DMINDUCT = 4 ) then
      PIndiForInduc_PostTerm = 'Yes'
;
   else PIndiForInduc_PostTerm  = 'No'
;
   label PIndiForInduc_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'
;
   label 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'
;
   label 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'
;
   label 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'
;
   label PIndiForInduc_Unknown = "Primary indication for induction of labour:No indication
given"
;
   OIndiForInduc_FetalDeath = ' '
;
   label OIndiForInduc_FetalDeath = "No available information"
;
   OIndiForInduc_IUGR = ' '
;
   label OIndiForInduc_IUGR = "No available information"
;
   OIndiForInduc_FetalDistress = ' '
;
   label OIndiForInduc_FetalDistress = "No available information"
;
```

```
    OIndiForInduc_MultiplePregnancy = ' '
;
    label OIndiForInduc_MultiplePregnancy = "No available information"
;
    OIndiForInduc_PROM = ' '
;
    label OIndiForInduc_PROM = "No available information"
;
    OIndiForInduc_Chorioamnionitis = ' '
;
    label OIndiForInduc_Chorioamnionitis = "No available information"
;
    OIndiForInduc_VaginalBleeding = ' '
;
    label OIndiForInduc_VaginalBleeding = "No available information"
;
    OIndiForInduc_PreeclampEclamp = ' '
;
    label OIndiForInduc_PreeclampEclamp = "No available information"
;
    OIndiForInduc_PostTerm = ' '
;
    label OIndiForInduc_PostTerm = "No available information"
;
    OIndiForInduc_ElectiveInduction = ' '
;
    label OIndiForInduc_ElectiveInduction = "No available information"
;
    OIndiForInduc_OthPregCompli = ' '
;
    label OIndiForInduc_OthPregCompli = "No available information"
;
    OIndiForInduc_OthMatMedCompli = ' '
;
    label OIndiForInduc_OthMatMedCompli = "No available information"
;
    OIndiForInduc_Unknown = ' '
;
    label OIndiForInduc_Unknown = "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
      AnaesAnalInLabor = 'No analgesia/anaesthesia'
;
   if sum ( of R011_00200, R011_00300, R011_00400, R011_00500, R010_00200,
   R010_00300, R010_00400, R010_00500 ) > 0 then
      AnaesAnalInLabor = 'Epidural'
;
   if sum ( of R011_00900, R010_00900 ) > 0 then
      AnaesAnalInLabor = 'Spinal'
;
   if ( R008 = 1 ) then
      AnaesAnalInLabor = 'Injectable analgesic'
;
   if sum ( of R011_01000, R010_01000 ) > 0 then
      AnaesAnalInLabor = 'Epidural/Spinal together'
;
   if sum ( of R011_00100, R011_01100, R011_00800, R010_00100, R010_01100,
   R010_00800 ) > 0 then
      AnaesAnalInLabor = 'Alternative method'
;
   if sum ( of R011_00600, R010_00600 ) > 0 then
      AnaesAnalInLabor = 'General'
;
   label AnaesAnalInLabor = "Anaesthesia/analgesia during labor only or during labor and
delivery"
;
   if sum ( of R012, R010 ) = 0 then
      AnaesAnalInDelOrCsec = 'No analgesia/anaesthesia'
;
   if sum ( of R012_00200, R012_00300, R012_00400, R012_00500, R010_00200,
   R010_00300, R010_00400, R010_00500 ) > 0 then
      AnaesAnalInDelOrCsec = 'Epidural'
;
   if sum ( of R012_00900, R010_00900 ) > 0 then
      AnaesAnalInDelOrCsec = 'Spinal'
;
   if sum ( of R012_00600, R010_00600 ) > 0 then
      AnaesAnalInDelOrCsec = '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, R011_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
```

```
      R018_00300 MI46
      MN17 MO904
      MY600
      MO860
      MO902
      DLadmsD8
      EPISIOT )
;
   LENGTH BIRTHID 8
;
   LENGTH AntibioticInAdmission InfAntenatally 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
```

```
        MO751
        R018_00300 MI46
        MN17 MO904
        MY600
        MO860
        MO902
        DLadmsD8
        EPISIOT
        DLDschD8
        BIRTHID /*primary key*/ )
;
   if ( R007 = 0 ) then
      AntibioticInAdmission = 'No'
;
   else AntibioticInAdmission = 'Yes'
;
   label AntibioticInAdmission = "Antibiotic administeration"
;
   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, MO752, 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
;

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

options fmtsearch = ( format )
;
data Neonatal_Data
   (drop =
      DLNUMFET BTBrthOr
      BrthDate
      BTBrthDT
      GA_OBS
      POSATDEL
      METHODEL LABOUR CDILCS
      BTOUTCOM TimngofD
      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 BTBrthOr
         BrthDate
         BTBrthDT
         GA_OBS
         POSATDEL
         METHODEL LABOUR CDILCS
```

```
        BTOUTCOM TimngofD
        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 PIndiForCSect_SusFetalGrowthImp PIndiForCSect_FetalDistress
   PIndiForCSect_PreeclamEclamp PIndiForCSect_Postdate PIndiForCSect_VaginalBleeding
   PIndiForCSect_Dystocia PIndiForCSect_MultiplePregnancy PIndiForCSect_UterineRupture
```

```
   PIndiForCSect_PostmortemCsect PIndiForCSect_Malpresentation
PIndiForCSect_PreviousCsect
   PIndiForCSect_FailedInduction PIndiForCSect_TubalLigation
PIndiForCSect_MaternalRequest
   PIndiForCSect_HIV PIndiForCSect_GenitalHerpes PIndiForCSect_OtherObstetCondi
   PIndiForCSect_OtherFetalIndi PIndiForCSect_OtherMatMedCondi
   PIndiForCSect_PreUterineSurgery PIndiForCSect_Unknown
OIndiForCSect_SusFetalGrowthImp
   OIndiForCSect_FetalDistress OIndiForCSect_PreeclamEclamp OIndiForCSect_Postdate
   OIndiForCSect_VaginalBleeding OIndiForCSect_Dystocia
OIndiForCSect_MultiplePregnancy
   OIndiForCSect_UterineRupture OIndiForCSect_PostmortemCsect
OIndiForCSect_Malpresentation
   OIndiForCSect_PreviousCsect OIndiForCSect_FailedInduction
OIndiForCSect_TubalLigation
   OIndiForCSect_MaternalRequest OIndiForCSect_HIV OIndiForCSect_GenitalHerpes
   OIndiForCSect_OtherObstetCondi OIndiForCSect_OtherFetalIndi
   OIndiForCSect_OtherMatMedCondi OIndiForCSect_PreUterineSurgery
OIndiForCSect_Unknown $
   30
;
   set Nsapd.Monster
      ( keep =
         IndicCS1
         DMINDUCT
         DLDschD8
         BIRTHID /*primary key*/ )
;
   if ( IndicCS1 = 'FGT' ) then
      PIndiForCSect_SusFetalGrowthImp = 'Yes'
;
   else PIndiForCSect_SusFetalGrowthImp = 'No'
;
   label PIndiForCSect_SusFetalGrowthImp = "Primary indication for c-section: fetal growth
restriction"
;
   if ( IndicCS1 = 'FDS' ) then
      PIndiForCSect_FetalDistress = 'Yes'
;
   else PIndiForCSect_FetalDistress = 'No'
;
   label PIndiForCSect_FetalDistress = "Primary indication for c-section: fetal distress"
;
   if ( IndicCS1 = 'HTD' ) then
      PIndiForCSect_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'
;
   label PIndiForCSect_FailedInduction = "Primary indication for c-section: failed induction"
;
   PIndiForCSect_TubalLigation = ' '
;
   label PIndiForCSect_TubalLigation = "Primary indication for c-section: Tubal
ligation/sterilization(no available information)"
;
   if ( IndicCS1 = 'MAT' ) then
      PIndiForCSect_MaternalRequest = 'Yes'
;
   else PIndiForCSect_MaternalRequest = 'No'
;
   label PIndiForCSect_MaternalRequest = "Primary indication for c-section: Maternal choice"
;
   if ( IndicCS1 = 'HIV' ) then
      PIndiForCSect_HIV = 'Yes'
;
   else PIndiForCSect_HIV = 'No'
;
   label 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 PIndiForCSect_Unknown="Primary indication for c-section: Unknown"
;
OIndiForCSect_SusFetalGrowthImp = ' '
;
label OIndiForCSect_SusFetalGrowthImp = "Other indication for c-section: fetal growth restriction"
;
OIndiForCSect_FetalDistress = ' '
;
label OIndiForCSect_FetalDistress = "Other indication for c-section: fetal distress"
;
OIndiForCSect_PreeclamEclamp = ' '
;
label OIndiForCSect_PreeclamEclamp = "Other indication for c-section: Hypertensive disorders"
;
OIndiForCSect_Postdate = ' '
;
label OIndiForCSect_Postdate = "Other indication for c-section: gestational age 41 completed weeks or more"
;
OIndiForCSect_VaginalBleeding = ' '
;
label OIndiForCSect_VaginalBleeding = "Other indication for c-section: Abruptio Placenta, 3rd trimester vaginal bleeding"
;
OIndiForCSect_Dystocia = ' '
;
label OIndiForCSect_Dystocia = "Other indication for c-section: Dystocia (Cephalopelvic disproportion, (C.P.D), Failure-to-progress, Maternal exhaustion, Cervical Stenosis POP, OP)"
;
OIndiForCSect_MultiplePregnancy = ' '
;
label OIndiForCSect_MultiplePregnancy = "Other indication for c-section: Multiple Pregnancy"
;
OIndiForCSect_UterineRupture = ' '
;
label OIndiForCSect_UterineRupture = "Other indication for c-section: Suspected/imminent uterine rupture"
;
OIndiForCSect_PostmortemCsect = ' '
;
label OIndiForCSect_PostmortemCsect = "Other indication for c-section: Postmortem C-section"

```
;
   OIndiForCSect_Malpresentation = ' '
;
   label OIndiForCSect_Malpresentation = "Other indication for c-section: Malpresentation,
Transverse Lie, Breech"
;
   OIndiForCSect_PreviousCsect = ' '
;
   label OIndiForCSect_PreviousCsect = "Other indication for c-section: previous c-section"
;
   OIndiForCSect_FailedInduction = ' '
;
   label OIndiForCSect_FailedInduction = "Other indication for c-section: failed induction"
;
   OIndiForCSect_TubalLigation = ' '
;
   label OIndiForCSect_TubalLigation = "Other indication for c-section: Tubal
ligation/sterilization(no available information)"
;
   OIndiForCSect_MaternalRequest = ' '
;
   label OIndiForCSect_MaternalRequest = "Other indication for c-section: Maternal choice"
;
   OIndiForCSect_HIV = ' '
;
   label OIndiForCSect_HIV = "Other indication for c-section: Human Immunodeficiency
Virus"
;
   OIndiForCSect_GenitalHerpes = ' '
;
   label OIndiForCSect_GenitalHerpes = "Other indication for c-section: Maternal herpes
simplex infection(no available information in extensive condyloma)"
;
   OIndiForCSect_OtherObstetCondi = ' '
;
   label OIndiForCSect_OtherObstetCondi = "Other indication for c-section: Other Obstetrical
Conditions, Prolonged rupture of membranes, Prolapsed cord, Placenta previa, Abruption
placenta, Isoimmunization"
;
   OIndiForCSect_OtherFetalIndi = ' '
;
   label OIndiForCSect_OtherFetalIndi = "Other indication for c-section: Other Fetal Conditions,
Suspected Fetal Anomaly"
;
   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 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 RequireAssisVentilation 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_00600 R082_00200 R082_00300 R084
         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 ( I_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.Labour_And_Delivery Work.Maternal_Outcome Work.Neonatal_Data
   Work.Caesarean_Section Work.Neonatal_Outcome
;
   by BIRTHID
;
   where '31MAR2008'D < DLDschD8 < '01APR2009'D
;
run
;
```