THE IDENTIFICATION AND VALIDATION OF NEURAL TUBE DEFECTS IN THE GENERAL PRACTICE RESEARCH DATABASE

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ABSTRACT

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The Identification And Validation Of Neural Tube Defects In The General Practice Research Database

(Under the direction of Dr. Suzanne West)

Background: Our objectives were to develop an algorithm for the identification of pregnancies in the General Practice Research Database (GPRD) that could be used to study birth outcomes and pregnancy and to determine if the GPRD could be used to identify cases of neural tube defects (NTDs).

Methods: We constructed a pregnancy identification algorithm to identify pregnancies in 15 to 45 year old women between January 1, 1987 and September 14, 2004. The algorithm was evaluated for accuracy through a series of alternate analyses and reviews of electronic records. We then created electronic case definitions of anencephaly, encephalocele, meningocele and spina bifida and used them to identify potential NTD cases. We validated cases by querying general practitioners (GPs) via questionnaire.

Results: We analyzed 98,922,326 records from 980,474 individuals and identified 255,400 women who had a total of 374,878 pregnancies. There were 271,613 full-term live births, 2,106 pre- or post-term births, 1,191 multi-fetus deliveries, 55,614 spontaneous abortions or miscarriages, 43,264 elective terminations, 7 stillbirths in combination with a live birth, and 1,083 stillbirths or fetal deaths. A marker of pregnancy care was identifiable for 330,153 pregnancies, eighty-four percent of which had data available at least 180 days prior to the first marker of pregnancy care. From the same population of 980,474 individuals, 217 NTD cases were identified. We attempted to validate all 217 NTD cases and 165 GP

questionnaires were returned. We validated a NTD diagnosis for 117 cases, giving our electronic case definitions a positive predictive value of 0.71. The positive predictive value varied by NTD type: 0.81 for anencephaly, 0.83 for cephalocele, 0.64 for meningocele, and 0.47 for spina bifida.

Conclusions: We were successful in identifying a large number of pregnancies in the GPRD. Our use of a hierarchical approach to identify pregnancy outcomes builds upon the methods suggested in previous work, while implementing additional steps to minimize potential misclassification of pregnancy outcomes. Our NTD identification algorithm was useful in identifying three of the four types of NTDs studied. Additional information is necessary to accurately identify cases of spina bifida.

To my wife Julie and my son Adam.
I could not have done this without their love and support.

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TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

LIST OF ABBREVIATIONS

AChE	Acetal Coline Esterase Inhibitor
AFP	Alpha-Feto Protein
CI	Confidence Interval
CNS	Central Nervous System
EOP	End-of-pregnancy
EUROCAT	European Concerted Action on Congenital Anomalies and Twins
FDA	US Food and Drug Administration
GP	General Practitioner
GPRD	General Practice Research Database
hCG	Human Chorionic Gonadotropin
ID	Identification
ISAC	Independent Scientific Advisory Committee
L&S	Live and Stillborn
LMP	Last Menstrual Period
MCA	Medicines Control Agency
MHRA	Medicines and Healthcare products Regulatory Agency
MoM	Multiples of the Median
MSAFP	Maternal Serum Alpha Feto Protein
NCAS	National Congenital Anomaly System
NHS	UK National Health Service
NIH	National Institutes of Health
NT	Nuncal Translucency

NTD	Neural Tube Defect
ONS	UK Office of National Statistics
OR	Odds Ratio
OXMIS	Oxford Medical Information System
PAPP-A	Pregnancy-associated plasma protein A
PCM	Pregnancy-care-marker
PID	Patient Identification Number
PPV	Positive Predictive Value
RR	Risk Ratio/Relative Risk
RTI	Research Triangle Institute
SEAG	Scientific and Ethical Advisory Group
uE3	Unconjugated estriol
UK	United Kingdom
US	United States
UST	Up to standard
VAMP	Value Added Medical Products
WHO	World Health Organization

I. INTRODUCTION

The purpose of this study is to develop methods for use in a comprehensive electronic medical records system that can identify neural tube defects (NTDs) for future epidemiologic study. We use The General Practice Research Database (GPRD) to develop these methods. The GPRD is a large electronic medical record system use by general practitioners in the United Kingdom. Using this data, in combination with a specially designed General Practitioner (GP) questionnaire, we have developed and validated operational case definitions for the identification of NTDs.

In addition to this introduction, there are five primary chapters to this dissertation. We begin with Chapter II: a review of the literature. This review introduces the current state of knowledge on the biology of NTDs, the known risk factors and known relationships between medications and NTDs, the current clinical practice for the identification of neural tube defects, and the current prevalence and means of monitoring for NTDs in the United Kingdom. Finally, we introduce the GPRD and discuss some of the previous birth defect and pregnancy identification research using the data.

Chapter III discusses the specific aims for this dissertation. We introduce our working hypothesis and propose several specific aims meant to address these research questions. Chapter IV provides a detailed description of the methods used in this research. After an overview and discussion of the data used, we describe in detail the procedures used for the identification of pregnancies and neural tube defects. We end our discussion of methods with a description of the analyses used to assess the procedures.

Chapter V discusses the results of this dissertation. Results are divided into three sections: 1) The identification of pregnancies within the GPRD, 2) the identification and validation of NTDs within the GPRD and 3) the discussion of several additional analyses conducted beyond the primary results for the pregnancy and NTD identification procedures. Chapter VI concludes this dissertation with a discussion of the conclusions drawn upon completion of this project and the future directions necessary to continue this work.

II. REVIEW OF THE LITERATURE

A. Neural Tube Defects

1. Biology

NTDs are a group of severe central nervous system abnormalities that occur during early embryonic development when the neural tube fails to close. The neural tube is an epithelial tube formed from the neuroectoderm of the early embryo by the closure of the neural groove. Through cell proliferation and organization, the neural tube develops into the central nervous system.[1] The neurulation process (neural tube closure) requires 10 days to complete and occurs during the 3rd to 4th week post-fertilization.[2, 3] Neural tube formation and neurulation are the most complex phases of embryogenesis involving both extrinsic and intrinsic forces.[2] These forces work together in the elevation and support of the neural plate, which then leads to the folding and closure of the neural tube.[2]

Extrinsic forces involve cell structures and tissues outside of the neural plate. Defects can occur in the neural tube when there is disruption of these extrinsic forces during initial stages of neural plate elevation, or abnormal cell proliferation or inhibition of cell surface glycoproteins of the neural and non-neural ectoderm.[2] Intrinsic forces include the forces occurring within the neural plate itself. Cytoskeletal elements, such as microtubules, actin microfilaments and actin-binding proteins, are important during the process of transformation of the neural plate epithelium.[2] Disruption in these cytoskeletal elements has been shown to cause severe NTDs in chicks and rodents.[4, 5]

The final stages of neural tube closure, particularly the actual site on the neural tube where closure is initiated, remain controversial.[2] Neural tube closure may occur following the pattern of the mouse neural tube, whereby the tube closes in a zipper like fashion from the cervical region to the posterior neuropore.[6] Alternatively, neural tube closure may be more similar to that of a chick, which closes at two initiation sites, a cervical site and a rostral forebrain site.[7] This controversy is partly due to the fact that mechanisms of closure and the shape of the neural tube differ in different anatomic regions. Defects in different regions may be the result of teratogenic agents that affect different mechanisms at a particular site during the closure process.[2] These delicate processes are of particular interest to researchers as they occur during a period of time that a woman may not know she is pregnant, which may present a critical window of exposure for medications to inflict damage to the growing fetus.

2. The Role Of Folic Acid

In mammals, folate is an essential nutrient for cell function, division and differentiation.[8] Folate is an important substrate in the formation of adenosine, guanine, and methionine synthesis via homocysteine and serine and glycine interconversion. Adenosine, guanine and methionine are involved in basic processes of cell formation and division, including neurulation. There has been evidence of a relationship between folic acid deficiency and malformations dating back to the middle of the 20th century. After early work in animal models,[9] the potent folic acid antagonist, aminopterin, was administered as an abortifacient between 22 and 62 days of gestation.[10] Spontaneous abortions resulted in 10 of the 12 cases. In two surgically induced abortions various malformations including cleft palate and

hydrocephalus were seen. In a follow-up series of these 12 women that received aminopterin early in pregnancy, one child with anencephaly was delivered.[11, 12] These early observations were the first evidence that chemical exposure to an embryo could result in a malformation and provided early insight into folic acids role in neurulation.[12]

There are a number of ways folate deficiencies can develop including inadequate dietary intake, malabsorption, altered metabolism and increased elimination.[8] Proposed mechanisms for folic acid's role in the prevention of NTDs focus on overcoming these folate deficiencies as well as decreasing the risks associated with genetic predisposition or metabolic disturbances. Increased requirements, poor absorption or inadequate conversion of folate in women with genetic predispositions for NTD have all been hypothesized as mechanisms for the beneficial effect of folate in decreasing NTDs.[8, 13-15] The ability of folic acid to surmount metabolic disturbances of folate regulated metabolic pathways, primarily those involved in the methylation process, has been demonstrated in a number studies.[16-18] Impaired methylation can cause errors in DNA synthesis and receptor molecule formation.[8]

Homocysteine metabolism is inter-related with folate status through the activities of 5-methyltetrahydrofolate, methionine synthase and the conversion of homocysteine to methionine.[8] Levels of homocysteine have been shown to be elevated in women who gave birth to children with NTDs.[19, 20] There are several possible disturbances in homocysteine and folate metabolism that may lead to NTDs. Defects in enzymes involved in the remethylation and transsulphuration of homocysteine can lead to elevated levels of homocysteine. While common errors in transsulphuration do not appear to be associated with NTDs,[21] disturbances in remethylation do appear to have a relationship with the

occurrence of NTDs.[20, 22] Although still unclear, additional folate intake by the mother may be enough to overcome elevated levels of homocysteine leading to a decrease in NTDs.

Clinical evidence for the role of folic acid in primary and secondary prevention dates back to the 1960's with some of the first work being done on the relationship between multivitamin use and congenital abnormalities.[23] Early theories focused on poor general nutritional being the cause of NTDs. The hypothesis that multivitamin supplementation (containing folic acid) prior to conception could decrease the number of central nervous system defects was tested by the work of Smithells et al.[24] The authors found that in a secondary prevention cohort of mothers who were given the multivitamin supplement had fewer subsequently affected newborns than mothers who were not given a multivitamin (0.6 versus 5.0 percent). Although this study had several methodological flaws,[25, 26] it provided important rationale to pursue data through randomized controlled trials.

Shortly after the Smithells study was published, Laurence et al published a double-blind randomized controlled trial of secondary prevention of NTDs with folate treatment.[27] The treatment group was given 2 mg of folic acid twice daily pre-conceptually. In these high risk women, the group on folic acid had no NTDs in 44 pregnancies, while the control group had four in 51.[12] Poor compliance and possible misclassification of outcomes left questions as to the differences in impact of folic acid and placebo.[12]

Many of the shortcomings of these studies were meant to be addressed in the Medical Research Council Trial.[28] This randomized, multi-center, placebo controlled trial allocated 1817 women with a previous NTD pregnancy to either folic acid, a multivitamin, both or placebo. Of 1195 pregnancies from this group, 6 of the 593 on folic acid had a NTD, while 21 of 602 in the other groups had a NTD yielding a relative risk of 0.28 (95% CI: 0.12 -

0.71). Despite the criticisms of this study, including inadequate control for socioeconomic status, uncertainty about the diagnosis of the initial NTDs and a failure to address primary prevention, it was the strongest evidence to date concerning the protective nature of folic acid supplementation and the prevention of secondary NTDs.[12]

The first study to address primary prevention of NTDs was conducted as part of the Metropolitan Atlanta Birth Defects Program.[29] In this case-control study, women were asked about pre-conception vitamin use. Of the 14 percent of women who reported pre-conception vitamin use, twice as many controls as cases reported that they took vitamin supplementation. Criticisms of this study included the potential for recall bias, the failure to ascertain stillbirths in the control group, and participation differences for whites and non-whites.[12] However, this study did offer the first evidence that not only high-risk mothers could benefit from folic acid supplementation. Werler and colleagues extended these results to include periconceptional folic acid exposure at differing doses.[30] In women without a prior history of NTD pregnancies who used folic acid containing vitamins 28 days before and after their last menstrual period, the risk of NTD was 60% lower (RR=0.4, 95%CI: 0.2-0.6) than those who did not take folic acid. When the dose of folic acid was 0.4mg the relative risk estimate was 0.3 (95% CI: 0.1-0.6).

Several additional studies relying on patient self-report followed the Atlanta study, each with mixed results. A case-control study sponsored by the NIH[31] of women in California and Illinois showed no major difference in the use of multivitamins or folate containing supplements. A prospective cohort study conducted in Boston[32] showed a substantial decrease in the number of births with NTDs born to women using folate supplements.

Studies from Australia[14], and Hungary[33], each showed no definitive evidence of an association between folic acid supplementation and primary prevention of NTDs.

In an attempt to summarize these data, Lumley et al conducted a systematic review of the literature to assess the effects of increased consumption of folate on the prevalence of NTDs.[34] The authors identified four studies that met their inclusion criteria.[27, 28, 33, 35] Pre-conceptual folate supplementation reduced the incidence of NTDs by 72 percent (relative risk 0.28, 95% CI: 0.13 to 0.58). The primary and secondary prevention of NTDs with folate supplementation was associated with a 93 percent reduction (relative risk 0.07, 95% confidence interval 0.00 to 1.32) and a 69 percent reduction (relative risk 0.31, 95% CI: 0.14 to 0.66) respectively.

3. Genetic Risk Factors

NTDs are thought to have both genetic and environmental determinants. Single gene mutations and chromosomal abnormalities are associated with various NTDs. It is difficult to determine what proportion of NTDs is due to these genetic causes or a combination of environmental and genetic causes. In several studies, the proportion of fetuses with NTDs that had chromosomal abnormalities ranged from 0 to 100 percent although not all studies included spontaneous abortuses, stillborn and live born births.[36-39] Autosomal recessive disorders such as Meckel-Gruber syndrome and Walker-Warburg syndrome are associated with encepholoceles.[40] Trisomy 13 and 18 syndromes are also associated with anencephaly, meningomyelocele and microencephaly (abnormal smallness of the brain).[40] Pregnancies with these syndromes may be classified separately, as it is suspected that the etiology of the

NTDs in these cases are mostly genetic in origin.[41] These cases may constitute a base NTD prevalence.

Even in non-syndromal NTDs, there is evidence that genetic components are important.[8] There are sex differences in the birth prevalence of certain NTDs.[42] The sex distribution of spina bifida is closer to birth proportions in most countries, with a slight female predominance.[43] There is also a reported excess of live born females with anencephaly, however, it is unknown if this is actually a favoring of females, or selective loss of males prior to birth.[44, 45] Khoury et al evaluated data from the US national Birth Defects Monitoring Program (1970-1978) and the Metropolitan Atlanta Congenital Defects Program (1968-1979), and found that there was a female predominance among anencephaly and spina bifida in cases of single NTDs.[46] Hypotheses proposed to explain these sex distributions include: 1) sex related differences in the rate of spontaneous abortions; 2) sex differences in the process of early development of the embryo; 3) sex differences in susceptibility to teratogens; and 4) genetic factors.[42, 43]

Studies of affected siblings have provided evidence for genetic risk factors. Elwood et al estimated that the risk triples with each subsequent NTD-affected pregnancy after the first.[43] Janerich and Piper conducted a review of New York State birth records looking at the recurrence frequency of anencephaly and spina bifida in siblings of initial cases with anencephaly or spina bifida.[47] While the percentage of siblings of initial cases with anencephaly or spina bifida was 1.8 percent, concordant twin pairs had a recurrence risk of 6.8 percent, indicating a genetic component. First, second and third-degree relatives of initial cases with NTDs also appear to be at higher risk. In a study of spina bifida and anencephaly, Toriello and Higgins contacted parents' groups and genetic clinics to identify cases and seek

information about other affected family members.[48] The occurrence of a NTD in first-degree relatives was 3.2 percent, second-degree relatives were 0.5 percent and it was 0.17 percent in third degree relatives. There is an increased prevalence of NTDs when the parents are related. In a 1966 WHO study by Stevenson et al, the rates of NTDs in consanguineous versus non-consanguineous marriages were 14.2 versus 5.7 per thousand total births respectively, further adding to the evidence of a genetic component to NTD occurrence.[44, 49]

4. Maternal Factors

There are several maternal factors that appear to affect NTD prevalence. Ethnic differences in the occurrence of NTDs are evident. Ethnicity as a risk factor was first introduced to help explain the variability in prevalence of NTDs in the British Isles.[41] In the US, the risk among African Americans is low, while the risk among Hispanics, even after controlling for diabetes and obesity, is high.[50, 51] Maternal age appears to have only a minor affect on the risk of NTD.[41] When an association has been found, it appears to be in those mothers under 20 and over 35.[44] Parity may have a stronger effect than maternal age, with a "modest risk in mothers of parity three or more",[43] however, other markers of maternal fertility and the use of treatments for infertility do not appear to be associated with increased risk.[41, 52]

Studies in Texas and California produced different results regarding the relationship between previous pregnancy terminations and NTDs. In a case-control study of Hispanics in Texas, Canfield et al. determined that women with a previous pregnancy termination had a risk of anencephaly that was 2.4 (95 % CI: 1.2-4.8) times as high as those who did not have a

previous pregnancy termination.[50] Todoroff and Shaw, in a study of prior spontaneous or elective abortions, found a slightly decreased risk of NTDs.[53]

Obesity has been shown to increase the risk of NTD in several studies.[51, 54, 55] Shaw and colleagues investigated this risk using the data from a population-based case-control study with cases identified from the California Birth Defects Monitoring Program.[51] Women in the highest pre-pregnancy weight group (pre-pregnancy weight of >100kg) had an increased risk of having a child with a NTD (RR=2.1; 95% CI: 0.8 to 5.8) compared to those whose weight was between 48 and 77 kg. Watkins et al conducted a similar study using data from the Metropolitan Atlanta Birth Defects Case-Control Study.[54] Obese women had an increased risk 1.9 (95% CI: 1.1-3.4) times as high as average-weight women to give birth to an infant with a NTD.

Because many obese women also have type II diabetes, Hendricks et al tried to establish if obesity or underlying hyperinsulinemia was associated with an increased risk of NTD.[56] They found that the presence of hyperinsulinemia and obesity yielded an odds ratio of 1.9 (95% CI: 1.2-3.0) compared to the absence of these two factors. Hyperinsulinemia adjusted for obesity had a similar effect with an odds ratio of 1.8 (95% CI: 1.1-2.8). Obesity adjusted for hyperinsulinemia had a more modest impact with an odds ratio of 1.4 (95% CI: 0.8-2.5).

Several maternal illnesses including “flu” or “cold” syndromes, and febrile illnesses have been associated with increased risk of NTDs. In a study of records from the Finnish Register of Congenital Malformations, Kurppa et al assessed the association between reported first trimester maternal cold and anencephaly.[57] In a case-control study of 393 mother-child pairs, 70 mothers with an anencephaly-affected child versus 17 control mothers reported a common cold with or without a fever in the first trimester (adjusted OR 4.5, 95% CI: 2.2-9.1). When

those without a fever were excluded, the result was similar but less precise (adjusted OR 4.7, 95% CI: 1.0-22.5).

Lynberg et al, using the Atlanta Birth Defects Case-Control Study data, evaluated the association between NTDs and maternal exposure to flu, fever and medications taken for illness.[58] For mothers who reported episodes of flu with fever that lasted 2 or more days in the time period from 1 month prior to 3 months post-conception, the risk of any NTD was 3.0 (95 percent CI: 1.9-4.7) times as high as the risk of any NTD in those mothers without an episode. The risk of NTD when the mother had flu without fever prior to or after conception was 2.0 (95% CI: 1.1-4.0) times as high as the risk in those who did not have the flu. The risk of NTD for women who took medications for their flu episode was 4.3 (95% CI: 2.6-7.1) times as high as the risk of NTD for women who did not take medications for the flu episode. Shaw et al, using the California Birth Defects Monitoring Program data, evaluated the impact of a variety of maternal illnesses on NTD occurrence.[59] While still finding an association between fever (OR 1.99, 95 percent CI: 1.37-2.90) or febrile illness (OR 1.99, 95 percent CI: 1.12-3.46) and NTDs, they failed to find the strong association between medication use and NTD occurrence.

5. Medications

While the mechanism for medication induced NTDs are primarily unknown, those that affect folic acid activity have been shown to be associated with an increase risk for NTDs. There are a variety of pharmacodynamic mechanisms that medications can make use of that can have this effect. Medications that can antagonize the effects of folic acid within the body include pyrimethamine, trimethoprim, trimetrexate, triamterene, and sulfasalazine

because they inhibit dihydrofolate reductase producing antifolate effects.[60] Aminopterin and methotrexate, antineoplastic agents, are potent folic acid antagonists and are known teratogens.[61] As mentioned above in the section on folic acid, aminopterin's effects were identified in early work on folic acid's role in neural tube formation.[10] By blocking the conversion of folic acid to tetrahydrofolic acid, these agents can limit the formation of important amino acids involved in cell formation.

A medication or its metabolite can also affect folic acid activity by impairing absorption or altering hepatic metabolism.[62-64] Colchicine, a common medication for gout, reduces blood folate concentrations through an unknown mechanism.[65] Cycloserine combined with isoniazid for the treatment of tuberculosis results in lower serum folate levels compared with isoniazid alone.[66] Oral contraceptives have also been shown to lower folate concentrations.[66] Colchicine, cycloserine, isoniazid and oral contraceptives have not been associated with NTDs.

Several antiepileptic medications have been shown to increase the risk of NTDs. Phenytoin reduces folic acid levels by affecting several enzymes involved in the metabolism of folic acid or tetrahydrofolic acid.[67-69] In a small study of multiple antiepileptic agents, phenytoin use was associated with a case of anencephaly.[62] Carbamazepine has been shown to reduce serum folate levels by interfering with folate metabolism.[70] Calandre et al found that serum folate levels were lower in patients with higher serum carbamazepine levels. Carbamazepine has been associated with spina bifida. In a review of literature, Rosa found a 1% incidence of spina bifida associated with carbamazepine treatment.[71] Valproic acid inhibits the metabolism of folic acid decreasing serum folic acid levels. Valproic acid is also linked to spina bifida. Rosa reported a 1 to 2 percent risk of spina bifida associated with

maternal valproic acid use.[71] Combinations of these medications are also associated with higher rates of birth defects. Lindhout found that pregnancies of women using carbamazepine, valproic acid and phenobarbital (a barbiturate often used as for epilepsy) with or without phenytoin resulted in a birth defect 58 percent of the time.[72]

6. Other Risk Factors

A variety of other risk factors have also been identified. Dietary, occupational and other exposures have been examined as possible risk factors for NTDs. Tea use,[73] lead exposure[74] and high levels of organic matter in drinking water[75] have been associated with increased NTD occurrence. Some occupations with exposure to industrial chemicals and/or pesticides have been associated with increased risk of NTDs.[76-80] Parental socioeconomic status has been associated with differing rates of NTDs, but contrary evidence leaves it a weak predictor of risk.[41]

B. Clinical Definitions

The NTDs of interest in this study are anencephaly, craniorachischisis, encephalocele, encephalomyelocele, meningocele and spina bifida. The clinical definitions for each of these conditions are presented below. There are multiple reasons for choosing the specific malformations to be studied in this project. The primary determinant is that these are the most commonly occurring NTDs in the United Kingdom (UK). These malformations, while relatively uncommon, carry a substantial burden in terms of morbidity and mortality of the affected offspring. They also occur in sufficient numbers for us to develop a monitoring system in the GPRD.

Additionally, these malformations have clear clinical definitions that decrease the likelihood of misdiagnosis. The potential does exist that some of the malformations could be misclassified within a category of NTD (i.e. a meningocele is incorrectly diagnosed as a spina bifida) however; this will not impact our primary results of total NTDs.

The ultimate goal of this research is to provide validated case definitions identifying new NTD cases and to further research of medications as risk factors. We are thus interested in conditions that have unknown etiologies, not genetic syndromes. Although some of these malformations do occur with certain genetic syndromes, none have a syndrome as their sole cause.

1. Anencephaly

Anencephaly is the complete or partial absence of all or part of the brain, neurocranium and the covering skin.[40, 45, 81] When the cephalic neural tube fails to close, brain protrudes and subsequently degenerates. Holo-anencephaly, or the complete absence of the brain, accounts for 65 percent of cases in the US, with the remainder being cases of mero-anencephaly, or partial absence of the brain.[82] Because of the extreme nature of this disorder, anencephaly is readily apparent at birth. In cases of anencephaly the failure of the cephalic neural tube closure occurs on or about the 24th day post fertilization.[45] The diagnosis of anencephaly can occur upon routine obstetric ultrasound, generally based upon a coronal view that reveals the absence of the brain. A diagnosis can be made as early as 11 weeks;[83] however an anencephalic fetus can also resemble a normal brain before 14 to 15 weeks of gestation.[45]

Craniorachischisis is similar to anencephaly in that the fetus is absent a developed brain, and is associated with a contiguous spina bifida.[45, 81, 84] The cervical spine is retroflexed to the point that the head is set gazing upward.[45] Craniorachischisis is often misdiagnosed as iniencephaly, which is characterized by a closed cranium, enlarged foramen magnum as well as a retroflexed spine with upward gaze.[81] Cases of holo-anencephaly are associated with craniorachischisis about 80 percent of the time.[82] Diagnosis of craniorachischisis is similar to that of anencephaly, occurring upon routine obstetric ultrasound at or after 14 to 15 weeks of gestation.

The prognosis for the infant with anencephaly or craniorachischisis is uniformly fatal, with a live born infant dying within hours to days after birth.[45, 85, 86] Postnatal care is supportive only, and generally not indicated. Prior to advances in prenatal diagnosis, the ratio of stillbirth to live birth was approximately 50 percent.[82] Between 1985 and 2000 in a cohort of 171 cases of anencephaly in Utah, approximately 66 percent of all anencephaly cases were terminated prior to delivery.[87]

2. Encephalocele

Cephaloceles are a group of anomalies due to a congenital defect of the skull resulting in a skin covered herniation of the brain (encephalocele), brain and spinal cord (encephalomyelocele) or a non-brain containing sac (cranial meningocele).[45, 81] Most cephaloceles occur along the midline of the cranium with lesions occurring in the occipital region 74 percent of the time.[45, 88, 89] Encephaloceles can have varying degrees of severity with approximately 50 percent of infants with encephaloceles having additional congenital defects.[90] Cephaloceles range in size from very small to larger than the head.[45] Because

cephaloceles are skin covered, alpha-fetoprotein (AFP) levels are generally not elevated, thus most cases are identified from prenatal ultrasounds in low risk populations.[45] The differential diagnosis of cephalocele should include cystic hygroma, scalp edema, blebs, a normal ear, brachial cleft cysts, amniotic band syndrome and cloverleaf skull, not just a paracranial mass.[45, 91, 92]

Prognosis is determined by the content of the lesion rather than the size, with some small lesions containing important brain tissue and/or signifying underlying CNS malformations.[45, 93, 94] Prognosis is generally best with frontoethmoidal lesions and tend to be most grave with rostral parietal lesions.[45] Surgical repair is possible, and includes attempts to enlarge the cranial cavity to preserve cerebral tissue and its vascular supply. However, when lesions contain cortex, are associated with an absent corpus callosum, or other malformations, poor survival and decreased intellect are often unavoidable.

3. Spina Bifida And Meningocele

Spina bifida is a defect of closure of the bones producing the spine due to failed fusion of the caudal portion of the neural tube.[45, 81] This defect may be covered by normal skin in the case of spina bifida occulta. It may be a protruding sac in the case of spina bifida cystica. It may also result in a completely open spine, in the case of rachischisis, which is often incompatible with life.[1, 90] Protrusion of neural tissue in a posterior spina bifida cystica is readily apparent at birth with lesions occurring in varying sizes at any location along the spine. Matson et al determined the location of lesions for a group of cases and found 42.2 percent lumbar lesions, 27.7 percent lubosacral, 9.9 percent thoracolumbar, 8.6 percent sacral, 7.5 percent thoracic, 3.7 percent cervical and 0.44 percent anterior.[89] Approximately

90 percent of the time the protruding sac contains elements of spinal cord and/or nerves, also known as meningomyelocele.[45] The remaining cases of spina bifida are considered meningoceles.

Meningocele, a form of spina bifida, occurs when a defect in the closure of vertebral bones results in a protruding fluid filled sac containing abnormal meninges and cerebral spinal fluid.[45] The underlying spinal cord is usually intact; however, it may also protrude into the sac, although not to the extent of a meningomyelocele. Normal skin usually covers the sac. To distinguish this malformation from meningomyelocele, the sac should be transilluminated or undergo magnetic resonance imaging at birth. Meningoceles are often asymptomatic at birth, however it may be associated with serious co-morbidities including diastematomyelia (a division of the spinal cord) and various tumors.[45, 95]

Cases of spina bifida are often difficult to diagnosis using direct sonographic visualization. The sensitivity and specificity of these scans vary depending on the underlying risk of the population.[96] Indirect methods of visualization have been developed to help make sonographic diagnoses. Infants with spina bifida who undergo ultrasound at 24 weeks of gestation frequently have a bilateral, concave, frontal contour of the cranium (the lemon sign) and cerebellar hemispheres with anterior curves with loss of the cisterna magna (the banana sign).[45] These signs have been shown in a large cohort of high risk pregnancies to have positive and negative predictive values of 92 percent and 99.8 percent for the lemon sign and 100 percent and 99.7 percent for cerebellar anomalies for the banana sign.[97]

Prognosis for patients with spina bifida is variable. Significant morbidity and mortality often depends on the severity and location of the lesion. Approximately 90 percent of infants with spina bifida are live births, and those without other life-threatening malformations

typically experience very high survival rates once beyond the first year of life.[45] Loss of renal function and shunt complications are the usual causes of death in older patients but many patients can lead relatively normal lives.[90] Population based data from British Columbia found 1, 5 and 10 year survival to be 67, 65 and 64 percent respectively.[98] Treatment with primary closure of the lesion has been reported to increase long term survival rates in some cohorts, while having only marginal impact in others.[45, 99-102]

C. Prenatal Diagnostic And/Or Screening Tests:

1. Alpha-fetoprotein

The primary method for screening for NTDs is testing for the presence of alpha-fetoprotein (AFP) in maternal serum. AFP is the principal fetal plasma protein early in gestation and remains so until the fetal liver matures and albumin becomes the primary plasma protein.[103] Amniotic fluid AFP (see below) passes through the placental barrier into the maternal circulation and levels are measurable early in the first trimester. When a fetus has an open neural tube lesion, high concentrations of AFP build up in amniotic fluid subsequently leading to increased maternal serum concentrations.[103, 104]

Maternal serum AFP (MSAFP) levels rise through the first and second trimesters of gestation in unaffected pregnancies, so gestational age must be considered when interpreting results.[104] MSAFP for prenatal screening purposes should be performed between the 15th and 20th weeks of gestation and results should be expressed in multiples of the median (MoM) for gestational age.[103] A result of 2.5 MoM in single gestations and 4.5 MoM in twin gestations is considered elevated enough to perform additional diagnostic testing.[103] Sensitivity of MSAFP screening has been determined in a number of trials, but depends on the NTD under evaluation. When used to evaluate anencephaly, MSAFP has a reported sensitivity between

88 and 92 percent depending on the underlying risk in the population.[105, 106] Sensitivity to MSAFP testing for spina bifida is lower, but depending upon the type of lesion involved, it is still between 64 and 76 percent.[105, 106]

Because of the possibility of overlap of MSAFP level in affected and unaffected NTD cases at different gestational ages, elevated MSAFP should not be considered diagnostic.[104] However, elevated MSAFP levels have been shown to be highly predictive of NTDs in a number of trials. In a series of studies by Drugan et al, MSAFP levels of 2.5 to 2.9 MoM are associated with NTDs 3.4 percent of the time, while defects occurred 40.3% of the time with a MoM of greater than 7. [107, 108] Other studies indicate that level of MSAFP greater than 5 MoM can be associated with ultrasound confirmed defects as much as 71 percent of the time[109], while levels greater than 8 MoM are most commonly associated with large structural defects and/or fetal death prior to 20 weeks of gestation.[110]

The UK Collaborative AFP Study, the first major study to determine the parameters of association between AFP and NTDs, produced detection rates for anencephaly of 98.2 percent and open spina bifida of 97.6 percent.[111] False positives do occur when fetal blood contaminates the sample. Fetal blood contains 100 to 200 times the AFP per milliliter that amniotic fluid does at a given gestational age, and will thus give false results.[104] The diagnostic cut off for AFP varies by gestational age between 2.5 at 13-15 completed weeks to 4.0 for 22-24 completed weeks.[104]

2. Amniocentesis

Amniocentesis is the collection of amniotic fluid from the amniotic sac of a developing fetus through an abdominal needle aspiration.[112] This screening procedure is normally

performed between the 15th and 20th week of gestation to aide in the determination of fetal karyotyping.[113] Although the procedure is extremely accurate in the screening and diagnosis of certain genetic disorders and NTDs, it is not without risk. Tabor et al conducted a randomized controlled trial and found that the risk of spontaneous abortion after amniocentesis was approximately 1 percent.[114] Roper et al found a similar cumulative fetal loss rate of 1.2 percent, but the rate was variable dependent upon the gestational age at amniocentesis.[115] When the amniocentesis was performed before 14 weeks, the fetal loss rate was 1.0 percent, while the rate increased to 3.1 percent after 18 weeks of gestation. As these rates are generally higher than some of the observed rates of the genetic disorders and NTDs that amniocentesis is meant to detect, less invasive and less risky tests are preferred in populations at low risk for the underlying defect.

Amniocentesis can also be used to detect the presence of acetylcholinesterase enzymes (AChE) in the amniotic fluid. While non-specific cholinesterase enzymes are present in the amniotic fluid, AChE are normally only found in the cerebrospinal fluid and within red blood cell membranes.[104] When an open NTD occurs, AChE can be detected in the amniotic fluid.[116] Between the 13th and 24th weeks of gestation, a group of confirmed open NTDs with a high amniotic fluid AFP (>99.6 percentile) had a positive amniotic fluid AChE in 99.5 percent of cases.[117] The Second Report of the Collaborative AChE Study recommended that the best policy for use of the AChE test was in the analysis of amniotic fluid samples with AFP results greater than 2.0 MoM.[118] This approach was predicted to yield a true positive rate for open spina bifida of 96 percent and a false positive rate of 0.14 percent.[104, 118]

3. Ultrasonography

Ultrasonography is considered the primary diagnostic technique for prenatal identification of NTDs. This technology, first utilized in 1958, has been demonstrated to provide accurate diagnostic information for gestational age and fetal anomalies.[119-122] Prenatal ultrasonography is a complex technology which uses sound waves to produce images of the developing fetus.[113] These images of the developing fetus allow the direct visualization of anencephaly and cephaloceles. [45, 103, 123] Anencephaly was the first malformation to be diagnosed by ultrasound.[124] Campbell et al determined that ultrasound could be used between the 14th and 15th week of gestation to determine a diagnosis of anencephaly.[123, 125] Accuracy of diagnosis of anencephaly by prenatal ultrasound has been shown to approach 100 percent.[105, 126, 127]

In the case of spina bifida, direct visualization is often difficult, thus indirect visualization methods have been devised.[45] Infants with spina bifida who undergo ultrasound at 24 weeks of gestation frequently have a bilateral, concave, frontal contour of the cranium (the lemon sign) and cerebellar hemispheres with anterior curves with loss of the cisterna magna (the banana sign).[45] One of the first studies to confirm the utility of ultrasonography in spina bifida affected pregnancies was that of Nicolaides et al.[128] The authors retrospectively analyzed the ultrasounds of 70 fetuses between 16 and 24 weeks of gestation that were diagnosed with open spina bifida lesions. Their work confirmed the use of indirect signs, such as the "lemon" sign and the "banana" sign in the diagnosis of NTDs.[45] Van den Hof et al were able to detect 98 percent of spina bifida cases in a cohort of 1561 high risk mothers, however, rates of 55 to 60 percent detection have been reported by others.[105, 129]

While the diagnostic ability of ultrasound for spina bifida may not approach that of anencephaly, when combined with other maternal screening approaches, diagnostic ability is improved. Nadel et al showed that the use of ultrasound in mothers with elevated MSAFP decreased the need for amniocentesis to confirm the diagnosis of a NTD.[130] Lennon et al examined a group of 2257 patients at high risk for an open NTD either because of a family history of NTDs or a positive MSAFP.[131] 2053 patients were given an ultrasound with 55 NTDs occurring in this cohort. All of the NTDs in this cohort were detected prenatally. The sensitivity and specificity of ultrasound in the identification of NTDs was 97 and 100 percent respectively. The positive predictive value was 100 percent and the negative predictive value was 99.9 percent.

4. Current UK Guidelines For NTD Screening

The Royal College of Obstetricians and Gynecologists and the National Institute for Clinical Excellence have proposed routine antenatal care for pregnant women.[132] Women should be scheduled for between seven and ten antenatal appointments for uncomplicated pregnancies. Ultrasound testing is recommended for all pregnant women between the 10^{th} and 13^{th} week of pregnancy to determine gestational age, detect multiple pregnancies, and improve the performance of screening procedures for Down's syndrome and other anomalies. In addition, women should be offered an additional ultrasound scan between week 18 and 20 to detect congenital anomalies. The Guideline recommends standard screening for Down's syndrome between 11 and 20 weeks of gestation through the performance of nuchal translucency as well as several combined tests. The recommendations are as follows: 1) Gestational age from 11 to 14 weeks - Nuchal translucency (NT) or the combined test (NT,

hCG and PAPP-A); 2) Gestational age from 14 to 20 weeks - the triple test (hCG, AFP and uE3) or the quadruple test (hCG, AFP, uE3, inhibin A); 3) Gestational age from 11 to 14 weeks and 14 to 20 weeks - the integrated test (NT, PAPP-A + hCG, AFP, uE3, inhibin A) or the serum-integrated test (PAPP-A + hCG, AFP, uE3, inhibin A). The "Triple", "Quadruple", "Integrated" and "Serum-integrated" tests all incorporate tests for alpha-fetoprotein thus also serving as a screening tool for NTDs.

Nuchal translucency (NT) testing may have some utility in the detection of NTDs. NT testing is conducted using a transvaginal ultrasound device to measure the normal subcutaneous space between the skin and the cervical spine in the fetus early (12^{th} to 14^{th} week) in pregnancy. A space less than 3 mm has been associated with increased risk for Down's syndrome, 18, 13 and triploidy and Turner syndrome.[133] As this screening ultrasound occurs much earlier than diagnostic ultrasounds for other abnormalities (NTDs for example), researchers have assessed if these early ultrasound can be used to identify other abnormalities. McAuliffe and colleagues determined that while NT can identify some serious structural abnormalities (i.e. anencephaly), the 18 to 20 week ultrasound should remain the gold standard.[134]

D. NTD Monitoring In The UK

Historically, the UK has had some of the highest recorded rates of NTDs. Prevalences of anencephaly and spina bifida were as high as 60/10,000 births in the 1940's and 1950's.[135, 136] Increased awareness of NTDs, folic acid supplementation and general UK population trends (such as increased immigration, changes in birth rate) may be related to the fall in NTD prevalences from those early numbers to 36/10,000 births in the 1970's and

roughly 8/10,000 births in the 1990's.[137] Table 2.1 describes the current rates of NTDs in the UK.[138-141]

Table 2.1 – Data for NTDs (anencephaly, all spina bifida and encephalocele) from ONS for the UK between 1999 and 2002.

	1999	2000	2001	2002	Totals:
Live Births	67	88	71	83	309
Still Births	31	36	29	34	130
Induced Abortions	295	331	288	255	1,169
Total Cases	393	455	388	372	1,608
Total Live Births & Stillbirths	624,862	607,304	597,506	599,279	2,428,951
Prevalence/10,000 (L&S)	1.57	2.04	1.67	1.95	1.81

These historically high rates of occurrence, in addition to the thalidomide tragedy of the 1960s created the impetus within the UK for a continuous monitoring system for congenital anomalies.

1. The National Congenital Anomaly System

The Office of National Statistics initiated the National Congenital Anomaly System (NCAS) in 1964. The England and Wales National Congenital Anomaly System collects data from birth registries throughout the UK and reports data to the Office of National Statistics on a continuous basis. Data are collected from birth notifications by local health care authorities in all regions of the UK using a standardized case report form that is completed and sent to the Office of National Statistics. Data are collected on live and stillbirths, and reporting is conducted on a voluntary basis. Some local congenital anomaly registries also report information to the NCAS.[141]

Rather than attempt to estimate the prevalence of various anomalies, the goal of the NCAS is to detect changes in the frequency of reporting of particular anomalies or groups of anomalies. Although the NCAS does not produce true prevalences of any abnormality

because of the voluntary nature of data reporting, the reported rates may offer important estimates of the prevalence of these conditions. The database is a valuable tool for detecting possible signals for further investigation; however, increases in notification may be due to changes in the reporting practices rather than true changes in prevalence.

Limitations of the data are due to the reliance on passive surveillance techniques for case ascertainment, lack of collection of information on spontaneous abortions and limited information on elective terminations of pregnancy. Although not collected directly through the NCAS, data on elective terminations and their association with a potential congenital anomaly is available through other National Health Service data. This data is captured and presented along with the data from live and stillbirths collected through the passive reporting system. The NCAS does collect some basic exposure information (such as mother's and father's occupation), but the data have limited utility for research on risk factors for congenital anomalies.

2. The European Concerted Action On Congenital Anomalies And Twins

The EUROCAT (European Concerted Action on Congenital Anomalies and Twins) program was set up in 1974 to monitor epidemiologic information on congenital anomalies.[142] The aim of EUROCAT is to carry out epidemiologic surveillance of congenital anomalies in Europe. As of 2003, data from 41 member registries from 20 countries are collected and transmitted to a central registry in the UK. Eight registries from the UK are currently full member registries, transmitting case data on all congenital anomaly cases in their region. Each member registry transmits core variables that are recorded using a common coding system. Biannually updated prevalence data tables for 80 congenital

anomaly subgroups between 1980 and 2003 are available to researchers through the EUROCAT website (www.eurocat.ulster.ac.uk). Core variables reported to the EUROCAT include date of birth, gender of fetus/infant, number of fetuses/infants delivered, type of birth (including spontaneous abortions), gestational age, demographic information on the mother and syndromal and malformation details. In EUROCAT prevalence calculations, numerators include cases identified from live birth, fetal deaths from 20 weeks gestation (stillbirths and spontaneous abortions) and induced abortions. A baby/fetus with several anomalies is counted once within each class of anomaly. The number in different classes of cases cannot be added to reach a total number of babies/fetuses. A baby is counted once only in any given prevalence. Current data on NTD prevalence with denominators including live births, fetal deaths and induced abortions are presented in Table 2.2.

Table 2.2 – Data for NTDs (anencephaly, encephalocele, spina bifida and iniencephaly) from EUROCAT for the UK between 2000 and 2003.

	2000	**2001**	**2002**	**2003**	**Totals:**
Live Births	37	31	45	20	171
Fetal Deaths (>= 20 weeks)	9	8	14	8	52
Induced Abortions	212	207	201	134	960
Total Cases	258	246	260	162	1183
Total Live Births & Stillbirths	204,693	192,117	192,785	111,765	904,886
Prevalence/10,000	12.6	12.8	13.49	14.49	13.07

Produced using EUROCAT Website Database: http://eurocat.ulster.ac.uk/pubdata/report8tab.html (accessed 6/13/05)

3. Differences Between NCAS And EUROCAT Systems

The importance of the differences in the utility of each database for the surveillance of congenital anomalies should not be overlooked. Boyd et al compared the NCAS to four of the UK registries that report to the EUROCAT.[143] Isolated cases were derived from similar locales to the four UK registries and created a ratio of cases identified by the national register to those in the local registry files. Overall, the ascertainment rate for the NCAS was 40

percent of the cases identified by the four registries when terminations of pregnancy were excluded, and 27 percent when terminations of pregnancies were included. The lowest ascertainment was for NTDs, with only 11 percent ascertainment when terminations were included and 68 percent ascertainment when terminations were excluded. The authors note that although the stated goal of the NCAS is for signal monitoring, the degree to which it can meet this goal is hindered by the uncertainty of the magnitude of under-ascertainment. If under-ascertainment is constant, signals can be detected. If, however, it is not constant, there is no way of knowing if any increase in reporting is due to increased ascertainment or to a true increase in prevalence.

A primary advantage of the development of a cohort population in our proposed study is the ability to determine various prevalence estimates. While the prevalence from the ONS and the EUROCAT were determined using different methodologies, they are both likely representative of the decline in occurrence compared to historical highs.[41, 137, 144] The disparity is indicative of a number of issues with the study of NTD prevalence. Improvement in folic acid use, both from supplementation and fortification of foods, has been identified as a cause for the decline in rates of NTDs.[33, 87, 145-152] However, it is believed that only a portion of NTDs are due to folic acid deficiency, thus the decline in rates is unlikely due entirely to the benefits of folic acid.[12, 153]

E. The GPRD

1. Introduction

The GPRD was initiated in 1987 and is the world's largest anonymized patient electronic medical records database. The Medicines and Healthcare products Regulatory Agency (MHRA), formerly Medicines Control Agency (MCA), manages the GPRD in the UK. Approximately 35 million patient years of data representing 8.9 million unique patients are currently available from the database.[154] Over 350 general practices are currently submitting data to the GPRD on 3 million patients or five percent of the UK population.[154, 155]

The GPRD has a makeup similar to the population of the UK. The practitioners are geographically dispersed, with a tendency to be part of larger rather than smaller group practices. The age distribution of the GPRD is similar to the UK's distribution and is reported in Table 3. Race within the GPRD is similar to that of the UK population. In 2001 the UK population was predominantly white (92.1 percent of the total population) with Asian or Asian British representing the largest portion of the minority population (50.2 percent of the minority population).[156] Sex is evenly distributed within the GPRD with 50.7 percent female.[157] This ratio is roughly equivalent to the UK population with 51.4 percent female.[158] The age groups of less than or equal to 9 years old are less and greater than 80 years old are more represented in GPRD, compared to national statistics. Combined, these aspects make prevalences from the GPRD generalizable to the UK population and allow us to achieve our second aim.

Extensive outcome information is available within the GPRD. Patient demographics, including age, height, weight and sex, are available. All medical diagnoses, including

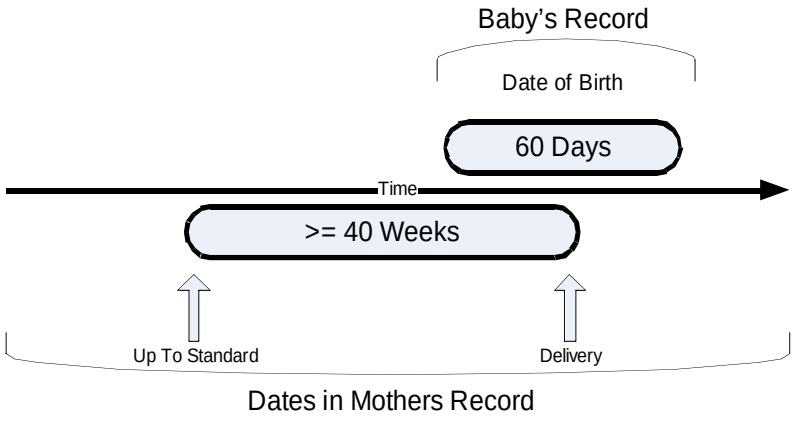
comments by the physician using OXMIS and/or Read coding systems are recorded. Records of referrals to hospitals, hospital treatment outcomes and hospital discharge reports are also located within the patient records. Detailed information on pregnancies is essential for epidemiologic study of congenital anomalies. The GPRD provides details on deliveries, stillborn and live born births and elective pregnancy terminations. Spontaneous abortions are also recorded in the database, although the completeness of this data and that for elective terminations is limited to those events that the physician was aware of and recorded in the database.

Since a long-term goal is to better identify potential teratogens, the information on exposures is equally important. GP's prescriptions, including details on formulation, strength, quantity prescribed, dosing instructions, indication for treatment and events leading to withdrawal of a drug treatment are recorded. Actual prescription dispensation is not recorded. Although there is a moderate dispensing fee incurred by all patients for each prescription, most patients fill their prescriptions indicated by a greater than 90 percent concordance between the records of prescriptions in the GPRD and those of the UK's prescription Pricing Authority.[159] Information on over the counter medications is not recorded in the database. Lab test results, immunization records and alcohol and smoking habits are also available for some patient records. This information will provide vital information regarding exposures and confounders that are generally not available in US claims data.

2. The Mother-Baby Linkage

The inability to link mothers and offspring has been identified as a major limitation for the use of electronic databases in birth defect research.[160, 161] The GPRD mother-baby link provides the opportunity to link the medical record of the mother with that of her newborn so that maternal exposures and infant outcomes can be assessed. A schematic of this linkage process is presented below to illustrate the relationship between the mother's record and the infant's record. The link is created in three steps. Potential mothers are identified from those women who are categorized as an acceptable patient (having met GPRD Quality Control standards), are between 15 and 45 years of age and have a record of delivery(s) or birth(s) at any point in time following the certification that the practice has met data quality standards (the up to standard (UTS) date). To identify multiple births with the same mother, births with >=210 days between episodes are considered separate deliveries. Potential newborns are identified from the cohort of patients who have a birth date after 1987, have a registration date within 6 months of the date of birth, are categorized as an acceptable patient, and are registered at any

Figure 2.1 – The GPRD Mother-Baby Linkage



point in time after the practices UTS date. Utilizing the mother and infant registration details and medical records, a mother-baby link is created when a potential mother and infant match on practice-specific family number, and when the infant's date of birth and the mother's delivery/birth records are within 60 days of each other. In addition the registration date and practice UTS date of the mother is at least 40 weeks before the date of birth of the infant.

The family ID number is a practice-specific identifier assigned to patients at their registration to the practice and is instrumental in the linkage process. In the old Value Added Medical Products system, now integrated into the GPRD, a family number was automatically generated at the time of registration, based upon the registrant's home address and house number. Patients with the same address would automatically be assigned the same family number. This method could produce inconsistencies in family ID numbers when the registrant was living in a large block of flats (apartment buildings for example) or if an extended family was living at the same address.

In the Vision system, the family ID number is proactively assigned at registration by the practice staff in consultation with the patient. At registration, the patient (or his/her mother if this is an infant) is asked if he/she is a member of an existing family at the practice. The family ID is assigned accordingly. Therefore, if a mother brings a newborn to her same general practice physician, the practice administrator assigns the family ID number of the mother to the newborn. The family ID number will remain the same as long as the mother and child remain in the same practice. If the mother or infant transfers to a non-GPRD provider, the mother-baby pair is lost to follow-up.

The mother-baby link within the GPRD makes the database ideally suited for the study of NTDs. As mentioned in the discussion above on the biology of the neural tube, closure takes

place within the 3rd to 4th week of gestation.[2, 3] Thus neural tube closure may occur prior to a pregnancy diagnosis.[162] The mother-baby link allows the capture of data for this time period. In addition to detailed information about maternal exposures captured in the database the linkage can provide substantial benefits for the study of NTDs and related teratogens.

3. Previous Birth Defect Research In The GPRD

There have been over 400 research articles, editorials, general articles and review articles reporting results from the GPRD.[163] Research articles have focused on a variety of topics and issues including disease prevalence, drug safety and the validity of using electronic medical records systems for epidemiologic research. For a full bibliography of published literature please consult the GPRD web site (www.gprd.com).

There have been a number of published articles using the GPRD to evaluate congenital anomalies. Jick and Terris published the first work in 1997.[164] Citing evidence that the prevalence of congenital malformations is higher in infants of women with epilepsy, they used the GPRD to perform a matched cohort study of women who took anticonvulsant drugs during their first trimester. The outcome of interest was any major congenital anomaly that could be identified around the time of birth and that could be drug-induced.[165, 166] Ten congenital anomalies were found in the epileptic women treated with anticonvulsants, versus six in the matched controls (RR 3.3; 95 percent CI 1.2-9.2). No anomalies occurred in women who did not have epilepsy, or who were non-epileptic yet treated with anticonvulsants. Interestingly, the authors validated the congenital anomalies found in their study, finding 100 percent concordance between information recorded on the computer and that received from a questionnaire sent to the GP. However, the authors did not attempt to evaluate outcomes resulting from spontaneous abortions or elective terminations.

Jick conducted another evaluation of pregnancies after maternal exposure to fluconazole.[167] They conducted a matched cohort study of 234 women exposed to oral fluconazole in their first trimester, 580 exposed to other topical and oral azole preparations and 1629 unexposed to any of these agents. Congenital anomalies in the infant were identified by a review of the computer records, and confirmed by an examination of the GPs clinical records. Although not clearly defined, the congenital anomalies of interest appear to be those present at birth that resulted in surgery or treatment. The prevalence of disorders was similar in the fluconazole group (4/234 or 17.1/1000 births) and the non-exposed group (26/1629 or 16.0/1000 births). The relative risks for congenital anomalies for first trimester users of fluconazole, other oral azoles and topical azoles versus non-users were 1.1 (95 % CI: 0.4-3.3), 2.1 (95 % CI: 0.7-6.8) and 0.6 (95 % CI: 0.2-1.6) respectively.

Ruigomez et al used the GPRD to assess pregnancies associated with the use of cimetidine, omperazole and ranitidine during pregnancy.[168] They conducted a cohort study of all pregnant women less than 45 years old who received a prescription for one of the three acid suppressing drugs between January 1991 and October 1996. In a cohort of 1179 pregnancies, 68 malformations were identified at birth. The overall malformation prevalence in the cohort was 4.4 percent (95 % CI 3.6-5.3). The relative risks for malformations associated with first trimester cimetidine, omperazole and ranitidine use were 1.2, 0.9 and 1.4 respectively. The case definitions of pregnancy is also worthy of mention. Either a pregnancy loss at 28 weeks or an elective termination of pregnancy due to a diagnosed malformation was considered a stillbirth. Congenital malformations were thus only those that resulted in a birth (live or still) with a structural defect detected either prenatally, at the time of birth or within one year after birth. This was an improvement over previous works,

but a substantial number of NTDs are likely to have resulted in a pregnancy loss prior to the 28th week of pregnancy. This could result in an underestimation of the results.

Wurst and colleagues published a study examining the prevalence of congenital heart defects found in the GPRD to those of other UK national monitoring systems.[169] They found that the prevalence ratio of these defects was between 2.20 and 2.79 the prevalence of the NCAS between 2001 to 2003 and was between 1.29 and 1.48 the prevalence of the EUROCAT. While preliminary, the authors report that the overall positive predictive value of their group of congenital heart defect codes was 93 percent.

Only one study has been published to date using data from the GPRD examining NTDs. Lawrenson et al examined the prevalence and mortality of patients with spina bifida, hydrocephalus, meningocele and meningomyelocele in the GPRD between 1994 and 1997.[170] Case definitions and details on the specific codes used to identify patients with one of these disorders were not included in the published article. Mean age standardized prevalence were 9.0 to 9.4 per 10,000 females and 7.9 to 8.4 per 10,000 males between 1994 and 1997. Rates for each disorder were not presented.

Lawrenson's inclusion of hydrocephalus as a NTD is problematic. Hydrocephalus, although often associated with spina bifida, meningocele and meningomyelocele, is not a NTD. Congenital hydrocephalus is also a frequently occurring central nervous system anomaly. Between 1994 and 1997, ONS estimates that the rate of congenital hydrocephalus in births (live or still) alone were 1.0 to 1.2 per 10,000 births.[171] This represents between 28 and 31 percent of all reported central nervous system defects during this time frame. Additional information would be necessary to compare the results found in this report to prevalence reported in other sources.

4. Previous Pregnancy Research Using The GPRD

While not developed in the GPRD, Manson et al. developed an approach to detect pregnancies using a health maintenance organization database.[162] In approximately 10,000 women with any record of pregnancy care or a pregnancy outcome, the authors identified potential pregnancies first by identifying outcomes and looking back up to 9 months for a marker of pregnancy care, then by identifying all individuals with a PCM and looking forward up to 9 months for a pregnancy outcome. Their approach led to accuracy in identifying a pregnancy outcome in the automated database compared with medical records of 99 percent and 73 percent when identifying pregnancy-care-markers without a pregnancy outcome.

Building upon the work of Manson et al., Hardy et al. developed an alternative approach for identifying pregnancies in the Value Added Medical Products (VAMP) based GPRD.[172] Using the GPRD records of 266,976 women between 15 and 44 years of age between 1991 and 1999, the authors created a computer algorithm which matched PCMs with a corresponding pregnancy care outcome creating a record of the recorded time between the first PCM and the outcome of pregnancy. Using this approach in the VAMP-GPRD database identified 297,082 pregnancies. Because of the extensive number of codes available in the various systems used in the UK and no applied method to address codes that have an ambiguous interpretation, over 21 percent of the pregnancies were categorized as an unknown outcome type (i.e. the delivery was either live or dead).

Hardy et al. used this approach for identifying pregnancies and attempted to create a mother-baby linkage for each live birth pregnancy.[173] The authors created the link by matching records based upon the GPRD's family identification code, the GP's practice

identification code, the year of practice registration, and the year of birth for the child and delivery for the mother. When these criteria were met and the birth record and delivery record where within 30 days of each other, a linkage was formed between that mother's pregnancy and that child. After randomly selecting one pregnancy per woman, the authors were able to create 122,198 matched pairs of mother and child. Of these matched pairs, 81,975 pairs had at least 7 months of prenatal data in the mother' profile and at least 2 health records in the baby's profile. From this group the authors were able to summarize information on medication exposure during pregnancy.

III. STATEMENT OF SPECIFIC AIMS

A. Hypotheses

Congenital anomalies have diverse etiologies and complicated clinical definitions. In addition, the circumstances of their occurrence, such as spontaneous abortions or elective terminations, make detailed information often difficult to obtain. These challenges make it difficult to use any medical database to study the adverse outcomes of drug use during pregnancy. The GPRD is one of the premier databases for performing pharmacoepidemiologic research. The GPRD has been used for evaluations of birth defects following the use of certain medications during pregnancy,[164, 168, 174] but some experts have argued that databases cannot provide sufficiently detailed information for the valid identification of congenital anomalies and related exposures.[175] One area of research in which a database may be useful is in the identification of NTDs.

B. Rationale

Although preventing the exposure of women to teratogenic agents seems an implicit goal of prenatal care, it may be one of the most difficult objectives to achieve. While medications such as thalidomide and isotretinoin are readily recognized to cause birth defects by providers and regulators, many medications with risks that are simply unknown are used in pregnancy.[175] This poses an extremely difficult situation for women and their clinicians, as they are often faced with the decision of exposing an unborn child

to a potentially dangerous medication or diminishing the maternal benefit from a medication.

The reasons for this lack of knowledge are complex. Ethical and regulatory barriers are in place that prevents pregnant women from taking part in approval trials. If women inadvertently become pregnancy while enrolled, they are typically withdrawn from the study. Medications are rarely studied using clinical trial populations that could be at risk of pregnancy, thus preventing any direct knowledge of the risks for teratogenicity in humans. Manufacturers frequently test products in animal models for teratogenic activity, but these models often have poor predictive values for known teratogens.[176] Frequently exposure registries have been used to prospectively and retrospectively follow the use of various medications, but many are limited by self referral bias and loss to follow-up.[161]

The identification of specific birth defects has proven difficult in many of the larger US claims databases. Grisso et al discovered several epidemiologic pitfalls in a case-control study of CNS birth defects using Medicaid data.[177] Cases were identified using electronic records and confirmed using paper medical records. The authors found substantial misclassification of outcomes (70 percent) and under reporting of diagnostic tests (25 percent). Although Grisso and colleagues point out that some of these problems may be unique to the data under study, many may be due to the limitations of claims data. Large databases have been used with some success in epidemiologic studies of birth defects,[165, 178] but even databases with records of over 100,000 pregnancies have limited use if information linking the mother to the offspring are not adequately recorded.[160]

Epidemiologic studies are the most commonly used approach to assess teratogenic risk. Electronic medical records databases allow researchers to conduct case-control

surveillance studies while avoiding the potential limitations from recall bias that can occur with maternal interviews.[161] Epidemiologic studies using databases have their disadvantages, sometimes being plagued with a variety of methodological problems. One methodological difficulty often seen in research of birth defects is the rarity of events. Depending on the birth defect under study, the risk of occurrence ranges from 1 per 1000 live births for oral cleft palate to 1 or fewer per 10,000 live births for hemimelia (limb development abnormality).[161] The rarity of events can lead to sample size difficulties, as often the number of outcomes as well as the number of exposed pregnancies can be small.

Case-control surveillance program methods, such as those utilized by Mitchell and colleagues,[179-181] have been shown to be able to over come some important issues. Small numbers of cases can largely be avoided for more common malformations when active case ascertainment programs are in place. The early studies by the now Slone Epidemiology unit were able to evaluate several important and controversial exposure outcome relationships related to Benedictine (pyloric stenosis[180], oral clefts and cardiac defects[179]) and diazepam (oral clefts[181]) because of their large number of cases of a variety of malformations. These authors also used closed ended questionnaires to reduce the amount of recall bias on exposure information. In the case of Benedictine, this method allowed them to produce exposure rates in cases and controls that closely matched expected exposure rates based on the general population.

Some authors have attempted to overcome the problem of small sample size by combining outcomes into a larger group of “birth defects”.[182] This approach is problematic as the mechanisms for most birth defects, while often unknown, frequently

result from exposures that affect specific cell types.[161] Problems with the development of these cell types are then related to very specific birth defects, which should preclude investigators from grouping together general categories of "birth defects" to overcome sample size issues. For this reason we focused this research on four specific NTDs.

An additional challenge to epidemiologic study of teratogenic risk is the choice of medication. To be appropriate for study of an association with NTDs, a medication should have certain characteristics. The medication would likely have pharmacologic properties that make it likely to alter the mechanical or metabolic processes involved in the closure of the neural tube. Most of these processes involve folic acid or homocysteine, presenting two targets for medications to alter through pharmacokinetic or pharmacodynamic processes. Medications to be studied should also be used to treat conditions affecting women of childbearing age and be used on a routine or long-term basis to treat the conditions affecting these women. Women requiring such medications are at particularly high risk of medication-induced NTDs as they are often unaware of their pregnancy prior to the closure of the neural tube. This trait in particular makes longitudinal data on medication history of particular importance for the accurate ascertainment of exposure.

The preferred study design and data source for evaluating potential teratogenicity are dependent on certain properties of the medication and the outcome. Medications with low exposure rates with potentially high risk for the outcome may be best identified using a cohort approach. Identification of exposed women and following them using a prospective cohort registry approach allows for the thorough evaluation of the presence or absence of a malformation. When studying a medication with a high exposure rate and

a low probability of an effect that requires large numbers of cases, a case-control approach may be recommended.[183]

Study designs should also consider the public health importance of the outcome. Medications with the potential for causing major malformations (thalidomide and isotretinoin) can pose a significant risk to large numbers of individuals. These medications should be monitored then with public health resources and using government regulatory authority. The registry-based risk management plans for both thalidomide and isotretinoin are both mandated by the FDA. For medications that may increase the risk of specific defects in limited numbers, the case-control surveillance programs may be the optimal approach. Our goal is to support all of these approaches by developing an algorithm to detect pregnancies and by developing an algorithm to identify cases of NTDs in the GPRD.

C. Research Questions And Specific Aims

The primary research questions for this study are:

Question 1: Can electronic medical records and associated medical codes be used to accurately identify cases of NTDs within the GPRD?

and

Question 2: Can the GPRD provide prevalence estimates of NTDs that are of similar accuracy to existing monitoring systems in the UK?

We believe that these questions can be answered through the following specific aims:

Specific Aim 1: Identify and validate cases of NTDs within the GPRD. To achieve this aim we created electronic case definitions of specific NTDs and use these definitions to identify potential cases. We then validated these cases through querying GPs using a short

assessment form and determine the positive predictive value of our electronic case definitions.

Specific Aim 2: Determine the prevalence of NTDs within the population that makes up the GPRD. Prevalence was determined using the following definition:

Prevalence –

$$\frac{\text{\# Cases (from live births, stillbirth, terminations \& spontaneous abortions)}}{\text{\# Potential Births (live births, stillbirth, terminations \& spontaneous abortions or an appropriate combination of these events)}}$$

To determine this prevalence we created electronic case definitions for pregnancies and use these definitions to determine the number of annual pregnancies. Using this information in combination with our validated annual cases we determined the prevalence of NTDs within the GPRD.

Specific Aim 3: Compare our prevalence of NTDs to other congenital anomaly monitoring systems at work in the UK. Through a comparison to monitoring systems using different mechanisms, we determined if our proposed monitoring approach produces similar results, while producing gains in efficiency.

IV. METHODS

A. Overview Of Methods Used

We have conducted a validation study and a retrospective cohort analysis to achieve our study aims. To meet our first aim (Aim 1: Identify and validate cases of NTDs within the GPRD), we identified all cases of NTDs within the GPRD between 1987 and 2004 in both children's and adult women's records. A questionnaire was sent to all the potential case's GP using the Verification Service provided by the GPRD Division at MHRA. The questionnaire is presented in Appendix A. We asked the practitioner to verify the NTD case through a series of questions focusing on method of verification and diagnosis. In addition, when the case was identified in a child's patient record (for example in a non-fatal NTD), we identified the linked mother and ask the GP to verify the linkage.

Upon receipt of all questionnaires from the Verification Service, the positive predictive value of the operational case definitions was determined. Based upon the positive predictive value of our definitions, alternate cases counts were created by multiplying the PPV by the identified number of cases.

The second aim (Aim 2: develop a means to determine the prevalence of NTDs within the population that makes up the GPRD) was met through the creation of a series of annual pregnancy cohorts. Using the annual pregnancy cohorts and the number of estimated NTDs, we determined the annual prevalence for NTDs. Prevalence estimates were created for all NTDs using stillbirth, live birth, and elective terminations as the denominator. As with most studies of birth outcomes, we were unable to capture all possible outcomes, thus we could

not determine the incidence of these NTDs. Using the prevalences created from comprehensive annual pregnancy denominators we determined estimates and made informal comparisons to the monitoring sources available in the UK.

B. Data Used

The GPRD was initiated in 1987 and is the world's largest anonymized, longitudinal patient electronic medical records database providing clinical information based on GP records. The GPRD data contain approximately 46 million patient years of follow-up representing 10.11 million unique patients.[184] Over 460 general practices in the UK are currently submitting data to the GPRD on 3.23 million patients or approximately five percent of the UK population.[154, 155, 184] The patient population is representative of the regional, age and gender distribution of the UK population.[184]

Members of the UK's National Health Service (NHS) act as the main means of access to and record holder for all forms of health care provision within the NHS. Practitioners in the GPRD tend to be part of larger rather than smaller practices. Practitioners enrolled in the GPRD must follow a recording protocol ensuring that significant clinical contacts are entered into the computer record. These contacts include all events resulting in hospitalization or referral to any specialist. The outcome of the referral is also recorded. Any significant test results are recorded in the GPRD. All events resulting in a prescription or withdrawal of treatment are recorded. Any events that the patient will consult with the practitioner on more than one occasion (childhood diseases, pregnancy) are often recorded multiple times by the practitioner.[185]

The MHRA has put in place specific recommendations regarding recording of pregnancies in the GPRD. The mother's profile should include a record of the identification

of the pregnancy when known. This includes positive pregnancy test results and any referral for ante-natal care. Additional information concerning significant abnormalities or complications of the mother or her fetus detected during pregnancy are also recorded. The outcome of the pregnancy, including the date of delivery, any congenital malformations of the baby, and where relevant, a record of neonatal death, are recorded.[185] Free text may be recorded by GPs to further detail the patient's medical conditions. Diagnoses are recorded using Read Codes (1996-current) and a modified version of the Oxford Medical Information System (OXMIS: 1987-1999). For this project data were selected from calendar years 1987 through September 2004, and thus require both the OXMIS and Read Code systems.

GPs code clinical information for their practices using the greater than 80,000 Read Codes which cover a wide range of topics in categories such as signs and symptoms, treatments and therapies, investigations, occupations, diagnoses, drugs and appliances. However, the GPRD also uses the 18,000 codes from the Oxford Medical Information System (OXMIS). Because these two coding systems co-exist within the GPRD, a cross-classification variable was developed called the GPRD Medical Code that allows investigators to query the system using Read, OXMIS or these GPRD Medical codes, with the latter being the most efficient for research purposes. The GPRD Medical codes allow for consistency over time in defining disease outcomes and thus they were used to conduct all analyses for this dissertation.

We created a data file containing all electronic patient records with a NTD code within the GPRD between January 1987 and September 2004. All the clinical, referral, diagnostic and screening test (and results), immunization and therapy events for this cohort were downloaded. The data set was created using the GPRD Business Objects data acquisition

system at the RTI-Health Solutions London, UK office and is in the form of tab delimited text files that were then converted into SAS datasets. The SAS datasets were used for all analyses. The medical code listings we used to identify NTD patients are listed in Appendix B. As many NTDs are associated with a variety of syndromes and often known by a variety of names, GPRD Medical codes were searched using a list of key words developed through an extensive review of the literature in addition to work by Jones[40] and Moore.[81] This list of codes is meant to be inclusive of all codes for anencephaly, craniorachischisis, encephalocele, encephalomyelocele, meningocele and spina bifida.

Pregnancy codes were identified through a key word search of the GPRD medical code dictionary. Codes were divided into two categories: End-of-pregnancy (EOP) events and pregnancy-care-markers (PCMs). EOP events are those events that represent the final outcome of a pregnancy, such as live births, stillbirths, miscarriages, spontaneous abortions, elective terminations, multi-fetus deliveries and pre- or post-term deliveries. PCMs include any event that describes the delivery of care relating to pregnancy prior to an EOP event. Examples include positive pregnancy tests, alpha-fetoprotein tests, obstetric ultrasounds, amniocenteses, visits related to pregnancy, pregnancy complications, threatened abortions, abortion referrals or counseling, and obstetric hospitalizations.

In addition to the keyword search of the code dictionaries, we created longitudinal patient histories for a subset of 10,000 women with at least one EOP code and visually reviewed them for previously undiscovered pregnancy related codes. These methods resulted in a total of 5,266 codes that were potentially associated with pregnancies (Appendix C). Our final list of codes consisted of two subsets of codes: one containing 1,691 PCMs codes (Appendix D),

and another containing 1,059 EOP codes (Appendix E). We excluded the remaining 2,516 codes as they represented post-natal care, or were deemed non-specific.

C. Procedure For Pregnancy Identification

1. Overview

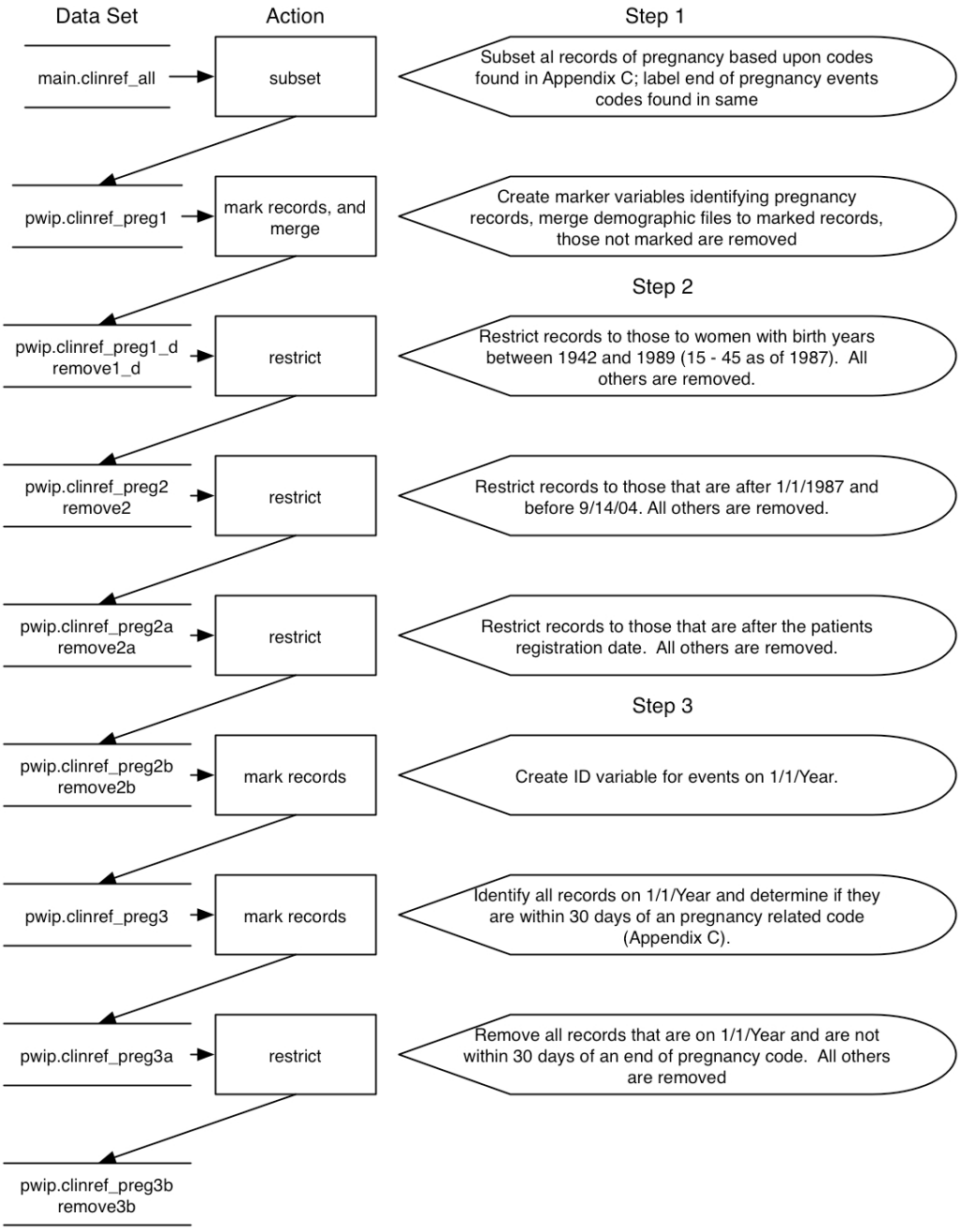
The challenge in identifying pregnancies within GPRD electronic medical records is that there is no consistent indicator of the occurrence of a pregnancy. To overcome this limitation we defined a pregnancy as the occurrence of at least one code in the GPs' record for an end-of-pregnancy event (i.e. an outcome of pregnancy). EOP (EOP) events included live births, stillbirths, spontaneous abortions and elective terminations. All codes for the above-mentioned EOP events are found in Appendix E.

In the GPRD, clinical contacts are recorded continuously in the patient's record and several records may be associated with a single event. In addition, women can become pregnant multiple times. To address these scenarios, we took a series of steps to identify separate pregnancies within a woman's clinical record. In addition to identifying all of the EOP events within a woman's clinical record, we had to determine gaps in time between the EOP codes for each EOP event type. At times, there were conflicting EOP event types within a very short period of time. For example, there might be a code of live birth and two days later, a stillbirth code. We developed a decision rule that handled these conflicts and eliminated redundancy between different types of EOP events within each woman's record. This process is described in detail and visually in the figures below. All descriptions use fictitious identification numbers and event dates.

2. Operational Procedure

a. Step1 – Identification Of All Patients With Pregnancy Records

Figure 4.1 – Steps 1 Through 3 Of EOP Event Identification Process.



EOP events were identified from the GPRD data set using the core clinical file that contains the clinical events recorded for patients as part of their routine care by the GP, the laboratory file that contains records of the performance of any laboratory tests and the referral record portions of the GPRD that contain records of any outside clinical care reported to the GP. From this large data file, a sub-set data file (*main.clinreflab_all*) of all patient event records for any individual in the data set with at least one pregnancy related clinical or referral code was created. The final list of 5266 GPRD medical codes is found in the file Appendix C. These codes were identified through the process described in "Data Used" section of this chapter.

- PID – The unique patient identification number
- EVENTID – The unique identification number for each recorded clinical event
- EVENTCODE – The GPRD code for the particular event associated with the EVENTID
- EVENTDATE – The date of record for the particular event associated with the EVENTID
- TEXTID – The unique identification number for a text note associated with an EVENTID

From this file (*main.clinreflab_all*) a new data set (*clinref_preg1*) was created consisting of only those records indicating a pregnancy event or a PCM (codes are found in Appendix D). In addition, each record that could be considered an EOP event (i.e. a live birth, stillbirth, termination or spontaneous abortion) or a PCM was marked with an indicator variable. Registration, demographic and practice details for each patient were added to each event record by merging them into the *clinref_preg1* file, with only those records that were originally in the *clinref_preg1* file maintained in the new file *clinref_preg1_du*. In addition to the above-mentioned variables, the following variables were added to the new file:

- PRACTICEID – the unique general practice identification number
- BIRTHYEAR – the patient's year of birth (available for all patients)
- BIRTHMONTH – the patient's month of birth (available for individuals less than 15 years old)
- FAMILYNUM – a practice-assigned family identification number
- GENDER – the gender of the patient
- REGDATE – the date the patient was registered at a specific practice
- SMOKE – history of smoking (yes/no)
- DRINK – history of drinking (yes/no)
- HEIGHT & WEIGHT – height and weight at visit
- BMI – calculated BMI based upon height and weight
- TRANSOUTDATE – date in which a patient transfers out of a practice
- TRANSOUTREASON – reason for which a patient transfers out of a practice
- UTSDATE – date which practice met all GPRD data quality standards

b. Step 2 – Apply Exclusions To Pregnancy Event File

A total of three exclusion criteria were placed on the file *clinref_preg1_d*. The first exclusion criterion was to remove the records of those individuals who were 1) female and 2) between the ages of 15 and 45 at any point up to September 2004 (the last month of data collection for our study). The gender restriction was applied by removing all records with a male gender variable. The age restriction was applied by requiring the birth year of the female to be between 1942 (earliest year in which individual could be 45 as of 1987) and 1989 (latest year in which individual could be 15 by the end of the study period). Only the birth year is available for individuals over the age of 15, thus precluding us from knowing the exact birth date for any individual. Although the use of the year 1942 caused some 45 year-olds to be excluded from the data (those born in September – December) and the choice of 1989 caused some 14 year olds (those born in September – December) to be included, these year choices were considered more conservative. Once these criteria were applied, a new data set was created named *clinref_preg2*. Those records that came from a male or were outside our age range were collected and placed in a new file named *remove_2*.

The second exclusion was the removal of records with event dates prior to 1/1/1987 or after 9/14/2004. The GPRD was launched as a database in on 1/1/1987. Any dates before 1/1/1987 are events that have been recorded by a GP as part of the patient's medical history. Any dates after 9/14/2004 (the last date of data gathered from the GPRD for this project) are either data entry errors or default dates (the year 2500) when no year is entered by the GP. The source file was *clinref_preg2* and the output files were *clinref_preg2a* and *remove_2a.*

The third exclusion we performed was the removal of records with event dates prior to the woman's registration date or the practice up to standard date, whichever came first. If one considers the registration date as the date of first contact with a patient by the GP, all dates before that should be considered patient history references or errors in data entry. The practice up to standard date is considered the first date in which records should be used in a physician's practice and a more reliable date by the MHRA for record integrity as compared to the patient registration date. The source file for this exclusion step was *clinref_preg2a* and the output files was *clinref_preg2b* and *remove_2b*.

c. Step 3 – Remove Historical Event Records

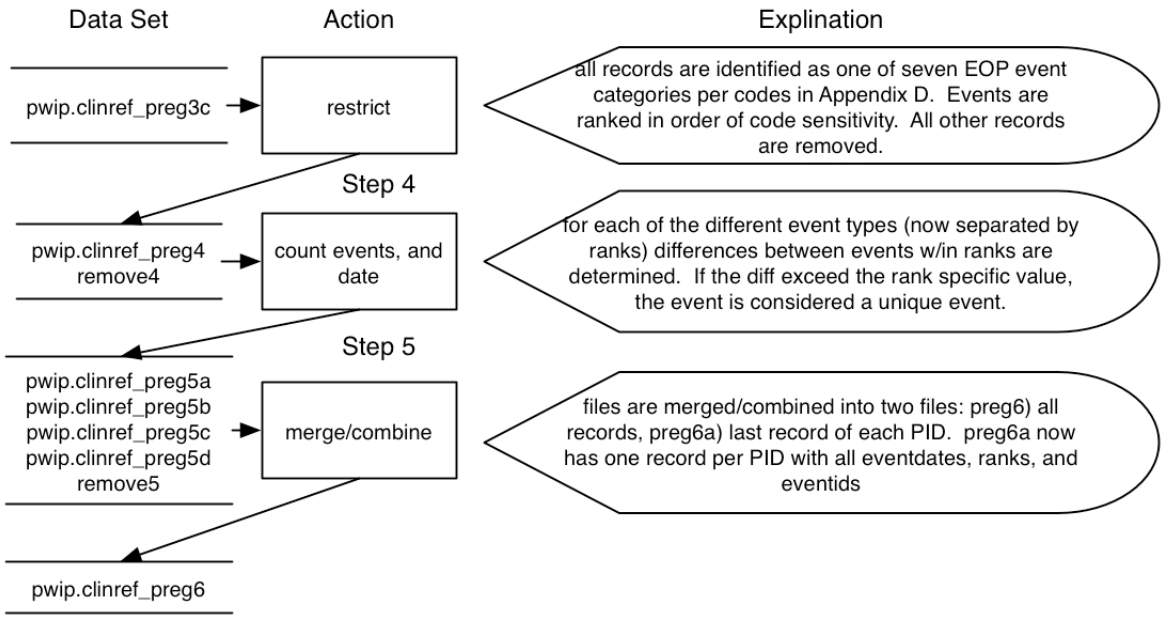
At times a GP may want to record the occurrence of an event in the patient's medical history. The physician can chose to override the date associated with the visit so that a date from the past can be entered. Events that may have occurred prior to when the woman registered with the practice may be clinically important. GPs enter this information as a historical reference. Unfortunately, it is often not clear when the GP has done this, as there is no code that identifies when this occurred. While not optimal, we assumed that the patient

was under the physicians care at that time (i.e. after their registration date with that practice), resulting in a minimal likelihood that the entry is based upon unreliable data.

There are other record entries that tend to be more suspect. At times a GP may want to record an event in the patient's medical history while only knowing the year in which that event occurred. The default month and day for a record of this type is January 1st of a given year. As records on "1/1/YEAR" can be historical records or actual care delivered on January 1st, we excluded those records that are not proximal to a pregnancy related record (codes found in Appendix C). Using the data set *clinref_preg_2b,* we created an indicator variable for all records on 1/1/YEAR of any given year and produced a new data set named *clinref_preg3.* Using *clinref_preg3,* all records that have an pregnancy related record within 30 days of the 1/1/YEAR date, were considered an actual event of interest. If events with a 1/1/YEAR event date were not within 30 days of an pregnancy related record they were removed. We performed sensitivity analyses on the 30-day cut off to see if it materially affects our results. The output files for this step was *clinref_preg3a, clinref_preg3b*, and *remove_3b*.

d. Step 4 – Identification And Ranking Of EOP Events

Figure 4.2 – Steps 4 Through 5 of EOP Event Identification Process.



After steps 2 and 3 were completed, the remaining data set contained any pregnancy related event that was not excluded. Step 4 began the process of identifying our final group of EOP events. Using the data file *clinref_preg3b*, we created a new file *clinref_preg4a* that labeled all records as one of seven EOP event categories. All other records were PCM records, and were removed to file *remove4a.* The seven categories or ranks are:

1) Stillbirths
2) Stillbirths at the same time as a live birth
3) Elective terminations
4) Spontaneous abortions or miscarriages
5) Multiple live births
6) Pre-term or Post-term live births
7) Normal term live births

The GPRD medical codes for each of these categories are found in Appendix E. After a careful review of the first 10,000 patients with a pattern of EOP events, we identified the above listed rank order as likely to result in appropriate classification of EOP events. This

rank order is necessary as codes were frequently recorded out of sequence, thus preventing a researcher from considering the first code in a series as the ultimate diagnosis. An example of this problem is illustrated with the sample patient record in the figure below.

Figure 4.3 – Example For Step 4 of EOP Event Identification Process.

PID	EVENTID	EVENTCODE	EVENTDATE	TEXTID
978158	1869703	Normal Delivery	4/30/94	18907
978158	2871349	Birth Details	4/30/94	167946
978158	3032970	Stillbirth	5/08/94	186234
972185	5042965	Birth Details	6/3/94	192310
978158	7042969	Birth Details	6/3/94	192309

In the example above, we can see that there was a normal delivery code on 4/30/94 followed by a stillbirth code on 5/08/94, 8 days later. If a researcher took only the first indicator of an EOP event, this event may have been misclassified as a live birth, when in all likelihood it was a stillbirth.

e. Step 5 – Removal Of Duplicate EOP Events Within Event Categories

Once event ranks were assigned, the clinical records were sorted by patient identifier, event rank and by event date. This sorting allowed us to analyze individual patient profiles for codes of interest and to establish a chronology of pregnancy events for each patient. The establishment of event chronology occurred in two steps for each patient: 1) within each EOP event type (occurs in this step); 2) between EOP event types (Step 6).

For each woman with pregnancies in our GPRD data set, we set up a count variable to determine the maximum number of each type of EOP event. This count variable (*num_rank*) is continuous and allows us to compare events both between EOP events of the same type (termination vs. termination) but also between EOP types (termination vs. live birth). This allows the determination of ranks that are needed for establishing the seminal pregnancy event for each woman's available GPRD reproductive history.

We describe step 5 using an example of an elective termination. After determining the maximum number of events in any single individual within any rank, we determined that no patient had more than 3 stillbirths alone or in combination with a live birth, no more than 7 elective terminations, 10 spontaneous terminations, no more than 2 multiple live births, 3 pre-term or post-term births and no more than 10 normal term live births. We created a count variable to be used in the process of comparing events. Based upon our ranks and the maximum number of events in any single individual within any rank the *num_rank* variable was assigned as follows:

1) Stillbirths – num_ranks 1 to 3
2) Stillbirths at the same time as a live birth – num_ranks 4 to 6
3) Elective terminations – num_ranks 7 to 13
4) Spontaneous abortions or miscarriages – num_ranks 14 to 23
5) Multiple live births – num_ranks 24 and 25
6) Pre-term or post-term births – num_ranks 26 to 28
7) Normal term live births – num_ranks 29 to 38

The first normal live birth event that is found in a patient record, regardless if it is actually the first or the last event found would be given the *num_rank* value of 29. Similarly, the first spontaneous abortion or miscarriage would be given a *num_rank* value of 14. The example in the figure below shows how we implemented the ranking process using an elective termination where the first event indicative of an elective termination was given a *num_rank* value of 7.

Figure 4.4 – Example 1 for Step 5 of EOP Event Identification Process

PID	EVENTID	EVENTCODE	EVENTDATE	TEXTID	Num_rank
9858	869703	Screening - general	7/30/00	18907	0
9858	871349	[D]Abdominal colic	7/30/00	167946	0
9858	1032970	Screening - general	8/28/00	186234	0
9285	1042965	Anencephalus	10/3/00	192310	0
9858	1042969	Therapeutic abortion	10/3/00	192309	7
9858	1042971	Therapeutic abortion	10/3/00	192312	7
9858	1042989	Therapeutic abortion	10/5/00	192567	7

Because a similar or identical code referring to the same event may be entered multiple times in the patient's record for each woman, we created a new variable that represents the number of days between the two records (*var=T_gap)* and set the start value to 0. We only increased the variable *num_rank* when the gap in days (var=*T_gap*) exceeded a certain predefined value. In the case of spontaneous abortions and terminations we set this required gap in days to 60. The use of a 60 day cut off between spontaneous abortion or termination events was based upon an estimate of the number of days after a pregnancy termination but before a women is likely to be diagnosed as pregnant again.[162] In the case of a live birth or a stillbirth, the required gap in days was 210. The 210 day gap is consistent with the gap used by the GPRD for identifying separate pregnancies for linkages between mothers and infants,[186] and is sufficient to detect pre-term as well as post-term live births.

In the example below we see that a code for a therapeutic abortion is recorded on 10/3 and then again on 10/8 creating a *T_gap* of 5. As this does not exceed the predefined value of 60 days for terminations, our *num_rank* variable remains at the starting value of 1. Please note that as the variable *num_rank* is a retained variable, the value remains in place even for the event codes "Anencephalus" and "Grief reaction". The count variable can be thought of as a cumulative count of events that have occurred in the patient's medical record up to that point.

Figure 4.5 – Example 2 for Step 5 of EOP Event Identification Process

PID	EVENTID	EVENTCODE	EVENTDATE	TEXTID	Num_rank	T_Gap
9858	869703	Screening - general	7/30/00	18907	0	
9858	871349	[D]Abdominal colic	7/30/00	167946	0	
9858	1032970	Screening - general	8/28/00	186234	0	
9858	1042969	Anencephalus	10/3/00	192310	0	
9858	1042970	Therapeutic abortion	10/3/00	192309	7	0
9858	1042971	Anencephalus	10/3/00	192310	7	
9858	1042972	Therapeutic abortion	10/8/00	192311	7	5
9858	1043269	Grief reaction	10/8/00	192209	7	

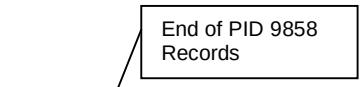
In the next illustration we see that the GP has entered a termination code on 5/19 of the following year. Because the variable *t_gap* now exceeds 60 (it is 200 in this case), we consider this termination code unrelated to the previous codes and representative of a new event. The *num_rank* variable is thus increased by 1 and now stands at 8.

Figure 4.6 – Example 3 for Step 5 of EOP Event Identification Process

PID	EVENTID	EVENTCODE	EVENTDATE	TEXTID	Num_rank	T_Gap
9858	869703	Screening - general	7/30/00	18907	0	
9858	871349	[D]Abdominal colic	7/30/00	167946	0	
9858	1032970	Screening - general	8/28/00	186234	0	
9858	1042969	Anencephalus	10/3/00	192310	0	
9858	1042970	Therapeutic abortion	10/3/00	192309	7	0
9858	1042971	Anencephalus	10/3/00	192310	7	
9858	1042972	Therapeutic abortion	10/8/00	192311	7	5
9858	1043269	Grief reaction	10/8/00	192209	7	
9858	1063569	Termination of pregnancy NEC	5/19/01	192921	8	200

Each patient event record (pregnancy and non-pregnancy related) was analyzed with the *num_rank* carried over until the next EOP event. This process continued for terminations until the last patient event record was analyzed. The next woman's records were then examined with the count variables and gap variables reset to zero.

Figure 4.7 – Example 4 for Step 5 of EOP Event Identification Process.



PID	EVENTID	EVENTCODE	EVENTDATE	TEXTID	Num_rank	T_gap
9858	1255355664	Dyspepsia	1/21/03	902651002	8	
9858	1255358167	[D]Abdominal pain	2/27/03	902653765	8	
13573	1132367	O/E - height	10/11/02	284356	0	0
13573	1144814	Dietary history	10/11/02	298239	0	
13573	1145251	Child exam.: genitalia	10/11/02	298680	0	

As the most critical information arising from this step is the identification of additional pregnancies in the same woman as indicated by EOP events separated by appropriate time windows, we needed to set up two new variables: *rank#* (event date) and *eid#* (event ID). The rank# captures the date of the event that corresponds to a given rank and the eid# corresponds to the event identification number for the event of a given rank#. The procedure for assigning the *eid#* variables occurs in unison with the *rank#* variables, so to simplify description we only describe the process for the *rank#* variables. To illustrate the process we consider a record with a stillbirth, a termination and a live birth. The new variables Rank1, Rank7, Rank8, Rank9 and Rank26 are created.

Figure 4.8 – Example 5 for Step 5 of EOP Event Identification Process

EVENTID	EVENTCODE	EVENT DATE	Num_rank	Rank1	Rank7	Rank8	Rank9	Rank26
1037118	Stillbirth	8/4/97	1	8/4/97				
1042969	Therapeutic abortion	10/3/00	7		10/3/00			
1043569	Termination of pregnancy NEC	5/19/01	8			5/19/01		
1047289	Premature delivery	3/2/02	26					3/2/02
1049971	Therapeutic abortion	1/8/03	9				1/8/03	

In our above example the *num_rank* value for the first event was 1, and thus the rank variable for this stillbirth was assigned "*rank1*" and it was given the event date for its value.

If there were a second stillbirth recorded, it's rank variable would have been "*rank2*". Because the next record was the first of a series of elective terminations and is the first event that is a member of the category of event ranks from 7 to 13, the rank variable "*rank7*" was assigned the event date for this record. Because the next event was also a termination, but at a future date (greater than 60 days) from the previous one, it was assigned to "*Rank8*" with the event date recorded as its value. Following the sequence of the clinical records, we then assigned a "rank#" to the first in a potential series of live births. Although the fourth actual event, the first available rank for a premature live birth is "*Rank26*" and thus the variable "*Rank26*" was assigned the premature live birth's event date as its value. Finally, we come to the final event of this profile, another termination. As this was the third termination for this patient, it was assigned the "*Rank9*" spot and the variable "*Rank9*" was assigned the event date.

To summarize, while looking at all potential event dates within each category, by moving between subsequent categories in our hierarchy, the rank variable is increased by one each time there is a new event within a category. The rank variables are assigned below.

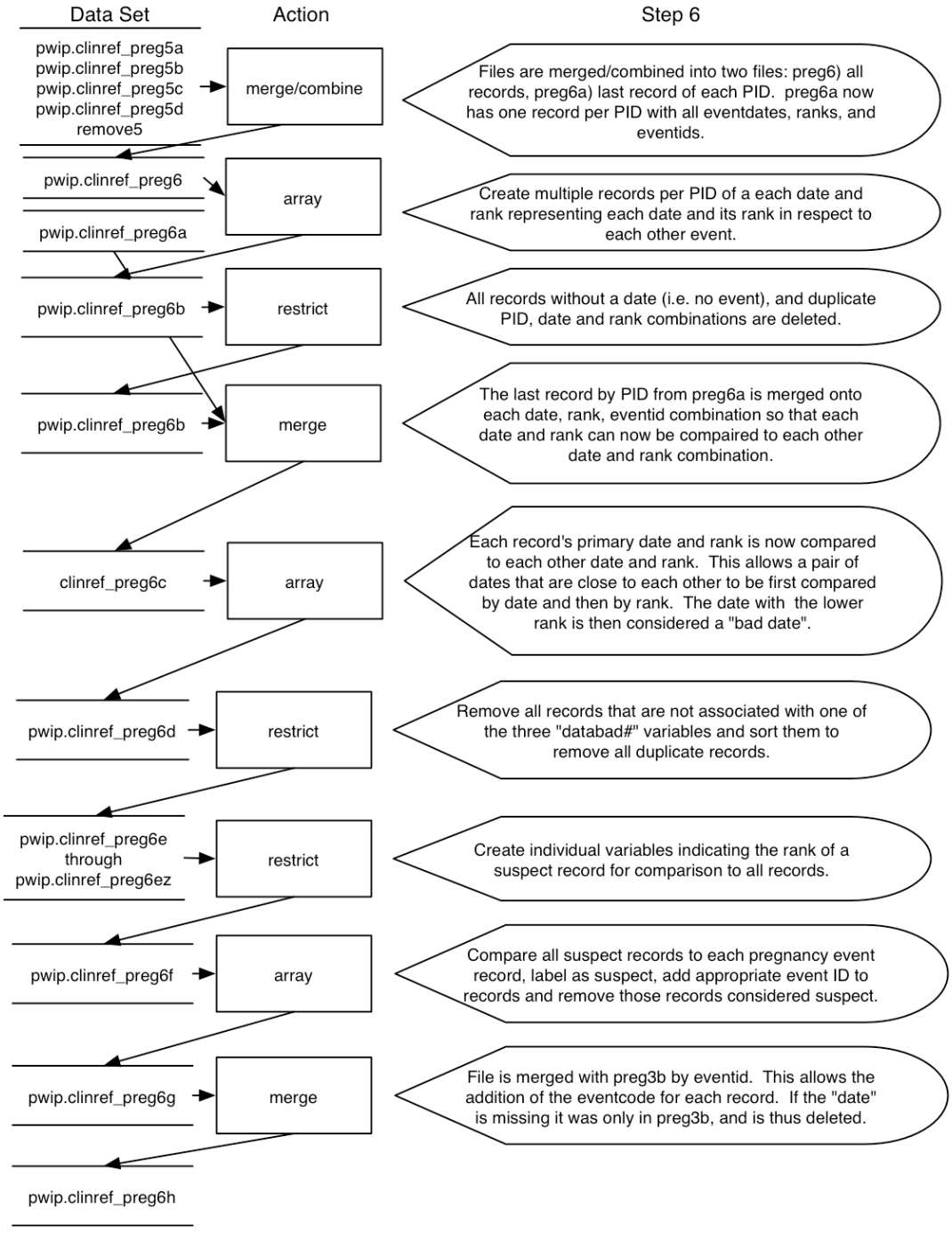
1) Stillbirths – Rank1 to Rank3
2) Stillbirths at the same time as a live birth – Rank4 to Rank6
3) Elective terminations – Rank7 to Rank13
4) Spontaneous abortions or miscarriages – Rank14 through Rank23
5) Multiple live births – Rank24 and Rank25
6) Pre-term or post-term births – Rank26 to Rank28
7) Normal term live births – Rank29 to Rank38

After all the clinical data indicating an EOP event was examined for each woman, we created seven new files representing each type of EOP event (Stillbirth, stillbirth at the same time as a live birth, etc) (file names: *clinref_preg5a through clinrer_preg5g*) to establish the within-patient chronology of all EOP event categories. These new files contained the PID,

the event date, the appropriate *num_rank* corresponding with the EOP types and all *rank#* and *eid#* variables.

f. Step 6 – Removal Of Duplicate EOP Events Between Event Categories

Figure 4.9 – Step 6 Of EOP Event Identification Process.



After we assigned ranks to each of the dates and event identification numbers, we were able to compare dates that were in close proximity to each other by not only their event dates, but also their rank. As explained earlier in step 4, EOP events are not necessarily recorded in a chronological fashion conducive to easy identification. To overcome this problem, we considered the sensitivity of certain categories of codes as better than others, allowing us to select the correct codes although they occur chronologically later than the first EOP code. This was achieved through a comparison of each event date to the newly created date value for each of the rank variables.

This process began by merging the files created in the previous step (*clinref_preg5a – preg5g*) into two new files. The first file, *clinref_preg6,* contained all EOP records in *clinref_preg5a – preg5g* meeting the inclusion criteria set forth to this point. The dates for each event and each rank were retained through each iteration of the data step allowing the last event of a patient's record to have all of the event dates for a given individual in the form of all of the rank variables.

Figure 4.10 – Example 1 for Step 6 of EOP Event Identification Process

- End of PID 9858 Records
- Contains all prior dates as ranks

PID	EVENTID	EVENTDATE	Num_rank	Rank1	Rank7	Rank8	Rank9	Rank29	Rank30
9858	1037118	8/4/97	1	8/4/97					
9858	1042969	10/3/00	7	8/4/97	10/3/00				
9858	1043569	5/19/01	8	8/4/97	10/3/00	5/19/01			
9858	1047289	3/2/02	29	8/4/97	10/3/00	5/19/01		3/2/02	
9858	1049971	1/8/03	9	8/4/97	10/3/00	5/19/01	1/8/03	3/2/02	
11098	1907531	4/27/94	29					4/27/94	
11098	4969836	4/29/94	1	4/29/94				4/27/94	
11098	5332504	8/3/00	30	4/29/94				4/27/94	8/3/00
13573	1144814	10/11/02	7		10/11/02				
27023	5249852	7/3/00	29					7/3/00	
27023	5250025	8/9/02	30					7/3/00	8/9/02
57323	1145251	9/10/95	7		9/10/95				
57323	1145320	9/15/96	8		9/10/95	9/15/96			
57323	1289061	7/08/97	9		9/10/95	9/15/96	7/08/97		

The second file created from *clinref_preg5a – preg5g* was the last record for each PID. This new file, *clinref_preg6a,* was used in the next part of step six. The file *clinref_preg6*

was then reformatted to create a new file (*clinref_preg6b).* This file consists of a new record for each event date, its rank and the event identification number. This file was then merged with *clinref_preg6a* to create another new file *(clinref_preg6c)* that contains each event date, rank number and all of the patients' rank# variables. Even though most rank# variables do not have a value, each record contains all 38 rank# variables. The file contents are illustrated below. To simplify illustration, only the rank# variables that are in use are shown in this example.

Figure 4.11 – Example 2 for Step 6 of EOP Event Identification Process

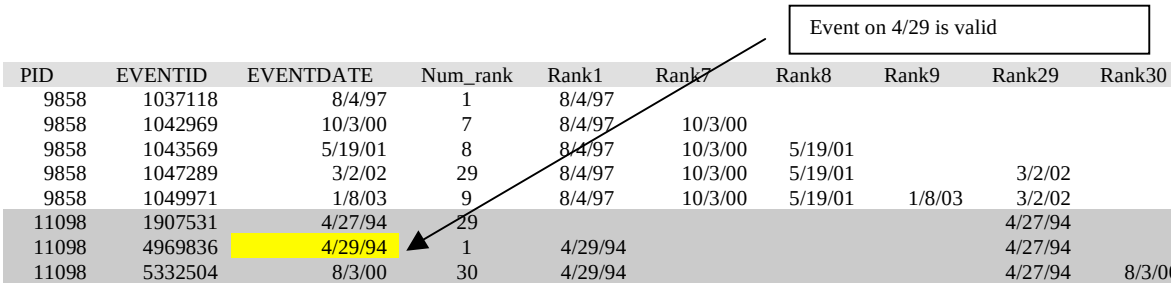
PID	EVENTID	EVENTDATE	Num_rank	Rank1	Rank7	Rank8	Rank9	Rank29	Rank30
9858	1037118	8/4/97	1	8/4/97					
9858	1042969	10/3/00	7	8/4/97	10/3/00				
9858	1043569	5/19/01	8	8/4/97	10/3/00	5/19/01			
9858	1047289	3/2/02	29	8/4/97	10/3/00	5/19/01		3/2/02	
9858	1049971	1/8/03	9	8/4/97	10/3/00	5/19/01	1/8/03	3/2/02	
11098	1907531	4/27/94	29					4/27/94	
11098	4969836	4/29/94	1	4/29/94				4/27/94	
11098	5332504	8/3/00	30	4/29/94				4/27/94	8/3/00
13573	1144814	10/11/02	7		10/11/02				
27023	5249852	7/3/00	29					7/3/00	
27023	5250025	8/9/02	30					7/3/00	8/9/02
57323	1145251	9/10/95	7		9/10/95				
57323	1145320	9/15/96	8		9/10/95	9/15/96			
57323	1289061	7/08/97	9		9/10/95	9/15/96	7/08/97		

Starting with file clinref_preg6c, each record date was compared to all other EOP record dates for the patient. This occurs using three arrays that evaluate all of our event types (i.e. ranks) with criteria similar to those used in step five. Stillbirths, live births, pre-term and post-term births and multiple births must be at least 210 days from other events to be considered valid, while elective terminations and miscarriages must be at least 60 days from other events to be considered valid.

For example, in the case of PID 11098 events with ranks 1 through 6 (stillbirths alone or in combinations with live births) are first compared to all other events with a criteria that they must be more than 210 days from a higher ranked event to be considered valid. As few events are ranked higher than those ranked 1 through 6, few of these events are considered

invalid. In the example below there is an event two days before the event with a rank of 1, but because it is a higher rank, the event on 4/29 is considered valid.

Figure 4.12 – Example 3 for Step 6 of EOP Event Identification Process



PID	EVENTID	EVENTDATE	Num_rank	Rank1	Rank7	Rank8	Rank9	Rank29	Rank30
9858	1037118	8/4/97	1	8/4/97					
9858	1042969	10/3/00	7	8/4/97	10/3/00				
9858	1043569	5/19/01	8	8/4/97	10/3/00	5/19/01			
9858	1047289	3/2/02	29	8/4/97	10/3/00	5/19/01		3/2/02	
9858	1049971	1/8/03	9	8/4/97	10/3/00	5/19/01	1/8/03	3/2/02	
11098	1907531	4/27/94	29					4/27/94	
11098	4969836	4/29/94	1	4/29/94				4/27/94	
11098	5332504	8/3/00	30	4/29/94				4/27/94	8/3/00
13573	1144814	10/11/02	7		10/11/02				
27023	5249852	7/3/00	29					7/3/00	
27023	5250025	8/9/02	30					7/3/00	8/9/02
57323	1145251	9/10/95	7		9/10/95				
57323	1145320	9/15/96	8		9/10/95	9/15/96			
57323	1289061	7/08/97	9		9/10/95	9/15/96	7/08/97		

When comparing the event on 4/27 and the event on 4/29, because this event is a live birth (its rank is between 29 and 38), it also must be at least 210 days from another event to be considered valid. Because this live birth event is 2 days before the stillbirth event and the rank of the stillbirth event is lower than the live birth event, the live birth event is identified as suspect allowing the event date and event ID to be removed. The stillbirth is the event selected.

The first of the final series of files for this stage of step 6 was *clinref_preg6d*. The arrays used to create this file produce a very large number of records (for the base case: 387,712 x 38 x 3 = 44,199,168 records created) making it difficult to illustrate. Most of the records in clinref_preg6d do not identify suspect dates, thus in order to later remove only those records that are suspect they are isolated. Once isolated to file *clinref_preg6e*, an additional stage is required to ensure that individuals who have multiple invalid records have all invalid records removed.

Once all suspect dates were identified, a series of new data files (*clinref_preg6ew to ez*) were created that contain only patient identification number and the variables indicating a

suspect record – *datebad1 – datebad3*. This new file, *clinref_preg6f* now contains all event dates, event IDs and event ranks along with a new series of variables indicating the suspect records – *bdate1* through *bdate38.*

These suspect dates are similar to the rank# variables used earlier in step 6, but there are only a potential of 38 (sum of maximum number of EOP events for each case type) suspect dates that any record could have. The file clinref_preg6f was then created to remove all records for each PID that were suspect. We used an array to evaluate all event dates and suspect dates. When a given event date's rank was equal to the suspect date's rank it was labeled for removal by setting the new variable "bad" to 1.

To complete step 6 the file *clinref_preg6g* was merged with *clinref_preg6c* so that the final removal of suspect dates could occur. The new file, *clinref_preg6gy*, then had all event dates, event identification numbers, event ranks and the "bad" variables. When the event rank equaled the "bad" variable that particular event record was removed to *remove_6g*. The final list of correct EOP event dates and event identification numbers was then contained in the file *clinref_preg6h*. Event codes and any additional information about the patient could then be added back into the file for future analysis.

g. Step 7 – Identification Of All Patients With Complete Pregnancy Profiles

After the completion of the identification of the most likely EOP events, we next identified the first pregnancy-care-marker (PCM) for that EOP event in the patient's record. Identification of the first PCM is important for determining the recognition of pregnancy and potentially estimating the date of the last menstrual period. The process for identifying PCMs is described in detail below and presented visually in the figures below. The same

process is applied to the identification of screening and diagnostic tests. This allows us to identify the first occurrence of a specific screening and diagnostic test for each pregnancy.

1. Sub-Step 1 – Identification Of Women With A PCM

Pregnancy-care-markers are diagnoses and procedure codes that define the delivery of care for a pregnant woman. These codes can be used to help identify the initiation of care at the beginning of a pregnancy or are indicative of care during an ongoing pregnancy**.** Prior to beginning this database search, relevant key words and codes that indicate PCMs were identified. Examples of some potential PCMs are listed in the table below:

Table 4.1 – Potential PCMs Used in the GPRD.

• Pregnancy test / hCG test • Alpha-fetoprotein test • Obstetric ultrasound • Amniocentesis • Rh screen • Chorionic villus sampling • AZ test • Antenatal blood group screen • Antenatal syphilis screen	• Visits related to pregnancy (antenatal care/booking) • Basic pregnancy codes (pregnant, pregnancy) • Pregnancy complications (anemia pregnancy, pregnancy bleeding) • Other (prenatal lifestyle advice etc.) • Threatened abortion • Abortion referral/counseling • Obstetric hospitalization (obstetric admission, obstetric discharge summary)

Source: List adapted from Hardy *et al.*[172] and Manson *et al.*[162]

To identify these PCM codes we systematically searched OXMIS and Read Code codebooks using keywords. We also merged codes provided by Dr. Janet Hardy that represented a subset of codes used in her early work with a similar data set.[172] Additionally, the profiles of a group of 10,000 women with suspected pregnancy records were visually searched to identify additional and previously undiscovered codes. The final list of 1,691 PCM codes is found in Appendix D.

We searched for all PCMs utilizing the same large automated data file as described in step 1 of this operational procedure (*main.clinreflab_all*). Each PCM record was then

labeled with an indicator variable that could then be used to identify the records in future steps. All file names and variables are the same as those mentioned in the pregnancy identification process at this point. The final file for step one was *clinref_preg1_du.*

2. Sub-Step 2 – Selecting Valid Occurrences Of PCMs

Using the same procedures as step 2 in the pregnancy identification process, we applied a series of exclusion criteria on the file *clinref_preg1_du*. The first exclusion criterion was to restrict the records to those individuals who were 1) female and 2) between the ages of 15 and 45 as of September 2004 (the last month of data collection for our study). The gender restriction was applied by removing all records with a male gender variable. The age restriction was applied by requiring the birth year of the female to be between 1942 and 1989. Only the birth year is available for individuals over the age of 15, thus precluding us from determining the exact birth date for any individual. Although the use of the year 1942 caused some 45 year-olds to be excluded from the data (those born in September – December) and the choice of 1989 caused some 14 year olds (those born in September – December) to be included, these year criteria were considered more conservative. Once these criteria were applied, a new data set was created named *clinref_preg2*. The records that came from a male or were outside our age range were collected and placed in a new file named *remove_2*.

We next removed records with event dates prior to 1/1/1987 or after 9/14/2004. The GPRD was launched as a database in on 1/1/1987. Any dates before 1/1/1987 are events that have been recorded by a GP as part of the patient's medical history. Any dates after 9/14/2004 (the last date of data gathered from the GPRD for this project) are either data entry

errors or default dates (the year 2500) when no year is entered by the GP. The source file was *clinref_preg2* and the output files were *clinref_preg2a* and *remove_2a.*

The third exclusion we performed was the removal of records with event dates prior to the individual's registration date or the practice up to standard date whichever is first. Because the registration date represents the GPs first contact with a patient, all dates before those were considered patient history references or errors in data entry. The practice up-to-standard date is considered the first date in which records should be used in a physician's practice and a more reliable date then the patient registration date. The source file for this exclusion step is *clinref_preg2a* and the output files are *clinref_preg2b* and *remove_2b*.

3. Sub-Step 3 – Create ID Variable For Events On 1/1/YEAR

After implementing the previous exclusions, we began the third step: identification and removal of historical event records after the patient's registration date. At times a GP may want to record the occurrence of an event in the patient's medical history. The physician can chose to override the date of visit at any time, thus allowing her to enter a date from the past. Dates entered after registration, but entered as a historical reference, are not labelled specifically as historical records. While not optimal, we assumed that the patient was under the physician's care at that time (i.e. after their registration date with that practice), resulting in a minimal likelihood that the entry is based upon unreliable data.

There are other record entries that tend to be more suspect. At times a GP may want to record an event in the patient's medical history while only knowing the year in which that event occurred. The default month and day for a record of this type is January 1st of a given year. Using the data set *clinref_preg_2b,* we created an indicator variable for all records on

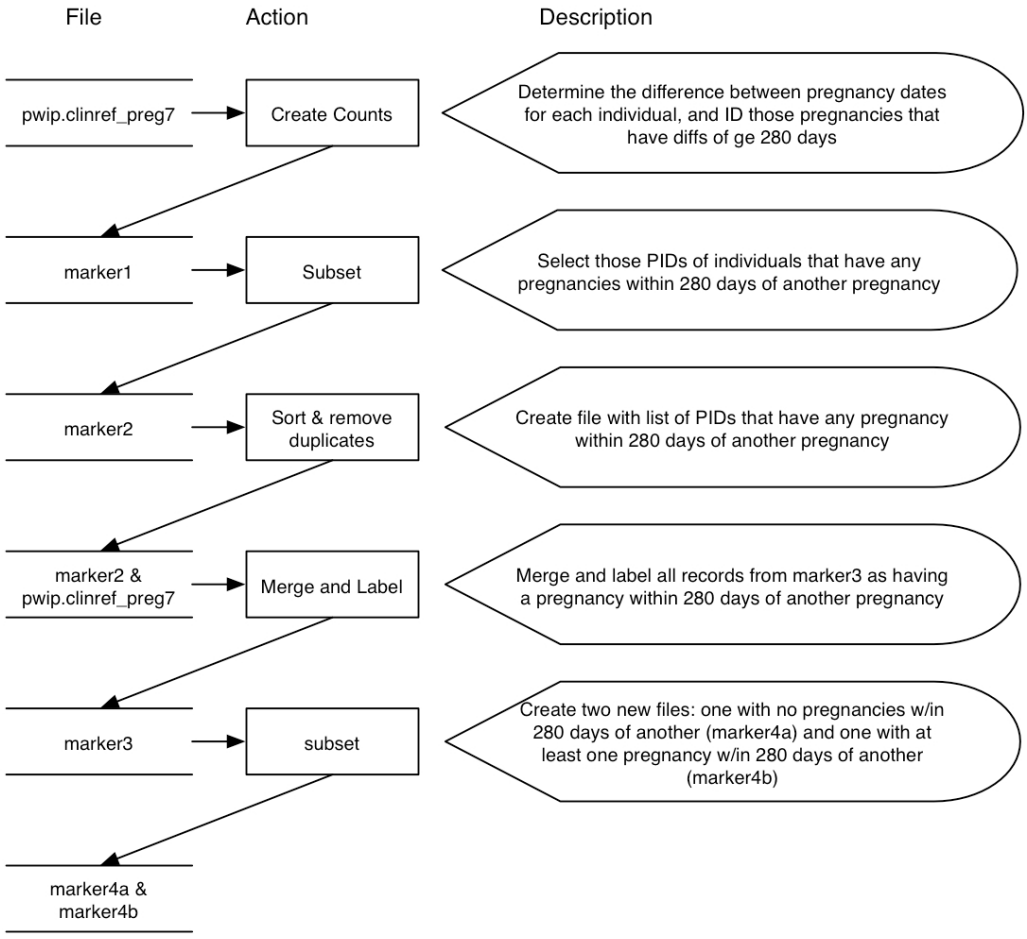
1/1/YEAR of any given year and produced a new data set named *clinref_preg3.* As records on "1/1/YEAR" lack specific information, we excluded those 1/1/YEAR records that are not proximal to a PCM or an EOP record. Using *clinref_preg3,* all records that have an EOP record within 30 days of the 1/1/YEAR date, were considered an actual event of interest. If events with a 1/1/YEAR event date were not within 30 days of a PCM or an EOP event they were removed. The output files for this step are *clinref_preg3a, clinref_preg3b,* and *remove_3b*.

4. Sub-Step 4 – Identifying First PCMs

After all valid PCMs where identified, we began the process of determining the number of days between each PCM and each EOP event. As many codes are replicated throughout a patient's record of care, it is necessary to select a point in time that a PCM must not exceed to be considered part of a given EOP event. For any given EOP event, only markers that occur during the 280 days prior to the EOP event were analyzed. If another end-or-pregnancy event occurs within 280 days, such as a miscarriage proceeded by an elective termination, the number of days between the prior EOP event and EOP event being analyzed serves as the cut off for assessing PCMs. The two approaches and the steps used to analyze each are described in detail and depicted visually in the figures below.

Identifying patients with pregnancies within 280 days of another

Figure 4.13 – PCM Identification Process: Part 1

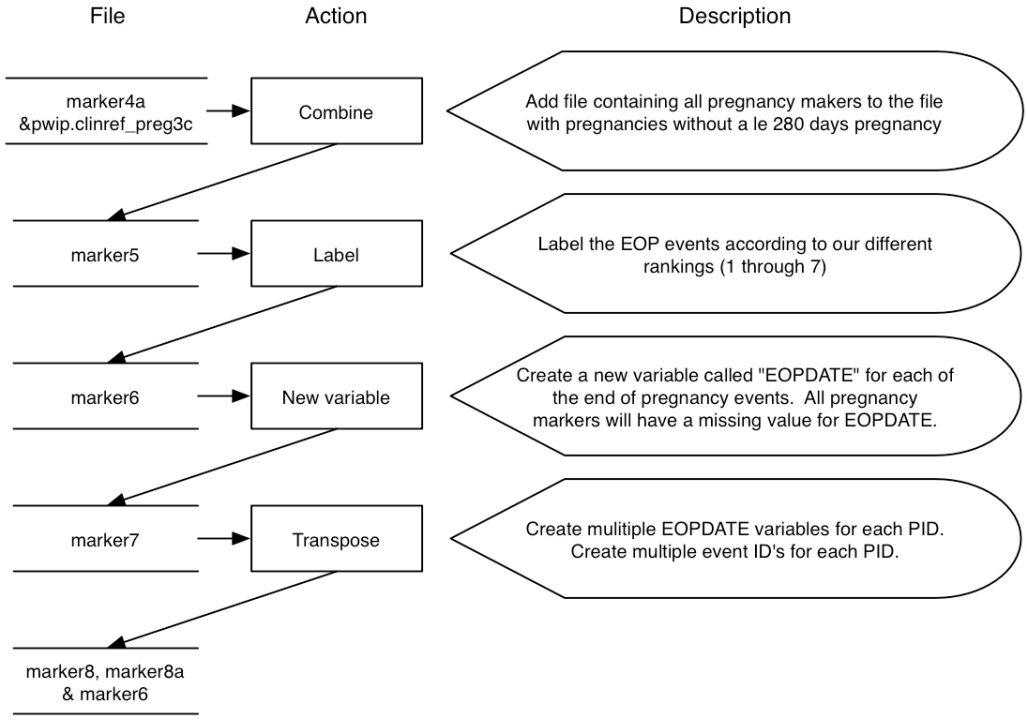


Starting with the final pregnancy file from Step 6 (*pwip.clinref_preg7),* we created a count variable within each patient identifier indicating the number of days between each EOP event. This new file was named *marker1*. Once the number of days between each EOP event was calculated, we put records for those patient identifiers that had at least one EOP event within 280 days of the previous EOP event into another file. This file is named *marker2.* All EOP events for these patients were then tagged with an indictor variable indicating that one of their pregnancies was within 280 days of a prior pregnancy. All EOP events were then subdivided into two groups, those with all pregnancies at least 280 days apart (file name:

marker4a) and those with at least one pregnancy within 280 days of another (file name: *marker4b)*. The approach used to identify the first PCM is different for these two groups. We describe each approach separately.

Group 1: First PCMs when all pregnancies are at least 280 days apart

Figure 4.14 – PCM Identification Process: Part 2

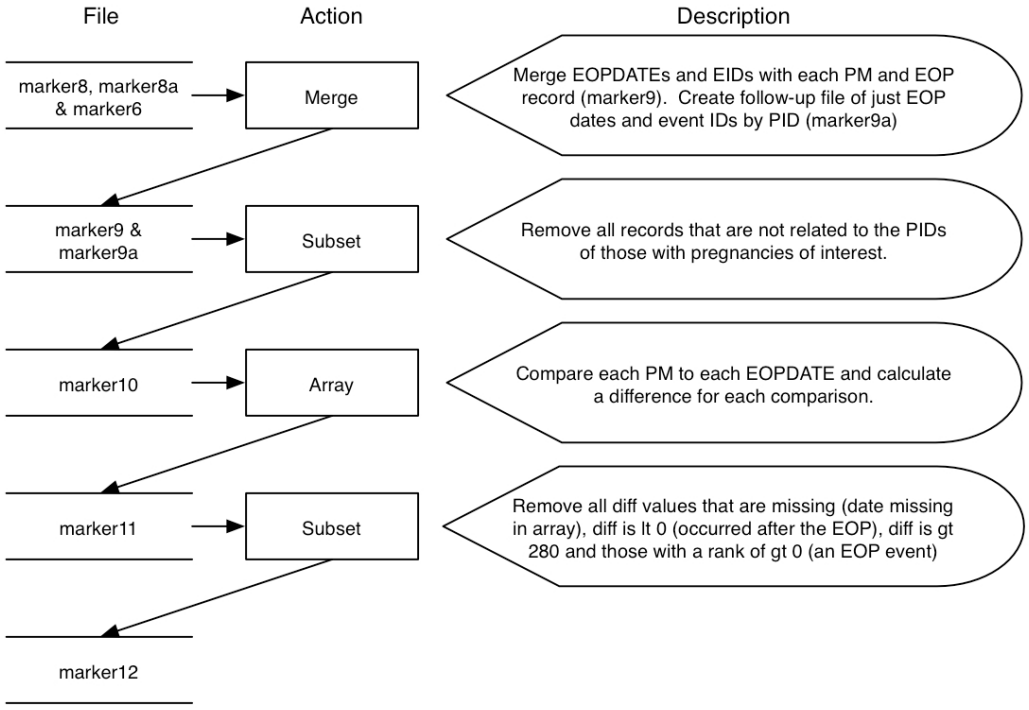


At this point, file *marker4a* contains only the EOP event records of those individuals that had no pregnancies within 280 days of another pregnancy. We then combined the EOP events with the PCMs identified through Step 4 as described above. This created the file named *marker5.* The file now contains an indicator of pregnancies which are greater than or less than 280 days apart. The following steps where then used to identify the first PCM in this group.

The file *marker5* contains two general types of records, PCMs and EOP events. All EOP events in file *marker5* were labeled as such in the new file, *marker6*. PCMs are now identifiable as those records that are not EOP events. A new variable was created named "EOPDATE" for each of the EOP events in *marker6*. All PCM records have a missing value for the EOPDATE variable. The file name at this stage is *marker7*.

In order to compare each possible PCM to all other pregnancies, we created multiple EOPDATE variables from the file *marker7* using PROC TRANSPOSE creating the file *marker8*. One variable was created for each pregnancy. There were up to 10 EOPDATE variables created named EOPDATE1 through EOPDATE10 in file *marker8*. Individuals who did not have 10 EOP events were given missing values for those EOPDATE values. At this stage we also created multiple event identification number variables in file *maker8a*. These variables named EID1 through EID10 represent the event identification numbers for up to 10 EOP events in a patient's record.

Figure 4.15 – PCM Identification Process: Part 3

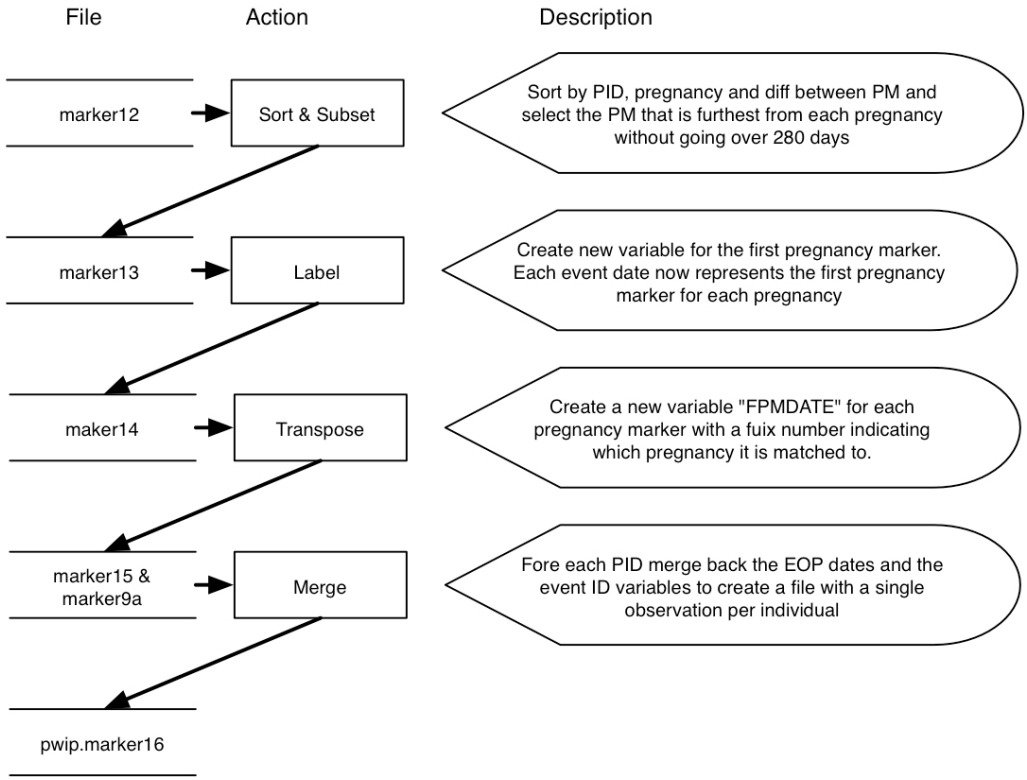


The multiple EOPDATE and EID variables in *marker8a* were then merged into *marker6* containing all records of EOP events and PCMs to create the new file *marker9*. An additional file, *maker9a*, was then created containing only the patient identifier and the multiple EOPDATE and EID variables. Because PCM records for patients not contained in *marker4a* remain in the file, we removed them at this point and renamed the file *marker10*. Each record (PCM as well as EOP events) is now compared to each EOPDATE variable. The number of days between each record and each EOPDATE is calculated using an array. This new file is named *marker11*.

The previous file, *marker11*, now contains many extraneous records. All records that have a calculated difference in days that is missing were deleted. These records represent a comparison between a marker's date and a missing value for the EOPDATE value. As most EOPDATE values were missing (i.e. most patients have less than 10 EOP events), this

represents the majority of records in our file *marker11*. Records with a calculated difference in days of less than zero were deleted. This difference occurs when the PCM occurs after a given EOP event. As there are many patients with multiple pregnancies, this is also a common scenario. When the difference was greater than 280, the PCM was being compared to an EOP event other than the one actually associated with the PCM (i.e. a future pregnancy). When this occurred the record was deleted. Finally, we deleted all records where the comparison was between an EOP event and the EOPDATEs. The file now only contained PCM records that could represent the first PCM for any given pregnancy. The file name at this stage is *marker12*.

Figure 4.16 – PCM Identification Process: Part 4



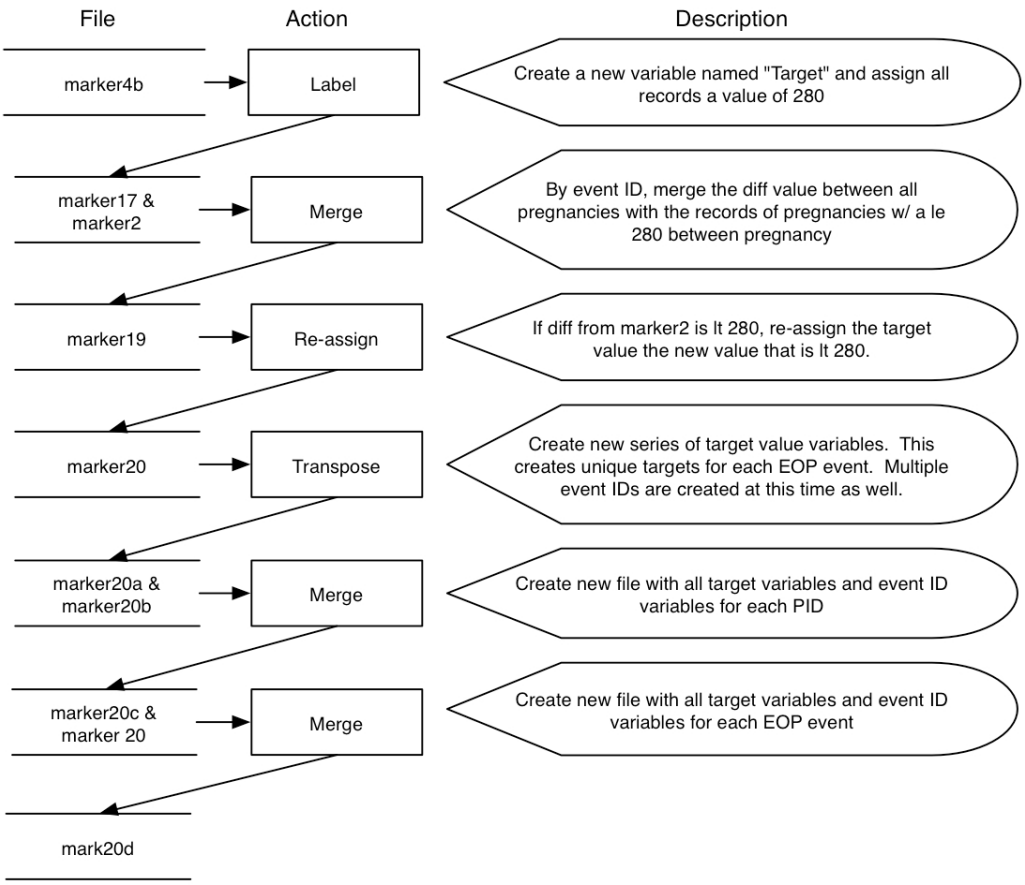
To determine the first PCM for any given pregnancy, we sorted the file *marker12* by patient identification number, number of EOP events (calculated in file *marker11*), and the number of days between the PCM and its respective EOP event. As there are likely multiple PCMs for each pregnancy, this sorting allowed us to select the PCM that is the furthest back in the patient's history without exceeding our limit of 280 days. The file *marker13* contains only the PCMs that are considered the first PCM for each of their respective pregnancies. A new variable, FPMDATE, is created that is equal to the event date found in the file *marker13.* The new file is *marker14.*

Each patient identifier number now has multiple first PCMs associated with multiple pregnancies. We then created a new variable representing each of these FPMDATE variables labeled FPMDATE1 through FPMDATE10. This new file is *marker15*. The final

step in this part of the process is to create a single record for each patient identification number that contains all EOP events, all of those EOP event identification numbers and the first PCM dates. This is accomplished by merging the files *marker15* and *marker9a*. The final file for this stage is *pwip.marker16*.

Group 2: First PCMs when at least one pregnancy is within 280 days of another

Figure 4.17 – PCM Identification Process: Part 5



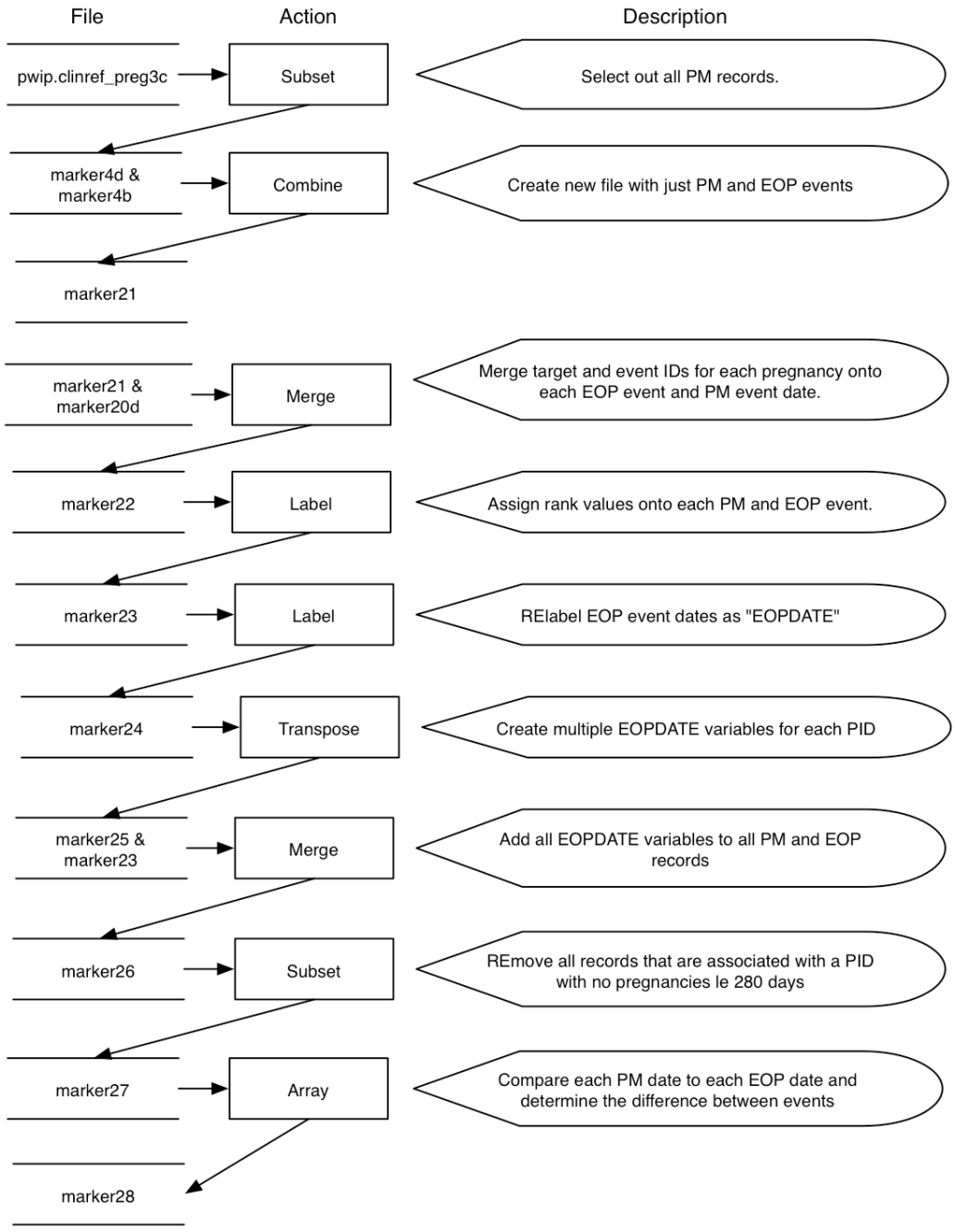
The approach used to address PCMs when there is at least one pregnancy within 280 days of another is similar to the previous procedure. We start with the file *marker4b*, which contains only the EOP event records of those individuals that have at least one pregnancy within 280 days of another pregnancy. Because these records cannot use a maximum cut point of 280 days for their first PCM for all of their pregnancies, additional steps must occur

to determine an alternate maximum for those pregnancies that occur within 280 days of another pregnancy.

Starting with *marker4b*, we create a new variable named "TARGET". This variable serves as the cut point for the number of days before an EOP event that a PCM can reach. The new file is named *marker17.* The default value for the variable TARGET is 280 days, but this will later be replaced for those specific pregnancies that are less than 280 days before another pregnancy.

The file *marker2* contains the EOP records of patients that were less than 280 days after a prior EOP and was then merged into *marker17* by record event identification number. We then created a new file named *marker19.* The variable TARGET was then replaced for those records in which the EOP event from the file *marker2* was less than 280 days. Now the variable TARGET is the actual number of days between each pregnancy with the maximum cut point of 280 days. This new file is named *marker20.* So that we can later use the different cut points for each unique EOP event, we created a new series of variables named TARGET1 through TARGET14. Additionally we created event identification number variables for each EOP event named EID1 through EID14. This new file is named *marker20d.*

Figure 4.18 – PCM Identification Process: Part 6

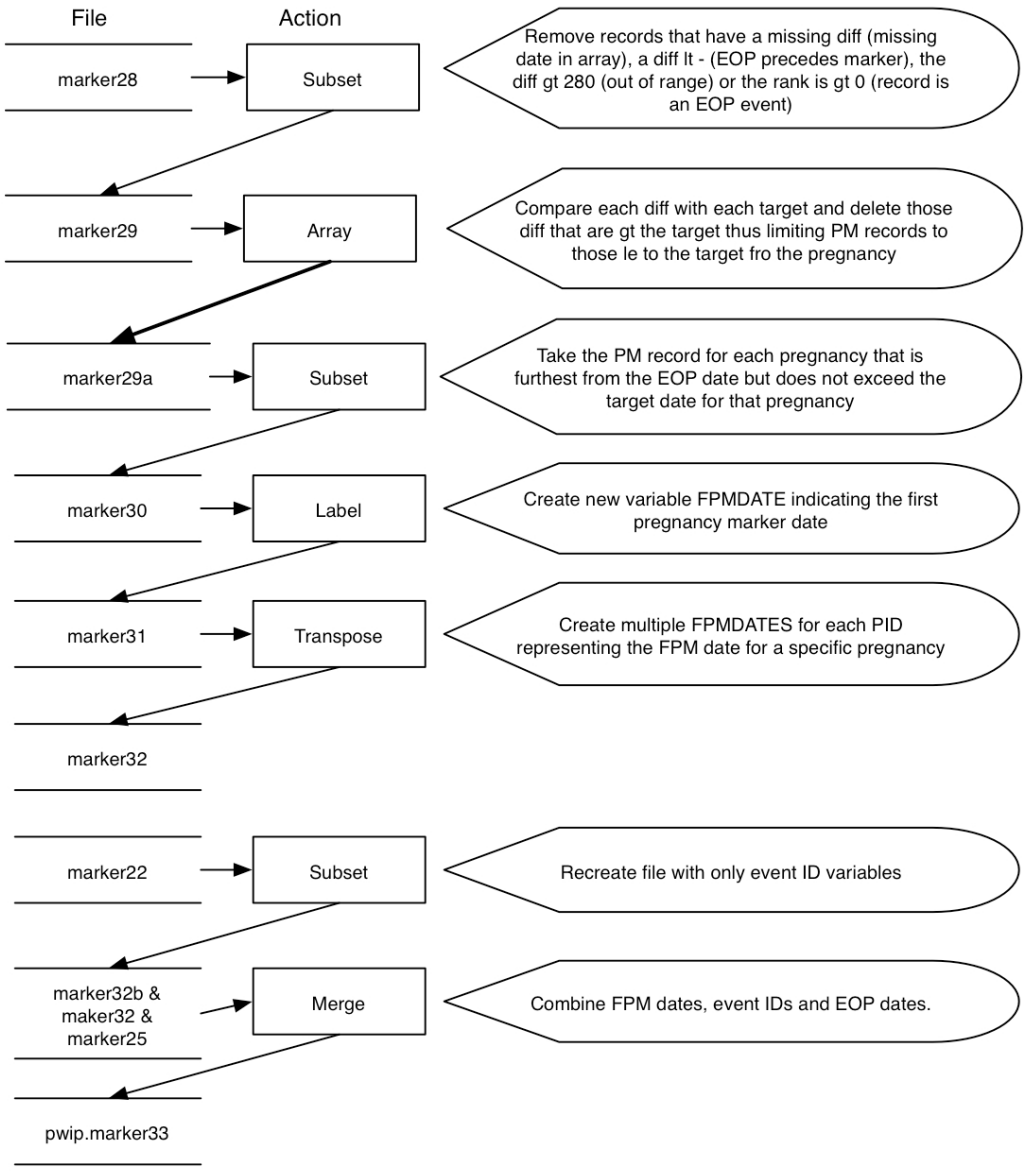


As before, we combined the EOP events from *marker4b* with the PCMs identified through step three as described earlier in the marker identification process. This created the file named *marker21*. The newly created TARGET variables from *marker20d* were then merged into all of the records from file *marker21*. This new file is named *marker22*.

The records in *marker22* are both PCMs and EOP events. So that we can identify and later remove the EOP events, we label them as such at this time. The new file is named *marker23.* A new variable was created named "EOPDATE" for each of the EOP events in *marker23*. All PCM records have a missing value for the EOPDATE variable. The file name at this stage is *marker24.* In order to compare each possible PCM to all pregnancies, we created multiple EOPDATE variables from the file *marker24*. One variable was created for each pregnancy. There were up to 14 EOPDATE variables created named EOPDATE1 through EOPDATE14 in file *marker25*.

We then merged all EOPDATE and TARGET variables for each patient identification number onto each PCM record. We then removed the PCM records that are associated with a patient with no pregnancies within 280 days of another (these records were evaluated in the previous step). The file *marker27* now contains only records of patients with at least one pregnancy that occurs less than 280 days from the prior pregnancy. Each event record date in *marker27* is then compared with each EOPDATE variable using an array. A difference value is calculated and a new file, *marker28,* is then created.

Figure 4.19 – PCM Identification Process: Part 7



As before, the array results in a large number of uninformative records that need to be removed. All records that have a calculated difference in days that is missing were deleted. These records represent a comparison between a marker date and a missing value for the EOPDATE value. As most EOPDATE values were missing (i.e. most patients have less than 14 EOP events), this represents the majority of records in our file *marker28*. Records with a calculated difference in days of less than zero were deleted. This difference occurs when the PCM occurs after a given EOP event. As there are many patients with multiple pregnancies,

this was also a common scenario. When the difference was greater than 280, the PCM was compared to an EOP event other than the one actually associated with the PCM. When this occurred the record was deleted. Finally, we deleted all records where the comparison was between an EOP event and the EOPDATES. This leaves us with a file that only contains PCM records that could represent the first PCM for any given pregnancy. The file name at this stage is *marker29*. [NOTE additional records are deleted in the next step using the TARGET variables.]

Using the file *marker29,* we compare the difference variable calculated in file *marker28* and compare it to the TARGET variables using an array. When the difference variable is greater than the TARGET variable for a given pregnancy it is deleted. This has the effect of limiting PCM variables to those that are less than or equal to the number of days between two pregnancies without exceeding the maximum number of days for a unique pregnancy. The new file is named *marker29a*.

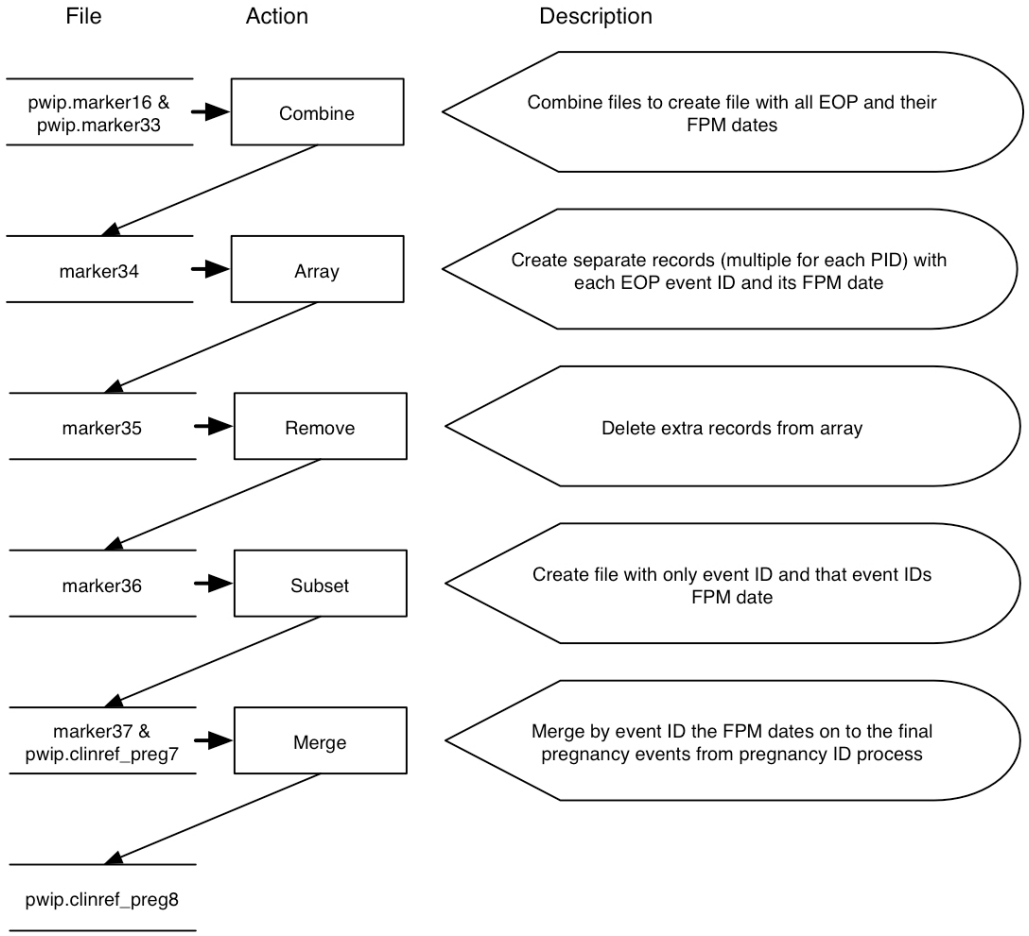
To determine the first PCM for any given pregnancy, we sorted the file *marker29a* by patient identification number, number of EOP events (calculated in file *marker28*), and the number of days between the PCM and its respective EOP event. As there are likely multiple PCMs for each pregnancy, this sorting allowed us to select the PCM that was the farthest back in the patient's history without exceeding our pregnancy specific limit (280 days or less). The file *marker30* then contained only the PCMs that were considered the first PCM for each of their respective pregnancies. A new variable, FPMDATE, was created that is equal to the event date found in the file *marker30.* The new file is *marker31*.

Each patient identifier number now has a single first PCM associated with each EOP event. We then created a new variable representing each of these FPMDATE variables

labeled FPMDATE1 through FPMDATE10. This new file is *marker32*. The final step in this part of the process is to create a single record for each patient identification number that contains all of their EOP events, all of those EOP event identification numbers and the first PCM dates. This is accomplished by merging the files *marker32, marker25* and *marker22*. The final file for this stage is *pwip.marker33*.

Combining the first PCM into the final pregnancy file

Figure 4.20 – PCM Identification Process: Part 8



To complete the first PCM identification process, we combined the final files for the two scenarios described above. By combining files *pwip.marker16* and *pwip.marker33* we created the file *marker34.* Using this file we performed another array to create multiple records per patient identifier number. Each record now represents a single EOP event, its

first PCM date and the event identification number of the EOP event. After the creation of two transitional files, *marker35* and *marker36*, the file *marker37* is then sorted by the event identification number and the new variable FPM (first PCM) is merged onto the final pregnancy file *pwip.clinref_preg7*. The new final file is named *pwip.clinref_preg8*. This file now contains all end-of-pregnancy events and when available, the first PCM date and event ID.

D. Procedure For NTD Identification

1. Overview

We analyzed the complete medical record profile for any individual in the GPRD with at least one NTD code between January 1, 1987 and September 14, 2004. The NTDs of interest in this study are anencephaly, encephalocele, meningocele and spina bifida. Our goal was to identify new cases of NTDs that occurred within the time frame of our available data from the database (January 1, 1987 to September 14, 2004).

To begin the identification process, we first identified potential mothers and children. Separate exclusion criteria were applied to each of these types of records. We considered all individuals as potential mothers if they were female and had a birth year between 1942 and September 1989 (between 15 and 45 as of 1987). Individuals were potential children if their birth year was between 1987 and 2004.

To avoid identifying records in which the mother herself had a NTD, we excluded NTD records in a mother's profile that were not within 210 days of another record indicating that the woman was pregnant. We also excluded records dated January 1st of a given year (used for recording historical information) if they were not within 30 days of any record indicating the woman was pregnant. Finally, to rule out the duplicate recording of a single NTD in a

woman's record, we selected the first NTD in a mother's profile and excluded all future records of NTDs recorded for a period of 60 days. When conflicts between two types of NTDs existed (i.e. a record for both meningocele and spina bifida was present), we selected the first record as the correct diagnosis.

We applied a separate series of exclusion criteria to the NTD codes identified in children's profiles. We analyzed the first 365 days of data available for a child after their estimated date of birth (the 15th of their birth month) and selected the first record of a NTD as the primary NTD diagnosis. All future records of NTD for that child were excluded. If the first NTD record was dated January 1st of a given year, it was excluded if not within 30 days of the child's estimated birth date.

The use of a link between the children's and mother's records was necessary to rule out duplication of events between profiles. To avoid double counting, we utilized the GPRD's mother-baby linkage. Once linked, the date of the first occurrence of a NTD diagnosis in the child's profile was compared to the date (or dates) of any NTD diagnosis in a mother's profile. If any NTD diagnosis in a mother's profile was within 180 days of the date in the linked child's profile, the record in the mother's profile was excluded. When the GPRD's mother-baby linkage was not able to provide us with a matching mother or child's identification number, we ruled out duplication by comparing GP Practice Identification numbers and NTD event dates. When GP Practice Identification numbers were the same, we considered a NTD to be a duplicate if it was the same NTD diagnosis and the event codes were within 90 days of each other.

Once all NTD cases were identified, a questionnaire was sent to the GP for each identified NTD using the Verification Service provided by the GPRD Division at the

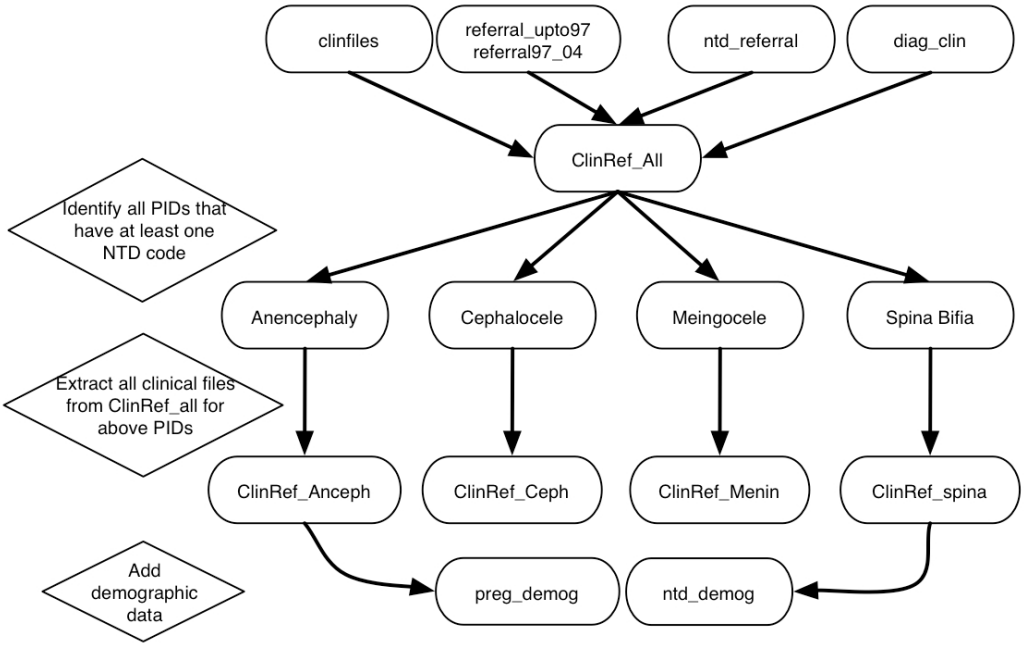
Medicines and MHRA. Each questionnaire consisted of at least three questions: 1) Can you confirm the NTD diagnosis and date, 2) What source was reviewed to confirm the diagnosis and date, and 3) If the NTD was confirmed, what type of examination was performed to determine the diagnosis. When the record was part of a mother's profile, we asked the GP to indicate if the diagnosis was the mother's own condition or if the diagnosis was for the mother's fetus or offspring. When the mother-baby linkage linked a case, we asked the GP to verify the linkage.

2. Operational Procedure

The following is a detailed description of the case identification process starting with a description of the data that were used. After reviewing the data files used in case identification, we describe our three-step identification process. Although explained in text below, flow charts were created (see below) to aid in the description of this process.

The GPRD provided all demographic information, clinical event records, diagnostic tests, laboratory tests, and immunization records from January 1, 1987 through September 14, 2004 for all individuals in the data set with either a NTD code (see Appendix B) or a pregnancy related code (see Appendix C). Data was gathered for practices that met the GPRD's up-to-standard quality assurance standards. All files were delivered separately as tab delimited text files and in the case of the clinical event files, unique files were available for each year. All files were then merged into SAS data sets.

Figure 4.21 – Initiation Of Case Identification Process.



For the purposes of identifying cases, a single file *clinref_all* was created from four of our original data request files: *clinfiles_all* (combined file for clinical files from 1987 to 2004), *refer_97_04* (referral files from 1997 to 2004), *refer_upto97* (referral files up to 1997), *diag_clin* (clinical files of possible NTD patients not in clinfiles_all) and *ntd_referral* (referral files of possible NTD patients not in the other referral files). The contents of this file include the following variables:

- PID – The unique patient identification number
- EVENTTYPE – Text variable indicating type of event record (clinical, referral, etc)
- EVENTID – The unique identification number for each recorded clinical event
- EVENTCODE – The GPRD Medical Code for the event associated with the EVENTID
- EVENTDATE – The date of record for the particular event associated with the EVENTID
- TEXTID – The unique identification number for a text note associated with an EVENTID
- SOURCE – A categorical variable indicating which original data file each record came from

Once these files were combined, the PID's for any individual with at least one code for a NTD (see Appendices 2a-2d) where identified. Upon identification of these individuals, four new files where created from the contents of *clinref_all*: *clinref_anenceph* (all records from *clinref_all* for those individuals with at least one anencephaly code), *clinref_ceph* (all records from *clinref_all* for those individuals with at least one cephalocele code) ,*clinref_menin* (all records from *clinref_all* for those individuals with at least one meningocele code), and *clinref_spina* (all records from *clinref_all* for those individuals with at least one spina bifida code). At this point there were four files that contained all clinical and referral records for any potential case in the GPRD database. The variables were the same as those listed above for the file *clinfiles_all*. For the purpose of simplifying the following discussion, we refer to the four files *clinref_anenceph, clinref_ceph, clinref_menin,* and *clinref_spina* in the generic format *clinref_diagnosis.*

At this point the *clinref_diagnosis* files do not contain any demographic information about the individual. In order to start the process of identifying the actual cases we added this information to the files. The files *preg_demog* and *ntd_demog* contain demographic information on all patients with either a code indicating a pregnancy or a NTD code. Upon addition of this data, the contents of this file includes the following variables in addition to those mentioned above:

- PRACTICEID – the unique general practice identification number
- BIRTHYEAR – the patient's year of birth (available for all patients)
- BIRTHMONTH – the patient's month of birth (for individuals less than 15 years old)
- FAMILYNUM – a practice assigned family identification number
- GENDER – the gender of the patient
- REGDATE – the date the patient was registered at a specific practice
- SMOKE – history of smoking (yes/no)
- DRINK – history of drinking (yes/no)
- HEIGHT & WEIGHT – height and weight at visit
- BMI – calculated BMI based upon height and weight

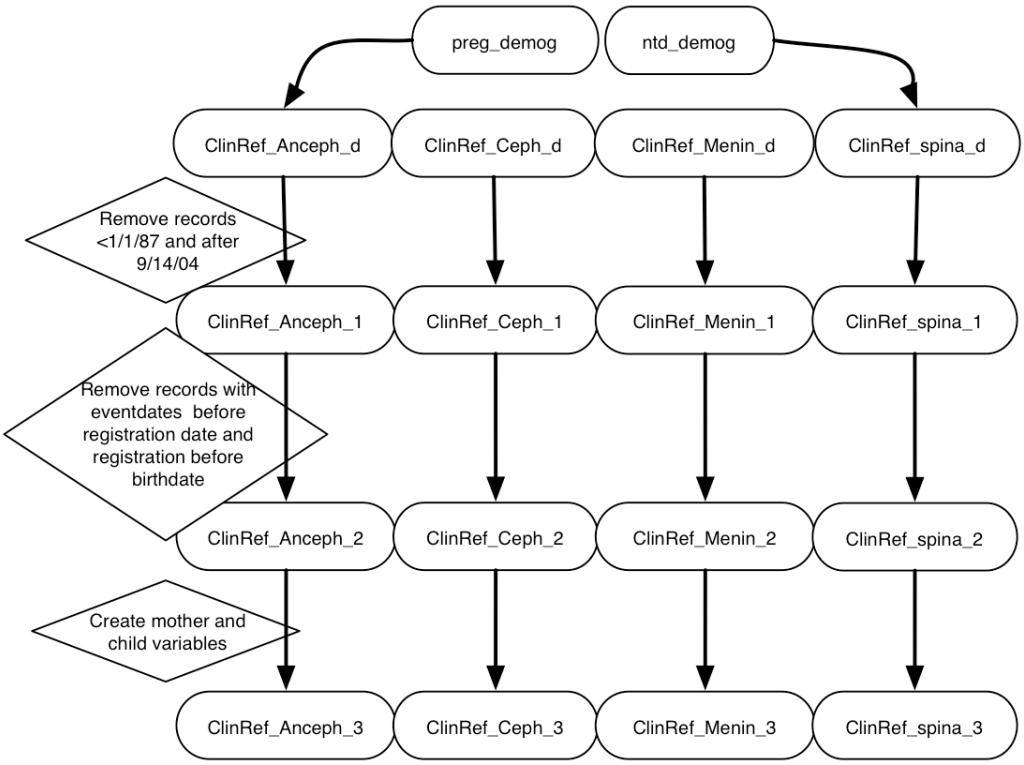
- TRANSOUTDATE – date in which a patient transfers out of a practice
- TRANSOUTREASON – reason for which a patient transfers out of a practice

The files *clinref_diagnosis_d* where the starting point for our identification of cases and all subsequent files have the above-mentioned variables. Once updated with the demographic information, we were able to begin applying our exclusion criteria. The case identification process has three stages: Step 1 – application of universal exclusions and creation of mother and child files, Steps 2 a & b – continued application of exclusion criteria and identification of cases in mother's and children's records, and Step 3 – combining of mother's and children's records and removal of duplicates. These three steps are described in the process below.

a. Step 1 – Universal Exclusions And Creation Of Mother And Child Files

The first two exclusion criteria were universally applied to all records within the *clinref_diagnosis_d* files with the intent of removing patient history references and records entered with the incorrect date (data entry errors). These steps are described below. Each step includes the name of the generic source file and output files.

Figure 4.22 – Step 1 Of Case Identification Process



The first step was the removal of records with event dates prior to 1/1/1987 or after 9/14/2004. The GPRD was launched as a database in on 1/1/1987. Any dates before 1/1/1987 are events that have been recorded by a GP as part of the patient's medical history. Any dates after 9/14/2004 (the last date of data gathered from the GPRD for this project) are either data entry errors or default dates when no year is entered by the GP. The source file was *clinref_diagnosis_d* and the output files were *clinref_diagnosis_1* and *remove_1_diagnosis.*

The second step was the removal of records with event dates prior to the individual's registration date. If one considers the registration date as the date of first contact with a patient by the GP, all dates before that should be considered patient history references or

errors in data entry. The source file was *clinref_diagnosis_1* and the output files was *clinref_diagnosis_2* and *remove_2_diagnosis.*

After removing these records, we began the third step: the process of identifying children and mothers' records. Potential children records are the records of those individuals less than 18 years old as of September 14, 2004 (last date of data collection in this study). Children are defined as an individual that had a birth year after 1987. As the exact date of birth is not available, we estimated the birth date as the 15th of the month in which the child was born (birth month is available for individuals born after 1987).

All records with a birth year before 1987 were considered adult records. Because we were only interested in finding new cases, we restricted adult records to females that may have had a pregnancy associated with a NTD. Females born after 1942 and before 1987 (between 1 and 44 years old as of 1987) were considered potential mothers. Males born before 1987 (more than 17 years old as of 2004) and women born before 1942 (over 44 years old) were not of interest in this study. The source files for this step are *clinref_diagnosis_2* and the output files are *clinref_diagnosis_3*.

To review, the electronic definition of a child's record is:

- a record that has a birth year after 1987;

and the electronic definition of a mother's record is:

- a record of a female, and
- a record with a birth year between 1942 and 1986.

The determination of whether a record was a child's or a mother's was necessary to rule out identification of the same NTD in both records. A non-fatal NTD may be recorded in a mother's record on or about the date of a live birth. As the infant is alive, a new patient identification number is generated for the infant when first seen by the GP. This presents the

opportunity for the same NTD to be recorded and counted in a mother's and child's record. To avoid this double counting we utilized the mother-baby linkage to link potential mothers and infants. We discuss the use of the mother-baby link further at the end of the case identification process.

We applied a number of exclusion criteria to the general data in the files *clinref_diagnosis_3*. These exclusion criteria had slight differences based upon the type of record (mother or child) and thus are described separately (Step 2a and 2b).

b. Step 2a – Identification Of Cases Within A Mother's Records

Figure 4.23 – Step 2a Of Case Identification Process In Mother's Records: Part 1.

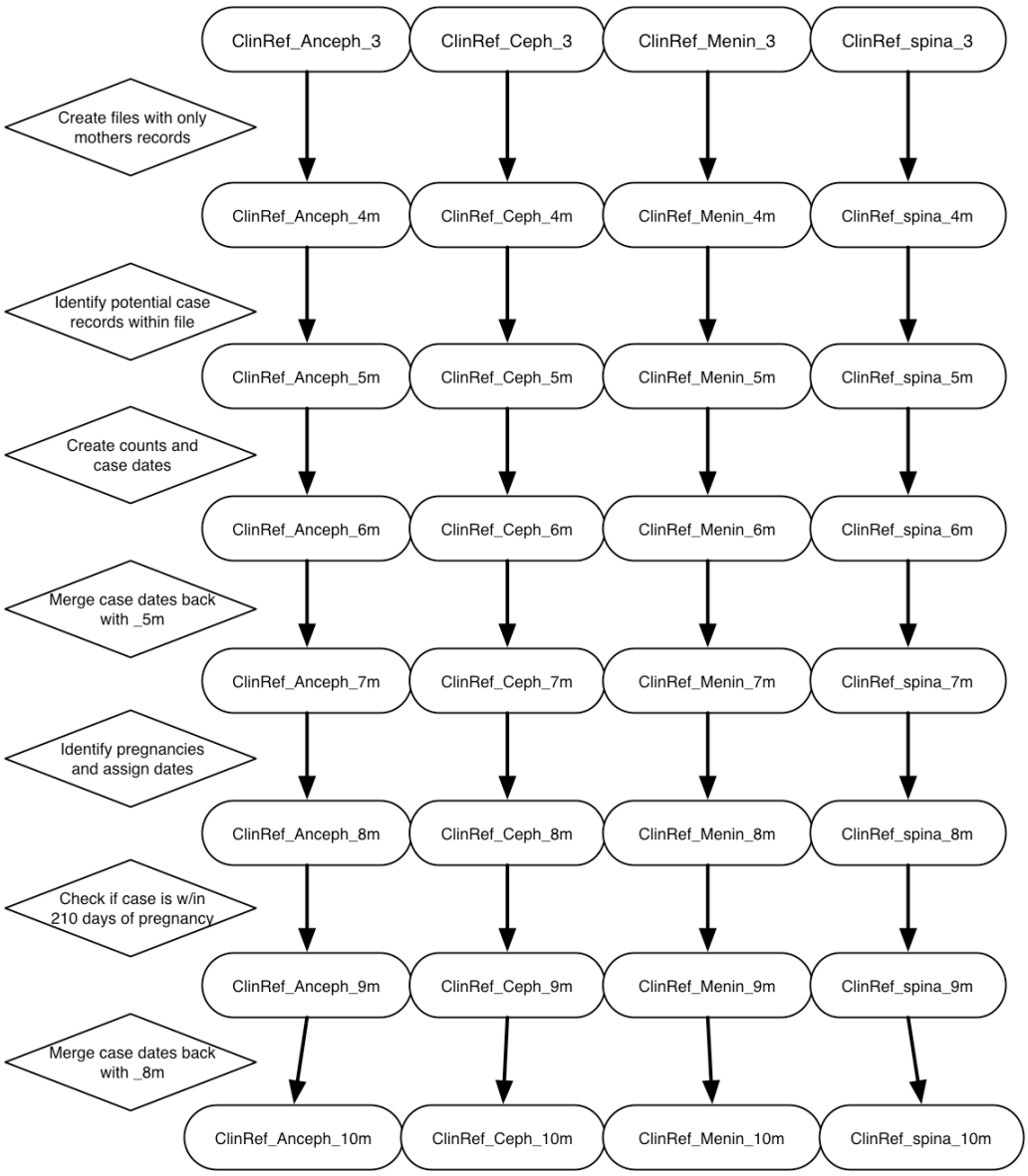
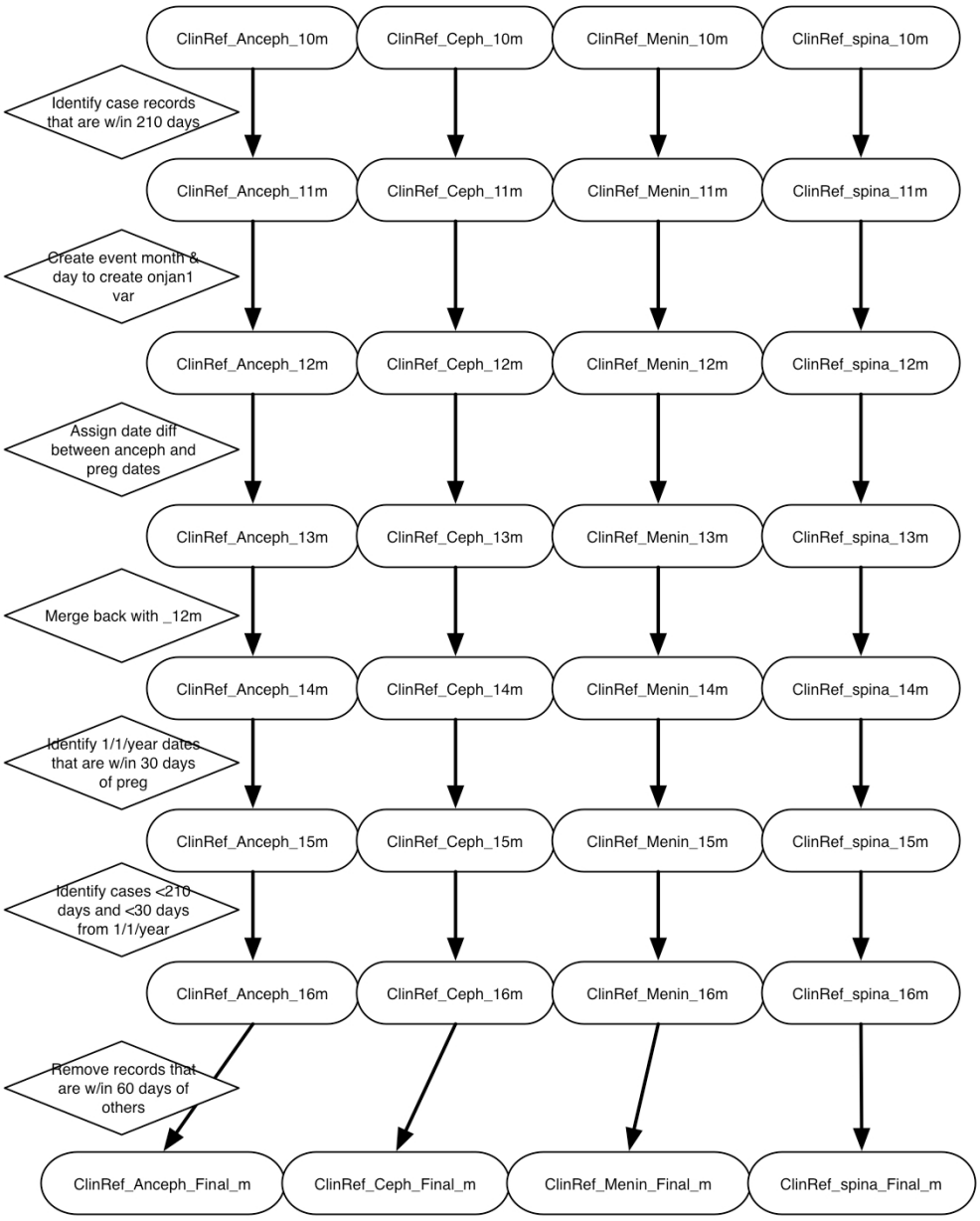


Figure 4.24 – Step 2a Of Case Identification Process In Mothers Records: Part 2.



The following are details as to how cases are identified in a mother's record. These details are depicted in the figures above. At each step that results in the removal of records, we created separate files containing the removed data. This data was reviewed to ensure that only the intended data was present.

The first step was the identification of all the records from females born between 1942 and 1987 (between 17 and 44 years old) in the file *clinref_diagnosis_3* and created new files containing all clinical and referral records for mothers. The source files are *clinref_diagnosis_3* and the output files are *clinref_diagnosis_4m.*

Next we identified all records with at least one NTD code (Appendix B) and created an indicator variable for each possible case type (i.e. anencephaly, cephalocele, meningocele, and spina bifida). These new variables allowed us to create counts of separate cases and assign records a series of "case dates" for use in future steps. The source files are *clinref_diagnosis_4m, clinref_diagnosis_5m,* and *clinref_diagnosis_6m* (_5m and _6m are also output files for this step). The output files are *clinref_diagnosis_5m, clinref_diagnosis_6m* and *clinref_diagnosis_7m.* No records were removed at this step.

Next we identified records related to a pregnancy, captured the individual dates, and compared these dates to each of the "case dates" described above. Records related to a pregnancy are any record that has an event code listed in Appendix C. If any/all of the case dates preceded a pregnancy related record by 0 to 210 days, a new indicator variable was created and set to 1. This new variable, *wi_seven#,* indicates that a specific NTD record (identified by a particular case date) was within 210 days of at least one pregnancy related record. The source files for this step are *clinref_diagnosis_7m, clinref_diagnosis_8m* and *clinref_diagnosis_9m* (files _8m and _9m are also output files in this step). The output files were *clinref_diagnosis_8m, clinref_diagnosis_9m* and *clinref_diagnosis_10m.* No records are removed in this step.

The fourth step was similar to the previous step, but focused on potential case records that may indicate a patient history record. At times a GP may want to record the occurrence of an event in the patient's medical history, while only knowing the year in which that event occurred. The default month and day for an entry into the patient's record without a specific date is January 1st of a given year. As records on "1/1/YEAR" are often historical references that lack specific information, we excluded records that were not in close proximity to the date of a pregnancy related record. Any events that occur on 1/1/YEAR that have a pregnancy related record in the 30 days before were considered potential cases. To test the assumption of 30 days, we performed a number of alternate analyses on the 30-day cut off to see if they materially affected our results. If a potential case record was up to 30 days after a pregnancy related record, the new indicator variable *wi_thirty#* was set to 1. The source files for this step were *clinref_diagnosis_10m, clinref_diagnosis_11m, clinref_diagnosis_12m, clinref_diagnosis_13m, clinref_diagnosis_14m* and *clinref_diagnosis_15m* (files _11m through _15m are also output files in this step). The output files were *clinref_diagnosis_11m, clinref_diagnosis_12m, clinref_diagnosis_13m, clinref_diagnosis_14m* and *clinref_diagnosis_15m*. No records were removed in this step.

In summary: potential case records that were 210 days before or after of a pregnancy record, and if on 1/1 of a given year no more than 30 days after a pregnancy record, had the variables *wi_seven#* and/or *wi_thirty#* set to one. All other records (regardless of whether the are related to pregnancy or case status) had these two variables set to zero.

The next step was to select all of the records that meet our exclusion criteria. We considered all NTD records potential cases if they were within 210 days of a pregnancy event or if on 1/1 of a given year were within 30 days of a pregnancy event. All other records were

removed. The source file for this step was *clinref_diagnosis_15m* and the output files were *clinref_diagnosis_16m* and *remove_16_diagnosis*.

The last step in this stage was to assign date differences between potential case records to determine if separate potential cases existed. If a potential case occurs >=60 days from future cases within a mother's record, the future record was considered a separate case. If it was < 60 days from another code, it was considered a duplicate record and was removed. The use of the 60 day cut off between two potential case records was based upon an estimate of the number of days that would be required to elapse after a pregnancy termination but before a women is likely to be diagnosed as pregnant again.[162] After this amount of time a women could potentially become pregnant and experience another NTD. As this 60 day cut point potentially had a large impact on our the number of cases, we performed alternate analyses by cutting this range to 15 and 30 days, as well as raise to 90, 180 and 365 days. The source files for this step were *clinref_diagnosis_16m* and the output files were *clinref_diagnosis_final_m* and *remove_diagnosis_final_m*.

c. Step 2b – Identification Of Cases Within A Children's Records

Figure 4.25 – Step 2b Of Case Identification Process In Children's Records: Part 1.

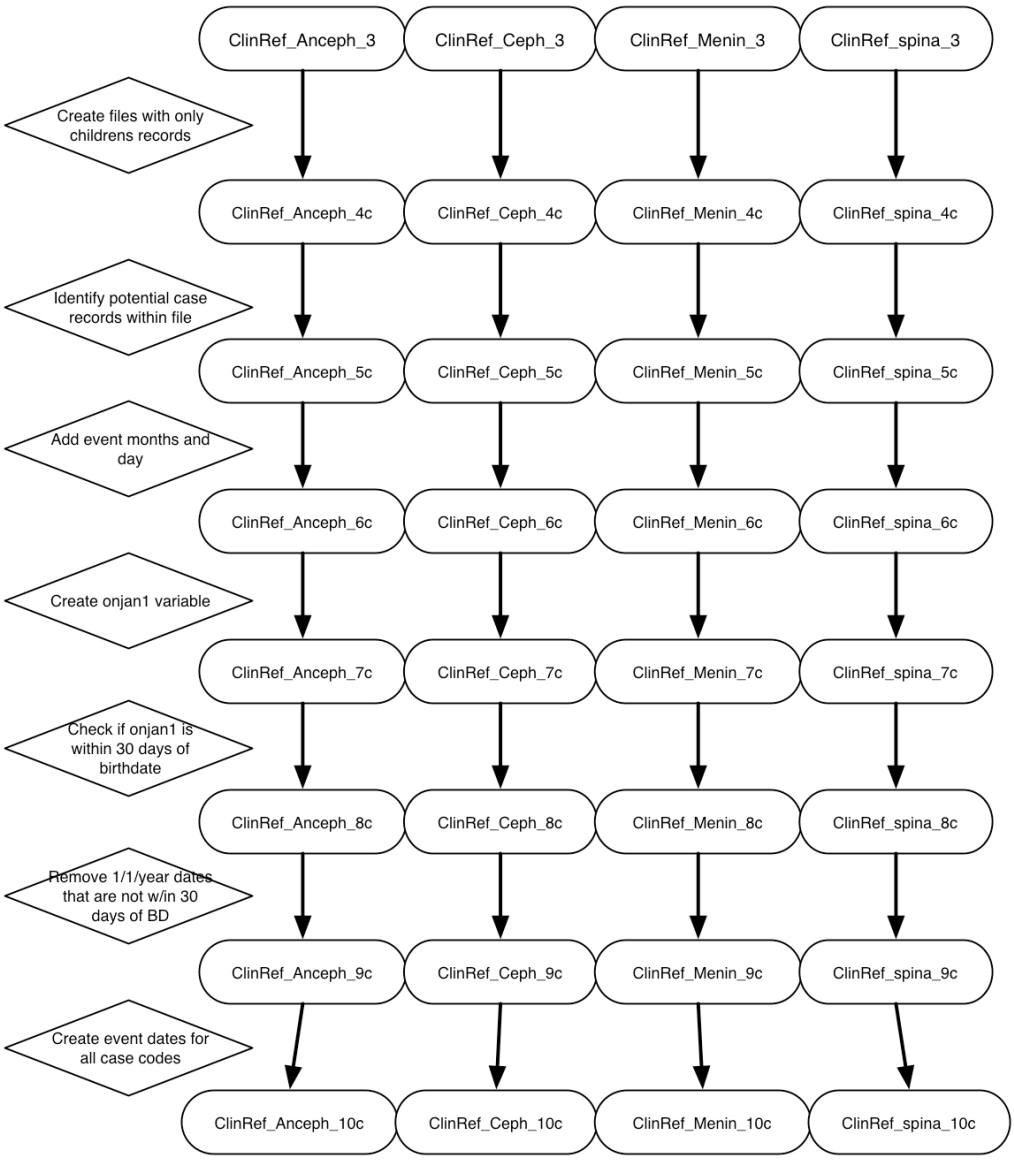
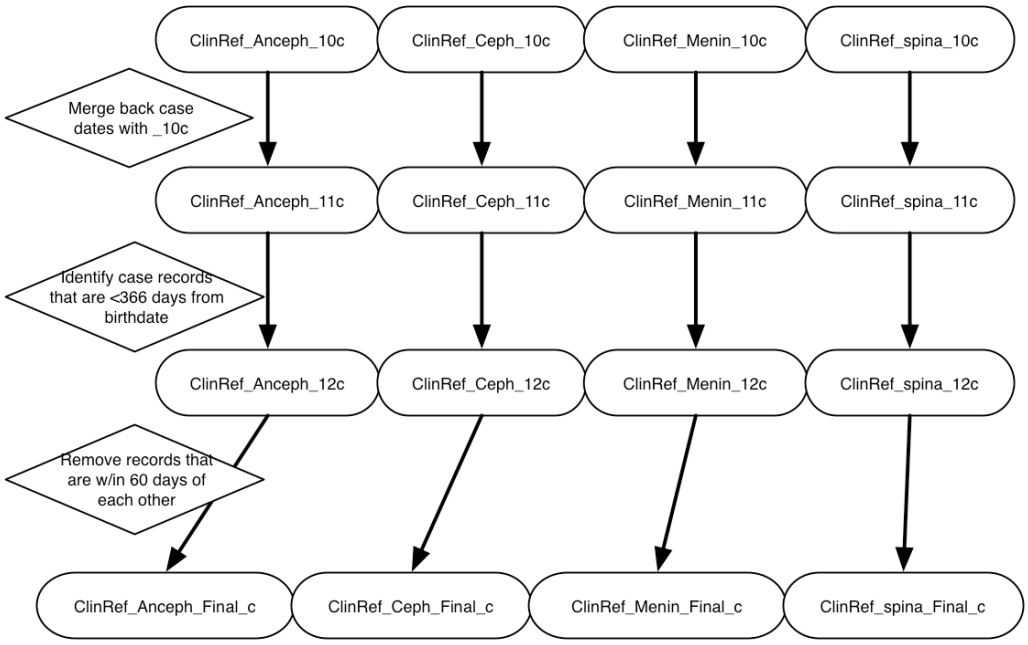


Figure 4.26 – Step 2b Of Case Identification Process Part 2.



We next identified cases in children's records. The process is depicted in the figures above. The first step was to identify all records that had a birth year after 1987 but before 2005 from *clinref_diagnosis_3* and create new files containing all valid clinical and referral records for mothers. This created our group of potential children. The source files are *clinref_diagnosis_3* and the output files are *clinref_diagnosis_4*c.

We then identified all records with at least one NTD code from Appendix B and create an indicator variable for each possible case type (i.e. anencephaly, cephalocele, meningocele, and spina bifida). These new variables then allowed us to create counts of separate cases and assign records a series of case dates for use in future steps. The source files were *clinref_diagnosis_4c, clinref_diagnosis_5c,* and *clinref_diagnosis_6c* (_5c and _6c are also output files for this step). The output files were *clinref_diagnosis_5c,* and *clinref_diagnosis_6c*. No records were removed at this step.

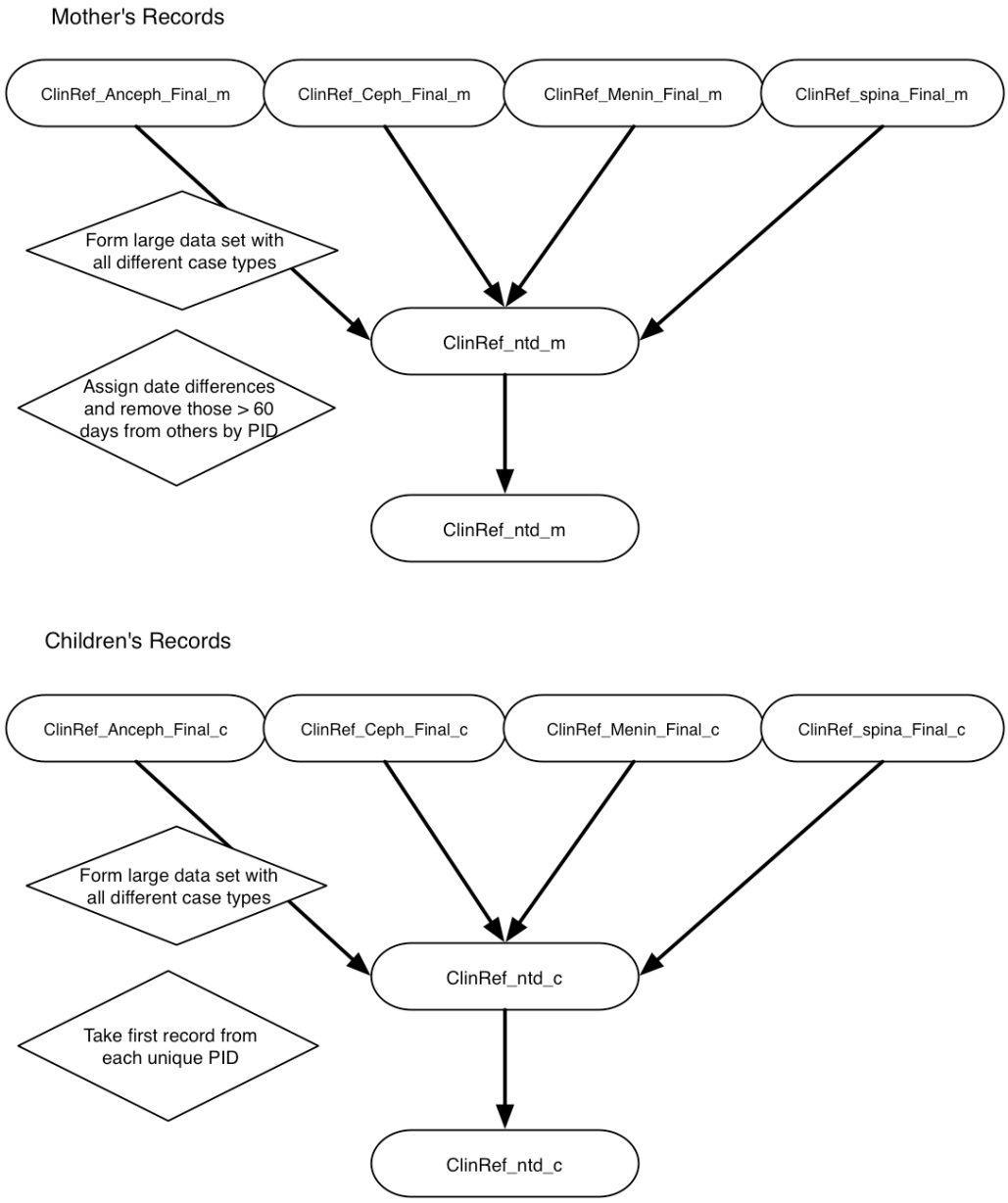
Next we identified records on “1/1/YEAR” and selected those records that were within 30 days of the child’s estimated date of birth. All records with dates of 1/1/Year that are not within 30 days of the date of birth were removed. The use of the child’s estimated birth date is a potential source of bias in this criteria, thus we performed alternate analyses on the 30-day cut off to see if it materially affected our results. The source files for this step were *clinref_diagnosis_6c, clinref_diagnosis_7c, clinref_diagnosis_8c* and *clinref_diagnosis_9c* (files _7c through _9c are also output files in this step). The output files were *clinref_diagnosis_7c, clinref_diagnosis_8c, clinref_diagnosis_9c,* and *remove_diagnosis_9_c*.

Next we identified case records, captured the dates, and compared these dates to the estimated birth date of each patient. Potential case records that are between 0 and 365 days from the patient’s date of birth were considered potential cases, and those that were not within this range were removed. The source files for this step were *clinref_diagnosis_9c, clinref_diagnosis_10c, clinref_diagnosis_11c* and *clinref_diagnosis_12c* (files _10c, _11c and _12c are also output files in this step). The output files were *clinref_diagnosis_10c, clinref_diagnosis_11c, clinref_diagnosis_12c* and *remove_diagnosis_12_c*.

The last step in this stage was to identify the first potential case record for each patient. As the case type cannot be repeated in a patient (i.e. each patient only represents a single possible case), the first occurrence of each NTD type was considered the only one. Please note that the possibility that the same child may have two separate diagnoses still exists at this point. Ruling out alternate diagnoses will take place in the next step of case identification. The source files for this step was *clinref_diagnosis_12c* and the output files were *clinref_diagnosis_final_c* and *remove_diagnosis_final_c*.

d. Step 3 – Merging Mothers' And Child's Records And Eliminating Duplicates

Figure 4.27 – Step 3 Of Case Identification Process.



In the final step of case identification (depicted above) we combined our potential cases identified from the record of a mother or child and compared them for potential duplication. Each of the files generated from the case identification process for mothers

(*clinref_anenceph_final_m, clinref_ceph_final_m, clinref_menin_final_m,* and *clinref_spina_final_m*) was recombined to form a single file: *clinref_ntd_m*. For each patient, if a case occurrence is within 60 days of another case occurrence, the case type that occurs first was considered the final case type. This allowed a mother's record to contain multiple different case types, but rules out the possibility that the same case (i.e. within 60 days of each other) are counted twice in our case counts.

A similar approach was applied to the children's records. Like a mother's record, the files generated from the case identification process for children (*clinref_anenceph_final_c, clinref_ceph_final_c, clinref_menin_final_c,* and *clinref_spina_final_c*) were combined to form a single file: *clinref_ntd_c*. However, as the case type cannot legitimately change throughout the child's life, we considered the first recorded case type to be the only case type for the child. This prevents the child's record from containing multiple different case types. As potential cases are removed in this step, a new file, *remove_ntd_c,* was created and reviewed.

The final step (recombining the case files and finalizing the list of cases) required the use of the mother-baby linkage. A detailed description of the methods used for the mother-baby linkage is provided in the Chapter II, Part E, Section 2. The possibility exists that a non-fatal NTD case could exist both in a mother's record (the record of the event associated with a birth) and as part of a child's record (within the first 12 months of life). In order to rule out these duplications, we used the mother-baby linkage to identify all the offspring of the mothers with a NTD record, and all the mothers of children with a NTD record. Once linked, the date of the first occurrence of a NTD diagnosis in the child's record was compared to the date (or dates) of any NTD diagnosis in a mother's record. If any NTD diagnosis in a

mother's record was within 180 days of the date in the linked child's record, the diagnosis in a mother's record was removed from the file *clinref_ntd_all* and placed in the file *remove_ntd_all* for further evaluation. The source files for *clinref_ntd_all* were *clinref_ntd_m* and *clinref_ntd_c*.

As this step is dependent on the reliability of the mother-baby linkage and our decision to call records that occur within 180 days of each other duplicates, we conducted several additional analyses. We conducted alternate analyses utilizing 90 days and 210 days as the cut points for designating mother-baby linked cases duplicates. To test the reliability of the mother-baby linkage we also analyzed all NTD cases (regardless of diagnosis) that occur within 14 days of each other. The family identification number and the practice identification numbers were compared. If the family identification number or the practice identification number match, the cases were copied to the file *suspect_ntd_final* and considered a possible duplication.

3. Validation Of Outcomes

The verification service provided by the GPRD Division at MHRA was used to distribute a GP Questionnaire for all NTD cases. The GP questionnaire was designed by epidemiologists with input from a dysmorphologist to provide as much insight as possible into the appropriateness of the diagnosis that is listed in the computer records. The GP questionnaire was submitted to the GPRD Scientific and Ethical Advisory Group (SEAG) for their input and approval. The SEAG assesses all questionnaires for appropriate content, time to completion and accessibility of the requested data. The SEAG approved GP Questionnaire may be found in Appendix A. A case that met our operational case definition of anencephaly, encephalocele, meningocele, or spina bifida and was confirmed by a physician

through the GP questionnaire was considered a validated case. In order to validate the linkage between mother and offspring we also asked the GP to confirm the personal identification number of the suspected mother of a case when a mother for the case could be identified using the mother-baby linkage.

E. Quality Assurance/Quality Control

1. GPRD Quality Assurance Practices

The MHRA utilizes a robust data quality program to ensure that the data utilized in any study is of the most reliable quality. Data quality indicators are available for individual patient records and each GPRD practice. [187] Individual patient records are considered to be of "acceptable" quality if no event records exist prior to birth year, the estimated age of the patient is less than 115 years old, the gender is recorded as either male, female or indeterminate, and the patient is in one of three acceptable registration status categories: 1) the patient is registered as 'Applied', 'Permanent' or 'Transferred Out'; 2) the patient registration year is after or equal to the patient birth year, and 3) for a patient registered as 'Permanent' or 'Applied' there is no transferred out date and reason, or for a patient registered as 'Transferred Out' there is a valid reason for transferring out and the date that the patient transfers out is after the registration date.

GPRD practices that meet GPRD data quality standards are considered up-to-standard (UTS). To be considered up-to-standard the practice must meet continuity of data checks that insure that there are no gaps in the reporting of patient record information and pass a series of time series analyses that evaluate the practices records for major data entry flaws. We only used data from patients in practices with an up-to-standard rating.

2. Data Management Quality Assurance Practices

Quality assurance criteria were also applied to the data sets received from the GPRD. The text files created from the GPRD data management software were converted to SAS data sets. To insure that the SAS data sets were correctly converted, variable and observation counts were compared to values created from the GPRD data management software. Once the integrity of the SAS data sets was confirmed, we verified that the data used for analysis met our inclusion and exclusion criteria. This was accomplished by conducting range checks for the variables of birth year, birth month and gender and verifying that we only used records that met acceptable patient registration status criteria and were from practices that are considered up to standard.

The author and the dissertation advisor, Dr. Suzanne West, reviewed the entire medical profile for each NTD record. Based upon our definition of a NTD, we determined if multiple records occurred or if illogical combinations of diagnoses exist (i.e. anencephaly followed by additional codes indicating additional health services). While we found no illogical combinations of diagnoses, the review did however lead to the addition of the question determining if the record was the mother's own condition or the condition of her offspring or fetus.

3. Programming Quality Assurance Practices

As this project was computer programming intensive, the quality and integrity of the programming was essential. We conducted two quality assurance procedures to insure all programming was correct. The first procedure was the detailed documentation of all programming. SAS was the primary analytic software program used in the analysis.

SAS was used to construct all data files, conduct range checks, determine frequencies, counts and conduct all statistical analyses. All SAS data step editor files and SAS log files were retained. Comments were used throughout the coding to describe the programming with the intent of meeting the second quality assurance procedure described below. Log files were generated and retained in their original form for each days programming.

The second procedure for quality assurance was the review of select coding and log files by a second investigator, Dr. Suzanne West. Dr. West reviewed code and log files with the intent of determining the accuracy of the coding steps and outputs. Although Dr. West did not repeat the data analysis, major errors in coding could be found through this review.

F. Analysis Plans

1. Pregnancy Identification

Our primary analytic output for the pregnancy identification process was annual counts of pregnancies. Upon identification, key characteristics of all women with pregnancies were described. The age of the woman, and the age at first pregnancy was determined and categorized into six groups: <=20 years old, >20 to 25 years old, >25 to 30 years old, >30 to 35 years old, >35 to 40 years old and >40 years old (45 is upper limit of our records). Screening and diagnostic methods for NTDs (AFP, Amniocentesis and Ultrasound) used in any pregnancy and the availability of smoking and alcohol use information were determined.

In addition to these primarily descriptive analyses, we also conducted a series of detailed electronic record reviews, assessments of variables used at various stages and alternate analyses in order to evaluate our identification algorithm. To find potential errors in our

algorithm we reviewed records of women with extremely short or long periods of time between their first and last identified pregnancies as well as women with eight or more pregnancies.

Several reviews of variables created by the algorithm were also conducted. The length of time between events ***within*** pregnancy categories impacts the number of EOP events that we identified. We conducted multiple alternate analyses varying the required time between 180 and 280 days for stillbirths, live births, pre-term and post-term births and multiple births and between 30 and 120 days for elective terminations and spontaneous abortions. We also assessed our assumptions of the length of time ***between*** events of different pregnancy event categories by varying the required time from 210 days to between 180 and 280 days for stillbirths, live births, pre-term and post-term births and multiple births and from 60 days to between 30 and 120 days for elective terminations and spontaneous abortions.

The time between potential EOP events was plotted and assessed to determine if our assumptions concerning required gaps were appropriate for the data. We also plotted and assessed the number of days between the first identifiable PCM and its associated EOP event to determine if the beginning and ending of a pregnancy were consistent with those found in other data sources.[162, 172]

We conducted alternate analyses using all records regardless of their relationship to registration or practice up-to-standard dates, or only the patient registration date as the beginning of records to ascertain the impact of these exclusions. Additionally, we evaluated our assumption that a PCM or EOP event found on a 1/1/YEAR date that was within 30 days was valid by varying this number between 15 days and up to 120 days. Finally, we assessed our assumption that pregnancy markers could be no more than 280 days prior to an EOP

event by plotting the number of days between each pregnancy marker and any EOP event in the patients record.

2. NTDs

One of the primary analytic outputs from the NTD validation study was the determination of annual NTD prevalences. It has been historically difficult to determine the incidence of NTDs, as many pregnancies do not result in a live birth, but rather in a stillbirth or an elective or spontaneous termination. Many monitoring programs, including the CDC's programs, have been limited to live births and stillbirths of >20 weeks of gestation. The CDC concluded in 1995 that estimation of the prevalence of NTDs at birth should include those cases that were electively terminated.[188] In several studies of the subject, prenatal diagnostic testing has resulted in increased terminations.[87, 188-194] With the increase in prenatal screening and the high degree of variability in reporting and surveillance of elective terminations, some under reporting of terminations may result in artificially low rates of NTDs. For these reasons, we only report the prevalence of NTDs in our analyses.

Upon the completion of each of the above-mentioned pregnancy identification analyses, we were able to determine annual prevalences. The numerators and denominators used to calculate key prevalence outputs are summarized below.

Annual Prevalence –

$$\frac{\text{\# Cases in Year (from live births, stillbirth, \& terminations)}}{\text{\# Potential Pregnancies in Year (live births, stillbirth, \& terminations)}}$$

Using positive predictive value adjusted case counts of NTDs as well as totals from the annual pregnancies, the prevalence for all NTDs were calculated and presented per 10,000 pregnancies.

To evaluate the internal robustness of our NTD identification algorithm, we conducted a number of alternate analyses. To evaluate some of our baseline assumptions for evaluating the mothers' records for NTDs, we varied both the number of days a pregnancy related record (Appendix C) must precede a normally recorded NTD diagnosis as well as one that may represent a historical reference. For children's records, we varied the number of days from the child's date of birth that a potential historical record may be recorded, and we extended the number of days past the estimated birth date that the first NTD diagnosis could be recorded. Because many NTDs may be recorded in close proximity to the patient's GP registration date, we determined the number of additional cases that could be identified if we looked in various time frames before the registration date. Finally, we varied the required number of days between the first NTD record and any subsequent records used to see if it influenced the number of cases identified by the algorithm.

The cases identified by the NTD algorithm and the cases from the returned GP questionnaires were compared. Those cases in which the GP confirmed the presence of a NTD were considered validated cases. We determined the positive predictive value (PPV) of our algorithm for the validated cases. Sensitivity and specificity of our algorithm cannot be determined because the number of true cases and non-cases could not be determined. We determined *a priori* that if our validated PPV was less than 70 percent, we would revise our electronic case definitions. If our validated positive predictive values exceeded 70 percent we would determine alternate case counts based upon the validated positive predictive values. Alternate case counts were calculated by multiplying the annual observed case counts by the positive predictive value determined for validated cases.

Using the alternate case counts, we determined annual prevalences of NTDs in the GPRD for the years 1991 through 2003. We restricted our calculations to these years, as our data on pregnancies was most complete for this time frame. The annual prevalence was calculated by dividing the number of alternate cases by the number of live births, stillbirth, and terminations. Annual prevalences were standardized to the age distribution of women giving birth in the UK. To aid in comparing our results to those of surveillance systems in the UK, we charted our age standardized annual prevalences with those of the UK's National Congenital Anomaly System.

To establish our ability to avoid duplicate counting of NTD records in both a mother's and a child's record we determined the accuracy of the GPRD mother-baby linkage for those NTD cases that we were able to link. The linkage between a mother and her offspring was considered correct by a positive response to a question on the GP's questionnaire. When the linkage between mother and offspring was confirmed, we described details of the mother at the time that the NTD was identified.

V. RESULTS

A. Additional Results

1. Review of NTD Cases With Changes In Diagnosis During 1st Year

Duplicate records of medical diagnoses are common place within the GPRD. Because the care delivered to a child with a NTD is likely to take place over the course of many visits to the GP, medical event codes signifying the NTD as the problem relating to care can and should be recorded several times throughout the patient's profile. As the GP has freedom to utilize any code, the possibility exists that different NTD codes can occur in the record over time. This becomes problematic when the actual category of NTD appears to change within the patient's record. This change can be due to a change in the GP's opinion of the diagnosis or by the feeling that some codes can be used interchangeably. In order to develop an algorithm to identify NTD diagnoses, we selected the first diagnosis by date, and in the case of a tie, by the first event identification number. We chose the first diagnosis based upon the assumption that the initial diagnosis may be the most likely to be determined by a specialist rather than the GP.

The following is a brief discussion on the five instances in which our identification algorithm found two potential NTD types within a child's record. Although the possibility exists that duplication could have occurred in a mother's record, we found no instances of this eventuality in the cases identified.

a. Description Of Identified Cases With Changes In Diagnoses

We identified five NTD cases with two different categories of NTD within the first year of the child's life. All five of the cases were identified from the primary clinical event files. No referral files were used to identify these cases. A brief summary of each case is presented in table 5.1 below. The first case for each individual was considered the final case.

Table 5.1 – Summary of Cases Which Changed Diagnosis Within the First Year

Event Code	Event Code Description	Event Date	DOB	Gender	Reg Date
Case 1					
304969	Meningocele	3/17/97	3/15/97	Female	3/17/97
304968	Spina Bifida	6/13/97	3/15/97	Female	3/17/97
Case 2					
299389	Meningomyelocele	2/27/98	1/15/98	Female	2/9/98
208117	Spina Bifida with hydrocephalus	2/27/98	1/15/98	Female	2/9/98
Case 3					
262689	Spina Bifida	7/29/02	6/15/02	Female	7/22/02
277162	Closure of spinal myelomeningocele	12/3/02	6/15/02	Female	7/22/02
Case 4					
277162	Closure of spinal myelomeningocele	12/23/03	10/15/03	Female	12/18/03
262689	Spina Bifida	1/7/04	10/15/03	Female	12/18/03
Case 5					
280988	Spina bifida with hydrocephalus, unspecified	8/7/90	5/15/90	Male	6/6/90
280993	Spinal meningocele	8/25/90	5/15/90	Male	6/6/90

b. Validation Results

We reviewed the results of the validation questionnaire to determine if the GP confirmed the diagnosis for the cases we submitted. Three of the five GP questionnaires were returned. The GP confirmed the date and diagnosis of each of the three cases. The results of the validation questionnaires are summarized in the table below.

Table 5.2 – Summary of Validation Responses for Cases Which Changed Diagnosis Within the First Year.

Event Code Description	Event Date	GP Quest Returned	Diag Validated	Source Reviewed	Exam Performed
Case 1					
Meningocele	3/17/97	No	n/a	n/a	n/a
Case 2					
Meningomyelocele	2/27/98	Yes	Yes	EMR, Letter from Spec	Other (No access to maternal AN records)
Case 3					
Spina Bifida	7/29/02	Yes	Yes	EMR	Ultrasound, MRI
Case 4					
Closure of spinal myelomeningocele	12/23/03	No	n/a	n/a	n/a
Case 5					
Spina bifida with hydrocephalus, unspecified	8/7/90	Yes	Yes	EMR, Letter from Spec, Paper Chart	Physical Exam by Ped/OB

c. Conclusions

Because of the limited number of cases with changes in diagnoses, it is difficult to reach any definitive conclusion as to the appropriateness of our assumption that using the first diagnosis identified. There are several points that are encouraging. The first are the validation results. All three of the returned questionnaires confirmed both the date and the diagnosis of the NTD in question and two of the three confirmed this using a letter from a specialist physician. As we expected the first diagnosis to be based upon the opinion of a specialist, these responses were reassuring. The second point is that all of the changes in diagnosis were related to cases of spina bifida or meningocele. As these two case types have a number of similarities in presentation and meningocele is often considered a type of spina bifida, some physicians may interchange these codes. Based upon these two points, we are comfortable with maintaining the assumption that the first identified diagnosis is the correct diagnosis.

2. Pregnancy Identification Alternate Analyses

Few of our reviews or alternate analyses described in our analysis section resulted in any substantive changes in our final results, demonstrating that our initial assumptions resulted in a fairly robust algorithm. We reviewed the records of the five women with four or more pregnancies that had the shortest and the longest length of time between their first and last pregnancy. All five of the women with the least amount of time between their first and last recorded pregnancy experienced three or more miscarriages in relatively short order. The women with the longest time between the first and last pregnancy exhibited no discernable patterns.

The records of the forty-one women with eight or more pregnancies were reviewed. We identified no reason to believe that any of the reviewed records were inaccurate. One of these women had seven live births, eight had six live births, five had five live births, twelve had four live births, and fifteen women had less than four live births. One woman had nine miscarriages over a three-year period. The miscarriages were no less than 70 days apart, with five of the nine greater than 140 days apart. Based on the low number of multiple pregnancies, the retention or elimination of these records would have minimal impact on the final number of pregnancies.

We altered the required number of days between events from our baseline of 210 days to between 180 and 280 days for stillbirths, live births, pre-term or post-term births and multiple births and from 60 days to between 30 and 120 days for elective terminations and spontaneous abortions. These analyses reliably added pregnancies as compared to baseline when criteria were relaxed and lost pregnancies when criteria were constricted. Changing the number of days between events to 280 and 120 resulted in up to 4,755 fewer pregnancies,

whereas reducing the number of days to 180 and 30 resulted in up to 1,271 additional pregnancies.

We performed an additional check on our baseline choices that if an EOP event were greater than 210 days (for stillbirths, multi-births, pre/post-term births and live births) or 60 days (spontaneous abortions or miscarriages and elective terminations), it would represent a separate event. We present histograms of the time between EOP events in the figure below.

Figure 5.1 – Days Between Stillbirth Event Codes In The GPRD Between 1987 and 2004.

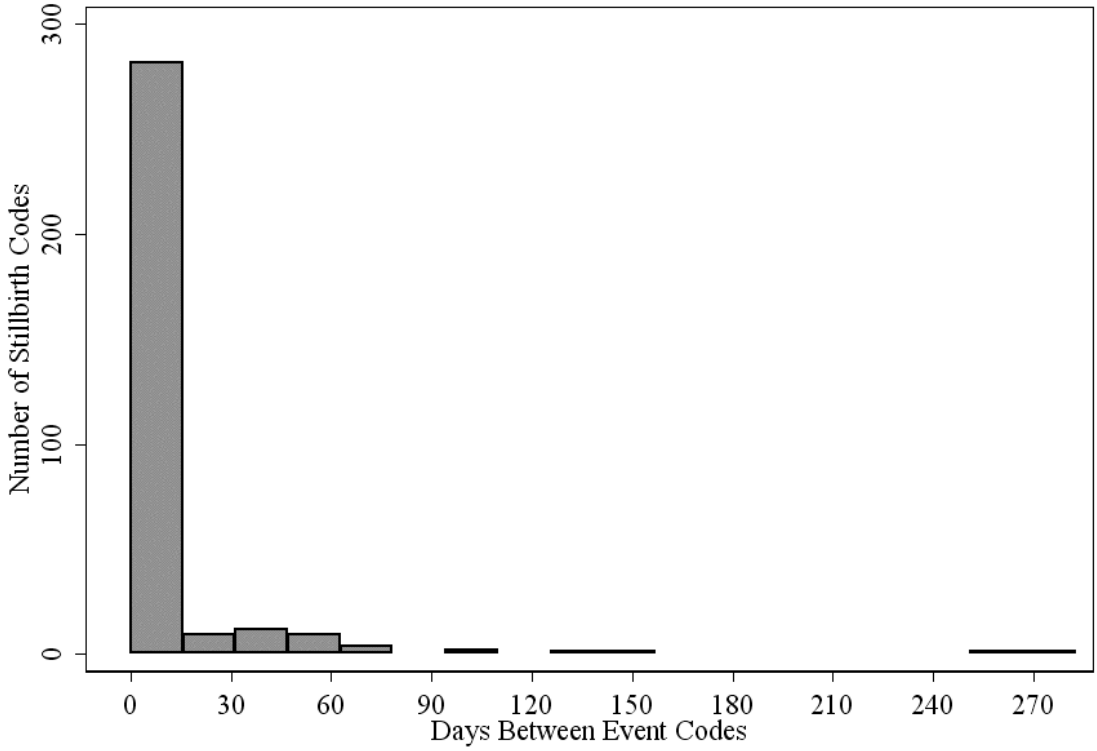


Figure 5.2 – Days Between Live Birth Stillbirth Event Codes In The GPRD Between 1987 and 2004.

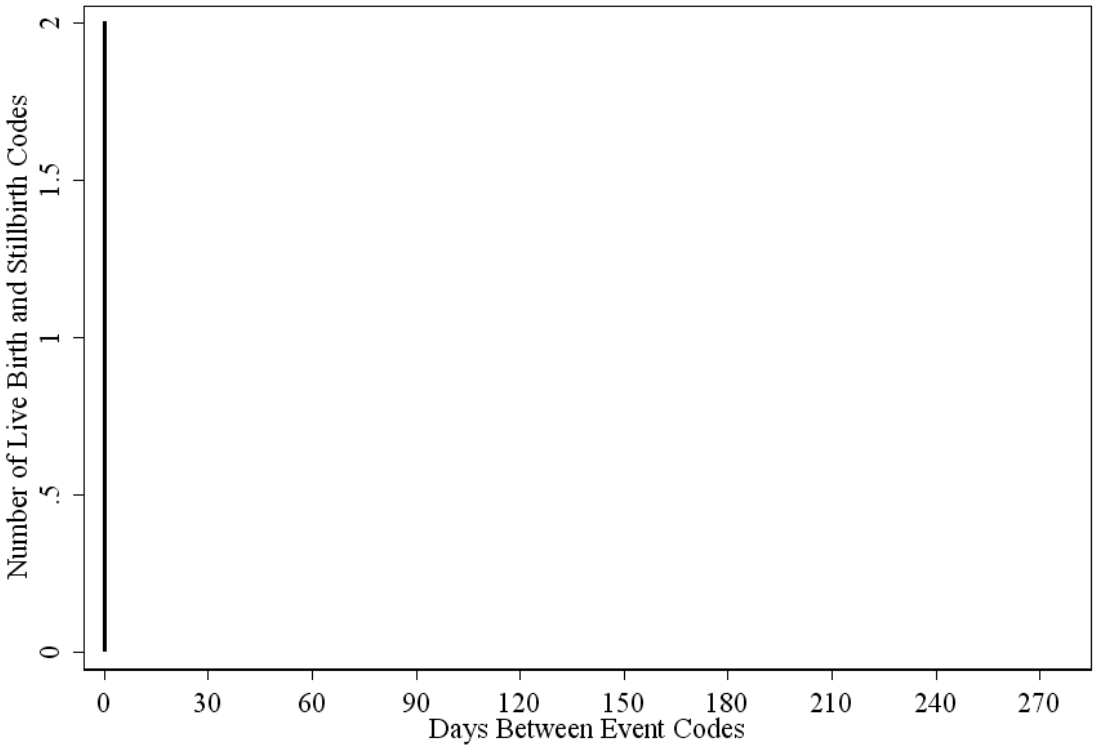


Figure 5.3 – Days Between Elective Termination Event Codes In The GPRD Between 1987 and 2004.

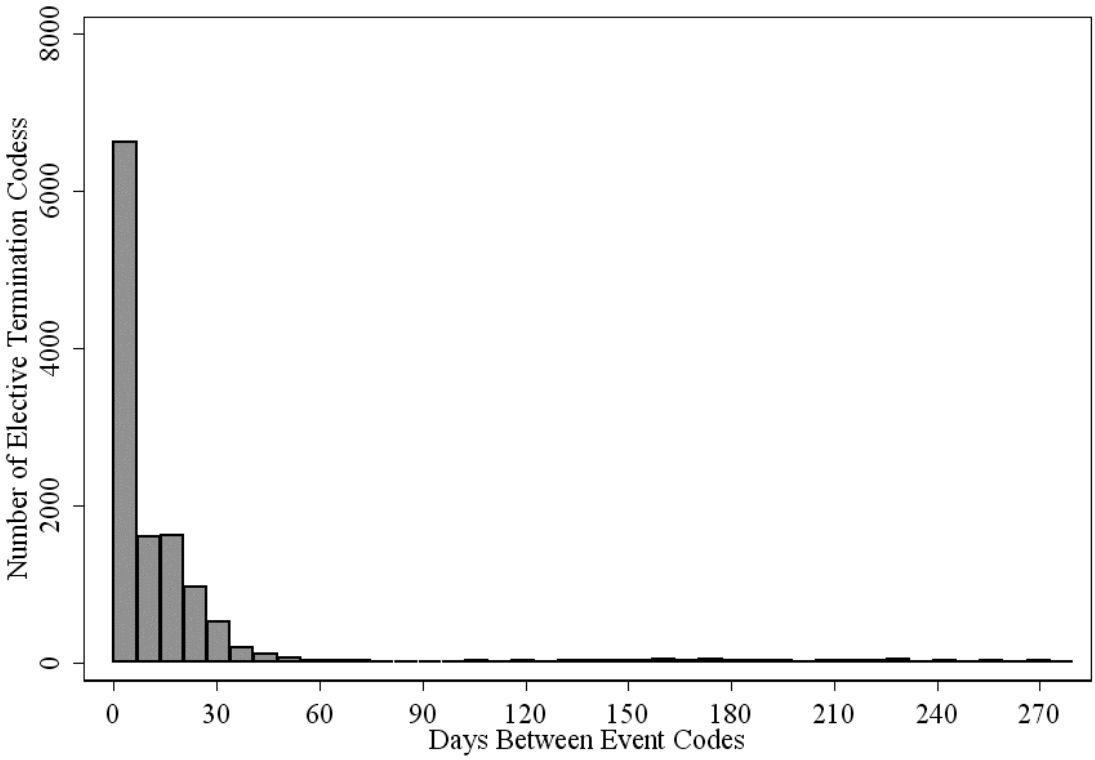


Figure 5.4– Days Between Spontaneous Termination Event Codes In The GPRD Between 1987 and 2004.

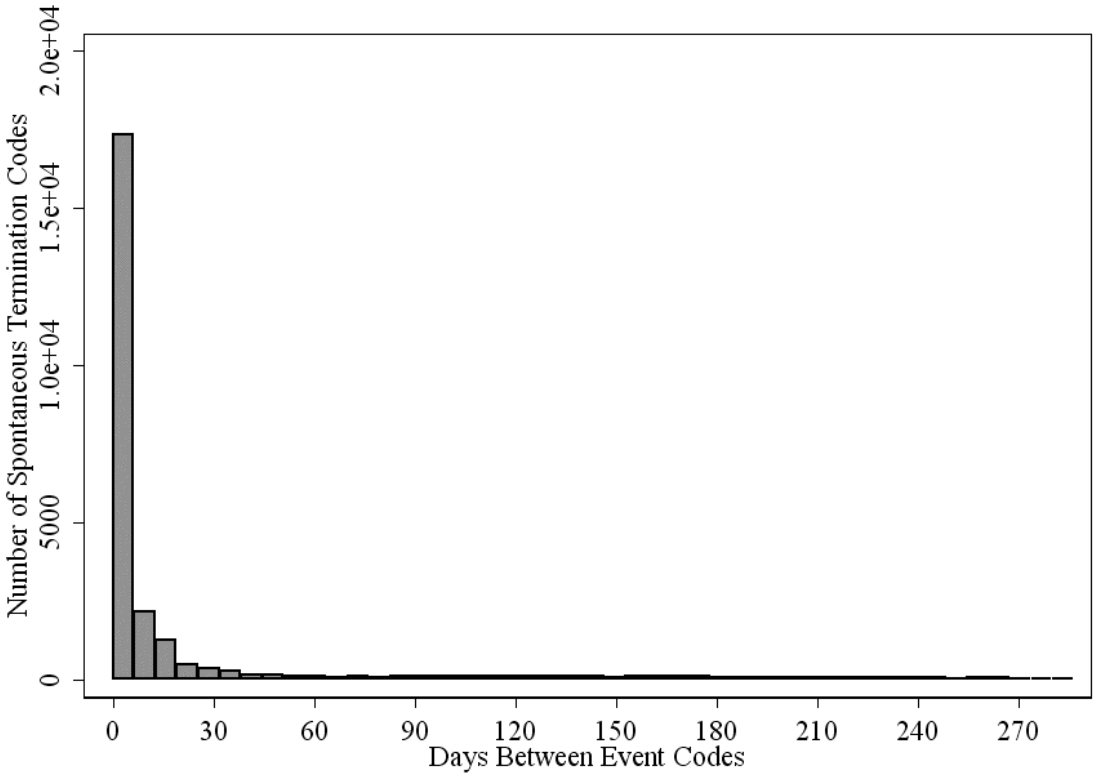


Figure 5.5 – Days Between Multiple Birth Event Codes In The GPRD Between 1987 and 2004.

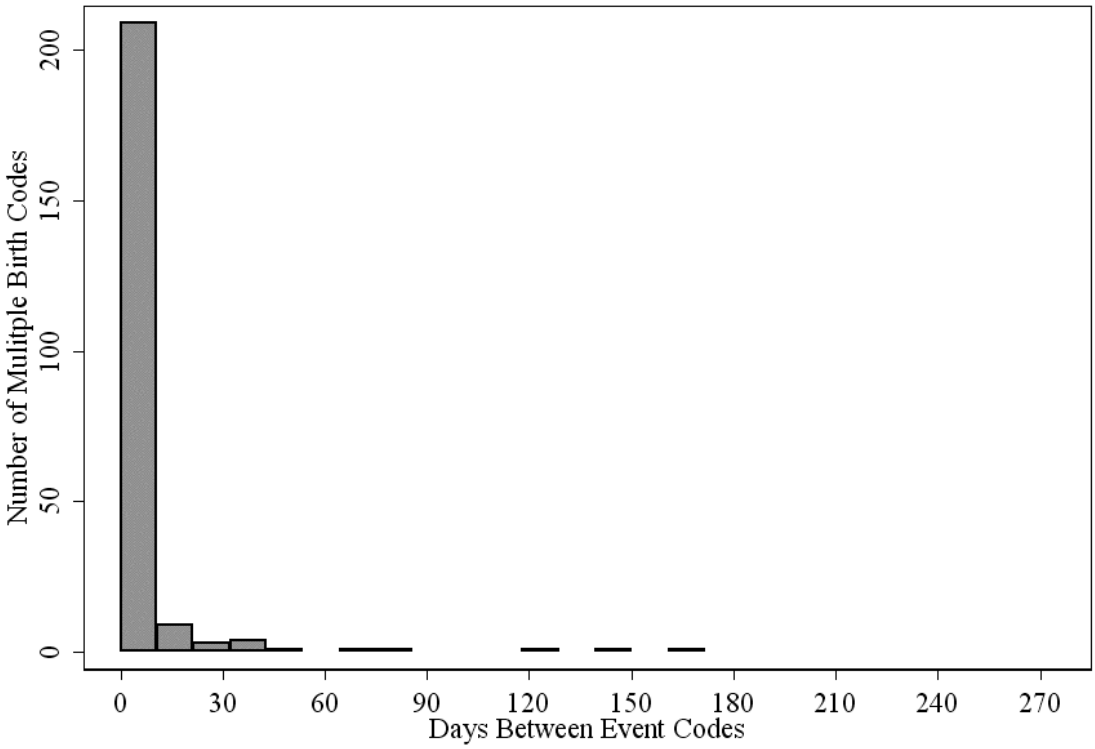


Figure 5.6 – Days Between Pre-term and Post-term Event Codes In The GPRD Between 1987 and 2004.

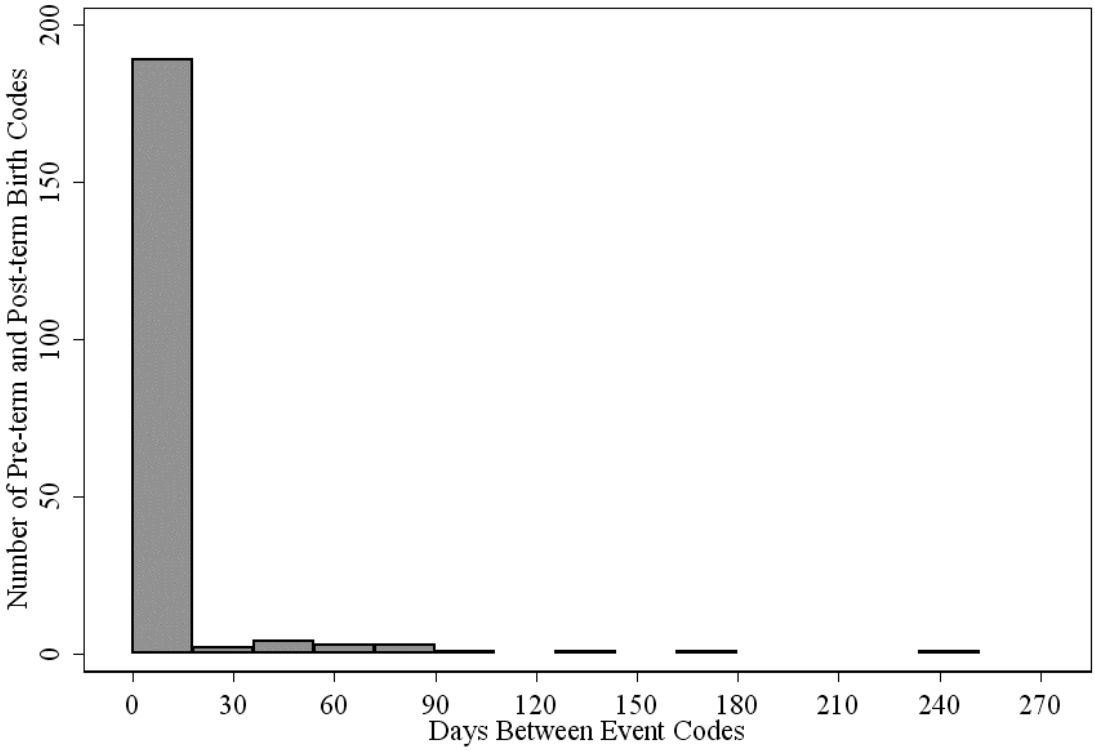
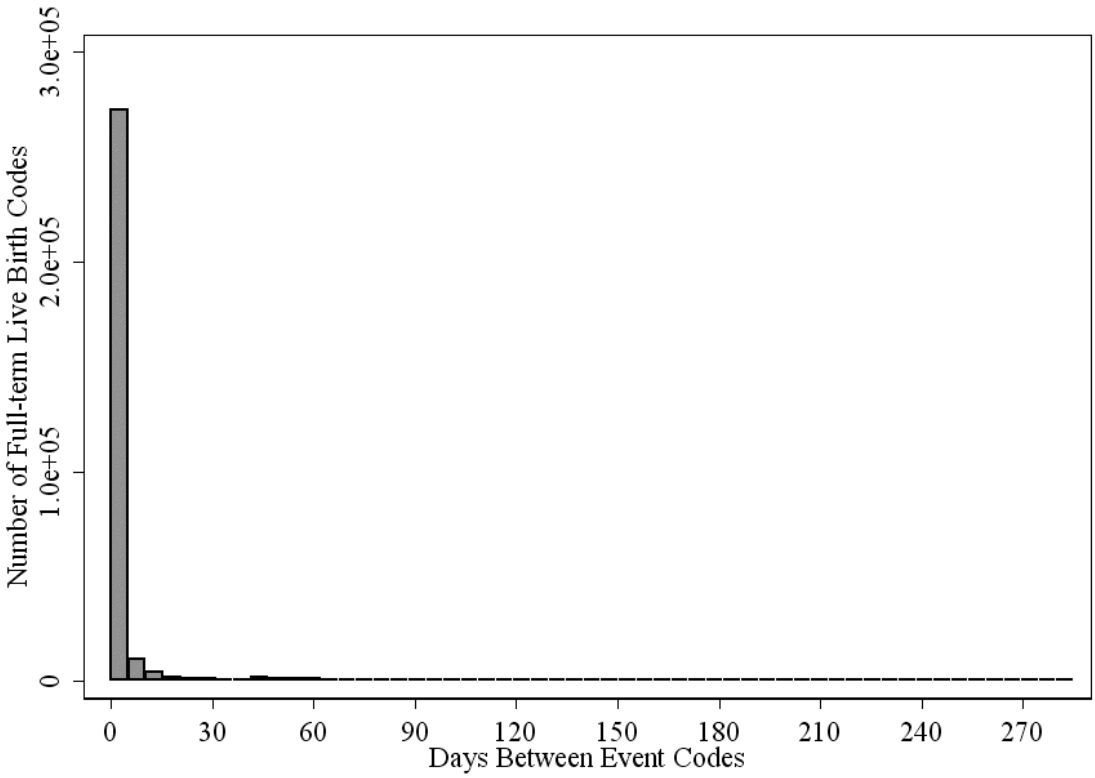


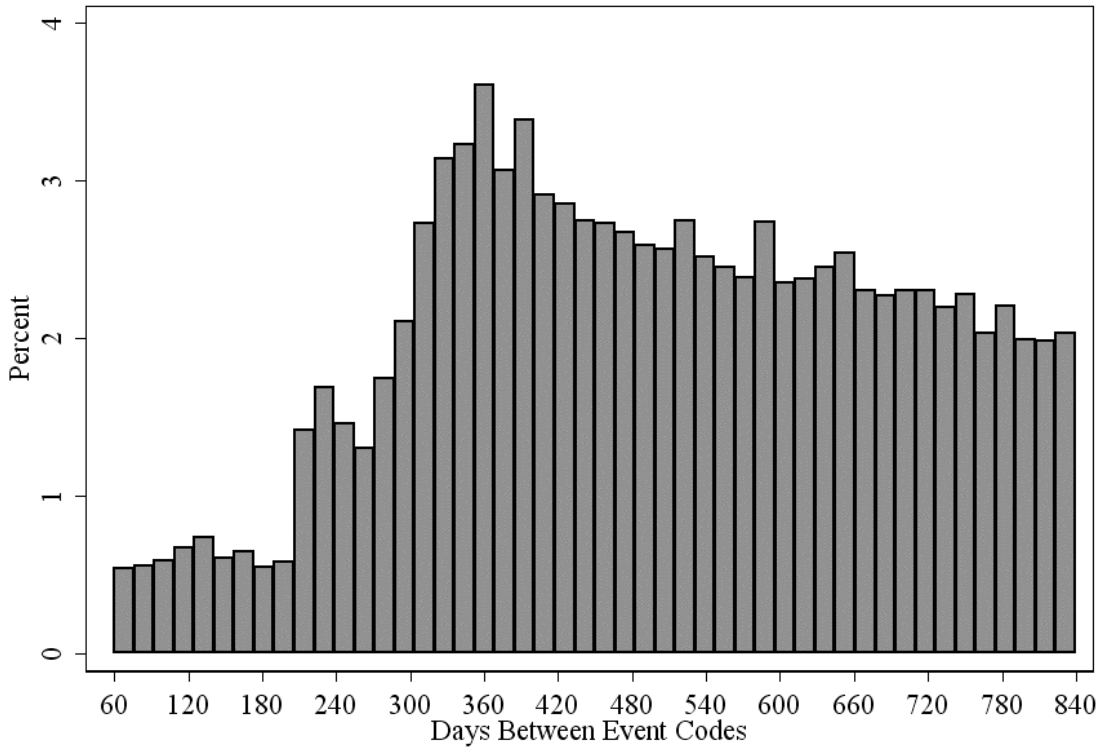
Figure 5.7 – Days Between Live Birth Event Codes In The GPRD Between 1987 and 2004.



These histograms in the figures above show that time is generally less than 30 days, indicating that most duplicate codes are recorded within 30 days of the first code of that event type in the patients record. This reaffirms the above assumptions indicating that there is little impact upon the final number of cases if we were to change our 60-day and 210-day cut points for separating pregnancy outcomes. Varying our choice of requiring a pregnancy related code (Appendix C) to be with 30 days of an event on January 1 of a given year had only minor effects on our final results.

Finally, we reviewed our baseline assumption that 280 days was the maximum length of time that should elapse between the patient's first PCM and the EOP event. This baseline was chosen based on the typical length of full gestation. The figure below indicates the distribution of the number of days between pregnancies in our EOP event cohort.

Figure 5.8 – Number Of Days Between End Of Pregnancy Events For All Identified Pregnancies In The GPRD Between 1987 And 2004.



The number of days gradually increases after 210 days with the majority time between pregnancies exceeding our 280-day maximum. Based upon the results of these alternate analyses, we feel that our initial algorithm assumptions were robust and any change in these assumptions would have produced similar results.

3. NTD Identification Alternate Analyses

While we conducted multiple alternate analyses (see analysis plan section), only two produced results that had any substantive impact on the final number of NTD cases. We elaborate on these alternate analyses in the sections below.

a. Alternate Analyses On Time Searched Past Birth Criteria

Not all NTDs are identified at the time of birth. Many are only identified after the appearance of complications that are common with the defects and through additional physical examination. Although our primary analysis focused on the first year after birth, we conducted a number of alternate analyses to explore the number of additional cases that may be gained by looking 180, 548, 730, 1000, and 2000 days after the estimated date of birth. The results of our alternate analyses are presented in the table below.

Table 5.3 – Primary Results Of Sensitivity Analysis On Time Past Birth Criteria.

Change NTD to birth date range	All	%Δ from base case	Anencephaly	%Δ from base case	Cephalocele	%Δ from base case	Meningocele	%Δ from base case	Spina Bifida	%Δ from base case
180 Identified in Children's Records	50	0.72	1	0.50	3	0.60	14	0.82	32	0.71
***BASELINE (365)* Identified in Children's Records**	**69**	**1.0**	**2**	**1.0**	**5**	**1.0**	**17**	**1.0**	**45**	**1.0**
548 Identified in Children's Records	79	1.14	2	1.00	5	1.00	21	1.24	51	1.13
730 Identified in Children's Records	87	1.26	2	1.00	5	1.00	21	1.24	59	1.31
1000 Identified in Children's Records	96	1.39	2	1.00	5	1.00	21	1.24	68	1.51
2000 Identified in Children's Records	113	1.64	2	1.00	5	1.00	24	1.41	82	1.82

Table 5.3 provides a review of the results of the sensitivity analysis and provides the percentage increase in the number of each case type versus the base line results. For all case types, as the number of days beyond the estimated birth date increases, the more cases are identified. The number of cases increases by approximately 64% for the entire group when

the range is extended through 2000 days, with the impact coming only from the diagnoses of spina bifida and meningocele. No cases of anencephaly or cephalocele were added in this sensitivity analyses.

In addition to these changes in case counts, we examined the effects of using records prior to registration on other variables. Tables 5.4 through 5.8 provide additional details about the 18 additional cases that are identified by extending the cut off to 730 days (2 years). Table 5.4 describes the case make-up of the 18 cases that were identified up to 2 years after the date of birth. More than three quarters of these cases were spina bifidas. Table 5.5 describes the gender break down of the individuals who had a case record. As all of these records were from a suspected child's record, each gender should represent the actual case. No substantial gender predominance was noted; however, the small sample size should limit our interpretation of these results.

Table 5.6 describes the difference between event date and estimated birth date. No patterns are noted. Table 5.7 indicates that 45 percent of all cases were originally identified from the pregnancy group clinical records; whereas 55 percent were identified from the group that had no history of a pregnancy related event in their clinical files. Table 5.8 indicates the year in which the event was recorded. No unusual patterns were seen.

Table 5.4 – Outcome Breakdown Of Additional Cases Added In Sensitivity Analysis On Extension Of Time Past Birth To 730 Days.

Outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Anencephaly	0	0.0%	0	0.0%
Cephalocele	0	0.0%	0	0.0%
Meningocele	4	22.2%	4	22.2%
Spina Bifida	14	77.8%	18	100.0%

Table 5.5 – Gender Of Case Event Record In Sensitivity Analysis On Extension Of Time Past Birth To 730 Days.

Current Gender (Current)				
Case Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Female	8	44.44	8	44.44
Male	10	55.56	18	100.00

Table 5.6 – Number Of Days Between Case Event Date And Estimated Birth Date In Sensitivity Analysis On Extension Of Time Past Birth To 730 Days.

Difference Between Event Date And Estimated Birth Date	Frequency	Percent	Cumulative Frequency	Cumulative Percent
369	1	5.88	1	5.88
378	1	5.88	2	11.76
408	1	5.88	3	17.65
409	1	5.88	4	23.53
461	1	5.88	5	29.41
463	1	5.88	6	35.29
488	1	5.88	7	41.18
500	1	5.88	8	47.06
513	1	5.88	9	52.94
559	1	5.88	10	58.82
568	1	5.88	11	64.71
589	1	5.88	12	70.59
601	1	5.88	13	76.47
612	1	5.88	14	82.35
622	1	5.88	15	88.24
679	1	5.88	16	94.12
683	1	5.88	17	100.00

Table 5.7 – Original Source File Of Case Event Record In Sensitivity Analysis On Extension Of Time Past Birth To 730 Days.

Source	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NTD Referral File	3	16.67	3	16.67
NTD Clinical File	7	38.89	10	55.56
Main Clinical Files	7	38.89	17	94.44
Main Referral 97 to 2004	1	5.56	18	100.00

Table 5.8 – Year Of Case Event Record In Sensitivity Analysis On Extension Of Time Past Birth To 730 Days.

Year of NTD Event Record	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1990	2	11.11	2	11.11
1992	4	22.22	6	33.33
1994	2	11.11	8	44.44
1997	2	11.11	10	55.56
1998	1	5.56	11	61.11
2000	1	5.56	12	66.67
2001	5	27.78	17	94.44
2003	1	5.56	18	100.00

After a careful review of each of these cases with a dysmorphologist, it was recommended that most of the cases of spina bifida occulta be excluded as there is uncertainty as to their relationship to open spina bifida.[3] Five of these cases did appear to have sufficient information to support their inclusion as cases (five spina bifida's a meningocele). Other cases did not have enough information in the records to support the case status. This complicating factor may require that spina bifida studies utilize additional follow-up data for identifying and verifying potential cases.

b. Alternate Analyses On Registration Date Criteria

The date on which events are recorded in a patient's record can be automatic as well as manually entered by the GP. As there is some flexibility in the entry of dates, situations arise that patient events may be given dates prior to the date on which a patient is first registered with a physician. Typically these dates are considered of questionable validity, as they are not entered on dates that comprise the longitudinal care history of the patient. However, records of children pose additional challenges for the recording of dates. Children are not always registered into a physicians practice on the date of a child's birth, thus the record of

an event prior to the patients registration date may be the only method of capturing information determined at birth. Although our primary analysis maintained the standard approach of utilizing only records entered after the registration date, we conducted a number of alternate analyses to explore the number of additional cases that may be gained by looking 30, 60 and 180 days prior to registration. The results of our alternate analyses are presented in the table below.

Table 5.9 – Primary results of Alternate Analysis on Registration Date Criteria.

Change in days prior to registration that an event date is valid (4)	All	%Δ from base case	Anencephaly	%Δ from base case	Cephalocele	%Δ from base case	Meningocele	%Δ from base case	Spina Bifida	%Δ from base case
BASELINE **Identified in Children's Records**	**69**	**1.00**	**2**	**1.00**	**5**	**1.00**	**17**	**1.00**	**45**	**1.00**
30 Identified in Children's Records	84	1.22	3	1.50	7	1.40	24	1.41	50	1.11
90 Identified in Children's Records	89	1.29	3	1.50	8	1.60	26	1.53	52	1.16
180 Identified in Children's Records	90	1.30	3	1.50	8	1.60	27	1.59	52	1.16

Table 5.9 provides a review of the results of the alternate analysis and provides the percentage increase in the number of each case type versus the base line results. For all case types, as the number of days prior to registration that we allow cases to be considered valid is allowed to increase, the more cases are identified. The number of cases increases by approximately 30% for the entire group when the cut off is extended through 180 days, with the impact being most dramatic for the diagnoses of cephalocele and meningocele. Few cases of spina bifida were added in this sensitivity analyses.

In addition to these changes in case counts, we examined the effects of using records prior to registration on other variables. Tables 5.10 through 5.15 provide details about the 22 additional cases that are identified by extending the cut off to 180 days. Table 5.10 describes the case make-up of the 22 cases that were identified prior to registration. More than three quarters of these cases were either meningoceles or spina bifidas. An important point to interpreting this sensitivity analysis is that while there are up to 22 additional cases identified, many of these cases (3 spina bifida, 3 meningoceles and 1 cephalocele) were later identified by codes that were recorded after the patient's registration date. Table 5.11 describes the gender break down of the individuals who had a case record. As all of these records were from a suspected child's record, each gender should represent the actual case. This female predominance is consistent with the literature; however, the small sample size should limit our interpretation of these results.

Tables 5.12 and 5.13 describe the differences between event date and registration date and event date and estimated birth date respectively. These data indicate that the almost three quarters of event dates are within 14 days of date of birth, and more than one half of the event dates are recorded within the 30 days prior to registration date. Table 5.14 indicates that 60 percent of all cases were originally identified from the pregnancy group clinical records; whereas 40 percent were identified from the group that had no history of a pregnancy related event in their clinical files. Table 5.15 indicates the year in which the event was recorded. No unusual patterns were seen.

Table 5.10 – Outcome Breakdown Of Additional Cases Added In Sensitivity Analysis on Registration Date Criteria.

Outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Anencephaly	1	4.5%	1	4.5%
Cephalocele	4	18.2%	5	22.7%
Meningocele	7	31.8%	12	54.5%
Spina Bifida	10	45.5%	22	100.0%

Table 5.11 – Gender of Case Event Record From Sensitivity Analysis On Registration Date Criteria.

	Current Gender (Current)			
Case Gender	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
Female	13	59.09	13	59.09
Male	9	40.91	22	100

Table 5.12 – Number Of Days Between Case Event Date And Estimated Birth Date From Sensitivity Analysis On Registration Date Criteria.

Difference between Event date and Estimated Birth Date	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	4.76	1	4.76
3	1	4.76	2	9.52
7	4	19.05	6	28.57
8	1	4.76	7	33.33
9	3	14.29	10	47.62
10	1	4.76	11	52.38
11	2	9.52	13	61.9
12	1	4.76	14	66.67
14	1	4.76	15	71.43
15	2	9.52	17	80.95
16	1	4.76	18	85.71
17	1	4.76	19	90.48
24	1	4.76	20	95.24
72	1	4.76	21	100

Table 5.13 - Number Of Days Between Case Event Date And Registration Date From Sensitivity Analysis On Registration Date Criteria.

Time Delay Between NTD Event Date and Registration Date	Frequency	Percent	Cumulative Frequency	Cumulative Percent
-100	1	4.55	1	4.55
-85	1	4.55	2	9.09
-48	1	4.55	3	13.64
-44	2	9.09	5	22.73
-41	1	4.55	6	27.27
-40	1	4.55	7	31.82
-39	1	4.55	8	36.36
-38	1	4.55	9	40.91
-31	1	4.55	10	45.45
-29	1	4.55	11	50
-26	1	4.55	12	54.55
-21	1	4.55	13	59.09
-14	1	4.55	14	63.64
-12	1	4.55	15	68.18
-10	1	4.55	16	72.73
-8	1	4.55	17	77.27
-6	2	9.09	19	86.36
-4	1	4.55	20	90.91
-3	2	9.09	22	100

Table 5.14 – Original Source File Of Case Event Record From Sensitivity Analysis On Registration Date Criteria.

Source	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NTD Referral File	1	4.55	1	4.55
NTD Clinical File	8	36.36	9	40.91
Main Clinical Files	12	54.55	21	95.45
Main Referral Up To 97	1	4.55	22	100

Table 5.15 – Year Of Case Event Record From Sensitivity Analysis On Registration Date Criteria.

Year of NTD Event Record	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1987	2	9.09	2	9.09
1989	2	9.09	4	18.18
1990	3	13.64	7	31.82
1992	2	9.09	9	40.91
1993	1	4.55	10	45.45
1994	1	4.55	11	50
1995	2	9.09	13	59.09
1998	3	13.64	16	72.73
1999	1	4.55	17	77.27
2001	2	9.09	19	86.36
2002	1	4.55	20	90.91
2003	2	9.09	22	100

In conclusion, while adding 22 additional cases, the hazards of data inaccuracy should temper thoughts of including these cases in our analysis. These cases could be an important opportunity for future validation.

4. Dataset Quality Assurance Analyses

The following table summarizes the comparison of record counts between the received ASCII Text files and the converted SAS data sets.

Table 5.16 – Comparison of record counts between received data and converted SAS data sets.

Rows	Text File (*.txt)	SAS File Name (.sas7bdat)	Observations	Difference
2476	Diagnosis cohort_smok_drink_Historic	GPRD.N_SMOKE_DRINK	2417	59
4261	Diagnosis cohort_BMI_Historic	GPRD.N_BMI	4180	81
5151965	Test00_01	GPRD.TEST00_01	5151956	9

Three files had small differences in record counts. On each occasion these were determined to be null value rows in the original text files, and thus were not converted to SAS records.

B. The Identification Of Pregnancies Within The GPRD

1. Introduction

Large automated electronic medical records databases are extremely valuable for the study of medication use during pregnancy and several recent studies have highlighted their use.[195, 196] For these databases to be useful for pharmacoepidemiologic studies, they must provide comprehensive medication and healthcare information about women before and during pregnancy and at delivery. Often a challenge exists for researchers because the time period in which a woman is pregnant is not easily identifiable in the database, requiring researchers to develop algorithmic approaches to identify these records.

The General Practice Research Database (GPRD) is the world's largest electronic medical records database[155] and has been found to be a complete and accurate source of health care data.[197, 198] An algorithm for the identification of pregnancies in the GPRD would provide researchers with the opportunity to use its extensive data regarding pregnancy and birth outcomes in a variety of research areas. We present a detailed report on an approach to identifying pregnancies in the GPRD. In addition, we describe aspects of the pregnancy data in the GPRD to highlight its potential for use in future pharmacoepidemiologic studies.

2. Methods

a. Data And Study Population

The GPRD was initiated in the United Kingdom (UK) in 1987 to provide research information based on general practitioner (GP) records. The GP serves as the gatekeeper for all health care in the UK. GPRD data contain approximately 46 million patient-years of

follow-up, representing approximately 10.1 million unique patients.[184] More than 460 general practices in the UK currently submit data to the GPRD on 3.2 million patients, or approximately five percent of the UK population.[154, 155, 184] The patient population is representative of the region, age and gender distribution of the UK population.[184]

GPs enrolled in the GPRD utilize the Vision system to enter data as a comprehensive electronic medical record. They follow a recording protocol to ensure that significant clinical contacts are entered into the computer record. Such contacts include all hospitalizations or visits to specialists, any significant test results, events resulting in a prescription or treatment withdrawal, adverse reactions to a medication, and any other events which result in multiple consults.[185] Free text may be recorded to further detail the patient's medical conditions. A modified version of the Oxford Medical Information System (OXMIS) medical codes was used from 1987 to 1999. OXMIS codes were phased out starting in 1996 and replaced with Read codes.

The Vision data are transformed by the GPRD division of the Medicines and Healthcare products Regulatory Agency into the database known as the FF-GRPD. All patient contacts are recorded and multiple health records are often generated when care for a condition is continued over a period of time, as in the case of pregnancy. Sorting through these multiple, and often duplicate, records makes the identification of distinct pregnancies a challenge.

The recording protocol for the GPRD makes specific recommendations regarding the amount of detail that should be entered for each pregnancy.[185] The mother's profile should include a record of the identification of the pregnancy, such as a positive pregnancy test result. It should also include any referral for ante-natal care, significant maternal or fetal abnormalities or complications detected during pregnancy, the outcome of the pregnancy, the

date of delivery (when appropriate), any congenital malformations of the baby, and where relevant, a record of neonatal death.

Among those registered in the GPRD, we searched for indicators of pregnancy in all women between the ages of 15 and 45 as of January 1, 1987. We then excluded any of the following: 1) records that occurred outside the study period of January 1, 1987 to September 14, 2004 (the last data collection date for our study); 2) records that occurred during the study period but prior to the individual's registration with the GPRD general practitioner or the date the GPRD practice achieved a sufficient data recording standard (the up-to-standard date), whichever was first; and 3) records that represented historical events recorded during the study period but not within 30 days of any pregnancy-related code.

b. Pregnancy Medical Codes

Pregnancy codes were identified through a key word search of the Read and OXMIS medical code dictionaries. Codes were divided into two categories: EOP events and PCMs. EOP event codes indicate the final outcome of a pregnancy, such as full-term, preterm, or post-term live births, stillbirths, miscarriages, spontaneous abortions, elective terminations, and multi-fetus live births. PCMs include any event that describes the delivery of care relating to pregnancy prior to an EOP event. Examples include positive pregnancy tests, alpha-fetoprotein tests, obstetric ultrasounds, amniocenteses, visits related to pregnancy, pregnancy complications, threatened abortions, abortion referrals or counseling, and obstetric hospitalizations.

In addition to the keyword search of the code dictionaries, we created longitudinal patient histories for a subset of 10,000 women with at least one EOP code and visually reviewed

them for previously undiscovered pregnancy-related codes. These methods resulted in a total of 5,266 codes that were potentially associated with pregnancies. Our final list of codes consisted of two subsets of codes: one containing 1,691 PCM codes, and another containing 1,059 EOP codes. We excluded the remaining 2,516 codes because they represented post-natal care or were too non-specific.

c. Identification Of Pregnancies

We designed a computer-based (SAS V9.1.3, SAS Institute, Cary, NC) three-step pregnancy identification algorithm to handle the complexities of identifying pregnancies in the GPRD data. The first step identified and removed duplicate EOP codes for each woman. The second step used a hierarchical coding scheme to select the final pregnancy outcome for each pregnancy. The third step used the final pregnancy outcome to determine the first pregnancy-care marker for each pregnancy. These steps are described in more detail below. When we were able to identify an EOP medical code and match it with a PCM, we considered this a complete pregnancy profile.

1. Step 1 – Removal Of Duplicate Pregnancy Codes

Starting with our entire study population, all records of EOP codes were grouped into three categories: 1) stillbirths (38 codes), 2) elective terminations (74 codes) and spontaneous abortions or miscarriages (229 codes), and 3) normal full-term births/deliveries (652 codes), pre-term and post-term births (25 codes), and multiple live births (41 codes). The actual codes are available upon request from the authors. For the purposes of this study, we considered multi-fetus pregnancies as one pregnancy.

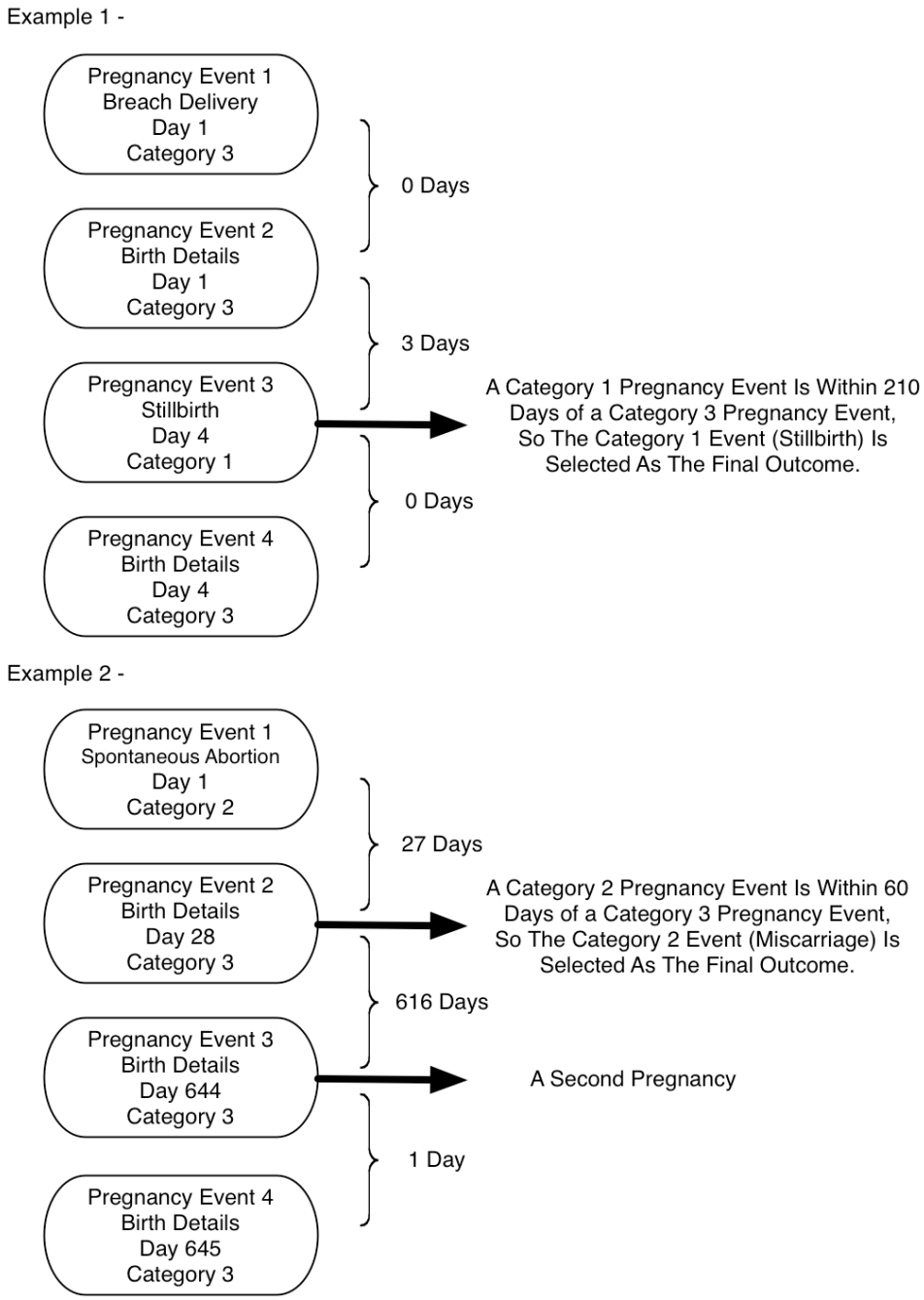
Because of the frequent recording of event codes that represent the same pregnancy, duplicate EOP codes had to be removed. For each woman, duplicate records were addressed within each of the three pregnancy categories by designating her earliest EOP code within a category as the index event, then disregarding all subsequent EOP codes in that same category within a predetermined time frame, 60 days. This time frame represented the minimum number of days after a pregnancy termination that subsequent pregnancies were likely to be diagnosed.[162] Similarly we used a 210-day span for live births or stillbirths to capture potential pre-term births in addition to full-term and post-term births. Within the three event categories, each subsequent EOP code that was beyond these time frames was considered a new pregnancy and was compared to future pregnancies in a similar fashion. This resulted in a group of potential pregnancies for each pregnancy category for each woman.

2. Step 2 – Selection Of Final Pregnancy Outcome

In addition to duplication, records can be recorded out of chronological order or contain conflicting information, making it difficult to determine the true outcome of interest. While codes indicating a normal live birth and delivery are correct for the majority of the mothers, there are some notable exceptions as illustrated in Figure 5.3. For patient 1, a stillbirth code occurs after a "breech delivery" code, the latter code often accompanying a full-term live birth. Another example, again illustrated in Figure 5.3, is the recording of a miscarriage before a "birth details" code. The birth details code may be entered in error, or it may be entered to describe aspects of the miscarriage. It is not possible for a woman to miscarry and then have a live birth 27 days later, so we must choose a pregnancy outcome based on the

most plausible biological scenario for these EOP codes. These two examples demonstrate that the correct outcome may occur somewhere within a cluster of codes with similar dates, requiring special approaches to identify the correct outcome.

Figure 5.9 – Example of Selection Challenges for Final Pregnancy Records in the GPRD.



To address these conflicting EOP codes, we developed a hierarchical decision rule based on the pregnancy code and the date in which the GP entered the code into the GPRD. We ordered each woman's codes chronologically and then ranked them based on the pregnancy categories developed in Step 1: stillbirths (category 1), spontaneous and elective terminations (category 2) and live births and deliveries (category 3). Each EOP record date was compared to every other EOP record in the mother's profile. When a pregnancy in category 1 was within 210 days of a pregnancy in category 2 or 3, the EOP record in category 1 was considered the actual pregnancy outcome. All other EOP codes within 210 days were deleted. When an EOP code from category 2 was within 60 days of a diagnosis code in category 3, the category 2 EOP code was selected as the final outcome and the remaining codes were disregarded. Pregnancy codes in category 3 were considered correct only when they were not in conflict with EOP codes in categories 1 or 2.

3. Step 3 – Identifying The First PCM

The determination of the beginning of pregnancy in an electronic database poses additional challenges because the data files do not routinely contain the most clinically relevant marker of pregnancy initiation, the last menstrual period. Many researchers attempt to overcome this by looking back a fixed number of days from the conclusion of pregnancy indicated by a delivery or birth outcome code. After counting back a set number of days, they use the first PCM code in the woman's record to signify the initiation of pregnancy care.[162, 172, 195, 196] This method is appropriate when looking at stillbirths or live births, as many go to full-term, but is less effective when researchers consider spontaneous and

elective terminations or preterm births. Outcomes other than full-term births can and do occur with variable intervals between the PCM and the EOP event and can appear to overlap with other pregnancies when a fixed-day approach is used.

Our algorithm takes a flexible approach to identifying the first PCM. For each EOP code identified after applying steps 1 and 2, we looked back a maximum of 280 days. If another EOP code occurred within 280 days (e.g. an elective termination occurring 170 days after a full-term pregnancy), the number of days between the first and second EOP codes served as the maximum number of days to look back for assigning a first PCM. The marker that was farthest from the EOP code without exceeding the maximum number of days as described above was labeled as the first PCM. With this first pregnancy-care-maker identified, it and its matched EOP code create a complete pregnancy profile.

d. Evaluation Of Identification Algorithm

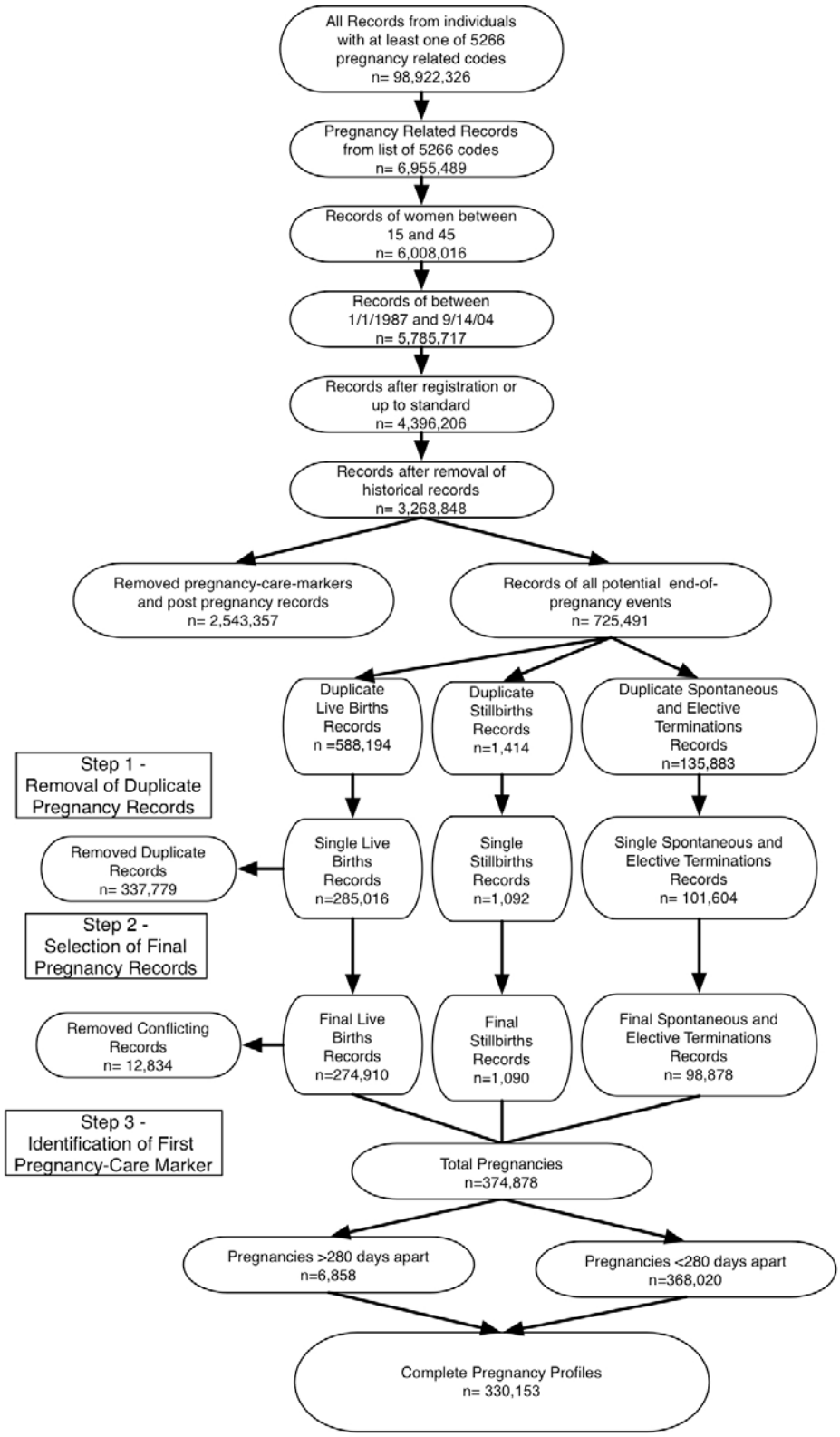
Because direct validation of our pregnancy identification algorithm using GP questionnaires was not financially feasible, we conducted a number of internal assessments and alternate analyses for evaluation. First, we reviewed electronic records of women with extremely short or long periods of time between their first and last identified pregnancies as well as women with what appeared to have had 8 or more pregnancies. We then varied the length of time assigned in the algorithm for developing the pregnancy categories in step 1 and selecting the EOP records in step 2. Alternate analyses were conducted using a range of 180 to 280 days for stillbirths, live births, pre-term and post-term births and multiple births, and 30 to 120 days for elective terminations and spontaneous abortions. We plotted and assessed the time between pregnancies to determine if assumptions concerning required gaps

were appropriate for the data. Additionally, we evaluated our step-3 assumption that PCMs could be no more than 280 days prior to a pregnancy by plotting the number of days between the matched PCM and the EOP code for each pregnancy in the patient's record.

3. Results

Between January 1, 1987 and September 14, 2004 there were a total of 98,922,326 records from 980,474 individuals with one of the 5,315 pregnancy-related medical codes in the GPRD. Our algorithm identified a total of 255,400 women who had 374,878 pregnancies. Our alternate analyses did not produce any substantive changes in our final results, suggesting that the initial assumptions resulted in a robust approach. Figure 5.4 provides the number of records remaining at each point in the pregnancy identification process, with special focus on how steps 1-3 influenced the final number of records, and ultimately, the final number of pregnancies used in our analyses.

Figure 5.10 – Record Counts In GPRD Through Pregnancy Identification Process.



We identified 271,613 full-term live births (72.5% of pregnancies), 2,106 pre- or post-term births (0.6% of pregnancies), 1,191 multi-fetus deliveries (0.3%), 55,614 spontaneous abortions or miscarriages (14.8%), 43,264 elective terminations (11.5%), and 1,090 stillbirths or fetal deaths (0.3%). Stratification by year is presented in Figure 5.5, and the distribution of pregnancies per woman is presented in Table 5.17.

Figure 5.11 – End of Pregnancy Event Counts By Outcome Type In The GPRD Between 1987 and 2004.

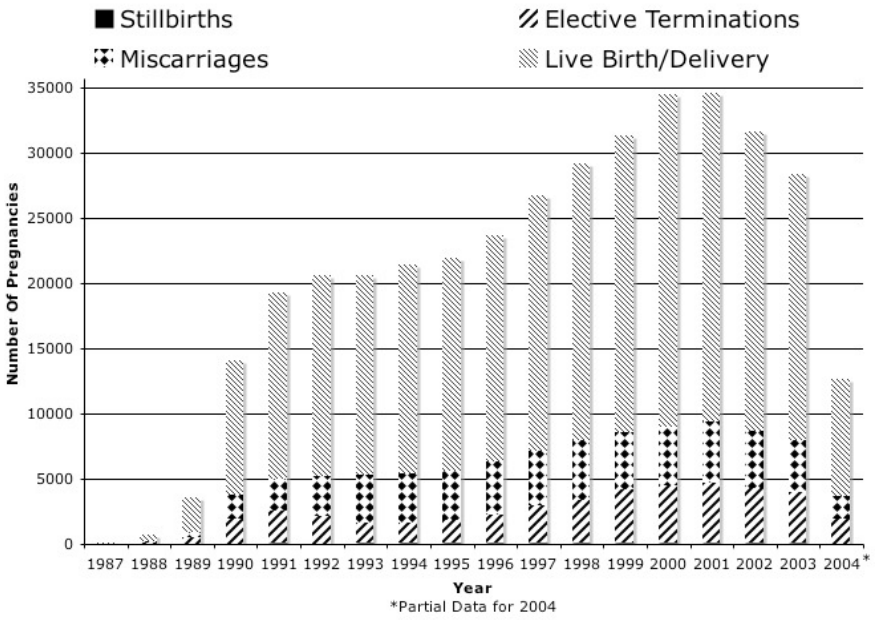


Table 5.17 – Distribution of pregnancy in women age 15 to 45 in the GPRD between January 1, 1987 and September 14, 2004.

Number of Pregnancies	Women w/ Pregnancies	Pregnancies by These Women
1	169869 (66.5)	169869 (45.3)
2	60930 (24.0)	121860 (32.5)
3	17879 (7.0)	53637 (14.3)
4	4839 (2.0)	19356 (5.1)
5	1353 (0.5)	6765 (1.8)
6	383 (0.1)	2298 (0.6)
7	106 (0.0)	742 (0.2)
8	26 (0.0)	208 (0.0)
9	7 (0.0)	63 (0.0)
10	8 (0.0)	80 (0.0)
Total	255400 (100.0)	374878(100.0)

The mean number of pregnancies per woman was 1.5, with a median of 1 and a maximum of 10. Of the women who had at least one pregnancy, less than 1% had more than 4 pregnancies. Of the women with more than four pregnancies, the mean and median number of years between the first pregnancy and the last pregnancy was 7.7 and 7.5 years respectively, with a range of 1.2 years to 14.5 years.

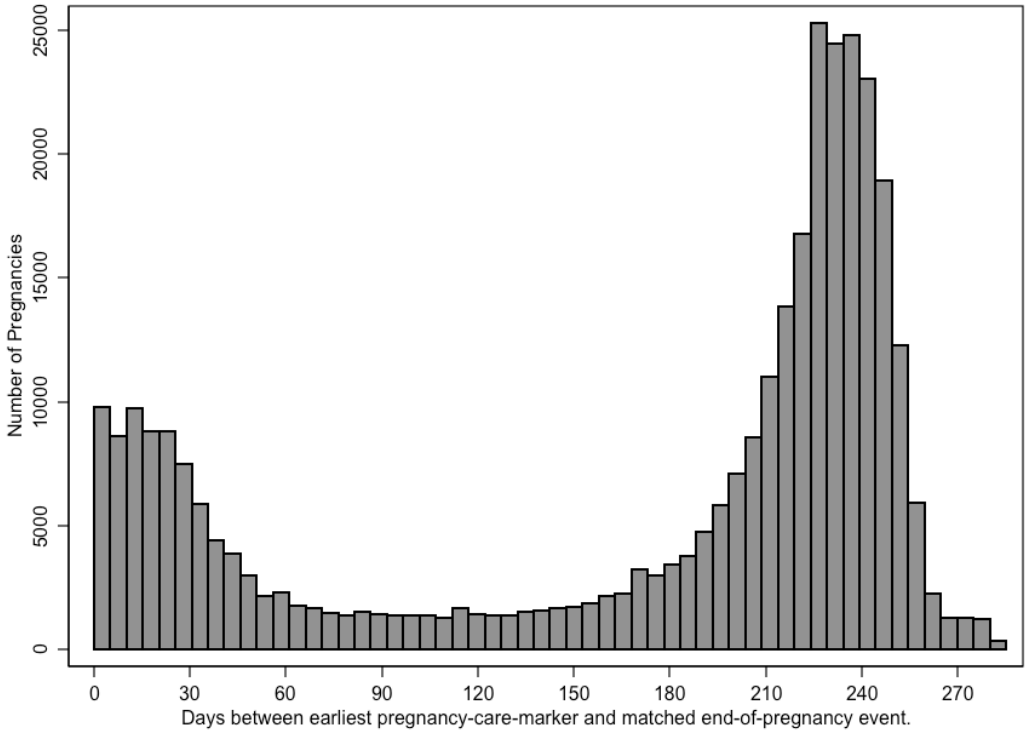
By fixing a maximum of 280 days between an EOP record and PCM, we were able to create complete pregnancy profiles for 88.1% of 374,878 pregnancies. This percentage varied by pregnancy category. Among the 271,613 full-term live births, 92.6% had at least one PCM whereas 74.1% of the 43,264 elective terminations and 76.5% of the 55,614 spontaneous abortions had at least one PCM. The 10 most common PCM codes from all pregnancies, representing 74.3% of the total, are presented in Table 5.18. Six of the 10 of these most common markers, representing 53.5% of the total, indicate the patient is pregnant.

Table 5.18 – Top Ten PCM Codes Identified Within The GPRD Between 1987 and 2004.

Event Code	OXMIS/ Read Code	Frequency	Percent Of Total
Patient Pregnant	62...00	44208	13.4
Delivery Booking Place	62B..00	40342	12.2
Pregnancy	Y60	39600	12.0
Pregnant	Y60 AA	32907	10.0
Urine Pregnancy Test	465..00	25370	7.7
Maternity Care	62...12	18711	5.7
Pregnancy Test	L 134	17898	5.4
Pregnancy Test Positive	L 134P	10812	3.3
Urine Pregnancy Test Positive	4654	8635	2.6
Antenatal Care	62...11	6722	2.0
Patient Pregnant	62...00	44208	13.4

The mean and median number of days in a complete pregnancy profile was 170 days and 216 days, respectively. The distribution of the number of days within complete pregnancy profiles is presented in Figure 5.6.

Figure 5.12 – Time Between First PCM And Its Matched EOP Event Within The GPRD Between 1987 And 2004.



When we stratified results by pregnancy category, the mean and median number of days was predictably different across categories (see Table 5.19). Because the amount of maternal medical history available prior to the first PCM is important for pharmacoepidemiology research, Table 5.20 summarizes the number of women with at least 30, 60, 90, 180 and 360 days of data before the start of each complete pregnancy profile. The mean number of days prior data began prior to the first PCM was 2,608, and the median was 1,469.

Table 5.19 – Summary Statistics Of The Time Between First PCM And Matched EOP Events In GPRD Between 1987 And 2004.

	Number of Events w/ FPM	*Missing FPM*	Mean Number of Days	Median Number of Days	Interquartile Range
All EOP Events	330153 (88.1)	44725 (11.9)	170	216	149

Stillbirths	981 (90.0)	109 (10.0)	163	170	92
Elective Terminations	32056 (74.1)	11208 (25.9)	45	21	24
Spontaneous Abortions	42547 (76.5)	13067 (23.5)	46	26	33
Multiple Live Births	1085 (91.1)	106 (8.9)	188	203	44
Pre/Post-term Births	1942 (92.2)	164 (7.8)	185	197	67
Live Births	251542 (92.6)	20071 (7.4)	207	226	39

FPM - First PCM

Table 5.20 – Pregnancies With Between 30 And 360 Days Of Data Available Prior To The First PCM In The GPRD Between 1987 And 2004.

	Pregnancy Outcome						
	Stillbirth and Fetal Deaths*	Elective Termination	Spontaneous Abortion	Multi-birth	Pre/Post term	Live Birth/ Delivery	Total
For Any Pregnancy (Total Pregnancies with a Pregnancy Care Marker = 330153)							
>30 days	866 (88.3)	29827 (93.1)	39865 (93.7)	972 (89.6)	1684 (86.7)	219934 (87.4)	293148 (88.8)
>60 days	830 (84.6)	29118 (90.8)	38925 (91.5)	942 (86.8)	1628 (83.8)	212023 (84.3)	283466 (85.9)
>90 days	813 (82.9)	28494 (88.9)	38121 (89.6)	912 (84.1)	1582 (81.5)	206302 (82.0)	276224 (83.7)
>180 days	771 (78.6)	26752 (83.5)	35913 (84.4)	852 (78.5)	1475 (76.0)	192185 (76.4)	257948 (78.1)
360 days	679 (69.2)	23955 (74.7)	32109 (75.5)	760 (70.1)	1303 (67.1)	169354 (67.3)	228160 (69.1)
First Pregnancy Only (Total First Pregnancies with a Pregnancy Care Marker = 220008)							
>30 days	521 (82.0)	20169 (90.1)	24703 (90.3)	626 (84.7)	1084 (80.8)	136001 (81.2)	183104 (83.2)
>60 days	485 (76.3)	19468 (87.0)	23791 (87.0)	596 (80.7)	1029 (76.7)	128151 (76.5)	173520 (78.9)
>90 days	468 (73.6)	18854 (84.2)	23015 (84.1)	567 (76.7)	985 (73.4)	122526 (73.1)	166415 (75.6)
>180 days	436 (68.6)	17191 (76.8)	20949 (76.6)	509 (68.9)	884 (65.9)	109119 (65.1)	149088 (67.8)
360 days	349 (54.9)	14700 (65.7)	17651 (64.5)	423 (57.2)	733 (54.6)	88910 (53.1)	122766 (55.8)

*Alone or in combination with a live birth

4. Discussion

Our pregnancy identification algorithm builds off the work of others. Manson *et al.* developed and evaluated an approach to detect pregnancies and pregnancy markers using a health maintenance organization database.[162] This approach was adapted to the Value Added Medical Products based GPRD by Hardy *et al*. [172] Manson's general approach of identifying a pregnancy outcome and looking backward a fixed number of days for PCMs has been used by other researchers in a variety of data sets.[195, 196] Because of the similarities of our approach and our data source to that of Hardy's, consistencies in both results should be noted. For example, the distribution of the number of pregnancies among identified women was similar. Specifically, both studies found that 66.5 percent of women had only one pregnancy and similar distributions for other pregnancy frequencies were observed. Additionally, the mean number of weeks between the first PCM and a live birth was 30 weeks in our data compared to approximately 31-35 weeks in Hardy's study.

Our pregnancy identification algorithm and the pregnancies that it identified in the GPRD offer several strengths. We identified a large number of pregnancies in a 17.5 year period of the GPRD. These pregnancies have a rich assortment of medical care data associated with them. At least one pregnancy care record was available for 88 percent of all pregnancies, and 78 percent of the identified pregnancies had records accessible going back at least 300 days from the pregnancy outcome. With these records, researchers can identify treatments and care delivered during critical windows of fetal development and throughout the pregnancy. Additionally, over 78 percent of the complete pregnancy profiles had medical history records going back at least 180 days before the first PCM. With records within the six months prior

to the first PCM, details on chronic conditions, health-services utilization and medication orders are available.

This rich dataset also gives researchers the ability to estimate the last menstrual period (LMP) date associated with each pregnancy. The LMP date is important for determining the timing of medication exposure during very early gestation, but is often estimated because it is generally not available in an electronic database. It is possible to estimate LMP using data developed by Manson *et al*. for the Kaiser-Permanente database. They found that the LMP was on average 40 days prior to the first PCM in the case of fetal deaths, and within 57 days of the first PCM for live births.[162] We evaluated our data using the time points from the Manson *et al*. study to determine the number of pregnancies for which we could estimate an LMP date. Among the aggregated stillbirths, elective terminations and spontaneous terminations, we found that ninety-three percent of those with a complete pregnancy profile had at least 40 days of medical records prior to the first PCM. Of the live births and deliveries with complete pregnancy profiles, eighty-five percent had at least 57 days of records prior to the first PCM. If we defined an LMP date as 57 days prior to the first PCM regardless of outcome type, we would be able to estimate the LMP date for 86 percent of the 330,153 pregnancies with complete profiles.

An additional strength of our algorithm is its ability to reduce the chance of selecting an indeterminate pregnancy outcome as the final EOP code by detecting outcomes that were out of order in the mother's record. Because we were able to detect specific codes (i.e. those for a stillbirth or an elective termination) even when they were not the first in a series of codes, we did not have unknown outcome codes. For example, if a fetal death or stillbirth was recorded after a code broadly applied in most patients (e.g. normal delivery or birth details),

the outcome was categorized as a fetal death and rather than an unknown outcome. While this approach relies upon accurate recording of fetal deaths and stillbirths, the reliability of recording by the GP has been shown to be excellent.[198-201]

Finally, a strength of both the algorithm presented here and the GPRD is the ability to identify recorded spontaneous abortions. Spontaneous abortions composed approximately fifteen percent of the identified EOP outcomes. This conforms with estimates of twelve to fifteen percent from other sources.[202, 203] Because we are able to identify multiple pregnancy outcome types, particularly spontaneous abortions, pharmacoepidemiologic studies using the GPRD data will not be restricted to pregnancies with full-term outcomes.

However, researchers should use caution when including these spontaneous abortions. There will be an unknown number of spontaneous abortions that are not detected by the mother or the GP. Many go unnoticed or are mistaken as part of a woman's normal menstrual cycle. Because of these unidentified spontaneous abortions, developing specific rates for this outcome would be ill advised; however, the GPRD still offers information about spontaneous abortions that is not commonly available in other large electronic databases and these data can be useful for addressing other objectives.

There are several limitations to our pregnancy algorithm and the identifiable pregnancies in the GPRD. The first is the potential for the incomplete ascertainment of pregnancies. In addition to the unrecorded spontaneous abortions mentioned above, the GPRD may not contain records of all elective terminations. These procedures occur at health care facilities other than the GP office and may not be recorded in the medical record, either by omission or at the woman's request.

GPs may fail to record all pregnancy care and outcomes in the database as we noted when

evaluating maternal data for evidence of diagnostic and screening tests. We found that only 15 percent of all pregnancies had any record of a possible 149 common diagnostic or screening tests codes relevant for pregnancy. This would limit the database utility in examining pregnancy complications as outcomes. The Royal College of Obstetricians and Gynecologists and the National Institute for Clinical Excellence,[132] have established guidelines for pregnancy diagnostic and screening tests. The NHS has also put in place financial incentives to ensure that these tests are done.[204] For this reason, we believe that these tests are likely being performed but do not exist in the discrete data portion of the mother's electronic health record. The GP has the opportunity to record information as free text comments and this may be where they place information on pregnancy diagnosis and screening tests. We did not search this free text information as the costs involved were outside of the planned budget of this project.

Additionally, at the time of patient registration with the GP, information on pregnancies that occurred prior to the patient's registration is frequently incomplete. Even though many of these pregnancies are often recorded in the GPRD as historical data, we did not include them in our analysis. There is also the potential that a woman could leave a physician's practice prior to delivery. We found that there were 13,812 women with a PCM within 90 days of transferring out of the practice and without an accompanying EOP event record. Because not all GP practices are part of the GPRD and records are not linked from one GP practice to the next, it was not feasible to track these outcomes.

Another limitation is the potential for misclassification of our pregnancy outcomes. The correct classification of pregnancies was an expressed goal of our algorithm. Although we believe misclassification was minimized through the use of recognized pregnancy codes,

physicians have the ability to use codes as they judge appropriate. The potential lack of consistency within and across GPs and the reality that many codes within the OXMIS and Read Coding dictionaries may have multiple uses complicate any attempt to avoid misclassification. Our approach of ranking pregnancy categories and selecting the final outcome using a hierarchical approach, rather than identifying the first available pregnancy outcome code and excluding all others within a fixed time period, should minimize misclassification. In our analyses, 12,834 pregnancies with the potential of being misclassified were ultimately identified and removed using a hierarchical pregnancy category approach. We will continue to refine this approach and hope to continue to minimize misclassification.

We believe that the algorithm for identifying pregnancies described here gives researchers the opportunity to utilize the GPRD for pharmacoepidemiologic research projects. Electronic medical records databases, such as the GPRD, allow researchers to conduct case-control surveillance studies while avoiding the potential limitations from recall bias that can occur with maternal interviews.[161] Because of the ability to link details of a mother to her offspring, including information on potential exposures in a mother prior to and during all stages of pregnancy, and potential pregnancy outcomes not limited to live births, the GPRD can now provide detailed records on a sample of pregnancies large enough to detect rare events This resource should prove valuable for future research on pregnancy outcomes.

C. Validation Of NTD In The GPRD

1. Introduction

The study of birth defects is complicated by a number of factors. There are diverse hypothesized etiologies and complicated clinical definitions for most birth defects. In addition, the context of their identification, such as spontaneous abortions or elective terminations, can make detailed information difficult to obtain. Neural tube defects (NTDs) are a group of severe central nervous system birth defects that occur when the neural tube fails to close during early embryonic development.[1] Neural tube formation and closure are complex events of embryogenesis,[2] requiring 10 days to complete and occurring during the 3rd to 4th week post-fertilization.[2, 3] NTDs are generally defined by the area of central nervous system that they affect: anencephaly is the absence of brain material, encephalocele is an opening in skull, and spina bifida is an opening along the spinal cord. While the birth prevalence of NTDs in the United Kingdom and Ireland, having declined from 45 per 10,000 live and stillbirths in 1980 to 10 to 15 per 10,000 in the 1990s through 2000, NTDs remain a common congenital anomaly.[205]

Although the associations of NTDs with medications affecting folic acid activity are well documented,[10, 62, 71, 72] the mechanisms in which other medications may cause NTDs are unknown. It is of great importance to understand a medication's potential role in NTD occurrence, as many women may not know they are pregnant during early gestation, potentially exposing their growing fetus to a harmful medication.[162]

The General Practice Research Database (GPRD) is one of the most widely used databases for pharmacoepidemiologic research. The GPRD has been used for evaluating the association between birth defects and use of certain medications during pregnancy,[164, 168, 174]

but some experts have argued that large automated databases cannot provide sufficiently detailed information for the valid identification of specific congenital anomalies and related exposures.[175] Researchers need a reliable means to study rare outcomes such as NTDs in large populations that may have uncommon medication exposures. The purpose of this study is to determine if the GPRD can be used to accurately identify NTDs.

2. Methods

The GPRD, currently managed by the United Kingdom's (UK) Medicines and Healthcare Products Regulatory Agency (MHRA), was initiated in 1987 and is the world's largest anonymized, longitudinal patient electronic medical records database. It provides clinical information based on general practitioner (GP) records. The GPRD data contain approximately 46 million patient-years of follow-up representing 10.1 million unique patients.[184] Over 460 general practices in the UK are currently submitting data to the GPRD on 3.2 million patients or approximately five percent of the UK population.[154, 155, 184] The patient population is representative of the regional, age and gender distribution of the UK population.[184]

Practitioners enrolled in the GPRD must follow a recording protocol ensuring that significant clinical contacts related to patients' medical care are entered into the computer record. These contacts include all events resulting in hospitalization or referrals to any specialist, the outcome of referrals, any significant test results, all events resulting in a prescription or treatment withdrawal including the indication for the medication, all adverse reactions to a medication, and any other events which result in multiple consults with the practitioner (childhood diseases, pregnancy).[185] Free text may also be recorded by GPs to

detail further the patient's medical conditions. Diagnoses have been recorded using Read codes since 1996 and a modified version of the Oxford Medical Information System (OXMIS: 1987-1999). Most of the Read codes used in this study are found in Chapter P (Congenital Anomalies), and OXMIS codes include 740 through 7439. A complete list of codes is available from the authors.

a. Identification And Validation Of NTD Cases

Our goal was to identify new cases of NTDs that occurred within the time frame of available data from the database (January 1, 1987 to September 14, 2004). The NTDs of interest in this study are anencephaly, encephalocele, meningocele and spina bifida. We analyzed the complete medical record profile for any individual in the data set with at least one NTD code between January 1, 1987 and September 14, 2004.

We first identified potential mothers and children and applied separate exclusion criteria to each of these types of records. We considered all individuals as potential mothers if they were female and had a birth year between 1942 and September 1989 (between 15 and 45 as of 1987). Individuals were potential children if their birth year was between 1987 and 2004.

To avoid identifying records in which the mother herself had a NTD, we excluded any NTD record in a mother's profile that was not within 210 days of another record indicating that the woman was pregnant. We also excluded records dated January 1st of a given year (system default used for recording historical information when the date was unknown) if they were not within 30 days of any record indicating the woman was pregnant. Finally, to avoid double counting of duplicate records of a single NTD in a woman's record, we selected the first NTD diagnosis listed in a mother's profile and excluded NTDs recorded during the next

60 days. When two different types of NTDs were recorded (i.e. a record for both meningocele and spina bifida was present), we selected the first record as the correct diagnosis.

We applied a separate series of exclusion criteria to the NTD codes identified in children's profiles. From the first 365 days following the estimated date of birth for each child (the 15th of their birth month) we selected the first record of a NTD as the primary NTD diagnosis as it should not change. All future records of NTD for that child were excluded. If the first NTD record was dated January 1st of a given year, it was excluded if not within 30 days of the child's estimated birth date.

The use of a link between the children's and mother's records was necessary to rule out duplication of events. To avoid double counting, we utilized the GPRD's mother-baby linkage.[206] Once linked, the date of the first occurrence of a NTD diagnosis in the child's profile was compared to the date (or dates) of any NTD diagnosis in a mother's profile. If any NTD diagnosis in a mother's profile was within 180 days of the date in the linked child's profile, the record in the mother's profile was not counted. When the GPRD's mother-baby linkage was not able to provide a matching mother or child's identification number, we ruled out duplication in mother and child records by comparing GP Practice Identification numbers and NTD event dates among all NTDs identified in mother and child records. When GP Practice Identification numbers were the same for a mother and child NTD record, we considered the NTD to be a single NTD if woman and child had the same NTD diagnosis and the event codes were within 90 days of each other.

Once all NTD cases were identified, a questionnaire was sent to the general practitioner for each identified NTD using the Verification Service provided by the GPRD. Each

questionnaire consisted of at least three questions: 1) Can you confirm the NTD diagnosis and date, 2) What source was reviewed to confirm the diagnosis and date, and 3) If the NTD was confirmed, what type of examination was performed to determine the diagnosis. When the record was part of a mother's profile, we asked the GP to indicate if the diagnosis was the mother's own condition or if the diagnosis was for the mother's fetus or offspring. When the mother-baby linkage linked a case, we asked the general practitioner to verify the linkage.

b. Analyses

The cases identified by the NTD algorithm and the cases confirmed by general practitioner responses to questionnaires were compared. Those cases in which the general practitioner confirmed the presence of a NTD were considered validated cases. We determined the positive predictive value (PPV) of our algorithm for the validated NTD cases. Sensitivity and specificity of our algorithm cannot be determined because the number of true cases and non-cases could not determined. We determined *a priori* that if our validated PPV was less than 70 percent, we would revise our electronic case definitions. If our validated positive predictive values exceeded 70 percent we would determine adjusted case counts based upon the validated positive predictive values. Adjusted case counts were calculated by multiplying the annual observed case counts by the positive predictive value determined for validated cases.

Because the GPRD mother-baby linkage can be used to avoid duplicate counting of NTD records in both a mother's and a child's record, the GP questionnaire included a question about the identification of the mother and the baby. With this information, we determined the accuracy of the GPRD mother-baby linkage for those NTD cases that we were able to

link. The linkage between a mother and her offspring was considered correct if there was a positive response to a question on the general practitioner's questionnaire. For NTD cases confirmed by the GP to have correct linkage between mother and offspring, we summarized maternal characteristics at the time that the NTD was identified.

Using the adjusted case counts, we determined annual prevalences of NTDs in the GPRD for the years 1991 through 2003. We restricted our calculations to these years, as our data on pregnancies were most complete for this time frame. The annual prevalence was calculated by dividing the number of adjusted case counts by the number of live births, stillbirth, and terminations. Annual prevalences were standardized to the age distribution of women giving birth in the United Kingdom. The method used for defining live births, stillbirth, & terminations is described in detail elsewhere.[207] To aid in comparing our results to those of a surveillance system in the United Kingdom, we charted our annual prevalences along with those of the UK's National Congenital Anomaly System.[208]

To evaluate the robustness of our NTD identification algorithm, we conducted a number of alternate analyses. To evaluate the impact of some of our assumptions about NTDs in mothers' records, we varied the requirement that a pregnancy record precede a recorded NTD diagnosis by no more than 210 days as well as the requirement that a pregnancy record precede a reference to a past medical history record (i.e. 1/1/Year) by no less than 30 days. For children's records, we varied the required 30 days between the child's date of birth and the date of a potential medical history record, and we extended the 365-day time window past the estimated birth date for acceptable first NTD diagnosis. Because many NTDs in children's records may be recorded in close proximity to their GP registration date, we determined the number of additional cases that could be identified if we used various time

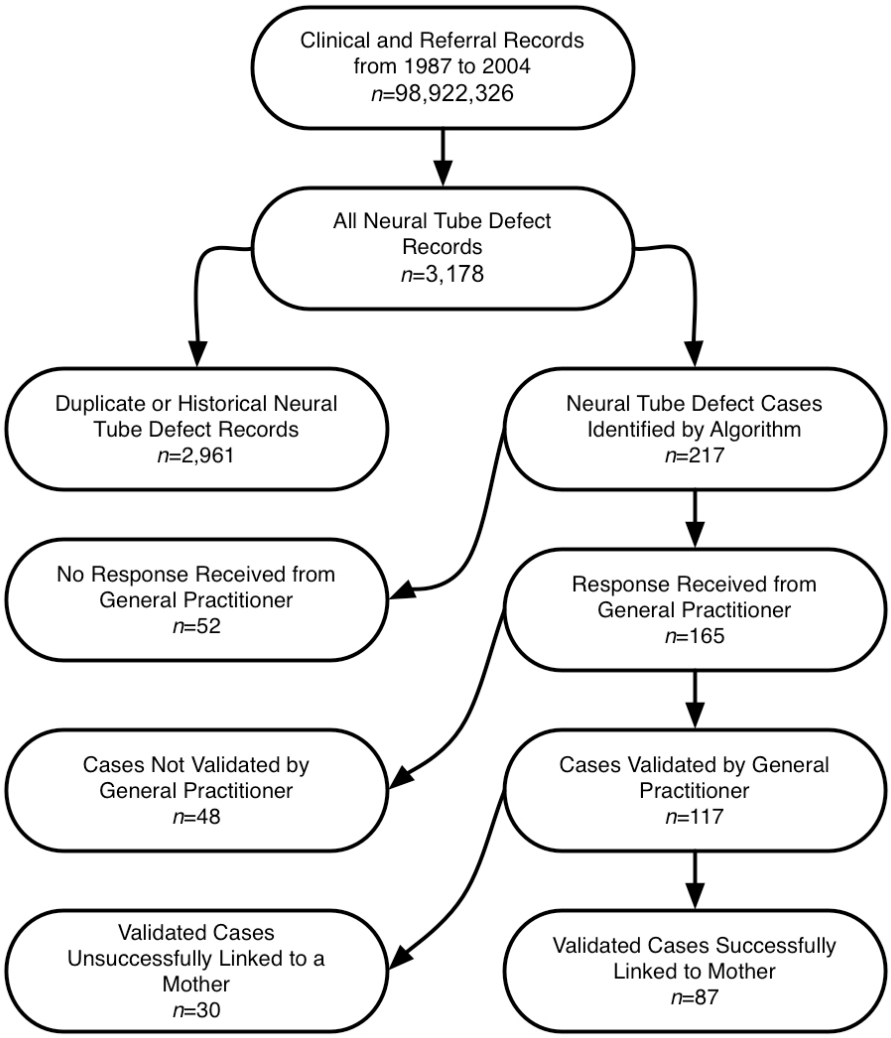
frames before the registration date of the child. Finally, we varied the required number of days used to rule out duplicate records between the NTD records in a mother's record and any subsequent records to see if it impacted the number of cases identified associated with each woman.

3. Results

We analyzed 98,922,326 records from 980,474 individuals and identified 2,117 individuals associated with 3,178 records with a NTD code. 457 individuals with a NTD record were excluded because the event date was outside the study period, 492 were excluded because the event was prior to the patients registration date, and 460 were excluded because they were found in men >17 years old or in women who were >45 years old. After these exclusions and application of our identification process, we identified 217 unique NTD cases associated with 214 individuals. 148 cases were found within a mother's record and 69 cases were found in a child's record. We found no evidence of duplicate NTD records in both the mother's and the child's record. 183 cases were identified from general practitioner clinical records, and 34 were identified from referral records. With two exceptions, our alternate analyses on our identification algorithm resulted in only moderate changes in the initial number of algorithm-identified NTDs. When we included records up to 90 days prior to the patient's GP registration date as opposed to using only records found after registration, we found an additional 21 NTD cases in children's records. Additionally, when we extended the acceptable time from birth to the first occurrence of a NTD diagnosis from one year to the first two years of life, we found an additional 18 NTD cases in children's records. We sent validation questionnaires to the general practitioners of all 217 identified cases in

August of 2006. Figure 5.7 describes the progression of records through the validation procedure.

Figure 5.13 – Progression of Records For Validated Neural Tube Defects in The General Practice Research Database Between 1987 and 2004.



Of the 217 requests, we received responses from general practitioners for 165 cases (76 percent) as of January 2007. Responses for 121 cases from mother's records and 44 cases from children's records were returned. Questionnaire return rates differed across NTD diagnoses (MH χ^2= 4.1, df=1, p=0.04), with anencephaly having the greatest overall response rate (86 percent) and cephalocele having the worst (60 percent). More responses were

received for NTDs found in mother's records (82 percent, 95% CI: 88 – 76 percent) than in children's records (64 percent, 95% CI: 52 – 75 percent). Although 80 percent (95% CI: 72 – 86 percent) of questionnaires for cases occurring after 1994 were returned versus 70 percent (95% CI: 58 – 79 percent) before 1994, the year of event had little impact on whether the questionnaire was returned.

The GP responses validated a NTD diagnosis for 117 of the 165 cases, yielding a positive predictive value of 0.71 for our algorithm ($\chi^2 = 28.9$, df=1, $p < 0.001$). Validation of the NTD did not vary by whether the case came from a mother's record (69 percent, 95% CI: 60 – 78 percent) or a child's record (75 percent, 95% CI: 60 – 87 percent), or by the number of repeat NTD codes in a case's complete record ($MH\chi^2 = 0.49$, df=1 p=0.48). Percentage validation of cases was not influenced by the year in which the NTD occurred.

There were 14 cases that the GP questionnaire indicated that the date or the specific NTD code identified was not accurate. If we do not count these cases as validated, the positive predictive value drops to 0.61. As the presence of a NTD was confirmed in these cases, we considered them validated. The PPV of the identification algorithm varied depending on the specific NTD diagnoses. The PPV for our algorithm was 0.81 for anencephaly codes, 0.83 for cephalocele codes, 0.64 for meningocele codes, and 0.47 for spina bifida codes. A list of these codes as well as their individual success in validation is presented in Table 5.21. Although the number of each specific NTD code was often small, when grouped, codes for spina bifida occulta proved the most unreliable.

Table 5.21 – Neural Tube Defect Codes And Positive Predicative Values Based Upon Validation of Records in The GPRD.

Description	GPRD Medical Code	OXMIS/Read Code	Validated Code	Total	PPV
Anencephaly	257028	740 AD	22	28	0.79
Spina Bifida	304968	7419	14	28	0.5
Anencephalus	290126	P00..00	17	21	0.81
Spina bifida	262689	P1...00	7	16	0.44
Spina Bifida Occulta	304970	7419CO	5	14	0.36
Suspect fetal anencephaly	216610	L250.11	10	12	0.83
Spina bifida occulta	253735	PG17.00	1	9	0.11
Suspect fetal spina bifida	225710	L250.13	6	7	0.86
Meningocele	304969	7419B	3	5	0.6
Encephalocele	238579	7430E	3	4	0.75
Spinal meningocele	280993	P113.00	2	4	0.5
Spina bifida NOS	281001	P1z..00	3	4	0.75
Spina bifida with hydrocephalus, unspecified	280988	P100000	2	3	0.67
Spina Bifida Meningocele Hydrocephalus	202515	7410D	1	1	1
Meningocele - cranial	217100	P203.11	1	1	1
Closed spina bifida with Arnold-Chiari malformation	226205	P101.11	0	1	0
Encephalocele	226217	P20..00	1	1	1
Spinal meningocele NOS	244311	P113z00	1	1	1
Meningocele - cerebral	244315	P203.00	0	1	0
Occipital encephalocele	253512	P20z000	1	1	1
Meningomyelocele Closure	266599	K027 C	1	1	1
Acrania	290127	P000.00	1	1	1
Meningomyelocele	299389	P114.00	1	1	1
Total			103	165	0.62

A summary of the methods used by the GP to confirm or refute the NTD diagnoses is presented in Tables 5.22 and 5.23.

Table 5.22 – Source Used To Confirm Or Refute NTD Diagnosis From Analysis Of General Practitioner Questionnaires

	Electronic Medical Records	%	Specialist / consultant Letter	%	Paper chart or notes	%	Other	%	Total
Returned Questionnaires	**130**	**79%**	**77**	**47%**	**28**	**17%**	**4**	**2%**	**165**
Anencephaly	48	77%	36	58%	12	19%	2	3%	62
Cephaloceles	6	100%	2	33%	0	0%	0	0%	6
Meningoceles	8	57%	5	36%	1	7%	0	0%	14
Spina Bifidas	68	82%	34	41%	15	18%	2	2%	83
Validated Cases	**96**	**82%**	**62**	**53%**	**19**	**16%**	**2**	**2%**	**117**
Anencephaly	45	79%	35	61%	12	21%	1	2%	57
Cephaloceles	5	100%	1	20%	0	0%	0	0%	5
Meningoceles	8	73%	5	45%	0	0%	0	0%	11
Spina Bifidas	38	86%	21	48%	7	16%	1	2%	44

Table 5.23 – Diagnostics And Screening Tests Used In NTD Diagnosis From Analysis Of General Practitioner Questionnaire.

	Prenatal Ultrasound	%	Physical exam by Ped/ObGyn	%	AFP, MRI or Amniocentesis	%	Other Physical Exams	%	Other	%	None	%	Unknown	%	Total
Returned Questionnaires	**66**	**40**	**32**	**19**	**24**	**15**	**11**	**7**	**35**	**21**	**1**	**1**	**17**	**10**	**165**
Anencephaly	42	68	9	15	8	13	0	0	16	26	0	0	3	5	62
Cephaloceles	1	17	1	17	1	17	0	0	1	17	0	0	2	33	6
Meningoceles	2	14	4	29	4	29	5	36	1	7	0	0	2	14	14
Spina Bifidas	21	25	18	22	11	13	6	7	17	20	1	1	10	12	83
Validated Cases	**61**	**52**	**27**	**23**	**24**	**21**	**10**	**9**	**23**	**20**	**0**	**0**	**12**	**10**	**117**
Anencephaly	39	68	7	12	8	14	0	0	15	26	0	0	3	5	57
Cephaloceles	0	0	1	20	1	20	0	0	1	20	0	0	2	40	5
Meningoceles	2	18	4	36	4	36	5	45	1	9	0	0	2	18	11
Spina Bifidas	20	45	15	34	11	25	5	11	6	14	0	0	5	11	44

For 32 percent (n=52) of our returned questionnaires, the only source reviewed to confirm the diagnosis was the GPRD electronic medical records. Electronic medical records were used alone or in combination with other records 79 percent of the time. The methods used by the GPs were similar for cases identified in the mother's records and children's records.

The GP indicated that an examination, diagnostic or screening technique was used to confirm or refute the NTD diagnosis 81 percent of the time. The most common technique was an ultrasound examination. 40 percent of all returned questionnaires and 59 percent of validated cases listed ultrasound as one of the techniques that were used by a clinician for determining the NTD diagnosis. Among cases identified in mother's records, ultrasound was the most common method (49 percent), while among cases identified in children's records a physical exam by an obstetrician or pediatrician was the most common method (41 percent).

Of the original 69 NTD cases identified in a child's record, we matched 51 children to a mother using the mother-baby linkage. Questionnaire responses confirmed that the mother baby linkage accurately identified the mother of a NTD case 89 percent of the time. When we looked at the 117 validated NTD cases, 87 cases were either in a mother's record (n=71) or correctly linked to a mother and confirmed by the general practitioner (n=16).

Among the 87 NTD cases in a mother's record or with valid mother-baby links, the mean and median maternal age was 28 and 29 respectively, with an age range of 16 to 38. The NTD pregnancy was the first pregnancy for 67 percent of the mothers. 34 percent of NTD cases had a diagnostic or screening test commonly associated with a NTD diagnosis recorded in their profile in the period prior to the end of their pregnancy. All pregnancy outcomes associated with the 87 validated NTD cases are presented in Table 5.24. 45 percent of the

NTD cases were associated with an elective termination. Spontaneous abortions were the second most commonly associated pregnancy outcome.

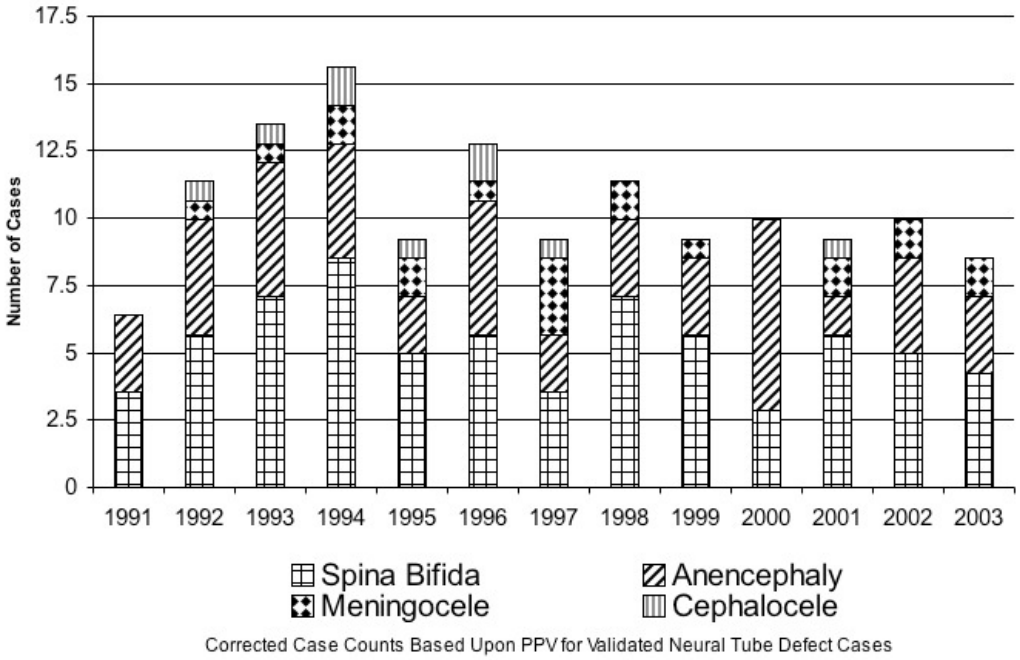
Table 5.24 – Neural Tube Defects by Linked Pregnancy Outcomes* for Validated NTDs In The GPRD.

	Pregnancy Event Type Matched To NTD						
	Stillbirth	Termination	Miscarriage	Pre/Post term	Live Birth /Delivery	Total	%
Anencephaly	0	27	15	0	2	44	50.6
Cephalocele	0	2	1	0	1	4	4.6
Meningocele	0	1	0	0	5	6	6.9
Spina Bifida	2	9	8	1	13	33	37.9
Total	2	39	24	1	21	87	
%	2.3	44.8	27.6	1.2	24.1		

*Linked pregnancy outcomes are those from a mother's record, and those in a child's record with a linked mother with a confirmed mother-baby linkage.

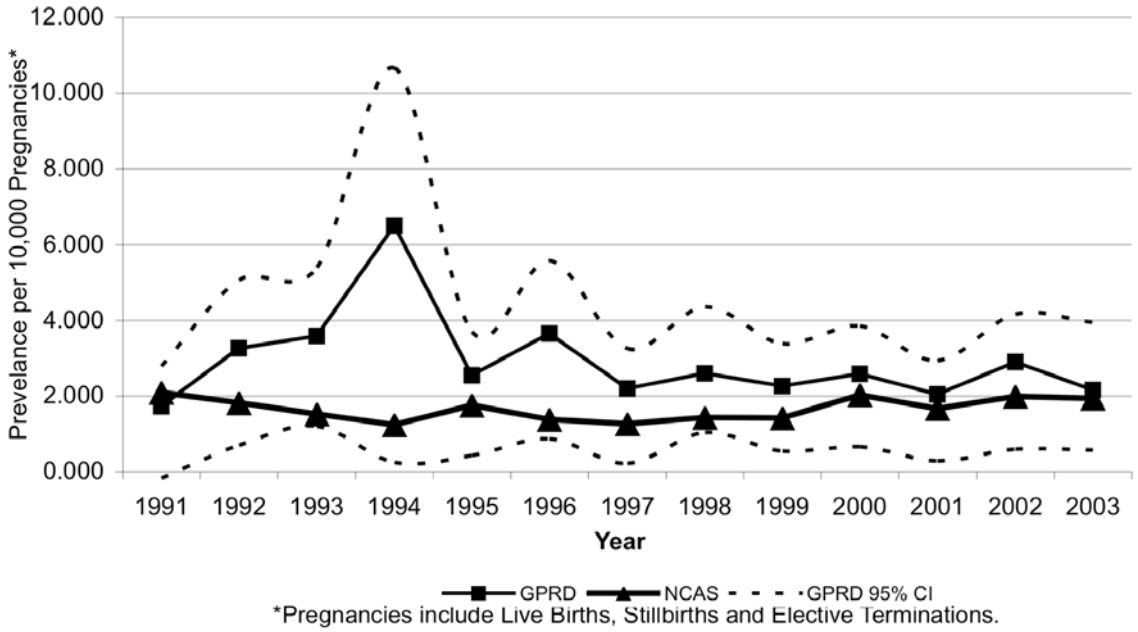
Because the positive predictive value of the validated NTD cases exceeded 0.70, we calculated adjusted annual case counts of NTDs. Adjusted counts of NTDs by year of occurrence are presented in Figure 5.14.

Figure 5.14 – Corrected Counts of Neural Tube Defect Cases in the General Practice Research Database Between 1991 and 2003.



Annual prevalences ranged from 5.4 per 10,000 pregnancies (live births, stillbirths and elective terminations) in 1994, to 1.38 per 10,000 pregnancies in 1991. These prevalences, as well as the annual prevalences of NTDs from the National Congenital Anomaly System (NCAS),[208] are presented in Figure 5.15.

Figure 5.15 – Age Standardized Annual Prevalence Of Neural Tube Defects From Corrected Case Counts Of Neural Tube Defects From The GPRD And The UK National Congenital Anomaly System Between Jan 1, 1991 And Dec 31, 2003.



4. Discussion

We were able to identify and subsequently confirm a large number of NTDs in the GPRD that may be useful in investigating maternal exposures and NTD outcomes. We believe our study has several benefits for future pharmacoepidemiologic research.

Our study confirms the need for continued use of validation of diagnoses within the GPRD. The added information gathered by our questionnaire allowed us to determine the means by which the physician verified the diagnosis of a NTD. The manual validation

procedure also allowed us to determine additional information exceeding that available solely through the electronic data. While a substantial number of the returned questionnaires reported that the physician confirmed the NTD by using only the electronic medical records (the records that we used to identify the case), the majority of cases used other means of verification, alone or in combination with the electronic medical record.

Additionally, this collection of validated cases available in the GPRD offers a potential source for case-control studies of maternal exposures and NTDs. Using our adjusted counts of NTDs, we would expect at least 137 NTDs available for research in the GPRD in the study time period. With 137 cases and a control to case ratio of 10:1, a researcher has 80 percent power to detect an odds ratio of 2.0 when exposure prevalence exceeds 10 percent. The power would be reduced for the analysis of specific categories of NTDs. We present minimum detectable odds ratios with exposure prevalences in the range of those found in pregnant women identified in the GPRD in Table 5.25.[173]

Table 5.25 – Minimum Detectable Odds Ratio With 80 Percent Power Using 10:1 Control To Case Ratio.

	Exposure Prevalence						
Cases	**0.01**	**0.025**	**0.05**	**0.075**	**0.1**	**0.15**	**0.2**
50	7.8	5.0	3.8	3.2	3.0	2.7	2.5
75	6.3	4.0	3.1	2.7	2.5	2.3	2.1
100	5.3	3.5	2.8	2.5	2.3	2.1	2.0
125	4.8	3.3	2.5	2.3	2.1	1.9	1.9
150	4.3	3.0	2.4	2.1	2.0	1.8	1.8
200	3.8	2.7	2.2	1.9	1.8	1.7	1.6

We were also reassured by the accuracy of the GPRD's mother-baby linkage. In addition to the success in linking a child's record to the mother, we also found that the linkage was successful in linking a mother to all of her offspring 72 percent of the time. Linkage

between mothers and children allows ascertainment of detailed pre- and peri-natal exposure information for mothers of cases that is not prone to recall bias. However, several questions still remain about the role of the GPRD's mother-baby linkage in research, primarily the completeness of the linkage. While only 13 percent of the cases of NTD identified in a child's record were not linked to a mother's record, 28 percent of women with at least one recorded pregnancy were not linked to a child's record. While our sample of children with NTDs and their mothers is not likely representative of the greater population of mothers and children in the linkage, it does indicate that further research could prove valuable in determining the completeness of the linkage.

There are several potential limitations of this study. Other researchers have documented that estimates for a variety of congenital anomalies may be underestimated by the NCAS.[143] The prevalences we estimated from GPRD and those from NCAS are comparable in the later years; yet appear quite different in the early years. There are several potential reasons for these apparent differences. We did not identify a large number of cases, which added significant imprecision to our prevalence estimates, as reflected by the wide 95 percent confidence intervals. All of our prevalence estimates have confidence intervals that contain the NCAS estimate. Additionally, our search methodology may not have ascertained all of the NTD cases that are actually in the GPRD population. Cases could be recorded in text notes, or in un-identifiable referral letters. There is also the possibility that some NTD cases were not captured in the GP records. If a practitioner other than the GP terminates a NTD pregnancy and that termination is not reported back to the GP, we would not capture that case. All of these scenarios would result in an underestimate of the NTD prevalence, which

in turn would limit the GPRD's ability to be a resource for use in monitoring overall NTD trends in the UK.

An additional limitation was our algorithm's inability to adequately differentiate cases in which the mother had spina bifida from new cases of spina bifida in offspring. While 18 percent of NTD diagnoses identified in the mother's records were determined by the GP to be the mother's, 37 percent of spina bifida diagnoses represented the mother's own condition. These false positives had a negative impact on the overall PPV of our study. If we exclude all spina bifida codes, the algorithm's PPV improves to 0.78, but 38 percent of confirmed NTDs are eliminated. If we exclude only spina bifida codes associated with spina bifida occulta (OXMIS/Read Codes: PG17.00 and 7419CO) the PPV increases to 0.68, with only 6 percent of confirmed NTDs lost. Because of the potential for misclassification of case status, especially in the case of spina bifida, additional means, such as text notes or additional validation questionnaires should be used to minimize the possibility of identifying women with incident NTD cases.

Finally, there were fewer prenatal diagnostic tests in mothers' records than we would have expected based upon the frequency of NTD pregnancy terminations and the established guidelines for antenatal care from The Royal College of Obstetricians and Gynecologists and the National Institute for Clinical Excellence.[132] More physician-reported diagnostic techniques were used to confirm a clinical diagnosis of a NTD than we were able to identify using computer codes. As most of these tests are performed in hospitals or hospital-based obstetric clinics, results may not be reported to or recorded by the general practitioner into the GP record. It is also possible that some of these diagnostic and screening tests are being

recorded in the form of free text information in patient visit electronic free-text notes. Due to cost restraints our study did not attempt to review this information

Despite these limitations, we believe that our study has shown that the number of NTD cases in the GPRD provides an excellent opportunity for research into maternal exposures and this important outcome. We intend to continue to improve our identification approach for cases of spina bifida and provide this information to other researchers that wish to utilize the GPRD for this purpose.

VI. CONCLUSIONS

A. Recapitulation Of Overall Study Aims, Findings And Degree To Which The Standards And Expectations For Doctoral Research Have Been Met.

This doctoral research project was initiated with three specific aims. The first aim was to identify and validate cases of NTDs within the GPRD. We achieved this aim by creating electronic case definitions of specific NTDs and used these definitions to identify potential cases. We then validated these cases through querying GPs using a short assessment form and determined the positive predictive value of our electronic case definitions. We found that our electronic case definitions performed well overall, but had significant shortcomings for identification of cases of spina bifida (PPV = 0.47) and to a lesser extent, meningocele (PPV = 0.64).

Our second specific aim was to determine the annual prevalence of NTDs within the population that makes up the GPRD. In order to determine these prevalences we created electronic case definitions for pregnancies and used these definitions to determine the number of annual pregnancies. The procedure produced results that were consistent with previous studies using similar databases. In order to make this important procedure available to other researchers, we made this effort a primary focus of one of the two manuscripts that are contained in this dissertation. Using this information, in combination with our validated annual cases, we determined the annual prevalence of NTDs within the GPRD. Although the overall number of NTDs was less than expected in our initial estimates, they were of

sufficient quantity to provide researchers opportunity to address research questions were power is adequate.

Our third and final specific aim was to compare our prevalence of NTDs to other congenital anomaly monitoring systems in the UK. Through a comparison to monitoring systems using different mechanisms, we determined if our proposed monitoring approach produces similar results, while producing gains in efficiency. We were not able to compare our prevalences to those of the European Concerted Action on Congenital Anomalies and Twins (EUROCAT) database. Age specific counts of NTDs were not publicly available at the time of this dissertation. We were able to do an informal comparison of NTD rates from the UK's National Congenital Anomaly System (NCAS). We found that our prevalences matched favorably with the NCAS during certain years, but unfavorably during others. This could be expected based upon the different methodologies used by the NCAS and previous studies indicating that the NCAS may provide underestimates of many congenital anomalies.[143]

This dissertation meets the four departmental expectations for doctoral research. Originality was shown through its innovation in the development of methods for identifying pregnancies and NTDs in the GPRD. Other researchers have not covered these areas. These procedures and algorithms add valuable research tools to the research community. This dissertation meets the expectation of depth through its sophisticated approach to prevention of pregnancy misclassification. This approach offers significant improvements to previous methodologies used in the field. With regard to scholarship, the specific aims for this dissertation addressed gaps in the field of pharmacoepidemiology discovered during the research process. Finally, this dissertation meets the expectation of demonstrable writing

skills. Evidence of these skills is provided in the dissertation document itself and two manuscripts that are of a standard for submission to a peer-reviewed journal.

B. Strengths & Limitations

1. Pregnancy Identification Strengths and Limitations

Our pregnancy identification algorithm and the pregnancies that it identified in the GPRD offer several strengths. We identified a large number of pregnancies in a 17.5-year period of the GPRD. These pregnancies have a rich assortment of medical care data associated with them. At least one PCM was available for 88 percent of all pregnancies, and 78 percent of the identified complete pregnancy profiles had records accessible going back at least 300 days prior to the EOP event. Using the electronic definitions, researchers can identify treatments and care delivered during critical windows of fetal development and throughout the pregnancy. Additionally, over 78 percent of the complete pregnancy profiles had medical history records going back at least 180 days before the first PCM. Using the records for the six months prior to the first PCM can provide details on chronic conditions, health-services utilization and medication orders.

This rich dataset also gives researchers the ability to estimate the last menstrual period (LMP) date associated with each pregnancy. The LMP date is important for determining the timing of medication exposure during very early gestation, but is often estimated because it is generally not available in an electronic database. It is possible to estimate LMP using data developed by Manson *et al*. for the Kaiser-Permanente database. They found that the LMP was on average 40 days prior to the first PCM in the case of fetal deaths, and within 57 days of the first PCM for live births.[162] We evaluated our data using the time points from the Manson *et al*. study to determine the number of pregnancies for which we could estimate an

LMP date. Among the aggregated stillbirths, elective terminations and spontaneous terminations, we found that ninety-three percent of those with a complete pregnancy profile had at least 40 days of medical records prior to the first PCM. Of the live births and deliveries with complete pregnancy profiles, eighty-five percent had at least 57 days of records prior to the first PCM. If we defined an LMP date as 57 days prior to the first PCM regardless of outcome type, we would have data as far back as the LMP date for 86 percent of the 330,153 pregnancies with complete profiles.

An additional strength of our pregnancy algorithm is its ability to reduce the chance of selecting an indeterminate pregnancy outcome as the final EOP code by detecting outcomes that were out of order in the mother's record. Because we were able to detect specific codes (i.e. those for a stillbirth or an elective termination) even when they were not the first in a series of codes, we did not have unknown outcomes. For example, if a fetal death or stillbirth was recorded after a code broadly applied in most patients (e.g. normal delivery or birth details), the outcome was categorized as a fetal death rather than as an unknown outcome. While this approach relies upon accurate recording of fetal deaths and stillbirths, the reliability of recording by the GP has been shown to be excellent.[198-201]

Finally, a strength of both the algorithm presented here and the GPRD is the ability to identify recorded spontaneous abortions. Spontaneous abortions composed approximately fifteen percent of the identified EOP outcomes. This conforms with estimates of twelve to fifteen percent from other sources.[202, 203] Because we are able to identify multiple pregnancy outcome types, particularly spontaneous abortions, pharmacoepidemiologic studies using the GPRD data are not be restricted to pregnancies with full-term outcomes.

However, researchers should use caution when including these spontaneous abortions. There will be an unknown number of spontaneous abortions that are not detected by the mother or the GP. Many go unnoticed or are mistaken as part of a woman's normal menstrual cycle. Because of these unidentified spontaneous abortions, developing specific rates for this outcome would be ill advised; however, the GPRD still offers information about spontaneous abortions that is not commonly available in other large electronic databases and these data can be useful for addressing other objectives.

There are several limitations to our pregnancy algorithm and the identifiable pregnancies in the GPRD. The first is the potential for the incomplete ascertainment of pregnancies. In addition to the unrecorded spontaneous abortions mentioned above, the GPRD may not contain records of all elective terminations. These procedures occur at health care facilities other than the GP office and may not be recorded in the medical record, either by omission or at the woman's request.

GPs may fail to record all pregnancy care and outcomes in the database. This was noted by the incomplete matching of a PCM to each EOP event and when evaluating maternal data for evidence of diagnostic and screening tests. Although we could not expect to have complete matching of a PCM for certain outcomes such as miscarriages because women may not know they are pregnant until the time of the miscarriage, it would not explain the approximately 8 percent of full-term pregnancies that we could not locate a PCM. As many aspects of pregnancy care are performed outside a GPs office, it is possible that information is not being conveyed to or entered by the GP in a format that is readily searchable (i.e. non-descript text entries).

Additionally, we found that only 15 percent of all pregnancies had any record of a possible 149 common diagnostic or screening tests codes relevant for pregnancy. This would limit the database utility in examining pregnancy complications as outcomes. The Royal College of Obstetricians and Gynecologists and the National Institute for Clinical Excellence,[132] have established guidelines for pregnancy diagnostic and screening tests. The NHS has also put in place financial incentives to ensure that these tests are done.[204] For these reasons, we believe that these tests are likely being performed but do not exist in the discrete data portion of the mother's electronic health record. The GP has the opportunity to record information as free text comments and this may be where they place information on pregnancy diagnosis and screening tests. We did not search this free text information as the costs involved were outside of the planned budget of this project.

An additional limitation is that information on pregnancies that occurred prior to the patient's registration is frequently incomplete. Even though many of these pregnancies are often recorded in the GPRD as historical data, this data may be incomplete or missing in some women, so we did not include them in our analysis. There is also the potential that a woman could leave a physician's practice prior to delivery. We found that there were 13,812 women with a PCM within 90 days of transferring out of the practice and without an accompanying EOP event record . Because not all GP practices are part of the GPRD and records are not linked from one GP practice to the next, it was not feasible to track these outcomes.

There is also the potential for misclassification of pregnancy outcomes. Although we believe misclassification was minimized through the use of recognized pregnancy codes, physicians have the ability to use codes as they judge appropriate. The potential lack of

consistency within and across GPs and the reality that many codes within the OXMIS and Read Coding dictionaries may have multiple uses complicate any attempt to avoid misclassification. Our approach of ranking pregnancy categories and selecting the final outcome using a hierarchical approach, rather than identifying the first available pregnancy outcome code and excluding all others within a fixed time period, should minimize misclassification. In our analyses, 12,834 pregnancies with the potential of being misclassified were ultimately identified and removed using a hierarchical pregnancy category approach.

2. NTD Identification Strengths And Limitations

This collection of validated cases available in the GPRD offers a potential source for case-control studies of maternal exposures and NTDs. Using our adjusted counts of NTDs, we would expect at least 137 NTDs available for research in the GPRD in the study time period. With 137 cases and a control to case ratio of 10:1, a researcher has 80 percent power to detect an odds ratio of 2.0 when exposure prevalence exceeds 10 percent. The power would be reduced for the analysis of specific categories of NTDs. We present minimum detectable odds ratios with exposure prevalences in the range of those found in pregnant women identified in the GPRD in the table below.[173]

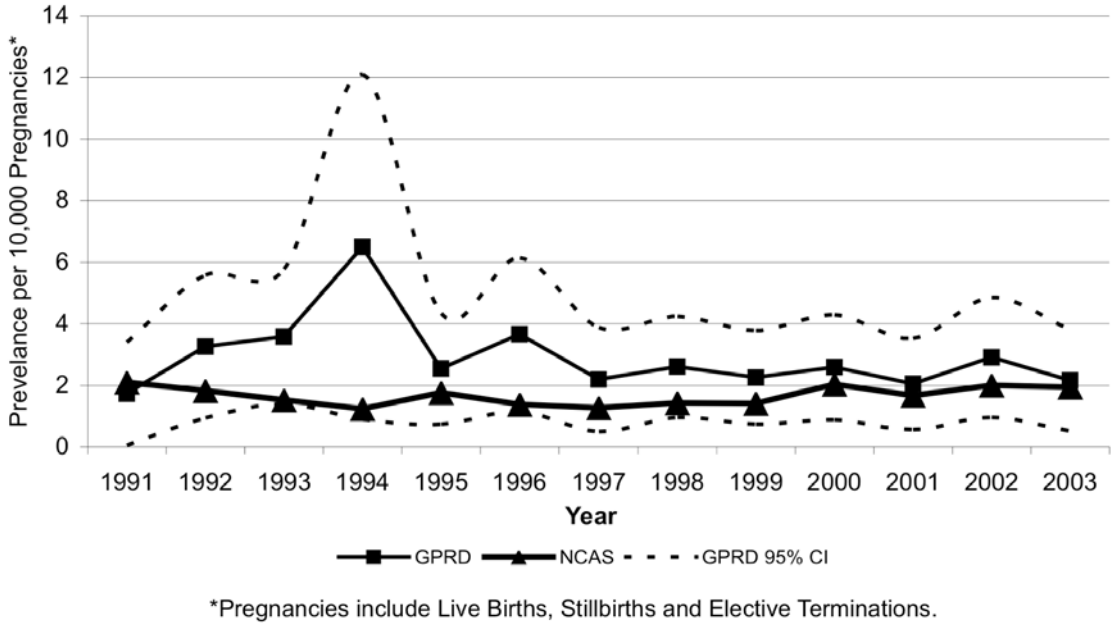
Table 6.1 – Minimum Detectable Odds Ratio With 80 Percent Power Using 10:1 Control To Case Ratio.

	Exposure Prevalence						
Cases	**0.01**	**0.025**	**0.05**	**0.075**	**0.1**	**0.15**	**0.2**
50	7.8	5.0	3.8	3.2	3.0	2.7	2.5
75	6.3	4.0	3.1	2.7	2.5	2.3	2.1
100	5.3	3.5	2.8	2.5	2.3	2.1	2.0
125	4.8	3.3	2.5	2.3	2.1	1.9	1.9
150	4.3	3.0	2.4	2.1	2.0	1.8	1.8
200	3.8	2.7	2.2	1.9	1.8	1.7	1.6

We were also reassured by the accuracy of the GPRD's mother-baby linkage. In addition to the success in linking a child's record to the mother, we also found that the linkage was successful in linking a mother to all of her offspring 72 percent of the time. Linkage between mothers and children allows ascertainment of detailed pre- and peri-natal exposure information for mothers of cases that are not prone to recall bias. However, several questions still remain about the role of the GPRD's mother-baby linkage in research, primarily the completeness of the linkage. While only 13 percent of the cases of NTD identified in a child's record were not linked to a mother's record, 28 percent of women with at least one recorded pregnancy were not linked to a child's record. While our sample of children with NTDs and their mothers is not likely representative of the greater population of mothers and children in the linkage, it does indicate that further research could prove valuable in determining the completeness of the linkage.

There are several potential limitations of this study. Other researchers have documented that estimates for a variety of congenital anomalies may be underestimated by the NCAS.[143] As illustrated in Figure 6.1 below, the prevalences we estimated from GPRD and those from NCAS are comparable in the later years; yet appear different in the early years, particularly in 1994.

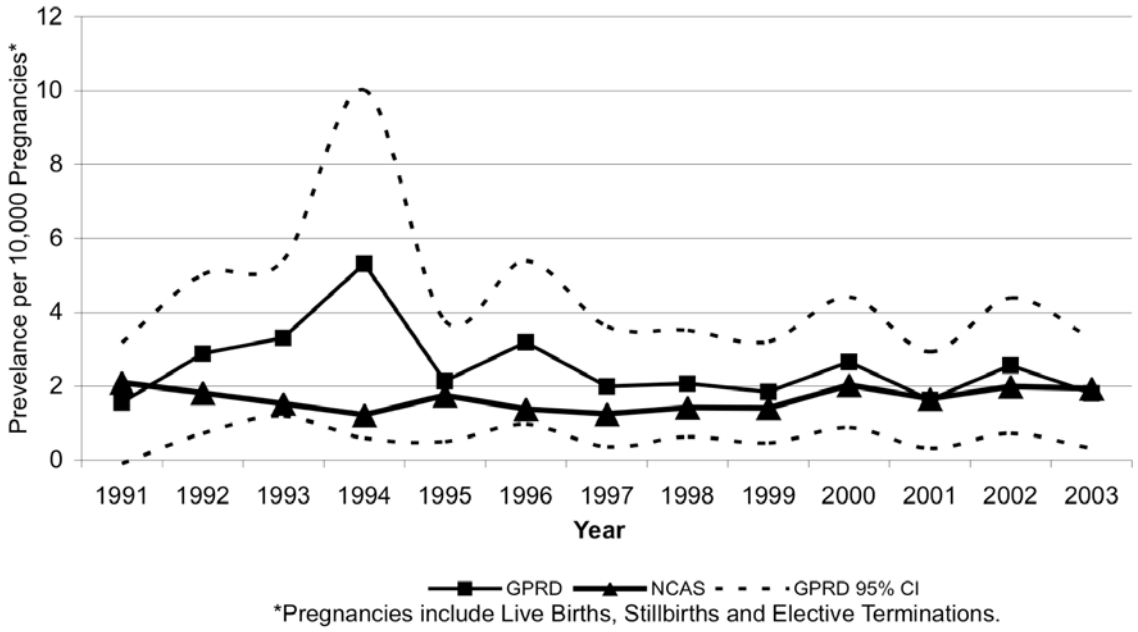
Figure 6.1 – Age Standardized Annual Prevalence Of NTDs From Corrected Case Counts Of NTDs From The GPRD And The UK National Congenital Anomaly System Between Jan 1, 1991 And Dec 31, 2003.



*Pregnancies include Live Births, Stillbirths and Elective Terminations.

We used corrected case counts to generate the annual prevalence estimates in the figure above. To correct cases counts we applied the PPV of 0.71 from the NTD validation to the annual total number of NTDs and created age standardized prevalence and confidence interval estimates. To determine if our method for correcting case counts had an impact on our annual prevalences comparability to NCAS estimates we utilized an alternative approach. Rather than apply the overall PPV of 0.71, we used our NTD type specific PPVs of 0.81 for anencephaly, 0.83 for cephalocele, 0.64 for meningocele and 0.47 for spina bifida and created new age standardized annual prevalence estimates and confidence intervals using these new counts. We present these results in the figure below.

Figure 6.2 – Age Standardized Annual Prevalence Of NTDs From Event Type Specific Corrected Case Counts Of NTDs From The GPRD And The UK National Congenital Anomaly System Between Jan 1, 1991 And Dec 31, 2003.



Predictably this approach results in lower annual estimates of NTD prevalence, however, it does not change any of the overall impressions of comparability. In both scenarios there is a pronounced difference in prevalence in between 1992 and 1996, save 1995. One possible reason for the steep decline in NTD prevalence in 1995 and there after was the 1995 to 1998 effort by the UK Health Education Authority to educate patients and physicians on the peri-conceptual folic acid supplimentation.[209] However, the education effort does not explain the increase in 1994.

There are several additional potential reasons for these apparent differences. We did not identify a large number of cases, which added significant imprecision to our prevalence estimates, as reflected by the wide 95 percent confidence intervals. All of our prevalence estimates have confidence intervals that contain the NCAS estimate. Additionally, our search methodology may not have ascertained all of the NTD cases that are actually in the

GPRD population. Cases could be recorded in text notes, or in un-identifiable referral letters. There is also the possibility that some NTD cases were not captured in the GP records. If a practitioner other than the GP terminates a NTD pregnancy and that termination is not reported back to the GP, we would not capture that case. All of these scenarios would result in an underestimate of the NTD prevalence, which in turn would limit the GPRD's ability to be a resource for use in monitoring overall NTD trends in the UK.

An additional limitation was our algorithm's inability to adequately differentiate cases in which the mother had spina bifida from new cases of spina bifida in offspring. While 18 percent of all NTD diagnoses identified in the mother's records were determined by the GP to be the mother's own condition, 37 percent of spina bifida diagnoses represented the mother's own condition. These false positives had a negative impact on the overall PPV of our study. If we exclude all spina bifida codes, the algorithm's PPV improves to 0.89, but 38 percent of validated NTDs are eliminated. If we exclude only spina bifida codes associated with spina bifida occulta (OXMIS/Read Codes: PG17.00 and 7419CO) the PPV increases to 0.78, with only 5 percent of validated NTDs lost. Because of the potential for misclassification of case status, additional means, such as text notes or additional validation questionnaires should be used to minimize the possibility of identifying women with incident cases of spina bifida.

Finally, there were fewer prenatal diagnostic tests in mothers' records than we would have expected based upon the frequency of NTD pregnancy terminations and the established guidelines for antenatal care from The Royal College of Obstetricians and Gynecologists and the National Institute for Clinical Excellence.[132] Based upon the results of the GP questionnaire we found that more physician-reported diagnostic techniques were used to

confirm a clinical diagnosis of a NTD than we were able to identify using computer codes. As most of these tests are performed in hospitals or hospital-based obstetric clinics, results may not be reported to or recorded by the GP into the GP record. It is also possible that some of these diagnostic and screening tests are being recorded in the form of free text information in patient visit electronic free-text notes. Our study did not attempt to review this information.

C. Future directions

1. Pregnancy Identification

There are several areas for future work with the pregnancy identification algorithm. Although we did achieve a high percentage of complete pregnancy profiles (i.e. PCM and matched EOP event), we were unsuccessful in matching over 40,000 EOP events to a PCM. These events were less likely to be associated with a full-term delivery; however, there were still a large number of full-term deliveries that did not have a matched PCM. Additional review of the text records for these events may provide additional information that could increase our ability to match additional EOP events to a PCM.

There is also a need to explore text records to identify evidence of the performance of screening and diagnostic tests. As noted in the results, an unexpectedly small number of screening and diagnostic codes were identified in the primary analyses of both the pregnancy identification algorithm and the NTD identification algorithm. The standard of care in the UK indicates that more than approximately 15 percent of pregnancies should have a screening or diagnostic code associated with them. The system of providing healthcare to a pregnant woman in the UK may provide some insight into why these numbers are so low. Much of the care delivered during pregnancy is performed by members of the healthcare

team other than the GP (i.e. mid-wives, OB/GYNs). Because this care is not being delivered by the GP, the information may not be recorded in the GP records or it may be recorded in the text notes of a visit code that is associated with pregnancy. A careful examination of the text notes of a sub-set of individuals who are similar to those with diagnostic and screening records may provide some insight into this matter.

2. NTD Identification

Our NTD identification algorithm for the GPRD will continue to be refined. As noted in the results section above, our algorithm did not perform as well in the identification of new cases of spina bifida and to a lesser extent, meningocele. Although many incident cases were identified and not selected for validation, many cases were discovered to be incident by validation despite the use of an appropriate NTD code. Much of this can be explained by the poor performance of just two codes for spina bifida occulta. There may also be limitations of relying completely on medical codes rather than an approach that also uses free-text information. The ability to review certain free-text records for each of NTD cases could prove helpful in decreasing the number of false positives.

Another area of work could focus on the development of a regularly updated case count for NTDs and other congenital anomalies by the GPRD. As the database matures, we would expect the number of NTD cases to increase. The periodic updating of the counts of NTDs would build the credibility of the GPRD to support case-control studies involving NTDs. As each additional case is added and additional exposure time is potentially added, the power to detect associations will improve thus increasing the attractiveness of the data for research.

Finally, there is a need for more research into the linkage between mothers and their offspring developed by the GPRD. Our study was successful in utilizing the mother-baby linkage, but many questions remain as to the accuracy and completeness of the linkage for the entire population of mothers and offspring. This truly unique feature of the GPRD has many important uses and will surely be an area of future research.

APPENDICES

Appendix A – GP Questionnaires

Version 1 – NTD Identified In Mother's Record

Validation of Neural Tube Defects Study
GPRD Protocol 609

Physician ID: < *insert physician ID* >
Patient ID: < *insert patient ID* >
Patient Diagnosis: < *insert primary diagnosis* >

We are requesting your assistance in conducting a validation study for the identification of neural tube defects (NTDs) within the GPRD. The following is a brief series of questions that are aimed at confirming the diagnosis of a neural tube defect that has been detected from a search of the automated GPRD records. This validation process is part of a research study being conducted by a doctoral student and faculty advisors at the University of North Carolina – Chapel Hill School of Public Health. The project is being supported by a grant from the U.S. Agency for Healthcare Research and Quality through its Centers for Education & Research on Therapeutics.

This study has been reviewed and approved by the GPRD Scientific and Ethical Advisory Group (SEAG) (Protocol # 609) and by the Institutional Review Board affiliated with the University of North Carolina, U.S. If you have questions about your rights as a study participant or are dissatisfied at any time with any aspect of this study, you may contact -- anonymously, if you wish -- the Institutional Review Board, University of North Carolina at Chapel Hill via admin@gprd.com. Your identity will not be revealed to the Review Board or the researchers.

Please answer the following questions regarding the above-mentioned patient and diagnosis.

1) Can you confirm the case of < *insert primary diagnosis* > found in the patients record on <*insert date of primary diagnosis*>?

   ☐ YES
   ☐ NO The actual NTD diagnosis is _____
   Date of new NTD diagnosis_____
   ☐ NO No actual NTD occurred

2) Is the diagnosis mentioned in question 1 regarding the mother's own condition or is it a diagnosis for a mother's fetus or offspring?

   ☐ Mother's own condition ☐ Diagnosis for mother's fetus or offspring

3) What source was reviewed to answer question 1? (Please tick all that apply.)

   ☐ Electronic medical record
   ☐ Letter from specialist/consultant(s)
   ☐ Paper chart or notes
   ☐ Other _____ (Please specify)

4) If a NTD was present, what type of examination/test was performed to determine the diagnosis for this patient? (Please tick all that apply.)

   ☐ Physical examination by you
   ☐ Maternal serum α-fetoprotein
   ☐ Amniocentesis
   ☐ Amniotic fluid α-fetoprotein
   ☐ Acetylcholinesterase (AChE)
   ☐ Prenatal ultrasound examination
   ☐ None
   ☐ Other _____ (Please specify)
   ☐ MRI
   ☐ Physical examination by another GP
   ☐ Physical examination by a neurologist
   ☐ Physical examination by a pediatrician/obstetrician
   ☐ Unknown

5) Can you confirm that patient ID number(s) < *insert patient ID* > are the offspring of this woman? If no, please provide the patient ID numbers that you believe to be the offspring of this patient: _____
   _____

m_v2 Please contact the researchers at admin@gprd.com with any questions.

Version 2 – NTD Identified In Child's Record

Validation of Neural Tube Defects Study
GPRD Protocol 609

Physician ID: «practice_id»
Patient ID: «patient_id»
Patient Diagnosis: «primary_diagnosis1»

We are requesting your assistance in conducting a validation study for the identification of neural tube defects (NTDs) within the GPRD. The following is a brief series of questions that are aimed at confirming the diagnosis of a neural tube defect that has been detected from a search of the automated GPRD records. This validation process is part of a research study being conducted by a doctoral student and faculty advisors at the University of North Carolina – Chapel Hill School of Public Health. The project is being supported by a grant from the U.S. Agency for Healthcare Research and Quality through its Centers for Education & Research on Therapeutics.

This study has been reviewed and approved by the GPRD Scientific and Ethical Advisory Group (SEAG) (Protocol # 609) and by the Institutional Review Board affiliated with the University of North Carolina, U.S. If you have questions about your rights as a study participant or are dissatisfied at any time with any aspect of this study, you may contact -- anonymously, if you wish -- the Institutional Review Board, University of North Carolina at Chapel Hill via admin@gprd.com. Your identity will not be revealed to the Review Board or the researchers.

Please answer the following questions regarding the above-mentioned patient and diagnosis.

1) Can you confirm the case of «primary_diagnosis2» found in the patient's record on «primary_diag_date»?

☐ YES
☐ NO The actual NTD diagnosis is _____
Date of new NTD diagnosis_____
☐ NO There is no NTD present.

2) What source was reviewed to answer question 1? (Please tick all that apply.)

☐ Electronic medical record
☐ Letter from specialist/consultant(s)
☐ Paper chart or notes
☐ Other _____ (Please specify)

3) If a NTD was present, what type of examination/test was performed to determine the diagnosis for this patient? (Please tick all that apply.)

☐ Physical examination by you
☐ Maternal serum α-fetoprotein
☐ Amniocentesis
☐ Amniotic fluid α-fetoprotein
☐ Acetylcholinesterase (AChE)
☐ Prenatal ultrasound examination
☐ None
☐ MRI
☐ Physical examination by another GP
☐ Physical examination by a neurologist
☐ Physical examination by a pediatrician/obstetrician
☐ Unknown
☐ Other _____ (Please specify)

4) Can you confirm that patient ID number «pateid_mother» was the mother of this child? If no, please provide the patient ID number that you believe to be the mother of this child: _____

Please contact the researchers at admin@gprd.com with any questions.

c v2

Appendix B – NTD Codes

GPRD Medical Codes	GP Medical Term	Type
202512	Absence brain	Anencephaly
208116	Anencephalus and similar anomalies NOS	Anencephaly
216610	Suspect fetal anencephaly	Anencephaly
238577	Acrania	Anencephaly
238578	Absence skull bone with anencephalus	Anencephaly
244302	Hemianencephaly	Anencephaly
244303	Other specified anencephalus	Anencephaly
253500	Craniorachischisis	Anencephaly
257028	Anencephaly	Anencephaly
262688	Anencephalus and similar anomalies	Anencephaly
275382	Acephalia	Anencephaly
280987	Anencephalus NOS	Anencephaly
290126	Anencephalus	Anencephaly
290127	Acrania	Anencephaly
304966	Acephalus	Anencephaly
202514	Meningocoele with hydrocephalus	Meningocele
202516	Meningomyelocele with hydrocephalus	Meningocele
202517	Meningocele	Meningocele
208118	Myelocele with hydrocephalus	Meningocele
208121	Cervical spinal hydromeningocele	Meningocele
208122	Cervical meningomyelocele	Meningocele
208123	Lumbar myelocele	Meningocele
208126	Syringomyelocele	Meningocele
208128	Syringomyelocele	Meningocele
211851	Meningocoele closed	Meningocele
217100	Meningocele - cranial	Meningocele
226210	Lumbar spinal meningocele	Meningocele
226211	Lumbar meningomyelocele	Meningocele
226212	Thoracic myelocele	Meningocele
240476	Closure of spinal meningocele	Meningocele
244309	Spinal hydromeningocele	Meningocele
244310	Cervical spinal meningocele	Meningocele
244311	Spinal meningocele NOS	Meningocele
244312	Myelocele NOS	Meningocele
244315	Meningocele - cerebral	Meningocele
253503	Hydromyelocele	Meningocele
253504	Lumbar hydromyelocele	Meningocele
253505	Cervical myelocele	Meningocele
257371	Repair meningocele spinal	Meningocele
262695	Spinal hydromeningocele NOS	Meningocele
262696	Hydromyelocele of unspecified site	Meningocele
262697	Meningomyelocele NOS	Meningocele
262698	Myelocele of unspecified site	Meningocele
266594	Repair meningocele cerebral	Meningocele
266599	Meningomyelocele closure	Meningocele

271962	Spinal hydromeningocele, unspecified	Meningocele
271963	Thoracic spinal hydromeningocele	Meningocele
271964	Hydromyelocele NOS	Meningocele
277162	Closure of spinal myelomeningocele	Meningocele
280990	Hydromyelocele with hydrocephalus	Meningocele
280992	Cervical hydromyelocele	Meningocele
280993	Spinal meningocele	Meningocele
280994	Spinal meningocele of unspecified site	Meningocele
280995	Meningomyelocele of unspecified site	Meningocele
280996	Thoracic meningomyelocele	Meningocele
280997	Myelocele	Meningocele
290134	Thoracic spinal meningocele	Meningocele
299388	Thoracic hydromyelocele	Meningocele
299389	Meningomyelocele	Meningocele
299394	Hydromeningocele - cranial	Meningocele
304969	Meningocele	Meningocele
202856	Repair meningoencephalocele	Cephalocele
208130	Meningoencephalocele	Cephalocele
217101	Nasofrontal encephalocele	Cephalocele
220566	Absence skull bone with hydrocephalus	Cephalocele
226217	Encephalocele	Cephalocele
226218	Encephalocele of other specified site	Cephalocele
229981	Repair encephalocele	Cephalocele
238579	Encephalocele	Cephalocele
253508	Hydroencephalocele	Cephalocele
253511	Encephalocele NOS	Cephalocele
253512	Occipital encephalocele	Cephalocele
262955	[X]Encephalocele of other sites	Cephalocele
271967	Frontal encephalocele	Cephalocele
277152	Repair of meningoencephalocele	Cephalocele
290139	Encephalomyelocele	Cephalocele
293615	Absence skull bone with encephalocele	Cephalocele
202515	Spina bifida meningocoele hydrocephalus	Spina bifida
204328	Repair of spina bifida NOS	Spina bifida
208117	Spina bifida with hydrocephalus	Spina bifida
208119	Cervical spina bifida with hydrocephalus - closed	Spina bifida
208120	Other spina bifida with hydrocephalus NOS	Spina bifida
208125	Cervical spina bifida without hydrocephalus - closed	Spina bifida
217094	Other specified spina bifida with hydrocephalus	Spina bifida
217098	Thoracic spina bifida without hydrocephalus - open	Spina bifida
220565	Spina bifida occulta	Spina bifida
225710	Suspect fetal spina bifida	Spina bifida
226205	Closed spina bifida with Arnold-Chiari malformation	Spina bifida
226207	Sacral spina bifida with hydrocephalus - open	Spina bifida
226208	Lumbar spina bifida with hydrocephalus - closed	Spina bifida
226209	Lumbar spina bifida without mention of hydrocephalus	Spina bifida
226214	Spina bifida without hydrocephalus - open	Spina bifida
226215	Cervical spina bifida without hydrocephalus - open	Spina bifida
226216	Lumbar spina bifida without hydrocephalus - open	Spina bifida

231472	Repair of spina bifida	Spina bifida
235305	Thoracic spina bifida with hydrocephalus - closed	Spina bifida
235306	Spina bifida with stenosis of aqueduct of Sylvius	Spina bifida
235307	Unspecified spina bifida without hydrocephalus - open	Spina bifida
235308	Other specified spina bifida without hydrocephalus	Spina bifida
244304	Lumbar spina bifida with hydrocephalus	Spina bifida
244305	Lumbar spina bifida with hydrocephalus - open	Spina bifida
244306	Dandy - Walker syndrome with spina bifida	Spina bifida
244307	Spina bifida with hydrocephalus NOS	Spina bifida
244308	Spina bifida without mention of hydrocephalus	Spina bifida
244313	Spina bifida without hydrocephalus - open NOS	Spina bifida
247777	Spina bifida meningocoele no hydrocephal	Spina bifida
249657	Other specified repair of spina bifida	Spina bifida
253502	Thoracic spina bifida without mention of hydrocephalus	Spina bifida
253506	Lumbar spina bifida without hydrocephalus - closed	Spina bifida
253735	Spina bifida occulta	Spina bifida
262689	Spina bifida	Spina bifida
262690	Thoracic spina bifida with hydrocephalus - open	Spina bifida
262691	Spina bifida with hydrocephalus - open NOS	Spina bifida
262692	Spina bifida with hydrocephalus - closed NOS	Spina bifida
262693	Spina bifida with hydrocephalus of late onset	Spina bifida
262694	Unspecified spina bifida without hydrocephalus NOS	Spina bifida
262699	Sacral spina bifida without hydrocephalus - open	Spina bifida
262956	[X]Unspecified spina bifida with hydrocephalus	Spina bifida
271960	Unspecified spina bifida with hydrocephalus	Spina bifida
271961	Cervical spina bifida without mention of hydrocephalus	Spina bifida
271965	Thoracolumbar spina bifida without hydrocephalus - closed	Spina bifida
280988	Spina bifida with hydrocephalus, unspecified	Spina bifida
280989	Thoracic spina bifida with hydrocephalus	Spina bifida
280991	Unspecified spina bifida with hydrocephalus - closed	Spina bifida
280999	Spina bifida without hydrocephalus - closed	Spina bifida
281001	Spina bifida NOS	Spina bifida
284487	Spina bifida	Spina bifida
284864	Spina bifida repair	Spina bifida
290130	Spina bifida with hydrocephalus NOS	Spina bifida
290132	Cervical spina bifida with hydrocephalus - open	Spina bifida
290133	Sacral spina bifida with hydrocephalus - closed	Spina bifida
290137	Unspecified spina bifida without hydrocephalus - closed	Spina bifida
290138	Sacral spina bifida without hydrocephalus - closed	Spina bifida
295434	Insertion of Halber valve for spina bifida	Spina bifida
299380	Cervical spina bifida with hydrocephalus	Spina bifida
299381	Spina bifida with hydrocephalus - open	Spina bifida
299383	Unspecified spina bifida with hydrocephalus - open	Spina bifida
299384	Spina bifida with hydrocephalus - closed	Spina bifida
299385	Thoracolumbar spina bifida with hydrocephalus - closed	Spina bifida

299386	Spina bifida without mention of hydrocephalus, unspecified	Spina bifida
299387	Spina bifida without hydrocephalus, site unspecified	Spina bifida
299391	Thoracic spina bifida without hydrocephalus - closed	Spina bifida
299392	Spina bifida without hydrocephalus - closed NOS	Spina bifida
299393	Spina bifida without mention of hydrocephalus NOS	Spina bifida
304968	Spina bifida	Spina bifida
304970	Spina bifida occulta	Spina bifida

Appendix C: All Pregnancy Codes

GPRD Medical Codes	Gp medical term
201581	Umbilical sepsis
201912	Birthmark angiomatous
201997	Pregnancy depression
202338	Pregnancy multiple
202339	Pregnancy disproportion
202340	Premature labour undelivered
202341	Pregnancy weight gain excessive
202342	Pyelitis puerperium
202343	Urinary infection pregnancy
202344	Pregnancy albuminuria
202345	Syndrome nephrotic pregnancy
202348	Delivery antepartum haemorrhage
202349	Malpresentation at delivery breech
202350	Labour difficult atony uterus
202351	Perineal laceration at delivery
202352	Pregnancy complicated delivery
202360	Galactorrhoea
202376	Abscess umbilicus newborn
202607	Placental insufficiency (baby)
202609	Haemolytic disease newborn without kerni
202611	Decreased foetal movements
202612	Hospital confinement (baby)
202613	Skin haemorrhage newborn
202615	Breech birth (baby)
202616	Birth no details
202645	Pregnancy delusions
202664	Jaundice increasing
202715	Handicapped since birth
203004	Midwifery sister
203221	Midwife attends 1 - 10 days post discharge
203250	Pregnancy benefits
203268	Patient pregnant
203297	No history of miscarriage
203298	H/O: 5 miscarriages
203299	H/O: termination
203308	Vaginal irritation
203493	O/E - fetal movements NOS
203651	Edinburgh postnatal depression scale
203769	Alpha-feto protein normal
204044	U-S scan - fetal cephalometry
204045	U-S scan - fetal maturity
204046	U-S scan - fetal presentation
204047	Viability US scan
204048	Antenatal ultrasound result received
204049	Antenatal ultrasound confirms ectopic pregnancy
204088	Antenatal care
204089	Pregnant - ? Planned
204090	A/N care: H/O stillbirth
204091	A/N care: poor A/N attender
204092	Delivery booking place
204093	Delivery booking - place NOS
204094	Feeding intention -baby
204095	Feeding intention - not known
204096	AFP blood test not wanted
204097	Static weight gain pregnancy
204098	Pregnancy prolonged - 41 weeks
204099	Mother currently breast feeding
204100	Maternal P/N exam. Defaulted
204101	Postnatal examination minor problem found
204102	Triple test
204103	Double test offered
204104	Triple test not wanted
204105	Downs screen blood test abnormal
204106	Birth details
204107	Baby premature 36-38 weeks
204108	Baby premature 39 weeks
204109	Baby premature 36 weeks
204110	Baby BW = 3% - 9% (2500-2849g)
204111	Birth HC = 75th-89th centile
204112	Apgar at 1 minute NOS
204113	Apgar at 10 minutes = 8
204114	Mother < 20 years old
204115	H.V.: mother not managing well
204116	Labour details
204117	Normal labour
204234	Preg. Termination counselling
204235	Fertility counselling
204242	Infant feeding advice
204243	Pregnancy alcohol advice
204244	Preg. Prescription exempt adv.
204946	Total abdominal hysterectomy NEC
204950	Hysterotomy and termination of pregnancy
204953	Termination of pregnancy NEC
204957	Introduction of abortifacient into uterine cavity
204989	Therapeutic fetoscopic operation NOS
204990	Foetoscopic examination foetus and sampling of foetal blood
204991	Therapeutic percutaneous operations on fetus
204992	Other operation on amniotic cavity NOS
204993	Removal of Shirodkar suture
204994	Other specified operation on gravid uterus

204995	Surgical induction of labour
204996	Hind water rupture of amniotic membrane
204997	Low forceps cephalic delivery
204998	Kielland forceps cephalic delivery with rotation
204999	Piper forceps delivery
205000	Episiotomy to facilitate delivery
205001	Induction and delivery operations NOS
205002	Normal delivery of placenta
205003	Other operation on delivered uterus NOS
205004	Other specified immediate repair of obstetric laceration
205005	Other obstetric operations NOS
205093	Open instillation sclerosing substance to peritoneal cavity
205674	Referral to antenatal clinic
205717	Full post-natal examination
205718	HSA1-therap. Abort. Green form
205775	Lss 24 wk inv risk inj phys/men hlth ext child preg wom fmly
207529	Fallopian tube pregnancy
207530	Other ectopic pregnancy
207531	Mesenteric pregnancy
207532	Spontaneous abortion unspecified
207533	Complete spontaneous abortion + other specified complication
207534	Complete spontaneous abortion + no mention of complication
207535	Inevitable miscarriage unspecified
207536	Unspecified inevitable miscarriage with unspec complication
207537	Inevitable miscarriage incomp
207538	Termination of pregnancy
207539	Unspecified legal abortion + delayed/excessive haemorrhage
207540	Unspecified legal abortion with no mention of complication
207541	Surgical abortion - incomplete
207542	Complete legal abortion + damage to pelvic organs or tissues
207543	Complete legal abortion NOS
207544	Unspecified illegal abortion with shock
207545	Incomplete illegal abortion with metabolic disorder
207546	Unspecified abortion with other specified complication
207547	Unspecified abortion complete
207548	Endometritis following abortive pregnancy
207549	Septicaemia NOS following abortive pregnancy
207550	Bowel damage following abortive pregnancy
207551	Cervix damage following abortive pregnancy
207552	Periurethral tissue damage following abortive pregnancy
207553	Renal tubular necrosis following abortive pregnancy
207554	Uraemia following abortive pregnancy
207555	Shock following abortive pregnancy
207556	Readmission for retained produc of concept, illegal abortion
207557	Failed medical abortion complic by genital tract/pelvic infn
207558	Failed medical abortion comp by delayed/excessive haem'ge
207559	Threatened abortion - delivered
207560	Other haemorrhage in early pregnancy - delivered
207561	Placenta praevia with haemorrhage unspecified
207562	Ablatio placentae
207563	Antepartum haemorrhage with coagulation defect NOS
207564	Antepartum haemorrhage with uterine leiomyoma NOS
207565	Renal hypertension in pregnancy/childbirth/puerp unspecified
207566	Other pre-exist hypertension in preg/childb/puerp-not deliv
207567	Gestational hypertension
207568	Mild or unspecified pre-eclampsia - not delivered
207569	Eclampsia in labour
207570	Eclampsia NOS
207571	Pre-eclampsia or eclampsia with pre-existing hypertension
207572	Pre-eclampsia or eclampsia with hypertension + p/n comp
207573	Unspecified hypertension in preg/childb/puerp unspecified
207574	Hyperemesis gravidarum with metabolic disturbance unsp
207575	Other pregnancy vomiting - not delivered
207576	Other pregnancy vomiting NOS
207577	Other threatened labour - not delivered
207578	Premature delivery
207579	Other pregnancy complication NEC
207580	Papyraceous fetus - delivered
207581	Unspecified renal disease in pregnancy unspecified
207582	Peripheral neuritis in pregnancy - not delivered
207583	Asymptomatic bacteriuria in pregnancy unspecified
207584	Infections of the genital tract in pregnancy
207585	Glycosuria during pregnancy - delivered
207586	Maternal syphilis in puerperium - baby delivered
207587	Maternal syphilis during pregnancy - baby not yet delivered
207588	Maternal gonorrhoea during pregnancy/childbirth/puerperium
207589	Infections of bladder in pregnancy
207590	Other mat.infective/parasitic dis in pregnancy - delivered
207591	Mat infect/parasitic dis NOS in puerperium - baby delivered
207592	Diabetes mellitus during pregnancy - baby delivered

207593 Diabetes mellitus in puerperium - baby delivered
207594 Gestational diabetes mellitus
207595 Postpartum thyroiditis
207596 Congenital heart disease in pregnancy
207597 Congenital cardiovasc dis in puerp - baby delivered
207598 Other cardiovascular diseases in pregnancy/childbirth/puerp
207599 Heart disease during pregnancy
207600 Other cardiovascular dis in pregnancy - baby not delivered
207601 Other cardiovascular disease in pregnancy/childb/puerp NOS
207602 Abnormal glucose tolerance test in pregnancy/childb/puerp
207603 Dis of the digestive sys comp preg childbirth and puerp
207604 Dis of the skin and subcut tis comp preg childbrth puerp
207605 Medical condition NOS in puerperium - baby delivered
207606 Twin pregnancy unspecified
207607 Triplet pregnancy unspecified
207608 Multiple delivery, all spontaneous
207609 Unstable lie NOS
207610 Breech presentation unspecified
207611 Oblique lie - delivered
207612 Brow presentation with antenatal problem
207613 Multiple pregnancy with malpresentation - delivered
207614 Compound presentation
207615 Fetal malposition and malpresentation NOS
207616 Disproportion - major pelvic abnormality unspecified
207617 Outlet pelvic contraction NOS
207618 Other disproportion NOS
207619 Bicornuate uterus affecting obstetric care
207620 Uterine operation scar in pregnancy/childb/puerp + a/n prob
207621 Other uterine/pelvic floor abnormality - baby delivered
207622 Rectocele - delivered with postpartum complication
207623 Rectocele complicating postpartum care - baby delivered prev
207624 Cervical incompetence unspecified
207625 Other cervical abnormality affecting obstetric care
207626 Polyp of cervix complicating a/n care- baby not delivered
207627 Stenosis of vagina complicating a/n care- baby not delivered
207628 Stenosis of vagina complicating p/n care - baby deliv prev
207629 Vulval abnormality in pregnancy/childbirth/puerperium NOS
207630 Persistent hymen in pregnancy/childbirth/puerperium NOS
207631 Rigid perineum in pregnancy/childbirth/puerperium NOS
207632 Pelvic soft tissue abnormality in preg/childb/puerp unspec
207633 Known or suspected fetal abnormality
207634 Fetus with central nervous system malformation - delivered
207635 Suspect fetal damage from maternal toxoplasmosis
207636 Fetus with radiation damage
207637 Fetus with radiation damage NOS
207638 Fetus with other damage NEC
207639 Other fetal and placental problems
207640 Fetal acidosis
207641 Fetal tachycardia
207642 Fetal distress with antenatal problem
207643 Maternal care for reduced fetal heart rate during pregnancy
207644 Small-for-dates with antenatal problem
207645 Small-for-dates NOS
207646 Suspected macroscopic fetus
207647 Feto-placental problems NOS, unspecified
207648 Polyhydramnios and hydramnios
207649 Hydramnios
207650 Polyhydramnios unspecified
207651 Polyhydramnios NOS
207652 Oligohydramnios
207653 Oligohydramnios unspecified
207654 Premature rupture of membranes with antenatal problem
207655 Prolonged spontaneous or unspecified rupture of membranes
207656 Chorioamnionitis
207657 Amniotic fluid leaking
207658 Other problem of amniotic cavity and membranes NOS
207659 Unspecified maternal pyrexia during labour NOS
207660 Elderly primigravida - delivered
207661 Other problems affecting labour unspecified
207662 Abnormal findings on antenatal screening of mother
207663 Abnormal cytological finding on antenatal screen of mother
207664 Abnormal radiological finding on antenatal screen of mother
207665 Obstructed labour due abnormality of maternal pelv organs
207666 Shoulder dystocia NOS
207667 Locked twins
207668 Other failed forceps, unspecified
207669 Other failed forceps - delivered
207670 Obstructed labour NOS with antenatal problem
207671 Abnormality of forces of labour NOS - delivered
207672 Abnormality of forces of labour NOS with antenatal problem
207673 Prolonged first stage unspecified

207674 Prolonged second stage - delivered
207675 Prolapse of cord - delivered
207676 Prolapse of cord NOS
207677 Cord tight round neck with antenatal problem
207678 Cord tight round neck NOS
207679 Cord tangled or knotted with compression
207680 Knot in cord
207681 Other cord entanglement
207682 Short cord with antenatal problem
207683 Vasa praevia - delivered
207684 Umbilical cord complications NOS - delivered
207685 First degree perineal tear during delivery with p/n problem
207686 Labial tear during delivery
207687 First degree perineal tear during delivery NOS
207688 Second degree perineal tear during delivery NOS
207689 Fourth degree perineal tear during delivery with p/n problem
207690 Vulval and perineal haematoma during delivery NOS
207691 Ruptured uterus before labour
207692 Rupture of uterus before labour - delivered
207693 Rupture of uterus during/after labour - deliv with p/n prob
207694 Rupture of uterus during/after labour with postnatal problem
207695 Rupture of uterus during and after labour NOS
207696 Inversion of uterus - obstetric
207697 Obstetric high vaginal laceration with postnatal problem
207698 Obstetric pelvic haematoma unspecified
207699 Other obstetric trauma with postnatal problem
207700 Other obstetric trauma NOS
207701 Obstetric trauma NOS - delivered
207702 Postpartum haemorrhage (PPH)
207703 Bleeding postpartum
207704 Postpartum coagulation defects NOS
207705 Mendelson's syndrome
207706 Obstetric anaesthesia with cardiac comp with postnatal prob
207707 Spinal/epidural anesth-induced headache dur labour/delivery
207708 Other complications of obstetric anaesthesia -del + p/n prob
207709 Obstetric anaesthetic complications NOS
207710 Obstetric anaesthetic complications NOS - deliv + p/n prob
207711 Obstetric shock unspecified
207712 Other complications of labour and delivery unspecified
207713 Complications of labour and delivery NOS
207714 Puerperal septicaemia
207715 Varicose veins of legs in pregnancy
207716 VV's of perineum/vulva in pregnancy/puerperium + a/n comp
207717 Superficial thrombophlebitis in pregnancy and the puerperium
207718 DVT - deep venous thrombosis, antenatal
207719 Haemorrhoids in pregnancy and puerperium with p/n comp
207720 Cerebral venous thrombosis in the puerperium
207721 Puerperal pyrexia of unknown origin with p/n complication
207722 Obstetric pulmonary embolus
207723 Obstetric air pulm embolism - delivered + p/n complication
207724 Obstetric pulmonary embolism NOS, unspecified
207725 Obstetric perineal wound disruption
207726 Other complication of obstetric surgical wound NOS
207727 Other complications of the puerperium with p/n complication
207728 Complications of the puerperium NOS with postnatal comp
207729 Complications of the puerperium NOS
207730 Obstetric nipple infection - delivered
207731 Obstetric nipple infection with antenatal complication
207732 Obstetric nipple infection with postnatal complication
207733 Obstetric breast abscess
207734 Obstetric breast abscess unspecified
207735 Obstetric breast abscess with antenatal complication
207736 Obstetric nonpurulent mastitis - delivered
207737 Obstetric nonpurulent mastitis NOS
207738 Retracted nipple in pregnancy/puerperium/lactation - deliv
207739 Breast engorgement in pregnancy, the puerperium or lactation
207740 Breast engorgement in pregnancy/puerp/lact - del + p/n comp
207741 Other breast disorder in pregnancy/puerperium/lactation
207742 Failure of lactation - delivered with postnatal complication
207743 Other disorders of lactation
207744 Other disorder of lactation unspecified
207745 Maternal care for poor fetal growth
207746 [X]Additional preg,cldbirth+puerperium diseas clssfctn terms
207747 [X]Other specified abnormal products of conception
207748 [X]Maternal care for other malpresentation of fetus
207749 [X]Obstructed labour due/other malposition+malpresentation
207750 [X]Obstructd labour due to oth maternal pelvic abnormalities
207751 [X]Complication of anaesthesia during labour and deliv unsp
207752 [X]Other single spontaneous delivery
207753 [X]Other obstetric embolism

207754	[X]Infection of caesarian section wound following delivery
207755	[X]Oth infctns wth predomin sexual mode/transmissn complicat
207756	[X]Other viral diseases complicating preg,cldbirth+puerperum
208411	Fetal and neonatal conditions
208412	Fetus/neonate affected by maternal problem unrelated to preg
208413	Fetus or neonate affected by maternal hypertensive disease
208414	Fetus/neonate affected-plac./breast transfer anticoagulant
208415	Fetus/neonate affected by placental damage-amniocentesis
208416	Fetus/neonate affected by feto-maternal transplacental trans
208417	Fetus or neonate affected by knot in cord
208418	Fetus or neonate affected by short cord
208419	Fetus/neonate affected malpos/malpres/disprop - lab/deliv OS
208420	Fetus/neonate affected by malposition/disproportion NOS
208421	Fetus/neonate affected by maternal anaesthetic/analgesia NOS
208422	Fetus or neonate affected by hypertonic labour
208423	Fetus/neonate affected by uterine inertia in labour/delivery
208424	Fetus or neonate affected by instrumental delivery
208425	Fet newborn affect nox influenc transmit placent breast milk
208426	Fetus/newborn affected maternal use of antihypertensive drug
208427	Fetal malnutrition, no mention light or small for gest age
208428	Extreme immaturity
208429	Disorders relating to long gestation and high birthweight
208430	Intracerebral haemorrhage in fetus or newborn
208431	Scalp injuries due to birth trauma
208432	Caput succedaneum due to birth trauma
208433	Other specified scalp injury due to birth trauma
208434	Fracture of radius or ulna due to birth trauma
208435	Spine fracture due to birth trauma
208436	Erb-Duchenne paralysis
208437	Subcutaneous fat necrosis due to birth injury
208438	Birth injury NOS
208439	Other and unspecified perinatal atelectasis
208440	Perinatal chronic respiratory disease NOS
208441	Perinatal apnoeic spells NOS
208442	Umbilical sepsis NOS
208443	Ophthalmia neonatorum - staphylococcal
208444	Neonatal candidiasis of perineum
208445	Neonatal candidiasis of lung
208446	Intra-amniotic fetal infection, unspecified
208447	Sepsis of newborn due to Escherichia coli
208448	Congenital viral disease, unspecified
208449	Fetal and neonatal haemorrhage
208450	Fetal blood loss from cut co-twin's cord
208451	Fetal placental blood loss
208452	Fetal blood loss from vasa praevia
208453	Perinatal gastrointestinal haemorrhage NOS
208454	Perinatal cutaneous ecchymoses
208455	Haemorrhage of fetus and newborn NOS
208456	Haemolytic disease due to rhesus isoimmunisation
208457	Rhesus isoimmunisation of the newborn
208458	Hydrops fetalis due to other+unspcfd haemolytic disease
208459	Breast feeding inhibitors causing neonatal jaundice
208460	Inspissated bile syndrome
208461	Newborn physiological jaundice NOS
208462	Other newborn transient coagulation defect
208463	Transient neonatal neutropenia
208464	Feeding problems in newborn
208465	Slow feeding in newborn
208466	Vomiting in newborn
208467	Bottle feeding problem in the newborn
208468	Grey syndrome of newborn
208469	Neonatal cerebral leukomalacia
208470	Other specified perinatal conditions
208471	Stillbirth NEC
208472	Other specified perinatal conditions
208473	[X]Fetus and newborn affected by other maternal conditions
208474	[X]Haemorrhagic+haematolog disorders of fetus and newborn
208475	[X]Other fetal blood loss
208476	[X]Trans disorder carbohydrate metab of fet and newborn unsp
208477	Perinatal conditions NOS
209589	Accident due to abandonment of newborn
210188	[V]Other normal pregnancy supervision
210189	[V]Pregnancy with history of infertility
210202	[V]Twin, born in hospital, mate stillborn
210284	[V]Pregnancy not (yet) confirmed
210352	Ventouse extraction delivery (baby)
210353	Repair uterus obstetric
210421	Version external
210444	Placental function test abnormal
210514	Pregnancy test done
210605	Pregnancy high risk
210713	Newborn infant examination- normal

210745	Prenatal care normal pregnancy
210747	Examination well baby normal
210748	Well baby/child care
210965	Cannabis ingestion in pregnancy
211355	Pregnancy bicornate uterus
211356	Pyelitis pregnancy
211357	Pregnancy nephritis
211359	Induced abortion legal
211361	Inevitable abortion
211362	Incomplete abortion
211363	Placenta praevia delivered
211364	Disproportion cephalopelvic
211365	Delivery crossbirth (mother)
211366	Malpresentation at delivery face
211367	Uterus atony
211368	Delivery bicornate uterus
211369	Laceration perineal at delivery slight
211371	Delivery sudden death (mother)
211373	Postabortion bleeding
211613	Twin conjoined
211615	Paralysis brachial plexus due birth inju
211616	Asphyxia antenatal
211621	Neonatal convulsion
211709	Disabled since birth
212193	Midwife attends 17 - 20 days post discharge
212194	Midwife attends 25 - 28 days post discharge
212269	Due to deliver - EDC
212275	H/O: abortion NOS
212276	H/O: delivery no details
212282	H/O: prolonged labour
212351	Delusions
212398	O/E - accessory resp.m's.used
212739	Serum pregnancy test equivocal
213053	U-S scan - obstetric, diagn.
213054	Antenatal ultrasound confirms intra-uterine pregnancy
213085	Pregnant, IUD failure
213093	Patient currently pregnant
213094	Unplanned pregnancy
213095	A/N care: uncertain dates
213096	A/N care: primip. < 17 years
213097	A/N - shared care
213098	Home delivery booked
213099	Deliv.booking - length of stay
213100	Feeding intention - bottle
213101	A/N amniocentesis wanted
213102	A/N amnio. For ? Neural tube
213103	A/N U/S scan not wanted
213104	A/N U/S scan abnormal
213105	Rh screen - 2nd preg. Sample
213106	Rh - 6/12 after anti-D sample
213107	A/N Rh antibody screen NOS
213108	Alpha-feto protein blood test
213109	AFP test - antenatal
213110	AFP blood test NOS
213111	Rubella screen offered
213112	Rubella screen NOS
213113	Antenatal sickle cell screen
213114	A/N sickle cell screen NOS
213115	A/N 20 week examination
213116	A/N 28 week examination
213117	A/N 39 week examination
213118	A/N 40 week examination
213119	P/N care refused
213120	P/N - seventh day visit
213121	Postnatal exam. - maternal
213122	Maternal P/N exam. Done
213123	Triple test offered
213124	Double test not offered
213125	Length of labour
213126	1 male + 1 female baby
213127	2 male + 1 female babies
213128	Premature baby
213129	Baby extremely prem.28-32 week
213130	Birthweight of baby
213131	Baby BW = 10 - 24% (2850-3149g)
213132	Baby BW = 90 - 96% (4050-4399g)
213133	Baby BW = 1.5-2.0kg
213134	Baby BW = above 2.5kg
213135	Birth HC = > 97th centile
213136	Birth length
213137	Birth length=50th-74th centile
213138	Birth length=75th-89th centile
213139	Apgar at 1 minute = 3
213140	Apgar at 1 minute = 7
213141	Apgar at 1 minute = 10
213142	Heterozygous twin
213143	Placental details
213144	Placenta diameter
213145	Birth details not known
213162	Baby normal at birth
213184	Child 8 week exam. Normal
213258	Pregnancy advice NOS
213942	Introduction of gamete into uterine cavity
213943	Implantation of fertilised egg into uterus
213966	Diagnostic endoscopic examination fetus using fetoscope NOS
213967	Selective destruction of fetus NOS
213968	Percutaneous sampling of foetal blood

213969 Lower uterine segment caesarean section (LSCS) NEC
213970 Extraperitoneal caesarean section
213971 Other specified other breech delivery
213972 Normal delivery
213973 Other method of delivery NOS
213974 Other obstetric operations
213975 Instrumental removal products of concep delivered uterus NOS
213976 Crede placental expression
213977 Pack to control postnatal haemorrhage
213978 Repair of ruptured uterus
213979 Fetal heart monitoring in labour
214389 Gas and air analgesia in labour
214625 Post-natal exercises
214674 Refuse procedure-after thought
214712 Maternity services admin.
214715 Part post-natal care-2 visits
214774 Unborn child at risk physi/ment abnormal serious handicap
214994 Neonatal gonococcal conjunctivits
215630 Neurotic depression reactive type
216494 Habitual aborter-not pregnant
216507 Abdominal pregnancy
216508 Unspecified spontaneous abortion with shock
216509 Unspecified spontaneous abortion with embolism
216510 Incomp spontaneous abortion + genital tract/pelvic infection
216511 Unspec inev abor comp by genital tract and pelvic infect
216512 Unspecified inevitable abortion with OS complication
216513 Incomp inev abor comp by genital tract and pelvic infection
216514 Incomplete inevitable abortion complicated by embolism
216515 Incomplete inevitable abortion with OS complication
216516 Inevitable abortion complete
216517 Elective abortion
216518 Unspecified legal abortion with metabolic disorder
216519 Incomplete legal abortion with shock
216520 Incomplete legal abortion with embolism
216521 Complete legal abortion with other specified complication
216522 Incomplete illegal abortion with complication NOS
216523 Complete illegal abortion NOS
216524 Unspecified abortion with genital tract or pelvic infection
216525 Unspecified abortion with no mention of complication
216526 Unspecified complete abortion + pelvic organ/tissue damage
216527 Unspecified complete abortion + no mention of complication
216528 Delayed/excess haemorrhage NOS following abortive pregnancy
216529 Pelvic organ or tissue damage following abortive pregnancy
216530 Embolism following abortive pregnancy
216531 Fat embolism following abortive pregnancy
216532 Other haemorrhage in early pregnancy - not delivered
216533 Early pregnancy haemorrhage NOS
216534 Antepartum bleeding
216535 Placenta praevia without haemorrhage - delivered
216536 Placenta praevia with haemorrhage - delivered
216537 Placenta praevia with haemorrhage NOS
216538 Placental abruption unspecified
216539 Antepartum haemorrhage with uterine fibroid
216540 Benign essential hypertension in preg/childb/puerp unspec
216541 Renal hypertension in pregnancy/childbirth/puerp - delivered
216542 Renal hypertension in preg/childb/puerp + p/n complication
216543 Other pre-existing hypertension in preg/childbirth/puerp
216544 Other pre-existing hypertension in preg/childb/puerp unspec
216545 Severe pre-eclampsia - delivered with postnatal complication
216546 Unspecified hypertension in preg/childb/puerp - delivered
216547 Unspecified hypertension in preg/childb/puerp with p/n comp
216548 Mild hyperemesis gravidarum
216549 Late pregnancy vomiting unspecified
216550 Late pregnancy vomiting - delivered
216551 Other pregnancy vomiting
216552 Threatened premature labour
216553 Threatened premature labour NOS
216554 Early onset of delivery unspecified
216555 Post-term pregnancy
216556 Oedema or excessive weight gain in pregnancy, delivered
216557 Oedema/excess weight gain preg - delivered + postnatal compl
216558 Albuminuria in pregnancy without hypertension
216559 Nephropathy NOS in pregnancy without hypertension
216560 Unspecified renal disease in pregnancy with p/n complication
216561 Peripheral neuritis in pregnancy
216562 Peripheral neuritis in pregnancy unspecified
216563 Genitourinary tract infection in pregnancy NOS
216564 Liver disorder in pregnancy unspecified
216565 Herpes gestationis unspecified
216566 Glycosuria during pregnancy unspecified

216567	Gestational oedema with proteinuria
216568	Excessive weight gain in pregnancy
216569	Pregnancy complication NOS
216570	Infective/parasitic disease in preg/childbirth/puerperium
216571	Maternal syphilis in pregnancy/childbirth/puerperium NOS
216572	Maternal tuberculosis in pregnancy/childbirth/puerperium
216573	Maternal tuberculosis in pregnancy - baby not yet delivered
216574	Maternal malaria during pregnancy - baby not yet delivered
216575	Viral hepatitis comp pregnancy, childbirth & the puerperium
216576	Other maternal viral dis. In pregnancy/childbirth/puerp. NOS
216577	Mat infect/parasitic dis NOS in puerp-baby previously deliv
216578	Diabetes mellitus - unspec whether in pregnancy/puerperium
216579	Anaemia in the puerperium - baby previously delivered
216580	Drug dependence during pregnancy - baby delivered
216581	Drug dependence in puerperium - baby previously delivered
216582	Mental disorder - unspec whether in pregnancy/puerperium
216583	Cardiomyopathy in the puerperium
216584	Dis nervous syst complic pregnancy,childbirth and puerperium
216585	Medical condition NOS in pregnancy - baby not yet delivered
216586	Twin pregnancy NOS
216587	Triplet pregnancy
216588	Cephalic version NOS - delivered
216589	High head at term with antenatal problem
216590	Other fetal malposition and malpresentation unspecified
216591	Fetal malposition and malpresentation NOS with a/n problem
216592	Disproportion - major pelvic abnormality
216593	Disproportion - major pelvic abnormality with antenatal prob
216594	Conjoined twins causing disproportion
216595	Other disproportion with antenatal problem
216596	Disproportion NOS, unspecified
216597	Uterine fibroids in pregnancy, childbirth and the puerperium
216598	Cystocele affecting obstetric care
216599	Cystocele complicating antenatal care - baby not delivered
216600	Other uterine/pelvic floor abn in preg/childb/puerp NOS
216601	Polyp of cervix - baby delivered+postpartum complication
216602	Stenosis of cervix - baby delivered+postpartum complication
216603	Other cervical abn complicating a/n care- baby not delivered
216604	Other cervical abn complicating p/n care - baby deliv prev
216605	Stenosis of cervix in pregnancy/childbirth/puerperium NOS
216606	Septate vagina complicating p/n care - baby delivered prev
216607	Pelvic soft tissue abnormality in pregnancy/childbirth/puerp
216608	Pelvic soft tissue abnorm in preg/childb/puerp with a/n prob
216609	Pelvic soft tissue abnorm in preg/childb/puerp with p/n comp
216610	Suspect fetal anencephaly
216611	Suspect cystic fibrosis fetus
216612	Fetus with hereditary disease with antenatal problem
216613	Fetus with suspected rubella damage via mother
216614	Fetus with viral damage via mother NOS
216615	Fetus with damage due to IUCD - delivered
216616	Rhesus isoimmunisation
216617	Rhesus isoimmunisation with antenatal problem
216618	Rhesus isoimmunisation NOS
216619	Fetal bradycardia
216620	Labour+delivery complicatd by biochem evidence/fetal stress
216621	Maternal care for fetal acidosis during pregnancy
216622	Small-for-dates - delivered
216623	Large-for-dates - delivered
216624	Other placental conditions unspecified
216625	Placental infarction
216626	Ragged placenta
216627	Reduced fetal movements
216628	Lithopaedian
216629	Other feto-placental problems - delivered
216630	Polyhydramnios
216631	Polyhydramnios with antenatal problem
216632	Premature rupture of membranes unspecified
216633	Prolonged spontaneous/unspecified rupture of membranes NOS
216634	Placentitis
216635	Amniotic cavity infection - delivered
216636	Other amniotic/membrane problem with antenatal problem
216637	Failed mechanical induction unspecified
216638	Failed mechanical induction - delivered
216639	Septicaemia during labour unspecified
216640	Grand multiparity unspecified
216641	Elderly primigravida with antenatal problem
216642	Vaginal delivery following previous caesarean section
216643	Other problems affecting labour
216644	Problems affecting labour NOS unspecified
216645	Other specified risk factors in pregnancy

216646 Obstructed labour caused by bony pelvis unspecified
216647 Obstructed labour due to pelvic inlet contraction
216648 Deep transverse arrest (DTA)
216649 Persistent occipitopost/occipitoant position + a/n problem
216650 Impacted shoulders
216651 Obstructed labour NOS - delivered
216652 Other uterine inertia - delivered
216653 Precipitate labour unspecified
216654 Hypertonic uterine inertia
216655 Contraction ring (dystocia)
216656 Uterine or cervical spasm
216657 Abnormality of forces of labour NOS unspecified
216658 Other cord entanglement NOS
216659 Short cord NOS
216660 Vasa praevia NOS
216661 Vascular lesions of cord unspecified
216662 Other umbilical cord complications unspecified
216663 Other umbilical cord complications - delivered
216664 Umbilical cord complications NOS with antenatal problem
216665 Vaginal tear
216666 First degree perineal tear during delivery - delivered
216667 Vulval/perineal trauma during delivery NOS with p/n problem
216668 Rupture of uterus before labour NOS
216669 Obstetric inversion of uterus unspecified
216670 Obstetric high vaginal laceration unspecified
216671 Obstetric trauma damaging pelvic joints and ligaments
216672 Obstetric damage to pelvic joints and ligaments + p/n prob
216673 Obstetric damage to pelvic joints and ligaments NOS
216674 Obstetric pelvic haematoma - delivered with p/n problem
216675 Other obstetric trauma - delivered
216676 Obstetric trauma NOS with postnatal problem
216677 Third-stage postpartum haemorrhage unspecified
216678 Third-stage postpartum haemorrhage - deliv with p/n problem
216679 Postpartum coagulation defects
216680 Retained portion of placenta or membranes - no haemorrhage
216681 Complications of anaesthesia during labour and delivery
216682 Obstetric anaesthesia with pulmonary complications unsp
216683 Obstetric anaesthesia with cardiac complications
216684 Obstetric anaesthesia with cardiac comp with antenatal prob
216685 Complication of anaesthesia during labour and deliv unsp
216686 Obstetric anaesthetic complications NOS - delivered
216687 Obstetric anaesthetic complications NOS
216688 Maternal distress with postnatal problem
216689 Obstetric shock with postnatal problem
216690 Maternal hypotension syndrome unspecified
216691 Other complications of obstetric procedures unspecified
216692 Other complications of obstetric procedures with p/n problem
216693 Ventouse delivery
216694 Breech extraction
216695 Other complications of labour and delivery - delivered
216696 Other complications of labour and delivery with a/n problem
216697 Other complications of labour and delivery with p/n problem
216698 Vaginal discomfort postnatal
216699 Intrapartum haemorrhage, unspecified
216700 Complications of labour and delivery NOS
216701 Major puerperal infection
216702 Major puerperal infection NOS, unspecified
216703 Perineal varices in pregnancy
216704 Thombophlebitis of legs in the puerperium
216705 Postnatal deep vein thrombosis NOS
216706 Piles - obstetric
216707 Haemorrhoids in pregnancy and puerperium - deliv + p/n comp
216708 Haemorrhoids in the puerperium
216709 Obstetric cerebral venous thrombosis
216710 Venous complication pregnancy/puerperium NOS - del +p/n comp
216711 Venous complication of pregnancy and puerperium NOS
216712 Amniotic fluid pulmonary embolism NOS
216713 Obstetric blood-clot pulmonary embolism
216714 Obstetric pyaemic and septic pulm embolism - deliv +p/n comp
216715 Other obstetric pulmonary embolism NOS
216716 Cerebrovascular disorders in the puerperium
216717 Puerperal cerebrovascular disorder - delivered with p/n comp
216718 Puerperal cerebrovascular disorder with antenatal comp
216719 Caesarean wound disruption unspecified
216720 Obstetric perineal wound disruption unspecified
216721 Other complication obstetric surg wound -delivered +p/n comp
216722 Other complications of the puerperium NOS

216723	Obstetric nipple infection
216724	Other obstetric breast infection NOS
216725	Retracted nipple in pregnancy/puerperium/lactation unspec
216726	Failure of lactation - delivered
216727	Galactorrhoea in pregnancy and the puerperium NOS
216728	Hypogalactia
216729	Galactocele - obstetric
216730	Other disorder of lactation with antenatal complication
216731	Other disorder of lactation with postnatal complication
216732	Maternal care for compound presentation
216733	[X]Failed medical abortion,wth other+unspcfied complications
216734	[X]Abnormal finding on antenatal screening of mother
216735	[X]Maternal care for other isoimmunization
216736	[X]Labour+delivery complicated by other cord complications
216737	[X]Other genitourinary tract infections following delivery
216738	[X]Other obstetric conditions, not elsewhere classified
216739	[X]Oth d/bld+bld-form org+c d inv im mch cm preg,cldbir+puer
216740	[X]Oth spcf dis+conditns complicat preg,childbirth+puerperum
217378	Fetus/neonate affected by other chronic mat CVS/RS dis NOS
217379	Fetus/neonate affected-placental/breast transfer unsp poison
217380	Fetus/neonate affected by placental/breast transfer narcotic
217381	Fetus/neonate affected - poison transfer placenta/breast NOS
217382	Fetus or neonate affected by maternal polyhydramnios
217383	Fetus affected by maternal death
217384	Fetus or neonate affected by abruptio placentae
217385	Fetus or neonate affected by torsion of cord
217386	Fetus or neonate affected by varices of cord
217387	Fetus or neonate affected by vasa praevia of cord
217388	Fetus or neonate affected by cord problems NOS
217389	Fetus and newborn afect by mat use of nutritional chem subs
217390	Fetal malnutrition
217391	Other "large-for-dates" infant
217392	Birth trauma
217393	Tentorial tear due to birth trauma
217394	Massive epicranial subaponeurotic haemorrhage-birth trauma
217395	Fracture of clavicle due to birth trauma
217396	Other skeleton injury due to birth trauma
217397	Other fractures due to birth trauma
217398	Other birth fracture
217399	Birth fracture of radius
217400	Fracture due to birth trauma NEC
217401	Fracture of nose due to birth trauma
217402	Spine dislocation due to birth trauma
217403	Spinal cord laceration due to birth trauma
217404	Other cranial or peripheral nerve palsy due to birth trauma
217405	Laryngeal injury due to birth trauma
217406	Liveborn with prelabour fetal distress
217407	Liveborn with prelabour abnormal heart beat
217408	Liveborn with labour fetal distress
217409	Liveborn with labour abnormal heart beat
217410	Liveborn with labour hypoxia
217411	Liveborn with labour fetal distress NOS
217412	Hyaline membrane disease
217413	Congenital pneumonia due to group B haemolytic streptococcus
217414	Congenital pneumonia due to pseudomonas
217415	Congenital pneumonia NOS
217416	Perinatal interstitial emphysema and related conditions
217417	Perinatal pulmonary haemorrhage NOS
217418	Perinatal pulmonary collapse NOS
217419	Wet lung syndrome in newborn
217420	Cyanotic attacks of the newborn
217421	Other perinatal respiratory problems NOS
217422	Grunting baby
217423	Tetanus neonatorum
217424	Tetanus neonatorum, unspecified
217425	Neonatal dacryocystitis/conjunctivitis due to staphylococcus
217426	Ophthalmia neonatorum - viral
217427	Other specified neonatal dacryocystitis or conjunctivitis
217428	Congenital septicaemia
217429	Umbilical haemorrhage after birth NOS
217430	Intracerebral (nontraumatic) haemorrhage of fet and newborn
217431	Haemolytic disease due to ABO isoimmunisation
217432	ABO isoimmunisation of the newborn
217433	Neonatal jaundice - deficiency enzyme for bilirubin conjug.
217434	Perinatal jaundice due to other specified cause
217435	Perinatal jaundice NOS
217436	Neonatal hypocalcaemia
217437	Hypocalcaemic tetany in newborn
217438	Disturbances of sodium balance of newborn
217439	Perinatal endocrine or metabolic problem NOS
217440	Fetal and newborn blood disorders
217441	Trans neonatal thrombocyto due to

	idopath matern thrombocyto
217442	Anaemia of prematurity
217443	Neonatal isoimmune neutropenia
217444	Other perinatal digestive system disorder NOS
217445	Other newborn temperature regulation disorders
217446	Newborn environmental pyrexia
217447	Perinatal skin disorder NOS
217448	Umbilical polyp of newborn
217449	Jittery baby
217450	Megalencephaly
217451	[X]Fetus+newborn affected/oth maternal complicatns/pregnancy
217452	[X]Fetus+newbrn affect/oth spcf complication/labour+delivery
217453	[X]Birth trauma
217454	[X]Other specified brain damage due to birth injury
217455	[X]Congenital pneumonia due to other bacterial agents
217456	[X]Other umbilical haemorrhages of newborn
217457	[X]Neonatal jaundice from other specified causes
217458	[X]Other transient neonatal disorders of coagulation
217459	[X]Neonatal goitre, not elsewhere classified
217460	[X]Other specified intestinal obstruction of newborn
217461	[X]Other disorders of muscle tone of newborn
217462	[X]Other specified conditions originat in perinatal period
219233	[V]Personal history of perinatal problems
219251	[V]Pregnancy with history of abortion
219255	[V]Twins, both stillborn
219256	[V]Other multiple birth, all stillborn
219257	[V]Other specified outcome of delivery
219262	[V]Twin, not hospitalised, mate stillborn
219264	[V]Other multiple birth,born before hospital,mates stillborn
219265	[V]Other multiple birth, unspecified
219388	Delivery assisted breech
219389	Termination pregnancy caesarean section
219390	Caesarean sterilisation
219391	Repair obstetric laceration
219491	Az test positive
219551	Referred to antenatal clinic
219680	Rhesus anti-d given
219689	Child born
219701	Counselling abortion
219702	Requests abortion
219722	Labour induction nonsurgical
219746	Pregnancy unmarried
219747	Problem unmarried pregnancy
219750	Decided against termination pregnancy
219785	Screening baby abnormal
219786	Screening newborn examination abnormal
219798	Newborn clinic attendance
219833	Antenatal booking
219834	Foetal movements normal
219836	Postnatal examination minor problem
219837	Postnatal examination normal
219838	Well baby examination
220413	Pregnancy placenta praevia
220414	Pregnancy haemorrhage
220416	Possible labour
220417	Toxaemia pregnancy
220419	Abortion with sepsis
220420	Normal labour
220421	Delivery continuous monitoring
220422	Delivery epidural
220423	Placenta abruptio complicating delivery
220424	Postpartum haemorrhage immediate
220425	Disproportion at delivery
220426	Malpresentation at delivery brow
220427	Malpresentation at delivery face to pube
220428	Twins non identical delivered
220505	Rheumatoid arthritis juvenile
220506	Juvenile arthritis
220654	Asphyxia due mucus aspiration newborn
220656	Foetal movements not felt
220658	Dysmaturity newborn
220659	Domiciliary confinement (baby)
220662	Haemorrhagic disease newborn
220666	Low apgar rating
220668	Normal birth (baby)
220708	Jaundice fluctuating
221207	Labourer NOS
221259	Midwife attends 14 - 16 days post discharge
221281	Teenage pregnancy
221364	H/O: premature delivery
221369	H/O: ante-partum haemorrhage
221370	H/O: perinatal fetal loss
221558	O/E - breech presentation
222137	U-S scan -placental localisatn
222138	U-S scan - fetal abnormality
222139	U-S obstetric diagn. Scan NOS
222174	Pregnant - on abdom. Palpation
222175	Antenatal care: multip
222176	A/N care: precious pregnancy
222177	A/N care: social risk
222178	A/N care from consultant

222179 G.P. unit delivery booking
222180 Parent craft classes
222181 Parent craft class NOS
222182 A/N U/S scan for ? Abnormality
222183 Spontaneous membrane rupture
222184 Breast changed to bottle feed
222185 Infant weaned
222186 Postnatal care provider
222187 P/N - shared care
222188 P/N - tenth day visit
222189 P/N care <48hrs after birth
222190 Postnatal visit NOS
222191 Triple test wanted
222192 Triplet birth
222193 Outcome of delivery NOS
222194 Birth of child
222195 Male baby
222196 Postmature baby
222197 Baby maturity NOS
222198 Baby BW = 50 - 74% (3450-3749g)
222199 Baby BW = 75 - 89% (3750-4049g)
222200 Apgar at 1 minute = 9
222201 Apgar at 5 minutes
222202 Apgar at 5 minutes NOS
222203 Apgar at 10 minutes = 0
222204 Apgar at 10 minutes = 1
222205 Apgar at 10 minutes = 4
222206 Apgar at 10 minutes = 6
222207 Risk of non-accidental injury
222208 Difficult to establish feeding
222209 One of triplets
222216 Birth exam abn. - on treatment
222225 Child 8 week exam. Not offered
222288 Folic acid advice - pre-pregnancy
222291 Termination counselling
222293 Postnatal support group
222924 Hysterotomy & evacuation retained products conception NEC
222929 Dilation cervix uteri & curettage products conception uterus
222934 Other specified introduction of gamete into uterine cavity
222950 Excision of ectopic ovarian pregnancy
222953 Removal of ectopic pregnancy from fallopian tube
222969 Fetoscopic blood transfusion of fetus
222970 Fetoscopic examination of fetus and biopsy of fetus
222971 Diagnostic endoscopic examination fetus using fetoscope OS
222972 Selective destruction of fetus
222973 Percutaneous blood transfusion of fetus
222974 Diagnostic percutaneous examination of fetus
222975 Diagnostic percutaneous examination of fetus NOS
222976 Spontaneous breech delivery
222977 High forceps cephalic delivery with rotation
222978 Vacuum delivery
222979 Trial of vacuum delivery
222980 Other specified vacuum delivery
222981 Water birth delivery
222982 Instrument removal retained products conception deliv uterus
222983 Immediate repair of obstetric laceration NOS
223676 Discharged from hospital within 6 hours of delivery
223694 Private referral to obstetrician
223710 FP58 - newborn registration
223737 Part post-natal care-3 visits
223838 Normal delivery
225610 Tubal abortion
225611 Mural pregnancy
225612 Other ectopic pregnancy NOS
225613 Incomplete spontaneous abortion NOS
225614 Complete spontaneous abortion + pelvic organ/tissue damage
225615 Unspec inevit abortion comp by delayed or excessive haemorr
225616 Unspecified inevitable abortion with unspec complication
225617 Incomplete inevitable miscarriage without complication
225618 Complete inevitable miscarriage without complication
225619 Legal abortion unspecified
225620 Incomplete legal abortion + genital tract/pelvic infection
225621 Incomplete legal abortion with no mention of complication
225622 Complete legal abortion with delayed/excessive haemorrhage
225623 Illegal abortion unspecified
225624 Unspecified illegal abortion with embolism
225625 Incomplete illegal abortion + other specified complication
225626 Complete illegal abortion + genital tract/pelvic infection
225627 Complete illegal abortion with no mention of complication
225628 Unspecified abortion with renal failure
225629 Unspecified abortion with metabolic disorder
225630 Unspecified incomplete abortion +genital tract/pelvic infect
225631 Unspecified incomplete abortion + pelvic organ/tissue damage
225632 Unspecified complete abortion with embolism
225633 Parametritis following abortive pregnancy
225634 Defibrination syndrome following abortive pregnancy

225635 Cardiac arrest following abortive pregnancy
225636 Urinary tract infection following abortive pregnancy
225637 Placenta praevia without haemorrhage NOS
225638 Placental abruption - delivered
225639 Placental abruption NOS
225640 Antepartum haemorrhage with trauma NOS
225641 Antepartum haemorrhage with uterine leiomyoma
225642 Antepartum haemorrhage with fibroid
225643 Placenta praevia
225644 Antepartum haemorrhage NOS
225645 Benign essential hypertension in pregnancy/childbirth/puerp
225646 Benign essential hypertension in preg/childb/puerp NOS
225647 Other pre-exist hypertension in preg/childb/puerp + p/n comp
225648 Transient hypertension of pregnancy - not delivered
225649 Pre-eclampsia, unspecified
225650 Severe pre-eclampsia - delivered
225651 Pre-exist 2ndry hypertens comp preg childbth and puerperium
225652 Mild hyperemesis-not delivered
225653 Unspecified pregnancy vomiting
225654 Other threatened labour unspecified
225655 Post-term pregnancy - not delivered
225656 Papyraceous fetus NOS
225657 Oedema or excessive weight gain in pregnancy no hypertension
225658 Unspecified renal disease in pregnancy - delivered
225659 Habitual aborter NOS
225660 Peripheral neuritis in pregnancy with postnatal complication
225661 Liver disorder in pregnancy - delivered
225662 Gestational proteinuria
225663 Other pregnancy complications
225664 Other pregnancy complication unspecified
225665 Maternal gonorrhoea in puerperium - baby delivered
225666 Maternal rubella in pregnancy, childbirth and the puerperium
225667 Maternal rubella in pregnancy/childbirth/puerperium NOS
225668 Other mat.viral dis. In puerperium-baby previously delivered
225669 Other mat. Infective/parasitic disease in preg/puerp unspec
225670 Other medical condition in pregnancy/childbirth/puerperium
225671 Thyroid dysfunction in pregnancy/childbirth/puerperium NOS
225672 Mental disorder during pregnancy - baby not yet delivered
225673 Congenital cardiovasc dis - unsp whether in preg/puerperium
225674 Congenital cardiovasc dis in pregnancy - baby delivered
225675 Other cardiovasc dis in puerperium - baby delivered
225676 Orthopaedic disorder during pregnancy - baby delivered
225677 Abnormal GTT in pregnancy/childbirth/puerperium NOS
225678 Medical condition NOS in pregnancy/childbirth/puerperium
225679 Spontaneous vaginal delivery
225680 Twin pregnancy with antenatal problem
225681 Quadruplet pregnancy NOS
225682 Multiple pregnancy NOS
225683 Malpresentation of fetus
225684 Cephalic version NOS
225685 Breech presentation with antenatal problem
225686 Face presentation with antenatal problem
225687 Brow presentation - delivered
225688 Multiple pregnancy with malpresentation unspecified
225689 Other fetal malposition and malpresentation with a/n prob
225690 Cephalo-pelvic disproportion
225691 Generally contracted pelvis
225692 Mixed feto-pelvic disproportion - delivered
225693 Hydrocephalic disproportion
225694 Hydrocephalic disproportion unspecified
225695 Cong abnorm uterus complic p/n care - baby previously deliv
225696 Tumour of uterine body affecting obstetric care
225697 Uterine fibroid affecting obstetric care
225698 Retroverted incarcerated gravid uterus NOS
225699 Rectocele complicating antenatal care - baby not delivered
225700 Other uterine/pelvic floor abn - baby delivered previously
225701 Polyp of cervix in pregnancy, childbirth and the puerperium
225702 Other cervical abnormality - baby delivered+postpartum compl
225703 Stenosis of cervix complicating p/n care - baby deliv prev
225704 Septate vagina in pregnancy, childbirth and the puerperium
225705 Vaginal abnormality affecting obstetric care
225706 Stenosis of vagina - baby delivered
225707 Vaginal abnormality - baby delivered+postpartum complication
225708 Septate vagina in pregnancy/childbirth/puerperium NOS
225709 Rigid perineum complicating a/n care - baby not delivered
225710 Suspect fetal spina bifida
225711 Maternal care for CNS malformation in fetus
225712 Suspect mongol fetus
225713 Fetus with damage due to other

	maternal disease - delivered
225714	Fetus with damage due to other maternal disease + a/n prob
225715	Fetus with damage due to other maternal disease NOS
225716	Fetus with damage due to intra-uterine contraceptive device
225717	Fetus with damage due to IUCD unspecified
225718	Fetus with damage due to IUCD with antenatal problem
225719	Fetus with other damage NEC NOS
225720	Fetus with damage NOS, unspecified
225721	Other blood-group isoimmunisation with antenatal problem
225722	Meconium stained liquor
225723	Fetal distress unspecified
225724	Maternal care for fetal tachycardia during pregnancy
225725	Intrauterine death
225726	Intrauterine death unspecified
225727	Other fetal problems
225728	Other placental conditions NOS
225729	Other fetal problems
225730	Feto-placental problems NOS
225731	Amniotic cyst
225732	Ragged membranes
225733	Failed mechanical induction
225734	Failed medical induction of labour
225735	Elderly primigravida unspecified
225736	Obstructed labour due to breech presentation
225737	Obstructed labour due to deformed pelvis
225738	Obstructed labour due to generally contracted pelvis
225739	Obstructed labour caused by pelvic soft tissues NOS
225740	Deep transverse arrest NOS
225741	Persistent occipitoposterior/occipitoanterior position NOS
225742	Shoulder dystocia - delivered
225743	Locked twins with antenatal problem
225744	Locked twins NOS
225745	Other failed trial of labour with antenatal problem
225746	Failed forceps unspecified
225747	Other failed ventouse extraction with antenatal problem
225748	Failed ventouse extraction NOS
225749	Other causes of obstructed labour NOS
225750	Primary uterine inertia unspecified
225751	Secondary uterine inertia - delivered
225752	Hourglass uterine contraction
225753	Prolonged first stage - delivered
225754	Prolonged first stage with antenatal problem
225755	Unspecified prolonged labour with antenatal problem
225756	Prolonged labour NOS
225757	Cord tight round neck - delivered
225758	Other umbilical cord complications with antenatal problem
225759	Vulval tear during delivery
225760	Third degree perineal tear during delivery - delivered
225761	Fourth degree perineal tear during delivery, unspecified
225762	Unspecified perineal laceration during delivery
225763	Tear of cervix - obstetric
225764	Obstetric laceration of cervix NOS
225765	Other obstetric pelvic organ damage unspecified
225766	Pubic symphysis separation
225767	Symphysis pubis separation
225768	Obstetric damage to pelvic joints and ligaments - delivered
225769	Obstetric trauma causing pelvic haematoma NOS
225770	Third-stage postpartum haemorrhage with postnatal problem
225771	Retained placenta or membranes with no haemorrhage
225772	Placenta accreta without haemorrhage
225773	Retained products with no haemorrhage with postnatal problem
225774	Obstetric anaesthesia with pulmonary comp with a/n problem
225775	Obstetric anaesthesia with pulmonary comp with p/n problem
225776	Obstetric anaesthesia with CNS complications unspecified
225777	Obstetric anaesthesia with CNS complications - delivered
225778	Obstetric anaesthetic complications NOS with p/n problem
225779	Maternal hypotension syndrome with postnatal problem
225780	Caesarean delivery following previous Caesarean delivery
225781	Postnatal vaginal discomfort
225782	Puerperal endometritis - delivered with postnatal comp
225783	Puerperal peritonitis unspecified
225784	Puerperal septicaemia with postnatal complication
225785	Vulval obstetric varicose veins
225786	Perineal varices in the puerperium
225787	Superficial thrombophleb in preg/puerperium - del + p/n comp
225788	Postnatal deep vein thrombosis with postnatal complication
225789	Other phlebitis/thrombosis in preg/puerperium + a/n comp
225790	Other phlebitis in the puerperium
225791	Haemorrhoids in pregnancy
225792	Other venous complication of pregnancy/puerperium -delivered
225793	Venous complication in the puerperium, unspecified

225794 Puerperal pyrexia NOS
225795 Obstetric pulmonary embolism
225796 Amniotic fluid pulm embolism - delivered + p/n complication
225797 Other obstetric pulmonary embolism
225798 Fat embolism - obstetric
225799 Stroke in the puerperium
225800 Placental polyp with postnatal complication
225801 Obstetric breast abscess - deliv with postnatal complication
225802 Obstetric nonpurulent mastitis with antenatal complication
225803 Other obstetric breast infection - deliv with p/n comp
225804 Other obstetric breast infection with postnatal complication
225805 Obstetric breast infection NOS
225806 Obstetric breast infection NOS, unspecified
225807 Obstetric breast infection NOS - deliv with p/n complication
225808 Cracked nipple in pregnancy, the puerperium or lactation
225809 Breast engorgement in pregnancy/puerperium/lactation unspec
225810 Agalactia
225811 Galactorrhoea in pregnancy and the puerperium - delivered
225812 Disorders of lactation NOS
225813 [X]Maternal care/other(suspected)fetal abnormality+damage
225814 [X]Other disorders of amniotic fluid and membranes
225815 [X]Other intrapartum haemorrhage
225816 [X]Other and unspecified forceps delivery
225817 [X]Complications predominantly related to the puerperium
225818 [X]Other specified puerperal infection
225819 [X]Other+unspcf disorders/breast associated with childbirth
226474 Fetus and newborn affected by maternal use of alcohol
226506 Fetus/neonate affect-plac./breast transf hypoglycaemic agent
226507 Fetus/neonate affected - poison transfer placenta/breast OS
226508 Fetus or neonate affected by maternal medical problem NOS
226509 Fetus or neonate affected by multiple pregnancy
226510 Fetus or neonate affected by unspecified multiple pregnancy
226511 Fetus/neonate affected by malpresentation before labour OS
226512 Fetus/neonate affected by materno-fetal transplacental trans
226513 Fetus or neonate affected by vacuum extraction delivery
226514 Fetus or neonate affected by hypertonic labour
226515 Fetus/neonate affected by labour/delivery complication OS
226516 Fetus+newborn affected/other maternal noxious influences
226517 Maternal problems unrelated preg affecting fetus/neonate OS
226518 Short gestation and unspecified low birthweight problems
226519 Low birthweight
226520 Disorders slow fetal growth, low and high birthweight NOS
226521 Birth trauma, asphyxia and hypoxia
226522 Subdural or cerebral haemorrhage due to birth trauma NOS
226523 Scalp abrasions due to birth trauma
226524 Electrode injury to scalp during birth
226525 Fracture of humerus due to birth trauma
226526 Skeleton injury due to birth trauma NOS
226527 Birth injury to phrenic nerve
226528 Phrenic nerve palsy in newborn
226529 Cerebral oedema due to birth injury
226530 Fetal death due to prelabour anoxia
226531 White asphyxia
226532 Other specified birth trauma, asphyxia or hypoxia
226533 Fetus and newborn respiratory conditions
226534 Respiratory distress syndrome
226535 Aspiration of blood in newborn
226536 Perinatal pneumothorax
226537 Perinatal partial atelectasis
226538 Other specified perinatal chronic respiratory disease
226539 Other perinatal respiratory problems
226540 Perinatal respiratory distress NOS
226541 Congenital rubella
226542 Congenital falciparum malaria
226543 Neonatal dacryocystitis due to staphylococcus
226544 Neonatal conjunctivitis due to other bacteria
226545 Neonatal inclusion blenorrhoea
226546 Neonatal dacryocystitis or conjunctivitis NOS
226547 Pseudomonas pyocyaneus congenital infection
226548 Sepsis of newborn due to Staphylococcus aureus
226549 Other specified perinatal infection NOS
226550 Perinatal infections NOS
226551 Perinatal melaena
226552 Perinatal cutaneous petechiae
226553 Perinatal purpura
226554 Other fetal and newborn haemorrhage
226555 Perinatal pseudomenses
226556 Perinatal transient vaginal bleeding
226557 Neonatal rectal haemorrhage
226558 Hydrops fetalis due to isoimmunisation
226559 Perinatal jaundice from bruising
226560 Perinatal jaundice from maternal transmission drug or toxin

226561 Other neonatal jaundice - delayed conjugation other cause
226562 Delayed conjugation causing neonatal jaundice, unspecified
226563 Neonatal jaundice with Crigler-Najjar syndrome
226564 Neonatal jaundice with Dubin-Johnson syndrome
226565 Neonatal jaundice with congenital hypothyroidism
226566 Neonatal jaundice with Rotor's syndrome
226567 Delayed conjugation causing neonatal jaundice OS
226568 Fetal and neonatal jaundice, unspecified
226569 Cow's milk hypocalcaemia
226570 Other specified transitory neonatal electrolyte disturbance
226571 Iatrogenic neonatal hypoglycaemia
226572 Other specified transient neonatal blood disorder
226573 Perinatal digestive system disorders
226574 Congenital faecoliths causing obstruction
226575 Intestinal obstruction in newborn due to faecoliths
226576 Transitory fever of newborn
226577 Non-immune hydrops fetalis
226578 Panniculitis in newborn
226579 Perinatal skin or temperature regulation disorder NOS
226580 Rumination in newborn
226581 Underfeeding in newborn
226582 Difficulty in feeding at breast
226583 [X]Macerated stillbirth
226584 Neonatal cardiac failure
226585 [X]Fetus+newborn affectd/other abnormalities/chorion+amnion
226586 [X]Oth intracranial laceratns+haemorrhages due/birth injury
226587 [X]Other birth injuries to scalp
226588 [X]Other chronic resp diseases originating/perinatal period
226589 [X]Other specified infections specific/perinatal period
226590 [X]Intracranial nontraumatic haemorrhage fetus newborn unsp
226591 [X]Other neonatal hypoglycaemia
226609 [D]Jaundice (not of newborn) NOS
228321 [V]Other specified pregnant state
228322 [V]Pregnancy with history of hydatidiform mole
228323 [V]Supervisn/pregnancy wth history insufficnt antenatal care
228325 [V]Admission for termination of pregnancy
228333 [V]Birth - type
228334 [V]Single live birth
228335 [V]Newborn receiving special care
228337 [V]Healthy liveborn infants according to type of birth
228376 [V]Illegitimate pregnancy
228415 [V]Postnatal screening for chromosomal anomalies
228423 [X]Other multiple births, some liveborn
228460 Dilatation & curettage with cautery
228474 Termination pregnancy d & c
228475 Amniocentesis
228476 High foetal forceps delivery
228477 Rotation foetal head forceps
228478 Hysterectomy with caesarean section
228479 Placenta manual removal
228480 Vaginorrhaphy obstetric
228481 Repair perineum obstetric
228592 Human placental lactogen level abnormal
228634 Seen in postnatal clinic
228644 Referred to postnatal clinic
228838 Iucd failed
228930 Prenatal examination
228931 Breast exam abnormal- recheck
228932 Postpartum care normal
228933 Twin
228934 Twin (non identical)
229070 Diabetes pregnancy
229500 Tubal abortion
229502 Praevia placenta
229503 Pregnancy macrocytic anaemia
229504 Hyperchromic anaemia pregnancy
229505 Varicose veins pregnancy
229506 Pregnancy milk leg
229507 Small for dates (foetus)
229508 Urinary infecion puerperium
229509 Termination of pregnancy requested
229510 Top (termination of pregnancy)
229511 Complete abortion
229512 Complicated abortion
229513 Premature separation placenta
229515 Labour difficult
229517 Delivery obstetric trauma
229519 Delivery death due anaesthetic
229522 Vaginal discomfort postnatal
229523 Postpartum galactocele
229738 Toxaemia pregnancy affecting foetus/newb
229739 Pyelitis newborn
229742 Erythroblastosis neonatorum
229743 Foetal distress
229745 Baby normal at birth
229746 Infant condition normal
229783 Laboured breathing
229798 Jaundice decreasing

229850 Invalid (disabled) since birth
229940 Syndrome battered baby/child
230252 Pipe/sheet metal labourer
230273 Light labourer NOS
230421 Para 3
230423 Past pregnancy outcome
230424 H/O: 1 miscarriage
230425 H/O: 4 miscarriages
230426 H/O: 1 abortion
230631 O/E - fetal movements seen
230992 Urine pregnancy test equivocal
231213 U-S obstetric scan normal
231214 Antenatal scan unable to confirm pregnancy
231247 Patient pregnant
231248 Pregnancy confirmed
231249 A/N care: gynae. Risk
231250 Delivery: no place booked
231251 Delivery booking place changed
231252 Parent craft classes offered
231253 Parent craft - group class
231254 A/N U/S scan awaited
231255 Antenatal ultrasounds scan at 4-8 weeks
231256 Rubella screen wanted
231257 Antenatal syphilis screen NOS
231258 A/N blood group screen done
231259 A/N blood group screen NOS
231260 A/N 34 week examination
231261 Antenatal examination NOS
231262 Misc. Antenatal data
231263 Misc. Antenatal data NOS
231264 Double test wanted
231265 Downs screening - blood sent
231266 Home delivery planned
231267 Born before arrival
231268 Twin birth
231269 Triplets - all live born
231270 Triplets -2 live+ 1 still born
231271 Baby premature 26-28 weeks
231272 Baby premature 37 weeks
231273 Birthweight
231274 Weight - baby
231275 Baby BW = below 751gm
231276 Birth HC = 25th-49th centile
231277 Birth length=25th-49th centile
231278 Apgar at 5 minutes = 0
231279 Apgar at 10 minutes = 10
231294 Birth exam. Abnormal -referred
231398 Maternity benefit advice
231989 Intravesical instill of therapeutic agent for benign disease
232074 Vacuum termination of pregnancy
232075 Dilation and curettage removal of missed abortion
232078 Intracervical artificial insemination
232107 Obstetric operations
232108 Feticide
232109 Late selective feticide
232110 Other specified selective destruction of fetus
232111 Percutaneous insertion of fetal vesicoamniotic shunt
232112 Percutaneous sampling of fetal blood
232113 Operations on gravid uterus
232114 Operation on gravid uterus NOS
232115 Other specified operations on fetus or gravid uterus
232116 Fetus and gravid uterus operations NOS
232117 Labour operations
232118 Fore water rupture of amniotic membrane
232119 Other specified surgical induction of labour
232120 Other induction of labour
232121 Other caesarean delivery
232122 Breech extraction delivery with version
232123 Manip cephalic vaginal deliv abnorm pres head without instrm
232124 Nonmanip cephal vagin deliv abnorm pres head without instrum
232125 Cephalic vagin deliv abnorm pres head without instrument OS
232126 Other specified normal delivery
232127 Destructive operation to facilitate delivery
232128 Symphysiotomy to facilitate delivery
232129 Pubiotomy to facilitate delivery
232130 Other specified induction or delivery operations
232131 Instrumental removal products of concep delivered uterus OS
232132 Pack to control postpartum haemorrhage
232133 Immediate repair of obstetric laceration
232134 Other obstetric operations
232135 Secondary repair of obstetric laceration
232136 Fetal monitoring
232137 Foetal monitoring
232138 Other specified obstetric operations
232139 Other specified obstetric operations
232442 Neonatal exchange blood transfusion
232506 Entonox analgesia in labour
232730 Iron supplement in pregnancy
232871 Complete post-natal care
232872 Part post-natal care-1 visit
232941 Seen in postnatal clinic
232952 Seen in antenatal clinic

233712 Congenital Heinz-body anaemia
233783 Fear of pregnancy
234265 Ectopic beats unspecified
234385 Asp pneumonitis due to anaesthesia during labour and deliv
234712 Habitual aborter - non pregnant state
234723 Other abnormal product of conception
234724 Ectopic pregnancy
234725 Intraligamentous pregnancy
234726 Unspecified spontaneous abortion with complication NOS
234727 Incomp spontaneous abortion + delayed/excessive haemorrhage
234728 Incomplete spontaneous abortion with complication NOS
234729 Complete spontaneous abortion with embolism
234730 Unspecified inevitable miscarriage complicated by embolism
234731 Complete inevitable abor comp by delayed or excessive haem
234732 Complete inevitable miscarriage with unspecified comp
234733 Incomplete legal abortion with renal failure
234734 Incomplete legal abortion with metabolic disorder
234735 Incomplete legal abortion with complication NOS
234736 Surgical abortion - complete
234737 Complete legal abortion with shock
234738 Unspecified illegal abortion with no mention of complication
234739 Unspecified illegal abortion NOS
234740 Illegal abortion incomplete
234741 Incomplete illegal abortion with renal failure
234742 Complete illegal abortion with renal failure
234743 Complete illegal abortion with metabolic disorder
234744 Complete illegal abortion with shock
234745 Unspec incomplete abortion with other specified complication
234746 Failed attempted abortion with metabolic disorder
234747 Pelvic peritonitis following abortive pregnancy
234748 Afibrinogenaemia following abortive pregnancy
234749 Renal failure following abortive pregnancy
234750 Soap embolism following abortive pregnancy
234751 Readmis for retain products of concept, spontaneous abortion
234752 Failed medical abortion, complicated by embolism
234753 Other specified pregnancy with abortive outcome
234754 Antepartum haemorrhage with uterine leiomyoma unspecified
234755 Other antepartum haemorrhage - not delivered
234756 Other antepartum haemorrhage NOS
234757 Renal hypertension in preg/childb/puerp -deliv with p/n comp
234758 Mild or unspecified pre-eclampsia
234759 Toxaemia NOS
234760 Eclampsia
234761 Eclampsia - not delivered
234762 Pre-eclampsia or eclampsia with hypertension - delivered
234763 Moderate pre-eclampsia
234764 Hyperemesis gravidarum with metabolic disturbance NOS
234765 Unspecified pregnancy vomiting - not delivered
234766 Early onset of delivery
234767 Post-term pregnancy
234768 Unspecified renal disease in pregnancy
234769 Habitual aborter - delivered
234770 Asymptomatic bacteriuria in pregnancy - not delivered
234771 Asymptomatic bacteriuria in pregnancy NOS
234772 Genitourinary tract infection in pregnancy with p/n comp
234773 Fatigue during pregnancy - delivered
234774 Herpes gestationis - delivered
234775 Abdominal pain in pregnancy
234776 Maternal gonorrhoea during pregnancy - baby delivered
234777 Other maternal venereal dis. In pregnancy-baby not delivered
234778 Maternal tuberculosis in pregnancy/childbirth/puerperium NOS
234779 Other maternal viral dis.in pregnancy-baby not yet delivered
234780 Mat infect/parasitic dis NOS in pregnancy - baby delivered
234781 Pregnancy and drug dependence
234782 Mental disorders in pregnancy, childbirth and the puerperium
234783 Congenital cardiovasc dis in puerp - baby previously deliv
234784 Other cardiovascular dis - unsp whether in preg/puerperium
234785 Orthopaedic disorder in pregnancy/childbirth/puerperium NOS
234786 Complications specific to multiple gestation
234787 Continuing pregnancy after abortion of one fetus or more
234788 Quadruplet pregnancy - delivered
234789 Multiple delivery, all by forceps and vacuum extractor
234790 Other multiple pregnancy NOS
234791 Fetus - unstable lie
234792 Cephalic version NOS with antenatal problem
234793 Oblique lie with antenatal problem
234794 Transverse lie - delivered
234795 Transverse lie with antenatal problem
234796 Transverse lie NOS
234797 Fetal malposition and malpresentation NOS, unspecified

234798 Generally contracted pelvis with antenatal problem
234799 Inlet pelvic contraction unspecified
234800 Outlet pelvic contraction unspecified
234801 Outlet pelvic contraction - delivered
234802 Mixed feto-pelvic disproportion
234803 Mixed feto-pelvic disproportion NOS
234804 Hydrocephalic disproportion NOS
234805 Disproportion NOS
234806 Cong abnorm uterus complicating a/n care, baby not delivered
234807 Bicornuate uterus in pregnancy, childbirth or puerperium NOS
234808 Tumour of uterine body - baby delivered
234809 Tumour of uterine body complicating a/n care, baby not deliv
234810 Uterine fibroid complicating a/n care, baby not delivered
234811 Tumour of uterine body complic p/n care, baby prev delivered
234812 Uterine fibroid complicating p/n care - baby delivered prev
234813 Uterine operation scar in pregnancy/childbirth/puerp NOS
234814 Retroverted incarcerated gravid uterus with postnatal comp
234815 Rectocele - baby delivered
234816 Other uterine/pelvic floor abnormal - baby not yet delivered
234817 Cervical incompetence with antenatal problem
234818 Cervical incompetence with postnatal complication
234819 Vulval abnormality affecting obstetric care
234820 Vulval abnormality - baby delivered
234821 Rigid perineum - baby delivered
234822 Fetus with central nervous system malformation NOS
234823 Fetus with drug damage unspecified
234824 Maternal care for (suspected) damage to fetus from alcohol
234825 Fetus with radiation damage with antenatal problem
234826 Maternal care for fetal abnormality and damage, unspecified
234827 Fetal-maternal haemorrhage with antenatal problem
234828 Other blood-group isoimmunisation
234829 Labour and delivery complicated by fetal heart rate anomaly
234830 Maternal care for fetal hypoxia
234831 Labour and delivery complic by meconium in amniotic fluid
234832 Small-for-dates unspecified
234833 Maternal care for intrauterine growth retardation
234834 Large-for-dates unspecified
234835 Other feto-placental problems NOS
234836 Amniotic cavity infection with antenatal problem
234837 Amniotic cavity infection NOS
234838 Amnion nodosum
234839 Other problem of amniotic cavity and membranes - delivered
234840 Amniotic cavity and membrane problem NOS with a/n problem
234841 Amniotic cavity and membrane problem NOS
234842 Unspecified maternal pyrexia during labour - delivered
234843 Grand multiparity
234844 Problems affecting labour NOS
234845 Abnormal ultrasonic finding on antenatal screening of mother
234846 Abnormal chromosomal and genet find/antenat screen of mother
234847 Low weight gain in pregnancy
234848 Malnutrition in pregnancy
234849 Persistent occipitopost/occipitoant position, unspecified
234850 Shoulder dystocia
234851 Failed ventouse extraction unspecified
234852 Dystocia NOS
234853 Primary uterine inertia NOS
234854 Secondary uterine inertia with antenatal problem
234855 Bandl's retraction ring
234856 Incoordinate uterine action
234857 Abnormality of forces of labour NOS
234858 Abnormality of forces of labour NOS
234859 Prolonged second stage with antenatal problem
234860 Prolonged labour NOS
234861 Cord tight round neck unspecified
234862 Cord tangled or knotted with compression NOS
234863 Velamentous insertion of cord
234864 First degree perineal tear during delivery, unspecified
234865 Vulval and perineal haematoma during delivery
234866 Other vulval and perineal trauma during delivery
234867 Rupture of uterus during and after labour unspecified
234868 Obstetric high vaginal laceration
234869 Obstetric high vaginal laceration NOS
234870 Other obstetric pelvic organ damage NOS
234871 Obstetric trauma causing pelvic haematoma
234872 Obstetric pelvic haematoma - delivered
234873 Other obstetric trauma OS
234874 Other obstetric trauma - delivered with postnatal problem
234875 Other immediate postpartum haemorrhage with postnatal prob
234876 Other immediate postpartum haemorrhage NOS
234877 Retained placenta or membranes with no haemorrhage NOS
234878 Obstetric anaesthesia with pulmonary complications

234879 CNS comps of anaesthesia during labour and delivery
234880 Other complications of obstetric anaesthesia + p/n problem
234881 Obstetric shock with antenatal problem
234882 Simpson's forceps delivery
234883 Forceps delivery - delivered
234884 Low forceps delivery
234885 Caesarean delivery unspecified
234886 Other complications of labour and delivery NOS
234887 Complications of labour and delivery NOS - del + p/n problem
234888 Puerperal septicaemia - delivered with postnatal comp
234889 Puerperal septicaemia NOS
234890 Varicose veins of legs in pregnancy/puerperium -del+p/n comp
234891 VV's of perineum/vulva in pregnancy/puerperium unspecified
234892 Vulval varices in pregnancy
234893 Superficial thrombophlebitis in the puerperium
234894 Superficial thrombophlebitis in pregnancy and puerperium NOS
234895 Antenatal deep vein thrombosis with antenatal complication
234896 Other phlebitis/thrombosis in pregnancy/puerperium - deliv
234897 Other venous complication of pregnancy/puerperium unsp
234898 Gestational phlebitis NOS
234899 Puerperal pyrexia of unknown origin - delivered + p/n comp
234900 Obstetric air pulmonary embolism
234901 Obstetric blood-clot pulmonary embolism unspecified
234902 Obstetric pyaemic and septic pulm embolism + p/n comp
234903 Obstetric pulmonary embolism NOS - delivered
234904 Obstetric pulmonary embolism NOS with antenatal complication
234905 Obstetric pulmonary embolism NOS with postnatal complication
234906 Puerperal cerebrovascular disorder unspecified
234907 Caesarean wound disruption with postnatal complication
234908 Other complication of obstetric surgical wound unspecified
234909 Placental polyp - delivered with postnatal complication
234910 Blood dyscrasia puerperal
234911 Complications of the puerperium NOS, unspecified
234912 Obstetric nipple infection - delivered with p/n complication
234913 Cracked nipple in pregnancy/puerp/lact - deliv + p/n comp
234914 Breast engorgement in pregnancy/puerperium/lact + p/n comp
234915 Other breast disorder in pregnancy/puerperium/lactation NOS
234916 Failure of lactation with postnatal complication
234917 Galactorrhoea in pregnancy and the puerperium
234918 Other disorder of lactation - delivered with p/n comp
234919 Disorder of lactation NOS
234920 Maternal care/known or suspected fetal problem,unspecifd
234921 [X]Oth+unspc fail induc abortn,complict/delay/exces h'morrhg
234922 [X]Oth venous complicatns follow abortn+ectopic+molr pregncy
234923 [X]Other vomiting complicating pregnancy
234924 [X]Other venous complications in pregnancy
234925 [X]Maternal care relat to fetus+amniotic cavity+deliv prob
234926 [X]Other multiple gestation
234927 [X]Maternal care/oth spcf known or suspected fetal problems
234928 [X]Other antepartum haemorrhage
234929 [X]Complications of labour and delivery
234930 [X]Labour+delivery complicat/oth evidence of fetal distress
234931 [X]Oth pulmonary complicatns/anaesthesia during lab+delivery
234932 [X]Other and unspecified disorders of lactation
235073 Juvenile rheumatoid arthritis - Still's disease
235326 Newborn glaucoma
235580 Fetus or neonate affected by maternal urinary disease
235581 Fetus/neonate affected by other chronic maternal CVS/RS dis
235582 Fetus/neonate affected by other chronic maternal CVS disease
235583 Fetus/neonate affected by maternal complication of pregnancy
235584 Fetus or neonate affected by abdominal ectopic pregnancy
235585 Fetus/neonate affected placental separation/haemorrhage NOS
235586 Fetus affected by cord problems
235587 Fetus or neonate affected by membranitis
235588 Fetus/neonate affected other abnormalities of chorion/amnion
235589 Fetus or neonate affected by breech delivery and extraction
235590 Fetus/neonate affect persistent occip-posterior - labour/del
235591 Fetus/neonate affected by mat general anaesthesia - lab/del
235592 Fetus or neonate affected by abnormal uterine contractions
235593 Fetus or neonate affected by uterine inertia or dysfunction
235594 Fetus/neonate affected by uterine dysfunction in labour/del
235595 Destruction of fetus to facilitate delivery
235596 Fetus/neonate affected by complic labour/delivery NOS
235597 Fetus small-for-dates with signs of malnutrition
235598 Fetus small-for-dates (SFD) with signs

	of malnutrition
235599	Extremely low birth weight infant
235600	Birth weight 999 g or less
235601	Subdural haemorrhage unspecified, due to birth trauma
235602	Scalpel wound due to birth trauma
235603	Birth injury to face
235604	Trunk injury NEC due to birth trauma
235605	Intrauterine hypoxia and birth asphyxia
235606	Labour fetal anoxia
235607	Liveborn with prelabour hypoxia
235608	Liveborn with unspecified fetal distress NOS
235609	Pulmonary hypoperfusion syndrome of newborn
235610	Other fetal and newborn respiratory conditions
235611	Congenital pneumonia due to Chlamydia
235612	Massive aspiration syndrome
235613	Meconium aspiration syndrome
235614	Perinatal interstitial emphysema or related condition NOS
235615	Perinatal atelectasis, unspecified
235616	Primary sleep apnoea of newborn
235617	Snuffles
235618	Other perinatal conditions
235619	Neonatal dacryocystitis due to other bacteria
235620	Neonatal viral dacryocystitis or conjunctivitis
235621	Fetal blood loss NOS
235622	Perinatal epistaxis
235623	Lucy - Driscoll syndrome
235624	Unspecified fetal or neonatal jaundice NOS
235625	Neonatal diabetes mellitus
235626	Hypomagnesaemic tetany in newborn
235627	Transitory neonatal hypernatraemia
235628	Transitory neonatal hypokalaemia
235629	Syndrome of infant of mother with gestational diabetes
235630	Transitory neonatal endocrine disorder, unspecified
235631	Other transitory neonatal endocrine and metabolic problem
235632	Transient neonatal thrombocytopenia
235633	Trans neonatal thrombocytopenia due to exchange transfusion
235634	Other specified transient neonatal thrombocytopenia
235635	Polycythaemia neonatorum NOS
235636	Newborn swallowing maternal blood - haematemesis/melaena
235637	Transitory ileus of newborn
235638	Meconium plug syndrome
235639	Thermal injury in newborn NEC
235640	Oedema of newborn unspecified
235641	Erythroderma neonatorum
235642	Other and ill-defined perinatal conditions
235643	Convulsions in newborn
235644	Newborn feeding problem, unspecified
235645	Neonat withdrawal symptom from mat use of drug of addiction
235646	Fetal death due to termination of pregnancy
235647	[X] stillbirth
235648	[X]Fresh stillbirth
235649	Transient myocardial ischaemia of newborn
235650	[X]Additional perinatal disease classification terms
235651	[X]Fetus+newbrn affct/oth malprsntn,malpsitn+disprop/lab+del
235652	[X]Other specified congenital infectious+parasitic diseases
235653	[X]Other infections specific to the perinatal period
235654	[X]Other neonatal gastrointestinal haemorrhage
235655	[X]Other neonatal hypocalcaemia
235656	[X]Oth specif condition of integument specif to fetus/newb
236304	Nutritional maltreatment of child
237316	[V]Normal level of neonatal care
237317	[V]Twin, mate stillborn, NOS
237318	[V]Other multiple birth, born before hospital, mates live
237319	[V]Other multiple birth, mates stillborn, NOS
237320	[V]Other multiple birth, born in hospital, mates live+still
237321	[V]Other multiple birth, not hospitalised, mates live+still
237322	[V]Unspecified birth, born before admission to hospital
237381	[V]Pregnancy examination and test
237401	[X]Supervision of other normal pregnancy
237450	Forceps extraction high
237451	Forceps extraction midcavity with episio
237452	Forceps breech extraction
237453	Dilatation cervix in labour
237454	Retained products conception removed
237550	Pregnancy test negative
237689	Violence with spouse
237710	Housing unsatisfactory very poor quality
237712	Housing problem poor facilities
237790	Pregnancy/birth extramarital
237791	Problem pregnancy unmarried
237816	Screening newborn examination
237854	Rubella contact in pregnancy
237874	Pregnancy
237875	Pregnancy normal
237876	Instruction antenatal given
237877	Examination prenatal

237878	Breast exam nad- recheck
237879	Breast screening examination normal
237881	Twin (identical)
238418	Placenta praevia central
238420	Pregnancy anaemia hypochromic
238421	Pregnancy malposition foetus
238423	Primigravida elderly
238424	Rhesus incompatibility pregnancy/puerper
238425	Intrauterine growth retardation
238426	Pyelocystitis pregnancy
238427	Puerperal cystitis
238429	Pregnancy terminated medical reasons
238431	Pregnancy normal delivery
238432	Labour
238433	Normal birth (confinement)
238434	Delivery after antepartum haemorrhage
238437	Delivery abnormal bony pelvis
238438	Foetopelvic disproportion complicating d
238439	Brow presentation
238440	Transverse lie delivery
238441	Delay 2nd stage (labour)
238442	Laceration perineal at delivery extensiv
238443	Laceration bladder complicating delivery
238480	Pruritus of pregnancy
238657	Pregnancy accident affecting baby
238658	Palsy erb's
238659	Trauma birth
238660	Abnormal erythrocytes newborn with kerni
238661	Rhesus incompatibility newborn without k
238662	Asphyxia birth
238663	Premature delivery (child)
238664	Infant condition- required resusitation
238665	Infant condition- apgar score
238666	Face presentation birth (baby)
238670	Physiological jaundice newborn
238671	Stillbirth
238871	Neglected baby malnutrition
239094	Photographer (still camera)
239283	FH: Raised B.P. in pregnancy
239403	H/O: birth trauma
239425	Estimated date of delivery
239429	H/O: 2 miscarriages
239430	H/O: 3 miscarriages
239431	H/O: 6 miscarriages
239432	H/O: abortion
239440	H/O: post-partum haemorrhage
240180	Fetal U-S scan
240181	Ultra-sound scan - obstetric
240212	Pregnant, diaphragm failure
240216	Pregnancy care
240217	Pregnant - on history
240218	Pregnant - unplanned - wanted
240219	Pregnant -unplanned-not wanted
240220	Patient ? Pregnant
240221	Patient pregnant NOS
240222	Antenatal care: primigravida
240223	Antenatal care: 3rd pregnancy
240224	Antenatal care: gravida NOS
240225	A/N care: obstetric risk
240226	A/N care: grand multip
240227	A/N care: H/O trophoblast.dis.
240228	Ante-natal care: not offered
240229	Ante-natal care: not attended
240230	No ante-natal care NOS
240231	Full stay delivery booking
240232	Parent craft not wanted
240233	Feeding intention - unsure
240234	Antenatal amniocentesis
240235	Antenatal amniocentesis NOS
240236	Rh screen - 1st preg. Sample
240237	Rh - random, non-preg. Sample
240238	Alpha-feto protein test - A/N
240239	AFP blood test not offered
240240	AFP blood test wanted
240241	Rubella screen
240242	Rubella screen not wanted
240243	Antenatal syphilis screen
240244	A/N syphilis screen-blood sent
240245	Antenatal blood group screen
240246	A/N 38 week examination
240247	Fetal maturity: dates not=size
240248	Initial booking of patient
240249	Infant feeding method
240250	Infant feeding method NOS
240251	P/N - fourth day visit
240252	P/N - sixth day visit
240253	P/N - ninth day visit
240254	P/N care >48hrs after birth
240255	Maternal P/N 6 week exam. NOS
240256	Puerperal depression
240257	Misc. Post natal data NOS
240258	Barts test
240259	Downs screen blood test normal
240260	Downs screening blood test NOS
240261	Sex of baby
240262	2 male babies

240263 Baby full term maturity
240264 Baby premature 38 weeks
240265 Baby BW = 751g-1kg
240266 Birth head circumference
240267 Birth HC = < 3rd centile
240268 Birth length=10th-24th centile
240269 Apgar at 1 minute = 2
240270 Apgar at 1 minute = 5
240271 Apgar at 5 minutes = 2
240272 Apgar at 5 minutes = 10
240273 Apgar at 10 minutes = 5
240274 Baby misc. "at-risk" factors
240275 Monozygous twin
240276 Baby "at-risk" factors NOS
240277 Placental weight
240278 Placental abnormality
240279 Placenta incomplete
240290 6 week exam.abnormal -for obs.
240310 Child 8 week exam. Not wanted
240390 Procreat/fertility counselling
240393 Pregnancy exercise advice
240394 Maternity milk/vits advice
241094 Curettage of products of conception from uterus NEC
241095 Dilation cervix & vacuum aspirat products conception uterus
241096 Evacuation of products of conception from uterus NEC
241126 Puerperium operations
241127 Therapeutic endoscopic operations on fetus
241128 Diagnost endoscopic examination foetus using foetoscope NOS
241129 Therapeutic percutaneous operation on fetus NOS
241130 Electrode applied to fetal scalp
241131 Diagnostic amniocentesis
241132 Amniocentesis NEC
241133 Biopsy of placenta NEC
241134 Arm
241135 Other specified other induction of labour
241136 Elective upper uterine segment caesarean delivery
241137 Failed forceps delivery
241138 Repositioning of inverted delivered uterus
241139 Instrumental exploration of delivered uterus NEC
241140 Immediate repair of obstetric tear
241141 Immediate suture of obstetric laceration
241926 Part post-natal care-4 visits
241927 Part post-natal care-5 visits
241983 BAAF B1/2-adopt:birth history
242794 Acquired neutropenia in newborn
242838 Postnatal depression
243026 Neonatal myoclonic epilepsy
243738 Pregnancy with abortive outcome
243742 Angular pregnancy
243743 Spontaneous abortion with heavy bleeding
243744 Unspecified spontaneous abortion NOS
243745 Incomplete spontaneous abortion with shock
243746 Complete spontaneous abortion + genital tract/pelvic infect
243747 Complete spontaneous abortion with renal failure
243748 Incomplete inevitable abortion without complication
243749 Therapeutic abortion
243750 Unspecified legal abortion with renal failure
243751 Unspecified illegal abortion with metabolic disorder
243752 Unspecified illegal abortion with complication NOS
243753 Incomplete illegal abortion + pelvic organ/tissue damage
243754 Incomplete illegal abortion with shock
243755 Illegal abortion complete
243756 Unspecified abortion with delayed or excessive haemorrhage
243757 Unspecified abortion with embolism
243758 Unspecified complete abortion NOS
243759 Failed attempted abortion with embolism
243760 Failed attempted abortion with complication NOS
243761 Sepsis NOS following abortion/ectopic/molar pregnancy
243762 Broad ligament damage following abortive pregnancy
243763 Renal shutdown following abortive pregnancy
243764 Renal failure NOS following abortive pregnancy
243765 Air embolism following abortive pregnancy
243766 Readmission for retained products of conception (NHS codes)
243767 Haemorrhage in early pregnancy
243768 Threatened abortion NOS
243769 Other haemorrhage in early pregnancy
243770 Early pregnancy haemorrhage NOS - not delivered
243771 Placenta praevia with haemorrhage - not delivered
243772 Antepartum haemorrhage with trauma - delivered
243773 Other antepartum haemorrhage
243774 Hypertension complicating pregnancy/childbirth/puerperium
243775 Transient hypertension of pregnancy unspecified
243776 Transient hypertension of pregnancy
243777 Mild or unspecified pre-eclampsia unspecified
243778 Severe pre-eclampsia NOS

243779 Eclampsia in pregnancy
243780 Morning sickness
243781 Early or threatened labour
243782 Threatened premature labour unspecified
243783 Early onset of delivery NOS
243784 Genitourinary tract infection in pregnancy - delivered
243785 Genitourinary tract infection in pregnancy - deliv +p/n comp
243786 Fatigue during pregnancy
243787 Herpes gestationis
243788 Herpes gestationis with postnatal complication
243789 Glycosuria during pregnancy NOS
243790 Braxton-Hicks contractions
243791 Pregnancy induced oedema+proteinuria without hypertension
243792 Other venereal diseases in pregnancy/childbirth/puerperium
243793 Other maternal venereal disease in puerperium-baby delivered
243794 Other mat. Venereal dis. In puerperium-baby previously deliv
243795 Pre-existing diabetes mellitus, non-insulin-dependent
243796 Anaemia during pregnancy - baby delivered
243797 Other cardiovasc dis in puerp - baby previously delivered
243798 Orthopaedic disorder in puerperium-baby previously delivered
243799 Twin pregnancy - delivered
243800 Triplet pregnancy with antenatal problem
243801 Other multiple pregnancy with antenatal problem
243802 Face presentation unspecified
243803 Mentum presentation
243804 High head at term - delivered
243805 Multiple pregnancy with malpresentation
243806 Generally contracted pelvis unspecified
243807 Inlet pelvic contraction - delivered
243808 Large fetus causing disproportion - delivered
243809 Other fetal abnormality causing disproportion unspecified
243810 Other disproportion
243811 Bicornuate uterus - baby delivered
243812 Tumour of uterine body in pregnancy/childbirth/puerperium
243813 Retroverted incarcerated gravid uterus - delivered
243814 Retroverted incarcerated gravid uterus - delivered +p/n comp
243815 Cystocele in pregnancy, childbirth and the puerperium
243816 Other uterine/pelvic floor abn - delivered+postpartum compl
243817 Other cervical abnormality - baby delivered
243818 Septate vagina complicating a/n care-baby not yet delivered
243819 Congenital/acquired abnormality vulva in preg/childb/puerp
243820 Vulval abn complicating p/n care - baby delivered previously
243821 Fetus with chromosomal abnormality unspecified
243822 Fetus with chromosomal abnormality - delivered
243823 Maternal care for suspected chromosomal abnormality in fetus
243824 Fetus with viral damage via mother with antenatal problem
243825 Fetus with damage NOS - delivered
243826 Fetal-maternal haemorrhage - delivered
243827 Fetal-maternal haemorrhage NOS
243828 Anti-D antibodies
243829 Rhesus isoimmunisation - delivered
243830 Fetal distress - delivered
243831 Maternal care for poor fetal growth
243832 Large-for-dates NOS
243833 Oligohydramnios NOS
243834 Prolonged artificial rupture of membranes
243835 Other problems of amniotic cavity and membranes
243836 Failed medical or unspecified induction NOS
243837 Other problems affecting labour NOS
243838 Problems affecting labour NOS with antenatal problem
243839 Obstructed labour due to fetal malposition with a/n problem
243840 Obstruct labour due pelvic outlet and mid-cavity contract
243841 Deep transverse arrest unspecified
243842 Uterine dystocia NOS
243843 Hypertonic uterine inertia NOS
243844 Prolonged first stage
243845 Short cord unspecified
243846 Short cord - delivered
243847 Hymen tear
243848 Vaginal muscle tear
243849 Third degree perineal tear during delivery, unspecified
243850 Perineal haematoma
243851 Vulval/perineal trauma during delivery NOS
243852 Rupture of uterus before labour with antenatal problem
243853 Obstetric inversion of uterus
243854 Obstetric pelvic joint damage
243855 Obstetric trauma NOS
243856 Obstetric trauma NOS - delivered with postnatal problem
243857 Obstetric trauma NOS with antenatal problem
243858 Secondary postpartum haemorrhage - deliv with postnatal prob
243859 Secondary and delayed postpartum

haemorrhage NOS

243860 Retained placenta without haemorrhage

243861 Retained placenta without haemorrhage

243862 Obstetric anaesthesia with pulmonary complications NOS

243863 Obstetric anaesthesia with cardiac complications unspecified

243864 Toxic reaction to local anaesthesia during labour and deliv

243865 Other complications of obstetric anaesthesia

243866 Maternal distress

243867 Maternal distress - delivered

243868 Obstetric shock

243869 Obstetric shock - delivered with postnatal problem

243870 Obstetric shock NOS

243871 Maternal hypotension syndrome - delivered

243872 Maternal hypotension syndrome with antenatal problem

243873 Maternal hypotension syndrome NOS

243874 Post-delivery acute renal failure with postnatal problem

243875 Breech extraction unspecified

243876 Caesarean delivery - delivered

243877 Delivery by elective caesarean section

243878 Delivery by emergency caesarean section

243879 Other complications of labour and delivery

243880 Complications of the puerperium

243881 Puerperal endometritis unspecified

243882 Major puerperal infection NOS - delivered with p/n comp

243883 Varicose veins - obstetric

243884 Varicose veins of legs in pregnancy/puerperium + p/n comp

243885 VV's of perineum/vulva in pregnancy/puerperium - delivered

243886 Superficial thrombophlebitis in pregnancy

243887 Phlegmasia alba dolens - obstetric

243888 Postnatal deep vein thrombosis unspecified

243889 Other phlebitis/thrombosis in pregnancy/puerperium unsp

243890 Other phlebitis in pregnancy

243891 Haemorrhoids in pregnancy and the puerperium unspecified

243892 Haemorrhoids in pregnancy and puerperium with a/n comp

243893 Other venous complication of pregnancy and puerperium NOS

243894 Venous complication pregnancy/puerperium NOS unspecified

243895 Puerperal phlebopathy NOS

243896 Obstetric air pulmonary embolism unspecified

243897 Obstetric air pulmonary embolism with a/n complication

243898 Amniotic fluid pulmonary embolism unspecified

243899 Amniotic fluid pulmonary embolism - delivered

243900 Obstetric blood-clot pulmonary embolism + a/n complication

243901 Obstetric blood-clot pulmonary embolism + p/n complication

243902 Obstetric pyaemic and septic pulmonary embolism - delivered

243903 Obstetric pyaemic and septic pulmonary embolism NOS

243904 Other obstetric pulmonary embolism unspecified

243905 Subinvolution of uterus in the puerperium

243906 Other obstetric breast infection - delivered

243907 Retracted nipple in pregnancy, the puerperium or lactation

243908 Other breast disorder in pregnancy/puerperium/lact +p/n comp

243909 Failure of lactation with antenatal complication

243910 Suppressed lactation NOS

243911 Galactorrhoea in pregnancy and the puerperium unspecified

243912 [X]Other ectopic pregnancy

243913 [X]Other abnormal findings on antenatal screening of mother

243914 [X]Maternal care for other abnormalities of cervix

243915 [X]Maternal care for other abnormalities of gravid uterus

243916 [X]Maternal care/known or suspected fetal problem,unspecifd

243917 [X]Other specified obstructed labour

243918 [X]Oth complicatn/spinl+epidur anaesths during lab+delivery

243919 [X]Labour & delivery complicated by fetal stress, unspecif

243920 [X]Oth infects+parasitc dis complicat preg,cldbrth+puerperum

244603 Fetus or neonate affected by maternal medical problems

244604 Fetus/neonate affected-plac./breast transfer addictive drug

244605 Fetus or neonate affected by oblique lie before labour

244606 Fetus or neonate affected by face presentation before labour

244607 Fetus/neonate affected by malpresentation before labour NOS

244608 Fetus or neonate affected by placental insufficiency

244609 Fetus or neonate affected by amnionitis

244610 Fetus/neonate affected by abnormalities chorion/amnion NOS

244611 Fetus/neonate affected by shoulder presentation - labour/del

244612 Fetus or neonate affected by caesarean section

244613 Fetus or neonate affected by maternal contraction ring

244614 Fetus or neonate affected by hypertonic uterine dysfunction

244615 Fetus/neonate affected by abnormal uterine contractions NOS

244616	Fetus or neonate affected by previous pelvic surgery
244617	Maternal problem unrelated preg affecting fetus/neonate NOS
244618	Immature baby
244619	Large baby born
244620	Postmature infant - greater than 42 weeks gestation, unspec
244621	Subdural and cerebral haemorrhage due to birth trauma
244622	Extradural haemorrhage in fetus or newborn
244623	Cephalhaematoma due to birth trauma
244624	Birth injury to central nervous system, unspecified
244625	Spleen rupture due to birth trauma
244626	Toe injury NEC due to birth trauma
244627	Intrauterine hypoxia
244628	Liveborn with labour meconium in liquor
244629	Liveborn with meconium liquor, unspecified
244630	Blue asphyxia
244631	Aspiration of mucus in newborn
244632	Aspiration of amniotic fluid in newborn
244633	Massive aspiration syndrome NOS
244634	Pneumonitis due to fetal aspiration
244635	Primary atelectasis
244636	Perinatal chronic respiratory disease
244637	Neonatal snuffles
244638	Congenital cytomegalovirus infection
244639	Congenital hydrocephalus due to toxoplasmosis
244640	Neonatal conjunctivitis due to E.coli
244641	Eschericha coli intra-amniotic fetal infection
244642	Intra-amniotic fetal infection NOS
244643	Intraventric (nontraumatic) haemorhage grade 2 fet newborn
244644	Perinatal nose haemorrhage
244645	Fetal or newborn haemorrhage NOS
244646	Haemolytic disease of fetus/newborn due to isoimmunisation
244647	Preterm delivery associated jaundice
244648	Perinatal jaundice due to other cause
244649	Perinatal jaundice due to mucoviscidosis
244650	Infant of a diabetic mother syndrome
244651	Transitory neonatal hyperkalaemia
244652	Transitory neonatal tyrosinaemia
244653	Perinatal skin and temperature regulation disorders
244654	Sclerema neonatorum
244655	Bronze baby
244656	Neonatal skin infection
244657	Breast feeding problem in the newborn
244658	Newborn drug reaction or intoxication NOS
244659	Cardiovascular disorders originating in the perinatal period
244660	Newborn death
244661	[X]Fetus and newborn affected by other maternal medication
244662	[X]Disorders related to length of gestation and fetal growth
244663	[X]Other preterm infants
244664	[X]Other specified birth injuries
244665	[X]Birth injuries to other parts of peripheral nerv system
244666	[X]Respiratory+cardiovasc dis specific to perinatal period
244667	[X]Other respiratory distress of newborn
244668	[X]Oth pulmonary haemorrhages originating/perinatal period
244669	[X]Other congenital viral diseases
244670	[X]Congenital viral disease, unspecified
244671	[X]Sepsis of newborn due to other+unspecified streptococci
244672	[X]Congenital infectious and parasitic disease, unspecified
244673	[X]Other specified disturbanc of temp regulation of newborn
244674	[X]Hypothermia of newborn, unspecified
246490	[V]Supervision of high-risk pregnancy due to social problems
246491	[V]Examination immediately after delivery
246496	[V]Admission for termination of pregnancy (TOP)
246504	[V]Antenatal screening
246508	[V]Other multiple birth, mates live born, NOS
246509	[V]Other multiple birth, unspecified, born before hospital
246510	[V]Other multiple birth, unspecified, NOS
246591	[X]Other multiple births, all stillborn
246626	Suture shirodkar
246631	Pregnant hysterectomy
246632	Termination pregnancy surgical induction
246633	Forceps breech aftercoming head
246634	Ventous assisted delivery
246635	Elective caesarian section
246636	Suture cervix postpartum
246637	Perineorrhaphy postpartum
246719	Pregnancy test positive
246832	Pregnancy unwanted
246857	Baby for adoption
246953	Termination refused pregnancy
246983	Newborn clinic
246986	Screening baby examination abnormal
246992	Clinic baby attendance
247032	Prophylactic therapy pregnancy
247033	Breast screening examination abnormal
247599	Placenta praevia lateral
247600	Placenta abruptio

247601	Pregnancy anaemia megaloblastic
247603	Missed abortion
247604	Primipara old
247605	Hick's contractions
247607	Pregnancy phlebitis
247608	Puerperal albuminuria
247610	Eclampsia post partum
247611	Pregnancy hyperemesis
247614	Abortion induced with complications
247616	Septic miscarriage
247617	History of abortion
247618	Delivery no details
247619	Placenta praevia noted at delivery
247620	Presentation face delivery (mother)
247621	Trauma obstetrical at delivery
247623	Maternal distress delivery
247626	Puerperal inflammation nipple
247636	Cellulitis umbilicus newborn
247864	Injury birth difficult labour
247865	Intracranial injury at birth
247866	Accident birth injury (baby)
247868	Rhesus incompatibility newborn with kern
247869	Incompatibility a b o newborn
247871	Syndrome aspiration newborn
247872	Neonatal disorder
247874	Neonatal obstruction
247875	Delivery caesarian section (baby)
247876	Windy baby
248077	Problem battered child
248463	Civil engineering labourer
248504	FH: Diabetes in pregnancy
248585	Disabled
248619	H/O: perinatal fit
248620	H/O: perinatal problem NOS
248634	History of past delivery
248635	H/O: full term delivery
248640	H/O: perinatal death
248642	H/O: previous forceps delivery
248862	O/E - fetal movements felt
249219	Urine pregnancy test NOS
249445	Antenatal care: gravida No.
249446	A/N care: precious preg. NOS
249447	A/N care: risk NOS
249448	A/N care:10yrs+since last preg
249449	A/N care: primip. > 30 years
249450	Consultant unit booking
249451	A/N amniocentesis -not offered
249452	A/N amniocentesis - normal
249453	A/N U/S scan for slow growth
249454	AFP - blood sent
249455	Quickening
249456	Fetal maturity: dates = size
249457	Vaginal "show" - A/N
249458	Bottle feeding stopped
249459	Postnatal visits
249460	P/N - third day visit
249461	P/N - eighth day visit
249462	Maternal P/N 6 week exam.
249463	Maternal P/N exam. Offered
249464	Misc. Postnatal data
249465	Maternal care NOS
249466	Place of birth
249467	Home birth
249468	Nursing home birth
249469	Full term baby
249470	Baby BW = 1.0-1.5kg
249471	Birth HC = 10th-24th centile
249472	Birth HC = 90th-96th centile
249473	Birth length = > 97th centile
249474	Apgar at 1 minute = 0
249475	Apgar at 5 minutes = 5
249476	Risk factor - been on SCBU
249477	Risk factor - been on special care unit
249478	Maternal tobacco abuse
249479	Maternal drug abuse
249480	Placenta normal O/E
249481	Paediatric surveillance checks
249497	Child 6 week exam. Normal
249515	Child 8 week exam
249594	Pregnancy smoking advice
249595	Mothercraft advice
250263	Curettage of term pregnancy NEC
250281	Fimbrial extraction of tubal pregnancy
250295	Therapeutic fetoscopic operations on fetus
250296	Percutaneous sampling of chorionic villus
250297	Mcdonald cerclage of cervix
250298	Other induction of labour NOS
250299	Ventouse delivery
250300	Vacuum delivery NOS
250301	Cephalic vaginal deliv abnorm presentation head - no instrum
250302	Manually assisted vaginal delivery
250303	Drainage of hydrocephalus of fetus to facilitate delivery
250304	Other specified other method of delivery
250305	Manual dilatation of cervix
250306	Manual removal of placenta from delivered uterus
250307	Brandt-Andrews expression of placenta

250308	Other specified other operation on delivered uterus
250309	Immed repair obstetric laceration perineum & anal sphincter
250310	Monitoring during labour
250973	Prophylactic iron therapy
251074	Referral to postnatal clinic
251108	Medical cert. Of still-birth
251183	Risk life pregnant woman greater than if pregnancy terminatd
251917	Acute posthaemorrhagic anaemia
252266	Neonatal nasolacrimal duct obstruction
252882	Other abnormal product of conception NOS
252883	Tubal pregnancy NOS
252884	Ovarian pregnancy
252885	Combined or heterotopic pregnancy
252886	Spontaneous abortion
252887	Miscarriage
252888	Incomplete spontaneous abortion + pelvic organ/tissue damage
252889	Incomp spontaneous abortion with no mention of complication
252890	Complete spontaneous abortion NOS
252891	Inevitable abortion unspecified
252892	Unspecified inevitable abortion complicated by embolism
252893	Inevitable abortion incomplete
252894	Incomplete inev mis comp by delayed or excessive haemorrhage
252895	Complete inevitable miscarriage complicated by embolism
252896	Legally induced abortion
252897	Unspecified legal abortion with complication NOS
252898	Medical abortion - complete
252899	Complete legal abortion with embolism
252900	Criminal abortion
252901	Unspecified illegal abortion with renal failure
252902	Incomplete illegal abortion with embolism
252903	Unspecified abortion
252904	Unspecified complete abortion + genital tract/pelvic infect
252905	Unspecified complete abortion with renal failure
252906	Unspecified abortion NOS
252907	Failed attempted abortion
252908	Failed attempted abortion with no mention of complication
252909	Failed attempted abortion NOS
252910	Genital or pelvic infection following abortive pregnancy
252911	Salpingo-oophoritis following abortive pregnancy
252912	Uterus damage following abortive pregnancy
252913	Vaginal damage following abortive pregnancy
252914	Amniotic fluid embolism following abortive pregnancy
252915	Other specified complication following abortive pregnancy
252916	Other haemorrhage in early pregnancy unspecified
252917	Placenta praevia without haemorrhage
252918	Placenta praevia without haemorrhage unspecified
252919	Couvelaire uterus
252920	Placental abruption - not delivered
252921	Antepartum haemorrhage with coagulation defect unspecified
252922	Antepartum haemorrhage with coagulation defect - delivered
252923	Antepartum haemorrhage with trauma unspecified
252924	Antepartum haemorrhage with uterine leiomyoma - delivered
252925	Benign ess hypert in preg/childb/puerp - deliv with p/n comp
252926	Benign essential hypertension in preg/childb/puerp-not deliv
252927	Renal hypertension in pregnancy/childbirth/puerperium
252928	Transient hypertension of pregnancy
252929	Mild or unspecified pre-eclampsia NOS
252930	Eclampsia unspecified
252931	Unspecified hypertension in preg/childb/puerp -del +p/n comp
252932	Hyperemesis gravidarum
252933	Late vomiting of pregnancy
252934	False labour
252935	Other threatened labour NOS
252936	Prolonged pregnancy NOS
252937	Papyraceous fetus - not delivered
252938	Excessive weight gain in pregnancy
252939	Oedema or excessive weight gain in pregnancy, unspecified
252940	Oedema or excessive weight gain in pregnancy - not delivered
252941	Uraemia in pregnancy without hypertension
252942	Unspecified renal disease in pregnancy - del with p/n comp
252943	Habitual aborter - unspecified
252944	Asymptomatic bacteriuria in pregnancy with postnatal comp
252945	Fatigue during pregnancy unspecified
252946	Glycosuria during pregnancy - not delivered
252947	Maternal syphilis during pregnancy - baby delivered
252948	Maternal gonorrhoea, unspec whether in pregnancy/puerperium
252949	Other mat. Venereal dis. In pregnancy/childbirth/puerp. NOS
252950	Maternal tuberculosis in puerperium - baby delivered
252951	Maternal rubella, unspecified whether pregnancy/puerperium
252952	Maternal rubella during pregnancy - baby delivered

252953 Other mat infective/parasit dis in pregnancy - not delivered
252954 Diabetes mellitus in pregnancy/childbirth/puerperium NOS
252955 Thyroid dysfunction - unspec whether in pregnancy/puerperium
252956 Anaemia in the puerperium - baby delivered
252957 Iron deficiency anaemia of pregnancy
252958 Drug dependence in the puerperium - baby delivered
252959 GTT - glucose tolerance test abnormal in preg/childb/puerp
252960 Abnormal GTT during pregnancy - baby not yet delivered
252961 Medical condition NOS in pregnancy/childb/puerp NOS
252962 Continuing preg after intrauterine death one fetus or more
252963 Multiple delivery, all by caesarean section
252964 Other multiple pregnancy - delivered
252965 Cephalic version NOS
252966 Breech delivery
252967 Oblique lie NOS
252968 Brow presentation
252969 High head at term NOS
252970 Multiple pregnancy with malpresentation with antenatal prob
252971 Other fetal malposition and malpresentation NOS
252972 Fetal malposition and malpresentation NOS - delivered
252973 Large fetus causing disproportion NOS
252974 Other fetal abnormality causing disproportion - delivered
252975 Disproportion NOS
252976 Congenital abnormality of uterus - baby delivered
252977 Bicornuate uterus complic p/n care - baby previously deliv
252978 Tumour of uterine body - baby delivered + p/n complication
252979 Uterine scar from previous surgery in pregnancy/childb/puerp
252980 Cystocele in pregnancy, childbirth or the puerperium NOS
252981 Polyp of cervix in pregnancy/childbirth/puerperium NOS
252982 Stenosis of vagina in pregnancy/childbirth/puerperium
252983 Septate vagina - baby delivered with postpartum complication
252984 Vaginal abnormality in pregnancy/childbirth/puerperium NOS
252985 Vulval abnormality in pregnancy/childbirth/puerperium
252986 Persistent hymen affecting obstetric care
252987 Rigid perineum affecting obstetric care
252988 Pelvic soft tissue abnorm in preg/childb/puerp -del+p/n comp
252989 Maternal care for suspected CNS malformation in fetus
252990 Fetus with hereditary disease NOS
252991 Fetus with drug damage
252992 Fetus with damage due to intra-uterine contraceptive device
252993 Fetus with other damage NEC with antenatal problem
252994 Fetus with damage NOS
252995 Maternal care for suspect fetal abnormal and damage, unspec
252996 Fetal-maternal haemorrhage
252997 Other blood-group isoimmunisation unspecified
252998 Fetal distress - affecting management
252999 Maternal care for fetal decelerations during pregnancy
253000 Large-for-dates with antenatal problem
253001 Feto-placental problems NOS with antenatal problem
253002 Oligohydramnios - delivered
253003 Premature rupture of membranes - delivered
253004 Premature rupture of membranes NOS
253005 Other problem of amniotic cavity and membranes unspecified
253006 Septicaemia during labour - delivered
253007 Problems affecting labour NOS
253008 Abnormal finding on antenatal screening of mother
253009 Obstructed labour due to fetal malposition unspecified
253010 Obstructed labour due to fetal malposition - delivered
253011 Obstructed labour due to shoulder presentation
253012 Obstructed labour caused by bony pelvis
253013 Obstructed labour caused by pelvic soft tissues + a/n prob
253014 Persistent occipitopost/occipitoant position - delivered
253015 Failed trial of labour unspecified
253016 Obstructed labour due to unusually large fetus
253017 Other causes of obstructed labour with antenatal problem
253018 Obstructed labour NOS, unspecified
253019 Primary uterine inertia
253020 Other uterine inertia unspecified
253021 Precipitate labour
253022 Delayed delivery second twin unspecified
253023 Umbilical cord complications
253024 Cord tight round neck
253025 Other cord entanglement unspecified
253026 Vascular lesions of cord
253027 Vascular lesions of cord - delivered
253028 Vascular lesions of cord with antenatal problem
253029 Vascular lesions of cord NOS
253030 Other umbilical cord complications
253031 Fourchette tear

253032 Vulval tear

253033 Vaginal tear during delivery

253034 Second degree perineal tear during delivery - delivered

253035 Mucosal tear of anus or rectum

253036 Unspecified perineal laceration during delivery NOS

253037 Other vulval/perineal trauma during delivery- delivered

253038 High vaginal tear - obstetric

253039 Obstetric high vaginal laceration - delivered

253040 Obstetric pelvic ligament damage

253041 Obstetric trauma NOS

253042 Retained placenta NOS

253043 Third-stage postpartum haemorrhage NOS

253044 Retained products with no haemorrhage NOS

253045 Obstetric anaesthesia with CNS complications

253046 Failed or difficult intubation during the puerperium

253047 Obstetric anaesthetic complications NOS with a/n problem

253048 Other complications of labour and delivery NEC

253049 Maternal hypotension syndrome

253050 Keilland's forceps delivery

253051 Forceps delivery unspecified

253052 Caesarean delivery NOS

253053 Death obst cse occur more 42 day less than one yr aft deliv

253054 Death from sequelae of direct obstetric causes

253055 Obstetric death of unspecified cause

253056 Puerperal endometritis with postnatal complication

253057 Puerperal peritonitis

253058 Varicose veins of legs in pregnancy and the puerperium

253059 Varicose veins of legs in pregnancy and puerperium NOS

253060 VV's of perineum/vulva in pregnancy/puerperium

253061 Vaginal varices in the puerperium

253062 Antenatal deep vein thrombosis

253063 Antenatal deep vein thrombosis NOS

253064 Postnatal deep vein thrombosis

253065 Venous complication pregnancy and puerperium NOS - delivered

253066 Venous complication pregnancy/puerperium NOS + p/n comp

253067 Puerperal thrombosis NOS

253068 Puerperal pyrexia of unknown origin unspecified

253069 Amniotic fluid pulmonary embolism

253070 Amniotic fluid pulmonary embolism with p/n complication

253071 Other obstetric pulmonary embolism with antenatal comp

253072 Other obstetric pulmonary embolism with postnatal comp

253073 Obstetric pulmonary embolism NOS - delivered with p/n comp

253074 CVA - cerebrovascular accident in the puerperium

253075 Caesarean wound disruption NOS

253076 Episiotomy breakdown

253077 Other complication obstetric surgical wound with p/n comp

253078 Other complications of the puerperium - delivered + p/n comp

253079 Obstetric nipple infection NOS

253080 Obstetric breast abscess - delivered

253081 Obstetric nonpurulent mastitis unspecified

253082 Other obstetric breast infection with antenatal complication

253083 Obstetric breast and lactation disorders NOS

253084 Retracted nipple in pregnancy/puerp/lact - deliv + p/n comp

253085 Retracted nipple in pregnancy/puerperium/lactation NOS

253086 Breast engorgement in pregnancy/puerperium/lactation - deliv

253087 Breast engorgement in pregnancy/puerperium/lact + a/n comp

253088 Other breast disorder in pregnancy/puerperium/lact - deliv

253089 Galactorrhoea in pregnancy/puerperium with a/n complication

253090 Galactorrhoea in pregnancy/puerperium with p/n complication

253091 Maternal care for other known or suspected fetal problems

253092 Maternal care for diminished fetal movements

253093 [X]Other abortion

253094 [X]Other haemorrhage in early pregnancy

253095 [X]Pre-existing diabetes mellitus, unspecified

253096 [X]Maternal care/(suspected)damage/fetus/oth medicl procedur

253097 [X]Other immediate postpartum haemorrhage

253098 [X]Other manipulation-assisted delivery

253099 [X]Other specified assisted single delivery

253100 [X]Other complications of anaesthesia during the puerperium

253101 [X]Cervicitis following delivery

253102 [X]Obstetric death of unspecified cause

253758 Birth mark, unspecified

253821 Fetus/neonate affected-placental/breast transfer anti-infect

253822 Fetus affected by hydramnios

253823 Fetus or neonate affected by twin pregnancy

253824 Fetus or neonate affected by maternal death

253825 Fetus or neonate affected by external version before labour

253826 Fetus affected by placental abruption

253827 Fetus/neonate affected placental separation/haemorrhage OS
253828 Fetus affected by placental insufficiency
253829 Fetus or neonate affected by prolapsed cord
253830 Fetus or neonate affected by other specified cord problems
253831 Fetus or neonate affected by velamentous insertion of cord
253832 Fetus or neonate affected by long cord
253833 Fetus/neonate affected by face presentation during labour/de
253834 Fetus/neonate affected by maternal pethidine in labour/deliv
253835 Fetus/neonate affected by other maternal opiates in lab/del
253836 Fetus and newborn affected by maternal use of tobacco
253837 Fet newborn affect mat exposure to environml chem subs
253838 Intrauterine growth retardation
253839 Light for gestational age
253840 Birth weight 1000-2499 g
253841 Premature infant 28-37 weeks
253842 Born premature NOS
253843 Disorders slow fetal growth, low and high birthweight OS
253844 Intracerebral haematoma in fetus or newborn
253845 Bruising of scalp due to birth injury
253846 Fracture of femur due to birth trauma
253847 Other specified skeleton injury due to birth trauma
253848 Cranial or peripheral nerve palsy due to birth trauma OS
253849 Eye damage due to birth trauma
253850 Traumatic glaucoma due to birth trauma
253851 Internal birth injury NEC
253852 Liveborn with prelabour meconium in liquor
253853 Liveborn with birth asphyxia NOS
253854 Congenital pneumonia due to staphylococcus
253855 Other specified congenital pneumonia
253856 Neonatal aspiration of milk and regurgitated food
253857 Perinatal lung alveolar haemorrhage
253858 Perinatal lung intra-alveolar haemorrhage
253859 Perinatal massive pulmonary haemorrhage
253860 Tracheobronchial haemorrhage origin in the perinatal period
253861 Other specified perinatal pulmonary haemorrhage
253862 Prematurity with interstitial pulmonary fibrosis
253863 Neonatal sniffles
253864 Umbilical stump infection of the newborn
253865 Neonatal dacryocystitis or conjunctivitis due to E.Coli
253866 Neonatal dacryocystitis due to E.Coli
253867 Ophthalmia neonatorum - coliform
253868 Neonatal dacryocystitis due to virus
253869 Neonatal candida infection
253870 Neonatal candidiasis of mouth
253871 Neonatal candida septicaemia
253872 Neonatal monilial septicaemia
253873 Other specified neonatal candida infection
253874 Staphylococcal intra-amniotic infection NEC
253875 Group A haemolytic streptococcal intra-amniotic infect. NEC
253876 Congenital hepatitis A infection
253877 Sepsis of newborn due to anaerobes
253878 Intraventric (nontraumatic) haemorhage grade 1 fet newborn
253879 Intraventric (nontraumatic) haemorhage grade 3 fet newborn
253880 Perinatal subarachnoid haemorrhage
253881 Perinatal cutaneous haemorrhage
253882 Perinatal cutaneous bruising
253883 Erythroblastosis fetalis
253884 Perinatal jaundice due to galactosaemia
253885 Neonatal cows' milk hypocalcaemia
253886 Neonatal hypomagnesaemia
253887 Newborn late metabolic acidosis
253888 Trans disorder carbohydrate metab of fet and newborn unsp
253889 Fetal or newborn blood disorder NOS
253890 Other perinatal digestive system disorders
253891 Perinatal digestive system disorders NOS
253892 Sclerema
253893 Newborn environmental hyperthermia
253894 Fits in newborn
253895 Central nervous system dysfunction in newborn NOS
253896 Newborn regurgitation of food
253897 Newborn drug withdrawal syndrome
253898 Acquired periventricular cysts of newborn
253899 Congenital renal failure
253900 Congenital hypotonia
253901 Neonatal cardiac dysrhythmia
253902 [X]Fetus+newborn affectd/oth medical procedure on mother,NEC
253903 [X]Fetus+newbrn affect/oth forms/placental separatn+h'morrhg
253904 [X]Other low birth weight
253905 [X]Other and unspecified atelectasis of newborn
253906 [X]Other apnoea of newborn
253907 [X]Other bacterial sepsis of newborn
253908 [X]Neonat jaun due/drg,toxn transmit frm mother/given newbrn
253909 [X]Other specified transitory neonatal endocrine disorders

253910 [X]Other transitory metabolic disturbances of newborn
253911 [X]Transitory neonatl disord calcium and magnes metab uns
255064 Accident due to neglect of newborn
255697 [V]Normal pregnancy
255698 [V]Unspecified pregnant state
255703 [V]stillbirth
255704 [V]Twins, both live born
255705 [V]Unspecified delivery outcome
255706 [V]Other specified antenatal screening
255711 [V]Other multiple birth, unspecified, born in hospital
255848 Top hysterotomy
255849 Excision ectopic pregnancy
255850 Repositioning foetus
255851 Forceps extraction midcavity
255852 Forceps delivery
255853 Antepartum operation
255854 Induction labour missed abortion
255948 Alpha-feto protein high
255955 Follicular stimulating hormone level
255956 Placental function test
256038 Postnatal visit
256250 Instruction antenatal
256251 Examination postnatal normal
256840 Pregnancy bleeding
256844 Static weight gain pregnancy
256845 Induced abortion medical indication
256846 Self-induced abortion
256848 Delivery contracted pelvis
256849 Malpresentation at delivery crossbirth
256851 Uterine perforation obstetrical
257126 Erb's palsy due birth injury
257127 Aspiration contents birth canal
257129 Insufficiency respiratory newborn
257130 Neonatal atelectasis
257131 Caesarian section birth (baby)
257132 Fontanelle anterior large at birth
257176 Icterus
257682 Heavy labourer NOS
257699 FH: Twin pregnancy
257775 Pregnancy benefit NOS
257826 H/O: miscarriage
257828 H/O: 3 abortions
257830 H/O: ectopic pregnancy
257831 H/O: baby feeding method
258032 O/E - fetal movements
258309 Serum pregnancy test negative
258377 Urine pregnancy test
258378 Urine pregnancy test positive
258604 Ultrasound in obstetric diagn.
258605 U-S scan - multiple fetus
258606 Dating/booking US scan
258649 Pregnant - V.E. confirms
258650 A/N care: social risk NOS
258651 A/N care: medical risk
258652 Ante-natal care: not wanted
258653 No A/N care: not known preg.
258654 Parent craft class not offered
258655 A/N amniocentesis - not wanted
258656 A/N U/S scan not offered
258657 A/N U/S scan offered
258658 A/N U/S scan normal +? Dates
258659 Antenatal ultrasound scan at 9-16 weeks
258660 A/N Rh antibody screen
258661 Rubella screen not offered
258662 A/N sickle cell screen done
258663 Antenatal examinations
258664 A/N 16 week examination
258665 A/N 36 week examination
258666 A/N 37 week examination
258667 A/N 41 week examination
258668 Breast feeding with supplement
258669 Double test
258670 Born - place delivered
258671 Ambulance birth
258672 2nd stage of labour length
258673 Length of labour NOS
258674 Outcome of delivery
258675 Single stillbirth
258676 Twins - both live born
258677 Triplets-1 live+ 2 still born
258678 Baby female
258679 2 female babies
258680 Birthweight of baby NOS
258681 Birth HC = 50th-74th centile
258682 Birth length=90th-96th centile
258683 Apgar at 1 minute = 4
258684 Apgar at 1 minute = 6
258685 Apgar at 5 minutes = 1
258686 Apgar at 10 minutes = 9
258687 Apgar at 10 minutes NOS
258688 Cot death liability
258689 High risk infant
258690 Birth details NOS
258693 Child development examinations
258705 Child exam. - birth
258706 Child not examined at birth
258707 Child birth exam. - normal

258708	Child exam. - birth NOS
258794	Pre-pregnancy counselling
258799	Pregnancy dental advice
259419	Instillation of therapeutic substance into bladder
259503	Curettage of uterus for termination of pregnancy NEC
259504	Other evacuation of contents of uterus
259505	Dilation cervix & evacuation products conception uterus NEC
259506	Suction termination of pregnancy
259509	Intrauterine artificial insemination
259510	Artficial insemination NEC
259534	Childbirth operations
259535	Fetus operations
259536	Therapeutic foetoscopic operations on fetus
259537	Fetoscopic examination of fetus and sampling of fetal blood
259538	Other specified therapeutic percutaneous operation on fetus
259539	Other specified other operation on amniotic cavity
259540	Repositioning of retroverted gravid uterus
259541	Artificial rupture of membranes
259542	Induction of labour using prostaglandins
259543	Syntocinon induction of labour
259544	Breech extraction delivery NOS
259545	Other specified forceps cephalic delivery
259546	Normal delivery NOS
259547	Cleidotomy of fetus to facilitate delivery
259548	Curettage of delivered uterus
259549	Manual removal retained products conception delivered uterus
259550	Manual removal products of conception delivered uterus NOS
260216	Child for adoption
260262	Requests pregnancy termination
260277	Patient date of birth
260300	FP24 maternity claim status
260499	Abortive plague
261017	Post-birth injury panhypopituitarism
262094	Complications of pregnancy, childbirth and the puerperium
262095	Blighted ovum
262097	Tubal pregnancy
262098	Spontaneous abortion with sepsis
262099	Incomplete spontaneous abortion with metabolic disorder
262100	Incomp spontaneous abortion + other specified complication
262101	Unsp inevitable mis comp by delayed or excessive haemorrhage
262102	Unspecified inevitable miscarriage without complication
262103	Complete inev misc compl by genital tract and pelvic infec
262104	Complete inevitable miscar comp by delayed or excessive haem
262105	Complete inevitable miscarriage with OS complication
262106	Spontaneous abortion NOS
262107	Unspecified legal abortion with other specified complication
262108	Legal abortion incomplete
262109	Complete legal abortion + genital tract or pelvic infection
262110	Complete legal abortion with no mention of complication
262111	Legally induced abortion NOS
262112	Illegally induced abortion
262113	Incomplete illegal abortion + genital tract/pelvic infection
262114	Unspecified abortion with complication NOS
262115	Unspecified incomplete abortion + no mention of complication
262116	Failed attempted abortion + damage to pelvic organs/tissues
262117	Failed attempted abortion with renal failure
262118	Failed attempted abortion with shock
262119	Failed attempted abortion with other specified complication
262120	Delayed/excessive haemorrhage following abortive pregnancy
262121	Readmission for retained produc of concept, unspec abortion
262122	Pregnancy complications
262123	Inevitable abortion
262124	Antepartum haemorrhage, abruptio placentae, placenta praevia
262125	Antepartum haemorrhage with hypofibrinogenaemia
262126	Antepartum haemorrhage NOS, unspecified
262127	Benign essential hypertension in preg/childb/puerp +p/n comp
262128	Renal hypertension in pregnancy/childbirth/puerperium NOS
262129	Other pre-existing hypertension in preg/childb/puerp - deliv
262130	Oth pre-exist hypert in preg/childb/puerp -del with p/n comp
262131	Severe pre-eclampsia
262132	Eclampsia with postnatal complication
262133	Pre-eclampsia or eclampsia with hypertension unspecified
262134	Unspecified hypertension in preg/childb/puerp - not deliv
262135	Excessive pregnancy vomiting
262136	Mild hyperemesis unspecified
262137	Mild hyperemesis-delivered
262138	Hyperemesis gravidarum with metabolic disturbance - not del
262139	Late pregnancy vomiting - not delivered
262140	Unspecified pregnancy vomiting NOS
262141	Other threatened labour
262142	Papyraceous fetus
262143	Maternal obesity syndrome

262144 Peripheral neuritis in pregnancy - delivered
262145 Peripheral neuritis in pregnancy - delivered with p/n comp
262146 Asymptomatic bacteriuria in pregnancy
262147 Asymptomatic bacteriuria in pregnancy - del with p/n comp
262148 Cystitis of pregnancy
262149 Liver disorder in pregnancy
262150 Liver disorder in pregnancy - not delivered
262151 Herpes gestationis - delivered with postnatal complication
262152 Glycosuria during pregnancy
262153 Glycosuria during pregnancy with postnatal complication
262154 Maternal syphilis, unspec whether in pregnancy or puerperium
262155 Maternal gonorrhoea in pregnancy/childbirth/puerperium NOS
262156 Maternal tuberculosis,unspec whether in pregnancy/puerperium
262157 Maternal malaria during pregnancy - baby delivered
262158 Maternal malaria in puerperium - baby delivered
262159 Maternal malaria during pregnancy/childbirth/puerperium NOS
262160 Maternal rubella in puerperium - baby previously delivered
262161 Other maternal viral dis. In pregnancy/childbirth/puerperium
262162 Other maternal viral disease in puerperium - baby delivered
262163 Other mat.infective/parasitic disease in preg/childb/puerp.
262164 Mat infect/parasitic dis NOS in pregnancy-baby not delivered
262165 Diabetes mellitus during pregnancy/childbirth/puerperium
262166 Diabetes mellitus in pueperium - baby previously delivered
262167 Thyroid dysfunction during pregnancy - baby delivered
262168 Thyroid dysfunction in puerperium-baby previously delivered
262169 Anaemia during pregnancy/childbirth/puerperium NOS
262170 Drug dependence during pregnancy - baby not yet delivered
262171 Mental disorder in puerperium - baby previously delivered
262172 Congenital cardiovascular disorders in preg/childb/puerp
262173 Risk factors in pregnancy
262174 Triplet pregnancy - delivered
262175 Other multiple pregnancy
262176 Other multiple pregnancy unspecified
262177 Multiple pregnancy NOS with antenatal problem
262178 Malposition and malpresentation of fetus
262179 Unstable lie - delivered
262180 Spontaneous breech delivery
262181 Breech presentation NOS
262182 Transverse lie unspecified
262183 Face presentation
262184 Fetal malposition and malpresentation NOS
262185 Mixed feto-pelvic disproportion unspecified
262186 Mixed feto-pelvic disproportion with antenatal problem
262187 Other fetal abnormality causing disproportion
262188 Other fetal abnormality causing disproportion with a/n prob
262189 Disproportion NOS - delivered
262190 Uterine operation scar in pregnancy/childbirth/puerp unspec
262191 Other uterine/pelvic floor abnormality in preg/childb/puerp
262192 Other cervical abnormality in pregnancy/childbirth/puerp NOS
262193 Congenital/acquired abnormality vagina in preg/childb/puerp
262194 Vulval abn complicating a/n care - baby not yet delivered
262195 Persistent hymen complicating a/n care - baby not delivered
262196 Persistent hymen complicating p/n care - baby delivered prev
262197 Pelvic soft tissue abnormality in preg/childb/puerp - deliv
262198 Fetus with central nervous system malformation
262199 Fetus with viral damage via mother unspecified
262200 Malformation of placenta
262201 Feto-placental problems NOS
262202 Polyhydramnios - delivered
262203 Polyhydramnios NOS
262204 Other problems of amniotic cavity and membranes
262205 Anhydramnios
262206 Premature rupture of membranes, labour delayed by therapy
262207 Prolonged spont/unspec rupture of membranes unspecified
262208 Prolonged artificial rupture of membranes with a/n problem
262209 Amniotic cavity infection unspecified
262210 Amniotic cavity and membrane problem NOS, unspecified
262211 Amniotic cavity and membrane problem NOS - delivered
262212 Failed mechanical induction with antenatal problem
262213 Failed medical or unspecified induction
262214 Septicaemia during labour
262215 Grand multiparity with antenatal problem
262216 Elderly primigravida
262217 Other problems affecting labour - delivered
262218 Other problems affecting labour with antenatal problem
262219 Obstructed labour caused by pelvic soft tissues unspecified
262220 Other failed trial of labour - delivered

262221 Failed forceps NOS
262222 Other failed ventouse extraction, unspecified
262223 Primary uterine inertia with antenatal problem
262224 Secondary uterine inertia unspecified
262225 Secondary uterine inertia NOS
262226 Other uterine inertia with antenatal problem
262227 Prolonged second stage NOS
262228 Cord tangled with compression with antenatal problem
262229 Vasa praevia unspecified
262230 Umbilical cord complications NOS, unspecified
262231 Vulval delivery trauma
262232 Second degree perineal tear during delivery
262233 Fourth degree perineal tear during delivery
262234 Fourth degree perineal tear during delivery - delivered
262235 Unspecified perineal laceration during delivery - delivered
262236 Vulval and perineal haematoma during delivery - delivered
262237 Other obstetric trauma
262238 Obstetric inversion of uterus - delivered with p/n problem
262239 Obstetric laceration of cervix unspecified
262240 Other obstetric pelvic organ damage
262241 Urethra injury - obstetric
262242 Other obstetric pelvic organ damage with postnatal problem
262243 Obstetric damage to pelvic joints and ligaments unspecified
262244 Other obstetric trauma unspecified
262245 Other obstetric trauma with antenatal problem
262246 Other immediate postpartum haemorrhage unspecified
262247 Secondary postpartum haemorrhage unspecified
262248 Afibrinogenaemia - postpartum
262249 Postpartum coagulation defects unspecified
262250 Retained membrane without haemorrhage
262251 Retained placenta with no haemorrhage unspecified
262252 Retained placenta with no haemorrhage - deliv with p/n prob
262253 Retained placenta with no haemorrhage with postnatal problem
262254 Retained placenta with no haemorrhage NOS
262255 Retained products with no haemorrhage unspecified
262256 Retained products with no haemorrhage - deliv with p/n prob
262257 Obstetric anaesthesia with pulmonary complications - deliv
262258 Obstetric anaesthesia with CNS comp - deliv with p/n problem
262259 Toxic reaction to local anaesthesia during pregnancy
262260 Spinal/epidural anaesth-induced headache during puerp
262261 Cardiac comps of anaesthesia during labour and delivery
262262 Other complications of obstetric anaesthesia - delivered
262263 Maternal hypotension syndrome - delivered with p/n problem
262264 Other complications of obstetric procedures - delivered
262265 Mid-cavity forceps delivery
262266 Delivery by combination of forceps and vacuum extractor
262267 Forceps delivery NOS
262268 Vacuum extractor delivery unspecified
262269 Other complications of labour and delivery - deliv +p/n prob
262270 Maternal exhaustion
262271 Complications of labour and delivery NOS, unspecified
262272 Puerperal endometritis
262273 Major puerperal infection NOS with postnatal complication
262274 Perineal obstetric varicose veins
262275 VV's of perineum/vulva in pregnancy/puerperium -del+p/n comp
262276 Vaginal varices in pregnancy
262277 Puerperal phlebitis
262278 Other venous complication of pregnancy and the puerperium
262279 Other venous comp of pregnancy/puerperium - deliv + p/n comp
262280 Venous complications of pregnancy and puerperium NOS
262281 Gestational thrombosis NOS
262282 Puerperal phlebitis NOS
262283 Puerperal pyrexia of unknown origin
262284 Puerperal pyrexia NOS
262285 Obstetric blood-clot pulmonary embolism - delivered
262286 Puerperal cerebrovascular disorder - delivered
262287 Caesarean wound disruption - delivered with p/n complication
262288 Complications of the puerperium NOS - delivered + p/n comp
262289 Obstetric breast abscess NOS
262290 Lymphangitis of breast - obstetric
262291 Obstetric breast infection NOS
262292 Lactation problems
262293 Retracted nipple in pregnancy/puerperium/lact with p/n comp
262294 Cracked nipple in pregnancy, the puerperium or lactation NOS
262295 Pain on breast feeding
262296 Other disorder of lactation NOS
262297 Disorder of lactation NOS, unspecified
262298 Other specified complications of the

puerperium

262299 Maternal care for fetus

262300 Maternal care for viable fetus in abdominal pregnancy

262301 [X]Other+unspcf failed induced abortion,without complication

262302 [X]Complic following abortion & ectopic & molar preg, unspec

262303 [X]Infections of other parts of urinary tract in pregnancy

262304 [X]Other+unspcf genitourinary tract infection in pregnancy

262305 [X]Other complications specific to multiple gestation

262306 [X]Intrapartum haemorrhage, unspecified

262307 [X]Other assisted breech delivery

262308 [X]Other infection of genital tract following delivery

262309 [X]Other venous complications in the puerperium

262310 [X]Oth complicatn/spinal+epidural anaesthes during puerperum

262311 Complications of pregnancy,childbirth and the puerperium NOS

262968 Fetus or neonate affected by maternal renal/urinary disease

262969 Fetus or neonate affected by maternal renal disease

262970 Fetus or neonate affected by maternal injury

262971 Fetus/neonate affected by poison transferred placenta/breast

262972 Fetus/neonate affected-placenta/breast transfer hallucinogen

262973 Fetus/neonate affected-plac./breast transfer anticonvulsant

262974 Fetus/neonate affected-plac./breast transfer uterine depress

262975 Fetus or neonate affected by maternal oligohydramnios

262976 Fetus or neonate affected by tubal ectopic pregnancy

262977 Fetus or neonate affected by triplet pregnancy

262978 Fetus or neonate affected by malpresentation before labour

262979 Fetus affected by malpresentation

262980 Fetus or neonate affected by transverse lie before labour

262981 Fetus/neonate affected-prem placental separation+acc haem'ge

262982 Fetus or neonate affected by other cord compression

262983 Fetus or neonate affected by thrombosis of cord

262984 Fetus or neonate affected by chorioamnionitis

262985 Fetus/neonate affected by mat analgesic agent in labour/del

262986 Fetus/neonate affected by mat tranquillizers in labour/deliv

262987 Fetus/neonate affected by other labour and delivery problems

262988 Fetus/neonate affected by destructive operation aid delivery

262989 Fetus/neonate affected by labour/delivery complication NOS

262990 Fetal growth retardation NOS

262991 Vacuum extraction chignon

262992 Scalp injury due to birth trauma, NOS

262993 Birth fracture of ulna

262994 Fracture of skull due to birth trauma

262995 Spine or spinal cord injury due to birth trauma

262996 Spinal cord rupture due to birth trauma

262997 Brachial plexus palsy due to birth trauma

262998 Brachial palsy unspecified, due to birth trauma

262999 Other specified brachial plexus palsy due to birth trauma

263000 Cranial or peripheral nerve palsy due to birth trauma NOS

263001 Testicular haematoma due to birth trauma

263002 Renal injury due to birth trauma

263003 Fetal death due to labour anoxia

263004 Fetal distress, unspecified when, liveborn

263005 Anoxia in newborn NOS

263006 Other specified massive aspiration syndrome

263007 Perinatal mediastinal emphysema

263008 Perinatal haemoptysis

263009 Perinatal pulmonary fibroplasia

263010 Respiratory failure of newborn

263011 Perinatal respiratory problems NOS

263012 Fetal or newborn respiratory problems NOS

263013 Congenital malaria

263014 Congenital tuberculosis

263015 Neonatal infective mastitis

263016 Neonatal conjunctivitis

263017 Neonatal dacryocystitis/conjunctivitis due to other bacteria

263018 Neonatal dacryocystitis or conjunctivitis due to virus

263019 Neonatal dacryocystitis due to chlamydiae

263020 Neonatal conjunctivitis due to other inclusion body

263021 Neonatal monilia

263022 Neonatal thrush

263023 Congenital hepatitis B infection

263024 Congenital infectious and parasitic disease, unspecified

263025 Subarachnoid haemorrhage due to birth injury

263026 Umbilical haemorrhage after birth

263027 Umbilical haemorrhage after birth, unspecified

263028 Newborn slipped umbilical ligature

263029 Other specified umbilical haemorrhage after birth

263030 Perinatal haematemesis

263031 Other specified perinatal gastrointestinal haemorrhage

263032	Intracranial nontraumatic haemorrhage of fetus and newborn
263033	Cerebellar (nontraum) and post fossa haemorhage fet newborn
263034	Other specified fetal or newborn haemorrhage
263035	Isoimmunisation of newborn
263036	Perinatal jaundice from bleeding
263037	Perinatal jaundice from other specified haemolysis
263038	Icterus neonatorum, unspecified
263039	Neonatal hypoparathroidism
263040	Other neonatal hypocalcaemia
263041	Transitory neonatl disord calcium and magnes metab uns
263042	Perinatal intestinal perforation
263043	Meconium obstruction NOS
263044	Neonatal chloridorrhoea
263045	Sclerema neonatorum NOS
263046	Newborn breast engorgement
263047	Other perinatal skin disorders
263048	Withdrawal symptoms from therapeutic use of drugs in newborn
263049	Congenital uraemia
263050	Other perinatal conditions NOS
263051	Other perinatal conditions NOS
263052	Perinatal death
263053	[X]Congenital pneumonia due to other organisms
263054	[X]Infections specific to the perinatal period
263055	[X]Neonatal jaundice from other+unspcf hepatocellular damage
264873	[V]Pregnancy confirmed
264874	[V]Pregnancy with history of trophoblastic disease
264875	[V]Postnatal care and examination
264881	[V]Other multiple birth, some live born
264883	[V]Other multiple birth, mates stillborn
264884	[V]Unspecified birth
264960	[V]Pregnancy examination or test, pregnancy unconfirmed
265024	Abortion hysterotomy
265025	Decapitation foetus
265026	Forceps extraction low
265027	Rotation foetal head manually
265028	Caesarean section classical upper segmen
265029	Retained placenta manual removal
265030	Suture obstetric laceration
265122	Alpha-feto protein normal
265128	Az test
265129	Pregnancy test sent (awaiting result)
265178	Seen in neonatal clinic
265237	Pregnancy planned
265240	Preconception advice
265241	Pregnancy symptoms
265387	Pregnancy out of wedlock
265408	Screening baby
265426	Pre-conception counselling clinic attend
265461	Pregnancy prenatal care
265462	Medical examination antenatal
265463	Pregnancy booking consultation
266073	Placenta praevia marginal
266075	Braxton hicks contractions
266076	Multiparity
266077	Pregnancy phlebothrombosis
266078	Prolapsed uterus pregnancy
266079	Svd (spontaneous vertex delivery)
266080	Delivery domicillary (mother)
266081	Delivery gp unit (mother)
266082	Delivery premature in hospital/maternity
266083	Shoulder presentation at delivery
266085	Inertia uterus complicating delivery
266086	Dystocia
266087	Inversion uterus complicating delivery
266090	Traumatic birth incident
266091	Septicaemia puerperal
266098	Milk excessive
266327	Injury newborn accident at birth
266328	Incompatibility rhesus newborn
266330	Asphyxia newborn
266331	Gp unit confinement
266334	Newborn infant dehydration
266335	Jittering baby
266336	Neonatal death
266374	Fat wheezy baby
266918	FH: Multiple pregnancy
266965	Midwife attends 11 - 13 days post discharge
266987	Death of infant
267026	H/O: birth injury
267038	H/O: stillbirth
267565	Serum pregnancy test (B-HCG)
267566	Serum pregnancy test positive
267650	Urine pregnancy test requested
267651	High sensitivity urine pregnancy test
267896	Pregnant - blood test confirms
267897	Pregnant - planned
267898	A/N care: obstetric risk NOS
267899	A/N care: H/O infertility
267900	A/N care from G.P.
267901	A/N care midwifery led
267902	Intends to breast feed
267903	Feeding intention - NOS
267904	Pregnancy prolonged - 42 weeks

267905	Bottle changed to breast
267906	P/N care from G.P.
267907	P/N care started at birth
267908	Maternal P/N exam. Refused
267909	Postnatal examination normal
267910	Triple test not offered
267911	Double test not wanted
267912	Delivery place planned
267913	Length of gestation
267914	Gestation <24 weeks
267915	3 male babies
267916	Sex of baby NOS
267917	Maturity of baby
267918	Baby BW = 25 -49% (3150-3449g)
267919	Baby BW = 2.0 - 2.5kg
267920	Birth HC = 3rd-9th centile
267921	Birth length = < 3rd centile
267922	Apgar at 1 minute = 8
267923	Apgar at 10 minutes
267924	Spontaneous onset of labour
267938	Baby length centiles
267973	Child 8 week exam.not attended
268040	TOP counselling
268042	Care of teeth advice -in preg.
268687	Dilation cervix uteri & curettage for termination pregnancy
268688	Curettage of uterus for termination of pregnancy NEC
268690	Introduction of abortifacient into uterine cavity NOS
268715	Other specified therapeutic fetoscopic operation
268716	Selective feticide NEC
268717	Percutaneous biopsy of fetus
268718	Other operations on amniotic cavity
268719	Sampling of chorionic villus NEC
268720	Cerclage of cervix of gravid uterus
268721	Other specified elective caesarean delivery
268722	Forceps to aftercoming head (breech)
268723	Other specified breech extraction delivery
268724	Other breech delivery NOS
268725	Scanzoni forceps cephalic delivery with rotation
268726	Ventouse extraction
268727	Cephalic vagin deliv abnorm pres head without instrument NOS
268728	Other methods of delivery
268729	Trial of labour NEC
268730	Other operations to facilitate delivery
268731	Manual removal products of conception delivered uterus OS
268732	Expression of placenta
268733	Immed repair obstetric laceration vagina and floor of pelvis
268734	Other obstetric operation NOS
268735	Obstetric monitoring
268741	Excision of birthmark of head or neck
268832	Open instillation therapeutic substance in abdominal cavity
269234	[SO]Delivered uterus
269396	Pregnancy vitamin/iron prophyl
269430	Ante-natal exercises
269483	Procedure refused
269573	Less 24 wk involv risk injury physic/mentl health preg woman
269776	Coxsackie myocarditis
270308	Malnutrition NOS
271380	Missed abortion
271381	Delivery of viable fetus in abdominal pregnancy
271382	Unspec spontaneous abortion + genital tract/pelvic infection
271383	Unspec spontaneous abortion + delayed/excessive haemorrhage
271384	Unspec spontaneous abortion + pelvic organ/tissue damage
271385	Unspec spontaneous abortion without mention of complication
271386	Spontaneous abortion incomplete
271387	Retained products after spontaneous abortion
271388	Complete spontaneous abortion +delayed/excessive haemorrhage
271389	Unspec inev miscarriage comp by genital tract pelvic infec
271390	Unspecified inevitable miscarriage with OS complication
271391	Incomplete inevitable miscarriage with unspecified comp
271392	Incomplete inevitable miscarriage with other specified comp
271393	Unspecified legal abortion + genital tract/pelvic infection
271394	Unspecified legal abortion with shock
271395	Incomplete legal abortion + delayed or excessive haemorrhage
271396	Incomplete legal abortion + damage to pelvic organs/tissues
271397	Incomplete legal abortion NOS
271398	Complete legal abortion with renal failure
271399	Complete legal abortion with metabolic disorder
271400	Complete legal abortion with complication NOS
271401	Incomplete illegal abortion NOS
271402	Complete illegal abortion with other specified complication
271403	Unspecified abortion NOS
271404	Unspecified incomplete abortion with embolism
271405	Complications following abortion/ectopic/molar pregnancies
271406	Pelvic organ or tissue damage NOS follow abortive pregnancy
271407	Blood-clot embolism following abortive

	pregnancy
271408	Readmission for abortive pregnancy (NHS codes)
271409	Cardiac failure following abortive pregnancy
271410	Failed attempted abortion
271411	Threatened abortion - not delivered
271412	Early pregnancy haemorrhage NOS
271413	Antepartum haemorrhage
271414	Placenta praevia with haemorrhage
271415	Premature separation of placenta with coagulation defect
271416	Antepartum haemorrhage with hyperfibrinolysis
271417	Other antepartum haemorrhage - delivered
271418	Antepartum haemorrhage NOS - delivered
271419	Renal hypertension in preg/childbirth/puerp - not delivered
271420	Severe pre-eclampsia unspecified
271421	Pre-exist hyperten heart renal dis comp preg chldbirth/puerp
271422	Hyperemesis of pregnancy
271423	Other pregnancy vomiting unspecified
271424	Prolonged or post-term pregnancy
271425	Post-term pregnancy unspecified
271426	Papyraceous fetus unspecified
271427	UTI - urinary tract infection in pregnancy
271428	Glycosuria during pregnancy - delivered with p/n comp
271429	Other pregnancy complication - not delivered
271430	Other pregnancy complication with postnatal complication
271431	Maternal syphilis in puerperium - baby previously delivered
271432	Maternal malaria in pregnancy, childbirth and the puerperium
271433	Rubella contact in pregnancy
271434	Maternal rubella in puerperium - baby delivered
271435	Other mat.infective/parasit dis in puerp-baby previously del
271436	Mat infect/parasitic dis NOS - pregnancy/puerperium unspec
271437	Thyroid dysfunction in pregnancy/childbirth/puerperium
271438	Drug dependence in pregnancy, childbirth and the puerperium
271439	Drug dependence - unspec whether during pregnancy/puerperium
271440	Mental disorder in the puerperium - baby delivered
271441	Mental disorder during pregnancy/childbirth/puerperium NOS
271442	Other cardiovascular disease in pregnancy - baby delivered
271443	Orthopaedic disorder in pregnancy - baby not yet delivered
271444	Abnormal GTT - unspec whether during pregnancy/puerperium
271445	Abnormal GTT in puerperium - baby delivered
271446	Medical condition NOS during pregnancy - baby delivered
271447	Normal delivery in a completely normal case
271448	Multiple pregnancy
271449	Quadruplet pregnancy unspecified
271450	Multiple pregnancy NOS - delivered
271451	Multiple pregnancy NOS
271452	Unstable lie unspecified
271453	Unstable lie with antenatal problem
271454	Prolapsed arm - delivered
271455	Prolapsed arm NOS
271456	Generally contracted pelvis - delivered
271457	Outlet pelvic contraction
271458	Hydrocephalic disproportion - delivered
271459	Other fetal abnormality causing disproportion NOS
271460	Other disproportion unspecified
271461	Other disproportion - delivered
271462	Double uterus in pregnancy, childbirth and the puerperium
271463	Cong abnormality uterus - baby delivered + postpartum compl
271464	Uterine fibroid - baby delivered + postpartum complication
271465	Cystocele - delivered with postpartum complication
271466	Rectocele in pregnancy, childbirth or the puerperium NOS
271467	Shirodkar suture present
271468	Vaginal abnormality in pregnancy/childbirth/puerperium
271469	Septate vagina affecting obstetric care
271470	Septate vagina - baby delivered
271471	Vaginal abnormality complicating p/n care - baby deliv prev
271472	Stenosis of vagina in pregnancy/childbirth/puerperium NOS
271473	Rigid perineum in pregnancy, childbirth and the puerperium
271474	Suspect fetal hydrocephaly
271475	Fetus with viral damage via mother
271476	Maternal care for damage to fetus from maternal rubella
271477	Fetus with damage due to other maternal disease unspecified
271478	Fetus with damage due to coil
271479	Fetus with other damage NEC, unspecified
271480	Fetal-maternal haemorrhage unspecified
271481	Other blood-group isoimmunisation
271482	Maternal care for fetal bradycardia during pregnancy
271483	Fetal death in utero
271484	Intrauterine death with antenatal problem
271485	Small-for-dates fetus in pregnancy
271486	Large-for-dates fetus in pregnancy
271487	Other feto-placental problems

271488 Feto-placental problems NOS - delivered
271489 Oligohydramnios with antenatal problem
271490 Prolonged spont/unspec rupture of membranes - delivered
271491 Delay deliv after spontaneous or unsp rupture of membranes
271492 Prolonged artificial rupture of membranes - delivered
271493 Prolonged artificial rupture of membranes NOS
271494 Amniotic cavity infection
271495 Amniotic cavity and membrane problems NOS
271496 Failed mechanical induction NOS
271497 Failed medical or unspecified induction with a/n problem
271498 Unspecified maternal pyrexia during labour, unspecified
271499 Abnormal haematologic find on antenatal screening of mother
271500 Obstructed labour due to fetal malposition NOS
271501 Obstructed labour caused by bony pelvis - delivered
271502 Locked twins unspecified
271503 Primary uterine inertia - delivered
271504 Precipitate labour - delivered
271505 Hypertonic uterine inertia with antenatal problem
271506 Prolonged labour unspecified
271507 Prolonged second stage
271508 Delayed delivery second twin with antenatal problem
271509 Prolapse of cord unspecified
271510 Cord tangled with compression unspecified
271511 Short cord
271512 Labial tear
271513 Anal sphincter tear
271514 Third degree perineal tear during delivery with p/n problem
271515 Vulval and perineal haematoma during delivery
271516 Vulval/perineal trauma during delivery NOS - delivered
271517 Rupture of uterus before labour unspecified
271518 Rupture of uterus during and after labour - delivered
271519 Obstetric inversion of uterus with postnatal problem
271520 Laceration of cervix - obstetric
271521 Obstetric laceration of cervix - delivered
271522 High vaginal laceration - obstetric
271523 Obstetric trauma NOS, unspecified
271524 Third-stage postpartum haemorrhage
271525 Secondary postpartum haemorrhage with postnatal problem
271526 Obstetric anaesthesia with pulmonary comp - deliv + p/n prob
271527 Obstetric anaesthesia with CNS comp with postnatal problem
271528 Failed or difficult intubation during pregnancy
271529 Failed or difficult intubation during labour and delivery
271530 Maternal distress unspecified
271531 Maternal distress - delivered with postnatal problem
271532 Maternal distress with antenatal problem
271533 Obstetric shock - delivered
271534 Post-delivery acute renal failure unspecified
271535 Post-delivery acute renal failure NOS
271536 Other complications of obstetric procedures
271537 Infection of obstetric surgical wound
271538 Vacuum extractor delivery NOS
271539 Caesarean delivery
271540 Complications of labour and delivery NOS with antenatal prob
271541 Complications of labour and delivery NOS with p/n problem
271542 Other specified complications of labour or delivery
271543 Sepsis - puerperal
271544 Puerperal salpingitis - delivered with postnatal comp
271545 Puerperal salpingitis NOS
271546 Major puerperal infection NOS
271547 Genital varices in the puerperium
271548 Phlebitis - postpartum
271549 Haemorrhoids in pregnancy and the puerperium - delivered
271550 Venous complication pregnancy/puerperium NOS + a/n comp
271551 Gestational phlebopathy NOS
271552 Amniotic fluid pulmonary embolism with a/n complication
271553 Other complications of the puerperium NEC
271554 Puerperal cerebrovascular disorder NOS
271555 Caesarean wound disruption
271556 Obstetric perineal wound disruption - deliv + p/n comp
271557 Obstetric perineal wound disruption NOS
271558 Placental polyp NOS
271559 Complications of the puerperium NOS
271560 Obstetric breast infections
271561 Obstetric breast infection NOS - delivered
271562 Obstetric breast infection NOS with postnatal complication
271563 Failure of lactation
271564 Suppressed lactation unspecified
271565 Other disorder of lactation - delivered
271566 Disorder of lactation NOS - delivered
271567 Disorder of lactation NOS - delivered with p/n complication

271568 Disorder of lactation NOS with antenatal complication
271569 Disorder of lactation NOS with postnatal complication
271570 Complications of the puerperium NOS
271571 Spontaneous vertex delivery
271572 Spontaneous breech delivery
271573 [X]Oth+unspcf failed inducd abortn,wth oth+unspcf complicatn
271574 [X]Other complications follow abortn+ectopic+molar pregnancy
271575 [X]Other maternal disorders predominant related to pregnancy
271576 [X]Other complications of anaesthesia during pregnancy
271577 [X]Other specified obstetric trauma
271578 [X]Other complications of anaesthesia during labour+delivery
271579 [X]Other single delivery by caesarean section
271580 [X]Other specified puerperal complications
271687 Adult still's disease
272025 Blue baby
272108 Predislocation status of hip at birth
272165 Collodion baby
272216 Fetus or neonate affected by maternal infections
272217 Fetus/neonate affected by other chronic maternal RS disease
272218 Fetus/neonate affected-plac./breast transfer chemotherapy
272219 Fetus/neonate affected-placenta/breast transfer medicine NEC
272220 Fetus/neonate affected maternal premature rupture membrane
272221 Fetus/neonate affected by other maternal complic pregnancy
272222 Fetus/neonate affect by placental damage-surgical induction
272223 Fetus or neonate affected by premature placental separation
272224 Fetus or neonate affected by marginal sinus rupture
272225 Fetus or neonate affected by placental abnormality NOS
272226 Fetus or neonate affected by placental transfusion syndrome
272227 Fetus/neonate affected by twin-to-twin transplacental transf
272228 Fetus or neonate affected by cord round neck
272229 Fetus/neonate affected by malposition/disproportion-delivery
272230 Fetus/neonate affected by disproportion during labour/delive
272231 Fetus or neonate affected by obstructed labour NEC
272232 Fetus/neonate affected by mat anaesthetic/analgesia-lab/del
272233 Fetus/neonate affected by mat anaesthetic agent in lab/deliv
272234 Fetus/neo. Affected maternal anaes/analgesia in lab/del OS
272235 Fetus or neonate affected by long labour
272236 Disorders due to slow fetal growth, low and high birthweight
272237 Slow fetal growth and fetal malnutrition
272238 Extreme prematurity - less than 28 weeks
272239 Very large baby - weight greater than 4500gm
272240 Cerebral haemorrhage unspecified, due to birth trauma
272241 Fracture of tibia or fibula due to birth trauma
272242 Birth dislocation of the shoulder
272243 Birth plexus inj - Erb-Duchenne
272244 Birth plexus injury - Klumpke-Dejerine
272245 Klumpke-Dejerine paralysis
272246 Birth plexus injury - whole plexus
272247 Brachial plexus palsy due to birth trauma NOS
272248 Cranial nerve injury due to birth trauma
272249 Other specified birth trauma
272250 Torticollis due to birth injury
272251 Birth trauma due to amniocentesis
272252 Severe birth asphyxia - apgar score less than 4 at 1 minute
272253 Mild to moderate birth asphyxia - apgar score 4-7 at 1 min
272254 Hypoxia in newborn NOS
272255 Congenital pneumonia due to viral agent
272256 Aspiration of liquor or mucus in newborn
272257 Perinatal pneumopericardium
272258 Perinatal interstitial emphysema
272259 Perinatal cyanotic attacks NOS
272260 Neonatal conjunctivitis due to virus
272261 Neonatal dacryocystitis due to other inclusion body
272262 Ophthalmia neonatorum due to inclusion body NEC
272263 Neonatal candidiasis of other skin
272264 Congenital viral hepatitis
272265 Other specified congenital viral hepatitis
272266 Sepsis of the newborn
272267 Perinatal coagulase negative staphylococcus
272268 Sepsis of newborn due to other+unspecified streptococci
272269 Other specified perinatal infection
272270 Neonatal urinary tract infection
272271 Fetal haemorrhage into co-twin
272272 Fetal haemorrhage into mother's circulation
272273 Neonatal haematemesis
272274 Perinatal jaundice from hereditary haemolytic anaemia NOS
272275 Kernicterus of newborn NOS
272276 Neonatal myasthenia gravis
272277 Transitory neonatal electrolyte disturbance NOS

272278 Neonatal tetany without calcium or magnesium deficiency
272279 Neonatal hypoparathyroidism
272280 Other transitory neonatal endocrine/metabolic disturb. NOS
272281 Congenital anaemia from fetal blood loss
272282 Inspissated milk causing intestinal obstruction
272283 Delayed passage of meconium NOS
272284 Neonatal diarrhoea
272285 Idiopathic hydrops fetalis
272286 Urticaria neonatorum
272287 Seizures in newborn
272288 Central nervous system dysfunction in newborn NOS
272289 Newborn cerebral depression
272290 Coma in newborn
272291 Other newborn abnormal cerebral signs
272292 Neonatal hypotension
272293 Other specified perinatal condition
272294 Floppy infant
272295 Neonatal "craniotabes"
272296 Persistent fetal circulation
272297 Cardiovasc disord origin in the perinat period, unspecif
272298 [X]Fetus+newborn affected/other compression/umbilical cord
272299 [X]Fetus+newborn affected/other maternal noxious influences
272300 [X]Other neonatal aspiration syndromes
272301 [X]Oth conds relat/interstial emphysema orig perinatl period
272302 [X]Other congenital malaria
272303 [X]Other specified perinatal haematological disorders
272304 [X]Transitory endocr & metab disord specif to fetus/newborn
272305 [X]Oth transitry disordrs/carbohydrat metabolsm/fetus+newbrn
272306 [X]Oth transitry neonatl disordrs/calcium+magnesm metabolism
272307 [X]Other electrolyte disturbances of newborn
272308 [X]Transitory neonatal endocrine disorder, unspecified
272309 [X]Other neonatal peritonitis
272310 [X]Other feeding problems of newborn
272346 [D]wheezing
273430 Accidentally struck by object falling from still machine
273585 War injury due to explosion of breech block
274046 [V]Pregnant state, incidental
274047 [V]Supervision of other normal pregnancy
274048 [V]High-risk pregnancy supervision
274057 [V]Other multiple birth, all live born
274059 [V]Twin, mate liveborn, NOS
274060 [V]Twin, mate stillborn
274061 [V]Other multiple birth, mates live born
274062 [V]Other multiple birth, not hospitalised, mates stillborn
274063 [V]Unspecified birth, not hospitalised
274157 [X]Other multiple births, all liveborn
274200 Chorionic villous sampling
274201 Version internal (assisted delivery)
274202 Forceps extraction low with episiotomy
274203 Ventouse extraction delivery (mother)
274204 Caesarian section lower segment
274205 Abortion incomplete curettage
274206 Uterus evacution (abortion)
274207 Trachelorrhaphy obstetric postpartum
274208 Repair anal sphincter obstetric
274291 Breast-fed (baby)
274296 Alpha-feto protein low
274465 Wife pregnant
274493 Pregnancy operation during
274550 Screening newborn examination normal
274556 Screening baby examination
274568 Newborn infant examination
274597 Pregnancy examination normal
274599 Care well baby/child- poor
274600 Twin mate stillborn
274608 Myocarditis newborn (aseptic/epidemic)
275198 Vaginitis pregnancy
275201 Pregnancy abnormal
275202 Missed labour
275203 Pregnancy cystitis
275204 Vomiting pregnancy
275206 Miscarriage
275207 Normal delivery (mother)
275209 Domiciliary confinement (mother)
275210 Delivery premature outside hospital
275211 Placenta praevia complicating delivery
275212 Delivery accreta placenta
275213 Malpresentation at delivery
275217 Hydramnios at delivery
275218 Sudden death childbirth cause unknown
275224 Postpartum haemorrhage delayed
275225 Postnatal haemorrhage
275468 Prolapsed cord (baby)
275469 Injury birth
275471 Premature baby
275472 Delivery domicillary (baby)
275474 Accident intrauterine foetus/newborn
275475 Crossbirth (baby)
275476 Caesarian section (baby)
275478 Normal apgar rating
276002 Light labourer NOS

276068	Mid-wife attends
276069	Midwife attends 21 - 24 days post discharge
276071	Unwanted pregnancy
276142	H/O: perinatal problem
276143	H/O: birth asphyxia
276159	H/O: miscarriage NOS
276160	H/O: normal delivery
276161	Past pregnancy outcome NOS
276241	Well baby
276693	Urine pregnancy test negative
276942	No ante-natal care
276943	Private home delivery booking
276944	A/N amniocentesis - offered
276945	A/N amniocentesis - awaited
276946	A/N U/S scan normal += dates
276947	A/N Rh screen not offered
276948	Rh screen - 3rd preg. Sample
276949	AFP blood test offered
276950	Rubella status not known
276951	A/N syphilis screen not done
276952	A/N blood gp screen not done
276953	A/N 32 week examination
276954	A/N 42 week examination
276955	Fetal movements felt
276956	Vaginal "show"
276957	Infant breast fed
276958	Bottle fed
276959	Infant bottle fed
276960	Downs screen - blood test
276961	Gestation = 24 weeks
276962	Consultant unit birth
276963	3rd stage of labour length
276964	Single live birth
276965	3 female babies
276966	Baby post-mature
276967	Baby BW = > 96% (over 4499g)
276968	Baby BW = 4400 - 4499g
276969	Birth head circumference NOS
276970	Birth length=3rd-9th centile
276971	Apgar at 5 minutes = 3
276972	Apgar at 5 minutes = 6
276973	Apgar at 5 minutes = 8
276974	Bonding problems
276975	Battered baby suspect - FH
276984	Birth exam. Abnormal -for obs.
276999	Child exam.: development
277005	Child 7 month exam
277074	Abortion counselling
277075	Contraception counselling
277083	Pregnancy advice
277084	Drugs in pregnancy advice
277412	Intubation oesophagus & instillation of acid or alkali HFQ
277789	Insertion of prostaglandin abortifacient pessary
277801	Excision of ruptured ectopic tubal pregnancy
277820	Fetus and gravid uterus operations
277821	Fetus & gravid uterus ops
277822	Diagnostic percutaneous examination of placenta
277823	Amnioscopy
277824	Surgical induction of labour NOS
277825	Oxytocic induction of labour
277826	Elective caesarean delivery NOS
277827	Upper uterine segment caesarean delivery NEC
277828	Lower uterine segment caesarean delivery NEC
277829	Breech extraction delivery
277830	Other breech delivery
277831	Barton forceps cephalic delivery with rotation
277832	Forceps cephalic delivery NOS
277833	High vacuum delivery
277834	Vacuum delivery before full dilation of cervix
277835	Other operation to facilitate delivery NOS
277836	Repair of episiotomy
277837	Repositioning of umbilical cord
277838	Other specified other obstetric operation
277839	Obstetric operations NOS
277918	Open instillation of therapeutic substance into pleura
278174	Intravenous induction of labour
278231	Epidural anaesthetic using lumbar approach
278426	Pregnancy prophylactic therapy
278427	Vitamin supplement - pregnancy
278444	Post partum care
278530	Referral to fertility clinic
278628	Reason for termination of pregnancy
279376	Nutritional deficiencies
279628	[X]Postnatal depression NOS
280430	Cervical pregnancy
280431	Inevitable miscarriage
280432	Unspec spontaneous abortion + other specified complication
280433	Unspecified inevitable abortion without complication
280434	Complete inev abor comp by genital tract and pelvic infec
280435	Complete inevitable abortion with unspecified complication
280436	Complete inevitable abortion with OS complication

280437 Unspecified legal abortion + damage to pelvic organs/tissues
280438 Incomplete legal abortion with other specified complication
280439 Unspec illegal abortion + delayed or excessive haemorrhage
280440 Unspecified illegal abortion + pelvic organ/tissue damage
280441 Complete illegal abortion with complication NOS
280442 Unspecified abortion
280443 Unspecified incomplete abortion + delayed/excess haemorrhage
280444 Unspecified complete abortion +delayed/excessive haemorrhage
280445 Salpingitis following abortive pregnancy
280446 Septic embolism following abortive pregnancy
280447 Readmission for retained produc of concept, legal abortion
280448 Acute liver necrosis following abortive pregnancy
280449 Cerebral anoxia following abortive pregnancy
280450 Complication NOS following abortion/ectopic/molar pregnancy
280451 Pregnancy with abortive outcome NOS
280452 Threatened abortion
280453 Early pregnancy haemorrhage NOS - delivered
280454 Antepartum haemorrhage with coagulation defect - not deliv
280455 Antepartum haemorrhage with trauma
280456 Antepartum haemorrhage with uterine leiomyoma - not deliv
280457 Other antepartum haemorrhage unspecified
280458 Mild or unspecified pre-eclampsia - delivered
280459 Mild or unspecified pre-eclampsia - delivered with p/n comp
280460 Severe pre-eclampsia with postnatal complication
280461 Eclampsia - delivered
280462 Pre-eclampsia or eclampsia with hypertension - not delivered
280463 Pre-exist hypertension compl preg childbirth and puerperium
280464 Pre-exist hyperten heart dis compl preg childbth+puerperium
280465 Unspecified hypertension in preg/childb/puerp NOS
280466 Other pregnancy vomiting - delivered
280467 Threatened premature labour - not delivered
280468 Early onset of delivery - delivered
280469 Early or threatened labour NOS
280470 Unspecified renal disease in pregnancy - not delivered
280471 Unspecified renal disease in pregnancy NOS
280472 Pregnancy care of habitual aborter
280473 Genitourinary tract infections in pregnancy
280474 Genitourinary tract infection in pregnancy - not delivered
280475 Other pregnancy complication - delivered with postnatal comp
280476 Other pregnancy complication NOS
280477 Maternal gonorrhoea in pregnancy - baby not yet delivered
280478 Maternal tuberculosis during pregnancy - baby delivered
280479 Other maternal viral disease, unspec in pregnancy/puerperium
280480 Other mat.infective/parasitic dis in preg/childb/puerp NOS
280481 Diabetes mellitus arising in pregnancy
280482 Pre-existing diabetes mellitus, unspecified
280483 Drug dependence during pregnancy/childbirth/puerperium NOS
280484 Mental disorder during pregnancy - baby delivered
280485 Congenital cardiovasc dis in pregnancy - baby not delivered
280486 Orthopaedic disorders in pregnancy/childbirth/puerperium
280487 Abnormal GTT in puerperium - baby previously delivered
280488 Medical condition NOS - unsp whether in pregnancy/puerperium
280489 Sublux of symphysis pubis in preg childbirth and puerp
280490 Normal delivery in completely normal case NOS
280491 Twin pregnancy
280492 Triplet pregnancy NOS
280493 Assisted breech delivery
280494 Breech presentation - delivered
280495 Oblique presentation
280496 Oblique lie unspecified
280497 Shoulder presentation
280498 Face presentation NOS
280499 Brow presentation unspecified
280500 High head at term
280501 High head at term unspecified
280502 Multiple pregnancy with malpresentation NOS
280503 Prolapsed arm presentation
280504 Prolapsed arm with antenatal problem
280505 Disproportion - major pelvic abnormality - delivered
280506 Disproportion - major pelvic abnormality NOS
280507 Large fetus causing disproportion unspecified
280508 Hydrocephalic disproportion with antenatal problem
280509 Bicornuate uterus in pregnancy, childbirth and puerperium
280510 Congenital abnormality of uterus affecting obstetric care
280511 Bicornuate uterus complicating a/n care, baby not delivered
280512 Uterine fibroid - baby delivered
280513 Uterine body tumour in pregnancy/childbirth/puerperium NOS
280514 Rectocele in pregnancy, childbirth and

	the puerperium
280515	Other uterine/pelvic floor abnormal affecting obstetric care
280516	Cervical incompetence - delivered
280517	Cervical incompetence - delivered with postnatal comp
280518	Cervical incompetence NOS
280519	Stenosis of cervix in pregnancy, childbirth, puerperium
280520	Stenosis of cervix complicating a/n care- baby not delivered
280521	Persistent hymen - baby delivered
280522	Persistent hymen - baby delivered+postpartum complication
280523	Pelvic soft tissue abnormality in preg/childb/puerp NOS
280524	Fetus with central nervous system malformation unspecified
280525	Fetus with chromosomal abnormality
280526	Fetus with chromosomal abnormality with antenatal problem
280527	Fetus with damage due to other maternal disease
280528	Fetus with radiation damage unspecified
280529	Fetus with damage NOS with antenatal problem
280530	Rhesus isoimmunisation unspecified
280531	Other blood-group isoimmunisation - delivered
280532	Other placental conditions - delivered
280533	Other feto-placental problems unspecified
280534	Amnionitis
280535	Other problems affecting labour
280536	Problems affecting labour NOS - delivered
280537	Retained intrauterine contraceptive device in pregnancy
280538	Complications occurring during labour and delivery
280539	Obstructed labour
280540	Shoulder dystocia with antenatal problem
280541	Locked twins - delivered
280542	Other causes of obstructed labour unspecified
280543	Obstructed labour NOS
280544	Atony of uterus
280545	Poor contractions
280546	Hypertonic uterine inertia unspecified
280547	Unspecified prolonged labour - delivered
280548	Delayed delivery second twin - delivered
280549	Presentation of cord
280550	Prolapse of cord with antenatal problem
280551	Cord tangled with compression - delivered
280552	Other cord entanglement - delivered
280553	Bruising of cord
280554	Umbilical cord complications NOS
280555	Perineal tear
280556	First degree perineal tear during delivery
280557	Fourchette tear during delivery
280558	Second degree perineal tear during delivery with p/n prob
280559	Third degree perineal tear during delivery
280560	Fourth degree perineal tear during delivery NOS
280561	Unspecified perineal laceration during delivery + p/n prob
280562	Vulval and perineal haematoma during delivery + p/n problem
280563	Other vulval/perineal trauma during delivery, unspecified
280564	Other vulval/perineal trauma during delivery + p/n problem
280565	Vulval/perineal trauma during delivery NOS unspec
280566	Other obstetric pelvic organ damage - delivered
280567	Obstetric pelvic haematoma with postnatal problem
280568	Postpartum coagulation defects with postnatal problem
280569	Obstetric anaesthesia with cardiac comp - deliv + p/n prob
280570	Obstetric anaesthesia with cardiac complications NOS
280571	Spinal+epidural anaesthesia-inducd headache during pregnancy
280572	Other complications of obstetric anaesthesia NOS
280573	Obstetric anaesthetic complications NOS, unspecified
280574	Mid-cavity forceps with rotation
280575	Vacuum extractor delivery - delivered
280576	Breech extraction - delivered
280577	Caesarean section - pregnancy at term
280578	Destructive operation for delivery
280579	Puerperal endometritis NOS
280580	Puerperal salpingitis
280581	Varicose veins of legs in the puerperium
280582	VV's of perineum/vulva in pregnancy/puerperium + p/n comp
280583	Superficial thrombophlebitis in pregnancy/puerperium unsp
280584	Antenatal deep vein thrombosis unspecified
280585	Antenatal deep vein thrombosis - delivered
280586	Other phlebitis/thrombosis in pregnancy and puerperium NOS
280587	Haemorrhoids in pregnancy and the puerperium
280588	Cerebral venous thrombosis in pregnancy
280589	Other venous comp of pregnancy/puerperium + p/n comp
280590	Obstetric air pulmonary embolism - delivered
280591	Septic obstetric embolism
280592	Obstetric pulmonary embolism NOS

280593 Puerperal cerebrovascular disorder with postnatal comp
280594 Obstetric perineal wound disruption with p/n complication
280595 Abscess of nipple - obstetric
280596 Obstetric nipple infection unspecified
280597 Obstetric nonpurulent mastitis
280598 Other obstetric breast infection unspecified
280599 Obstetric breast infection NOS with antenatal complication
280600 Other breast disorder in pregnancy/puerperium/lact +p/n comp
280601 Galactorrhoea in pregnancy/puerperium - deliv with p/n comp
280602 Complications of pregnancy,childbirth or the puerperium OS
280603 [X]Pregnancy with abortive outcome
280604 [X]Other specified pregnancy-related conditions
280605 [X]Other placental disorders
280606 [X]Other uterine inertia
280607 [X]Other infection during labour
280608 [X]Other specified complications of labour and delivery
280609 [X]Multiple delivery, unspecified
280610 [X]Vaginitis following delivery
281253 Fetus or neonate affected by maternal nutritional disorder
281254 Fetus/neonate affected - placental/breast transfer toxic NEC
281255 Fetus or neonate affected by multiple pregnancy NOS
281256 Fetus/neonate affected by breech presentation before labour
281257 Fetus/neonate affected by complic of placenta/cord/membrane
281258 Fetus affected by APH - antepartum haemorrhage
281259 Fetus or neonate affected by placental damage OS
281260 Fetus or neonate affected by entanglement of cord
281261 Fetus or neonate affected by cord compression NOS
281262 Fetus/neonate affected-cephalopelvic disproportion lab./del.
281263 Fetus or neonate affected by forceps delivery
281264 Fetus/neonate affected by mat epidural anaesth - labour/del
281265 Fetus or neonate affected by uterine inertia
281266 Fetus small-for-dates (SFD), without mention of malnutrition
281267 Cerebral haematoma in fetus or newborn
281268 Subdural or cerebral haemorrhage due to birth trauma OS
281269 Sampling injury to scalp during birth
281270 Birth paralysis of phrenic nerve
281271 Vulval haematoma due to birth trauma
281272 Subconjunctival haemorrhage due to birth trauma
281273 Liveborn with fetal distress, unspecified
281274 Liveborn with abnormal heart beat, unspecified
281275 Liveborn with fetal hypoxia, unspecified
281276 Birth asphyxia
281277 Congenital pneumonia due to Escherichia coli
281278 Aspiration of vomit in newborn
281279 Perinatal interstitial emphysema or related condition OS
281280 Perinatal pulmonary haemorrhage
281281 Perinatal secondary atelectasis
281282 Wilson-Mikity syndrome
281283 Extended rubella syndrome
281284 Other congenital infections
281285 Congenital herpes simplex
281286 Omphalitis of the newborn
281287 Infectious granuloma
281288 Omphalitis
281289 Other specified umbilical sepsis
281290 Neonatal dacryocystitis and conjunctivitis
281291 Neonatal candidiasis of intestine
281292 Intra-amniotic fetal infection
281293 Intrauterine fetal sepsis, unspecified
281294 Fetal blood loss
281295 Fetal blood loss, unspecified
281296 Fetal exsanguination
281297 Other specified fetal blood loss
281298 Perinatal gastrointestinal haemorrhage
281299 Perinatal rectal haemorrhage
281300 Perinatal cutaneous haemorrhage, unspecified
281301 Perinatal superficial haematoma
281302 Perinatal cutaneous haemorrhage NOS
281303 Neonatal melaena
281304 Kernicterus due to isoimmunisation
281305 Perinatal jaundice from hereditary haemolytic anaemias
281306 Perinatal jaundice from infection
281307 Perinatal jaundice from swallowed maternal blood
281308 Perinatal jaundice from haemolysis NOS
281309 Delayed conjugation causing neonatal jaundice NOS
281310 Perinatal jaundice due to congenital obstruction bile duct
281311 Transient neonatal hyperbilirubinaemia
281312 Haemorrhagic disease of the newborn
281313 Transient neonatal thrombocytopenia due to isoimmunisation
281314 Neonatal thrombocytopenia due to platelet alloimmunisation
281315 Transient neonatal thrombocytopenia NOS
281316 Polycythaemia due to maternal fetal transfusion
281317 Other meconium obstruction

281318	Intestinal obstruction of newborn, unspecified
281319	Neonatal peritonitis NOS
281320	Scleroderma in newborn
281321	Newborn cold injury syndrome
281322	Patent processus vaginalis
281323	Neonatal erythema toxicum
281324	Other specified perinatal skin disorder
281325	Newborn cerebral irritability, unspecified
281326	Newborn feeding problem NOS
281327	Congenital hypertonia
281328	Other perinatal condition NOS
281329	Congenital hepatic fibrosis
281330	Neonatal hypertension
281331	Neonatal death
281332	[X]Other "heavy for gestational age" infants
281333	[X]Other specified respiratory conditions of newborn
281334	[X]Sepsis/newborn due to other+unspecified staphylococcus
281335	[X]Oth intracranial(nontraumatic)haemorrhages/fetus+newborn
281336	[X]Other transitory neonatal disorders/thyroid function,NEC
281337	[X]Transitory metabolic disturbance of newborn, unspecified
281338	[X]Digestive system disorders of fetus and newborn
281339	[X]Intestinal obstruction of newborn, unspecified
281340	[X]Conditions involv integument & temp reg of fetus/newborn
282016	Battered baby syndrome NOS
283103	[V]First normal pregnancy supervision
283105	[V]Other specified high-risk pregnancy
283113	[V]Outcome of delivery
283114	[V]Twins, one live born and one stillborn
283116	[V]Level of neonatal care
283117	[V]Newborn receiving intensive care
283118	[V]Neonatal care on ITU
283119	[V]Neonatal care on NNU
283122	[V]Twin, born before admission to hospital, mate stillborn
283125	[V]Other multiple birth, born in hospital, mates stillborn
283126	[V]Other multiple birth, mates live and stillborn NOS
283127	[V]Other multiple birth, unspecified, not hospitalised
283128	[V]Unspecified birth, born in hospital
283143	[V]Problems related to unwanted pregnancy
283206	[X]Oth multip liveborn infants, unspec as to place of birth
283260	Antenatal operation
283261	Induction labour
283262	Episiotomy
283263	Delivery caesarian section (mother)
283264	Evacuation retained products conception
283265	Repair lacerated cervix obstetric
283266	Repair vagina/pelvic floor postpartum
283361	Pregnancy test
283362	Human placental lactogen level normal
283455	Pregnancy unplanned
283538	Death father child born after
283633	Screening baby normal
283679	Pregnant
283680	Pregnancy antenatal care normal
283681	Normal pregnancy prenatal care throughou
283682	Foetal movements felt
283683	Bottle fed baby
283684	Examination newborn well baby
283838	Insufficiency dietary baby
283839	Malnutrition baby
283874	Heinz-body anaemia of newborn
284333	Pregnancy pelvis bony abnormal
284337	Pregnancy induction labour failed
284338	Leaking amniotic fluid
284339	False uterine contractions
284340	Thrombosis pregnancy
284341	Varix complicating pregnancy
284342	Pyelocystitis puerperium
284343	Vomiting pernicious pregnancy
284344	Induced abortion social reasons
284346	Pregnancy uncomplicated delivery
284348	Puerperal anaemia due blood loss
284349	Obstructed labour
284350	Laceration perineal at delivery third de
284352	Labour premature with complications
284353	Delivery prolapsed cord (mother)
284355	Puerperal coagulopathy
284357	Mastitis lactating
284358	Lactating engorgement breast
284539	Anuria newborn
284575	Apnea at birth
284576	Immaturity at birth
284578	Neonatal period normal
284579	Precipitous birth (baby)
284580	Weak newborn
285051	Registrar-birth/death/marriage
285148	Builder's labourer
285159	Other labourers/general hands
285160	Other labourer NOS
285232	Wife pregnant
285294	H/O: 2 abortions
285481	O/E - abd.mass still with resp

285773 Serum pregnancy test NOS
286053 U-S obstetric scan abnormal
286077 Breast feeding problem
286084 Maternity care
286085 A/N care: recurrent aborter
286086 A/N care: multip. > 35 years
286087 A/N risk NOS
286088 A/N care provider NOS
286089 Short stay delivery booking
286090 Delivery booking - stay NOS
286091 Intends to bottle feed
286092 A/N U/S scan wanted
286093 Antenatal ultrasound scan at 17-22 weeks
286094 Antenatal ultrasound scan NOS
286095 A/N 12 weeks examination
286096 A/N 24 week examination
286097 A/N 30 week examination
286098 Fetal movements seen
286099 Breast fed
286100 Breast feeding started
286101 Breast feeding stopped
286102 P/N care from consultant
286103 No post natal care
286104 Postnatal care
286105 P/N - first day visit
286106 P/N - fifth day visit
286107 Maternal P/N exam. Not offered
286108 Full term gestation - 40 weeks
286109 GP unit birth
286110 Place of birth NOS
286111 1st stage of labour length
286112 Livebirth
286113 Stillbirth [prevention record]
286114 Twins - both still born
286115 Triplets - 3 still born
286116 Delivery - sex of baby
286117 Baby male
286118 Baby premature 24-26 weeks
286119 Apgar at 1 minute = 1
286120 Apgar at 5 minutes = 4
286121 Apgar at 5 minutes = 7
286122 Apgar at 5 minutes = 9
286123 Apgar at 10 minutes = 2
286124 Apgar at 10 minutes = 3
286125 Apgar at 10 minutes = 7
286126 One of twins
286127 Placental infarct
286128 Placental details NOS
286246 Diet in pregnancy advice
286963 Dilation cerv & curettage RPC
286964 Curette of retained products of conception from uterus NEC
286970 Introduction of gamete into uterine cavity NOS
286971 Intraamniotic injection of abortifacient NEC
286976 Manual manipulation of non pregnant uterus
286981 Removal of products of conception from fallopian tube
286994 Pregnancy operations
286995 Diagnostic endoscopic examination of foetus using fetoscope
286996 Fetoscopy NEC
286997 Early selective feticide
286998 Percutaneous insertion of fetal pleuroamniotic shunt
286999 Drainage of amniotic cavity
287000 Removal of cerclage from cervix of gravid uterus
287001 Induction and delivery operations
287002 Elective lower uterine segment caesarean section (LSCS)
287003 Other specified other caesarean delivery
287004 Other caesarean delivery NOS
287005 Assisted breech delivery
287006 Forceps cephalic delivery
287007 Mid forceps cephalic delivery NEC
287008 Dehee forceps cephalic delivery with rotation
287009 Incision of cervix to facilitate delivery
287010 Other specified other operation to facilitate delivery
287011 Pack to control postnatal vaginal bleeding
287012 Immed repair obstetric laceration of uterus or cervix uteri
287013 Immediate repair of minor obstetric laceration
287649 Abandoned baby care
287704 Patient requested epidural
287785 RM10-DHSS DMO report received
287804 To prevent grave permnt inj physic/mental health preg woman
287823 Seen in baby clinic
287833 Seen in postnatal clinic
288647 Phantom pregnancy
288962 Stilling-Turck-Duane syndrome
289051 Acute aseptic myocarditis of the newborn
289542 Gravid fallopian tube rupture
289543 Cornual pregnancy
289544 Incomplete spontaneous abortion with renal failure
289545 Complete spontaneous abortion with metabolic disorder
289546 Incomp inev mis complicated by genital tract pelvic infect
289547 Incomplete inevitable abortion with unspecified complication

289548 Complete inevitable abortion complicated by embolism
289549 Complete inevitable abortion without complication
289550 Unspecified legal abortion with embolism
289551 Unspecified legal abortion NOS
289552 Unspecified illegal abortion + other specified complication
289553 Complete illegal abortion + delayed or excessive haemorrhage
289554 Complete illegal abortion + pelvic organ/tissue damage
289555 Illegally induced abortion NOS
289556 Unspecified abortion with shock
289557 Unspecified incomplete abortion with metabolic disorder
289558 Unspecified incomplete abortion with shock
289559 Unspecified incomplete abortion with complication NOS
289560 Unspecified complete abortion with shock
289561 Unspecified complete abortion with complication NOS
289562 Failed attempted abortion + delayed or excessive haemorrhage
289563 Intravascular haemolysis following abortive pregnancy
289564 Embolus following abortive pregnancy
289565 Pulmonary embolism following abortive pregnancy
289566 Threatened abortion unspecified
289567 Other haemorrhage in early pregnancy NOS
289568 Antepartum haemorrhage with coagulation defect
289569 Antepartum haemorrhage with afibrinogenaemia
289570 Benign essential hypertension in preg/childb/puerp - deliv
289571 Other pre-existing hypertension in preg/childb/puerp NOS
289572 Transient hypertension of pregnancy + postnatal complication
289573 Mild pre-eclampsia
289574 Mild or unspecified pre-eclampsia with p/n complication
289575 Mild pre-eclampsia
289576 Severe pre-eclampsia - not delivered
289577 HELLP - Syndrome haemolysis, elev liver enzyme low platelets
289578 Proteinuric hypertension of pregnancy
289579 Unspecified hypertension in pregnancy/childbirth/puerperium
289580 Hyperemesis gravidarum with metabolic disturbance - deliv
289581 Late pregnancy vomiting NOS
289582 Unspecified pregnancy vomiting unspecified
289583 Unspecified pregnancy vomiting - delivered
289584 False labour at or after 37 completed weeks of gestation
289585 Gestational oedema
289586 Oedema or excessive weight gain in pregnancy NOS
289587 Habitual aborter
289588 Peripheral neuritis in pregnancy NOS
289589 Asymptomatic bacteriuria in pregnancy - delivered
289590 Genitourinary tract infection in pregnancy unspecified
289591 Infections of kidney in pregnancy
289592 Urinary tract infection following delivery
289593 Liver disorder in pregnancy NOS
289594 Fatigue during pregnancy - delivered with postnatal comp
289595 Fatigue during pregnancy - not delivered
289596 Fatigue during pregnancy NOS
289597 Herpes gestationis - not delivered
289598 Herpes gestationis NOS
289599 Other pregnancy complication - delivered
289600 Maternal syphilis in pregnancy/childbirth/puerperium
289601 Other maternal venereal disease during pregnancy- baby deliv
289602 Maternal tuberculosis in puerperium - baby previously deliv.
289603 Maternal malaria, unspec whether during pregnancy/puerperium
289604 Other maternal viral disease in pregnancy - baby delivered
289605 Infections of urethra in pregnancy
289606 Maternal infect/parasitic dis NOS in pregnancy/childb/puerp
289607 Diabetes mellitus during pregnancy - baby not yet delivered
289608 Pre-existing malnutrition-related diabetes mellitus
289609 Gestational diabetes mellitus
289610 Anaemia - unspecified whether in pregnancy or the puerperium
289611 Anaemia during pregnancy - baby not yet delivered
289612 Orthopaedic disorder in puerperium - baby delivered
289613 Medical condition NOS in puerperium - baby previously deliv
289614 Complications of pregnancy/childbirth/puerperium OS
289615 Quadruplet pregnancy
289616 Multiple delivery
289617 Breech presentation
289618 Transverse presentation
289619 Face presentation - delivered
289620 Brow presentation NOS
289621 Other fetal malposition and malpresentation - delivered
289622 Inlet pelvic contraction with antenatal problem
289623 Inlet pelvic contraction NOS
289624 Large fetus causing disproportion with antenatal problem
289625 Disproportion NOS with antenatal problem

289626 Congenital abnormality of uterus in preg/childbirth/puerp
289627 Bicornuate uterus - baby delivered + postpartum complication
289628 Congenital abnormality uterus in pregnancy/childb/puerp NOS
289629 Retroverted incarcerated gravid uterus unspecified
289630 Retroverted incarcerated gravid uterus with antenatal prob
289631 Pendulous abdomen in pregnancy,childbirth and the puerperium
289632 Cystocele - baby delivered
289633 Cystocele complicating postpartum care - baby delivered prev
289634 Cervical incompetence
289635 Polyp of cervix complicating p/n care - baby deliv prev
289636 Vaginal abnormality - baby delivered
289637 Persistent hymen in pregnancy, childbirth and the puerperium
289638 Vulval abnormality - baby delivered+postpartum complication
289639 Rigid perineum - baby delivered with postpartum complication
289640 Maternal care for chromosomal abnormality in fetus
289641 Fetus with hereditary disease - delivered
289642 Suspect fetal damage from maternal alcohol
289643 Fetus with drug damage with antenatal problem
289644 Fetus with drug damage NOS
289645 Other blood-group isoimmunisation NOS
289646 Lab+del comp fetal ht rate anom wth meconium in amnio fluid
289647 Intrauterine death - delivered
289648 Placental insufficiency
289649 Other placental conditions
289650 Other placental conditions with antenatal problem
289651 Placental transfusion syndromes
289652 Placenta gritty
289653 Other feto-placental problems with antenatal problem
289654 Premature rupture of membranes
289655 Membranitis
289656 Failed medical or unspecified induction unspecified
289657 Failed medical or unspecified induction - delivered
289658 Maternal pyrexia during labour, unspecified
289659 Septicaemia during labour NOS
289660 Grand multiparity NOS
289661 Abnormal biochemical finding on antenatal screen of mother
289662 Obstructed labour due to compound presentation
289663 Obstructed labour caused by pelvic soft tissues - delivered
289664 Deep transverse arrest - delivered
289665 Persistent occipitoposterior or occipitoanterior position
289666 Other failed forceps with antenatal problem
289667 Other failed ventouse extraction - delivered
289668 Obstructed labour NOS
289669 Abnormal forces of labour
289670 Secondary uterine inertia
289671 Other uterine inertia
289672 Other uterine inertia NOS
289673 Long labour
289674 Delayed delivery of second twin, triplet etc
289675 Other cord entanglement with antenatal problem
289676 Vasa praevia with antenatal problem
289677 Umbilical cord complications NOS
289678 Pelvic floor tear
289679 Second degree perineal tear during delivery, unspecified
289680 Unspecified perineal laceration during delivery, unspecified
289681 Other vulval/perineal trauma during delivery NOS
289682 Rupture of uterus during and after labour
289683 Bladder injury - obstetric
289684 Fibrinolysis - postpartum
289685 Postpartum coagulation defects - delivered with p/n problem
289686 Postpartum haemorrhage NOS
289687 Retained placenta with no haemorrhage
289688 Obstetric anaesthesia with CNS complication NOS
289689 Toxic reaction to local anaesthesia during the puerperium
289690 Other complications of obstetric anaesthesia unspecified
289691 Other complications of obstetric anaesthesia + a/n problem
289692 Other complications of obstetric procedures - del +p/n prob
289693 Forceps delivery
289694 Delivery by caesarean hysterectomy
289695 Complications of labour and delivery NOS - delivered
289696 Puerperal peritonitis with postnatal complication
289697 Genital varices in pregnancy
289698 Varicose veins of perineum/vulva in pregnancy/puerperium NOS
289699 Superficial thrombophlebitis in preg/puerperium + a/n comp
289700 Superficial thrombophlebitis in preg/puerperium + p/n comp
289701 Thrombophlebitis of legs in pregnancy
289702 Other phlebitis and thrombosis in pregnancy and puerperium
289703 Other phlebitis/thrombosis in preg/puerperium + p/n comp

289704 Other venous comp of pregnancy/puerperium + a/n comp
289705 Obstetric air pulmonary embolism with p/n complication
289706 Obstetric blood-clot pulmonary embolism NOS
289707 Pyaemic obstetric embolism
289708 Obstetric pyaemic and septic pulmonary embolism unspecified
289709 Obstetric pyaemic and septic pulm embolism + a/n comp
289710 Other obstetric pulmonary embolism - delivered
289711 Obstetric pulmonary embolism NOS
289712 Other complication of obstetric surgical wound
289713 Haematoma - perineal wound
289714 Infection - perineal wound
289715 Placental polyp
289716 Other complications of the puerperium
289717 Other complications of the puerperium unspecified
289718 Purulent mastitis - obstetric
289719 Retracted nipple in pregnancy/puerperium/lact with a/n comp
289720 Cracked nipple in pregnancy/puerperium/lactation unspecified
289721 Cracked nipple in pregnancy/puerperium/lactation - delivered
289722 Breast engorgement
289723 Failure of lactation unspecified
289724 Suppressed lactation - delivered
289725 Suppressed lactation - delivered with postnatal complication
289726 [X]Oth+unspcf failed inducd abort,complct gen tract+pelv inf
289727 [X]Maternal care for other abnormalities of pelvic organs
289728 [X]Other premature separation of placenta
289729 [X]Obstructed labour due to other abnormalities of fetus
289730 [X]Other obstetric injury to pelvic organs
289731 [X]Obstructed labour due to fetopelv disproportion, unspec
289732 [X]Assisted single delivery, unspecified
290406 Perinatal conditions
290407 Fetus or neonate affected by maternal surgical operation
290408 Fetus/neonate affected-plac./breast transfer endocrine agent
290409 Fetus or neonate affected by other maternal condition
290410 Fetus or neonate affected by ectopic pregnancy
290411 Fetus or neonate affected by ectopic pregnancy NOS
290412 Fetus or neonate affected by unstable lie before labour
290413 Fetus/neonate affected by maternal complic pregnancy NOS
290414 Fetus or neonate affected by placenta previa
290415 Fetus/neonate affect other placental separation/haemorrhage
290416 Fetus/neonate affected by placental damage-caesarian section
290417 Fetus or neonate affected by placental infarction
290418 Fetus/neonate affected by feto-fetal transplacental transfus
290419 Fetus or neonate affected by chorioamnionitis
290420 Fetus or neonate affected by placentitis unspecified
290421 Fetus or neonate affected by complication of labour/delivery
290422 Fetus or neonate affected by induction of labour
290423 Fetus small-for-dates, without mention of malnutrition
290424 Fetal malnutrition without mention of "light for dates"
290425 Light for gestational age
290426 Brain injury due to birth trauma NOS
290427 Cerebral injury due to birth trauma
290428 Cerebral haemorrhage due to birth injury
290429 Monitoring injury to scalp during birth
290430 Spine or spinal cord injury due to birth trauma NOS
290431 Facial nerve palsy due to birth trauma
290432 Peripheral nerve injury due to birth trauma
290433 Other specified birth trauma NOS
290434 Kidney injury due to birth trauma
290435 Birth trauma, asphyxia or hypoxia NOS
290436 Congenital pneumonia due to group A haemolytic streptococcus
290437 Newborn transitory tachypnoea
290438 Infections specific to perinatal period
290439 Congenital listeriosis
290440 Congenital toxoplasmosis
290441 Lymphadenopathy due to congenital toxoplasmosis
290442 Other congenital infection NOS
290443 Tetanus omphalitis
290444 Tetanus neonatorum NOS
290445 Ophthalmia neonatorum, unspecified
290446 Neonatal dacryocystitis or conjunctivitis due to chlamydiae
290447 Neonatal conjunctivitis due to chlamydiae
290448 Neonatal dacryocystitis/conjunctivitis-other inclusion body
290449 Neonatal haemorrhage
290450 Fetal blood loss from ruptured cord
290451 Massive umbilical haemorrhage
290452 Neonatal vaginal haemorrhage
290453 Other specified perinatal cutaneous haemorrhage
290454 Haemolytic disease of fetus/newborn due isoimmunisation NOS

290455	Neonatal jaundice + glucose-6-phosphate dehydrogenase defic.
290456	Neonatal jaundice from breast milk inhibitor
290457	Perinatal jaundice due to hepatocellular damage
290458	Perinatal hepatitis causing jaundice, unspecified
290459	Giant cell hepatitis causing neonatal jaundice
290460	Other transitory neonatal electrolyte disturbance
290461	Disturbances of potassium balance of newborn
290462	Neonatal hypoglycaemia
290463	Neonatal goitre, not elsewhere classified
290464	Vitamin K deficiency of the newborn
290465	Newborn disseminated intravascular coagulation
290466	Polycythaemia neonatorum
290467	Congenital anaemia
290468	Maternal transfer neutropenia
290469	Transient neonatal neutropenia NOS
290470	Meconium ileus
290471	Other hypothermia of newborn
290472	Floppy baby
290473	Infant death
290474	[X]Fetus/newborn affected by maternal factors+complications
290475	[X]Fetus+newborn affected/oth maternal circul+resp diseases
290476	[X]Fet+newbrn affct/oth+unspcf morphlogc+functl abnml/plcnta
290477	[X]Other birth injuries to skull
290478	[X]Other brachial plexus birth injuries
290479	[X]Oth cardiovascular disorders originating/perinatal period
290480	[X]Hydrops fetalis due to other+unspcfd haemolytic disease
290481	[X]Other congenital anaemias, not elsewhere classified
290482	[X]Other hypothermia of newborn
290483	[X]Other and unspecif oedema specific to fetus and newborn
290484	[X]Other disorders originating in the perinatal period
290485	[X]Oth specified disturbances of cerebral status of newborn
291185	Battered baby or child syndrome NOS
292229	[V]Supervision of normal pregnancy
292230	[V]Pregnancy with history of vesicular mole
292231	[V]Pregnancy with other poor reproductive history
292232	[V]Unspecified high-risk pregnancy
292238	[V]Neonatal care in SCBU
292240	[V]Other multiple birth, not hospitalised, mates live born
292241	[V]Unspecified birth, NOS
292281	[V]Other unwanted pregnancy
292376	Termination pregnancy intra-amniotic inj
292377	Forceps extraction high with episiotomy
292378	Forceps delivery (mother)
292379	Keillands delivery (mother)
292380	Episiotomy repair
292381	Forceps failed
292383	Suture obstetric laceration uterus
292488	Luteinization hormone level
292542	Seen in antenatal clinic
292577	Contraception cap failure
292592	Trying to conceive
292681	Advice given on abortion
292753	Pre-conception counselling clinic
292758	Screening baby examination normal
292808	Prenatal care regularly attended
292809	Breasts self examination
292978	Underweight baby due feeding problem
292996	Newborn infant anaemia posthaemorrhagic
293028	Pregnancy phantom
293337	Hepatitis neonatal
293427	Placenta praevia partial
293429	Concealed pregnancy
293430	Products of conception passed
293431	Obstetric history bad
293432	Multipara
293434	Toxaemia pre-eclamptic
293436	Pregnancy bp raised at end of
293437	Pregnancy nausea & vomiting
293439	Abortion induced social reasons unmarrie
293440	Spontaneous abortion
293441	Premature labour dead foetus under 28 we
293443	Premature labour
293444	Malposition foetus complicating delivery
293446	Twin pregnancy delivery
293452	Puerperal mastitis
293453	Postpartum caked breast
293456	Suppression lactation
293542	Still's disease
293627	Blue baby
293698	Paralysis klumpke(- dejerine)
293699	Haemolytic disease newborn with kernicte
293700	Abnormal erythrocytes newborn
293701	Anaemia newborn
293702	Postmature (baby)
293704	Pneumonia newborn aspiration
293706	Neonatal hypotonia
293768	Jaundice
293769	Jaundice fading

294125	Midwife
294344	Babysitting service
294349	Illegitimate pregnancy
294371	Sudden infant death
294417	H/O: perinatal convulsion
294443	H/O: long labour
295236	U-S obstetric scan requested
295237	Placenta U-S scan
295262	IUD failure - pregnant
295264	Pregnant, sheath failure
295271	Pregnant - urine test confirms
295272	Pregnancy unplanned ? Wanted
295273	Antenatal care: 2nd pregnancy
295274	A/N care: H/O perinatal death
295275	A/N care: poor obstetr history
295276	A/N care: elderly primip.
295277	A/N care: poor home conditions
295278	A/N care: late booker
295279	A/N care: H/O child abuse
295280	A/N care: under 5ft tall
295281	A/N care provider
295282	Parent craft class attended
295283	Parent craft -individual class
295284	Feeding intention
295285	Feeding intention - breast
295286	A/N amniocentesis - abnormal
295287	A/N amnio. For ? Chrom.abnorm.
295288	Antenatal ultrasound scan
295289	Antenatal ultrasound scan at 22-40 weeks
295290	A/N Rh screen offered
295291	Rh screen - cord blood sample
295292	Rubella screen - blood sent
295293	A/N sickle screen not done
295294	A/N booking examination
295295	A/N 35 week examination
295296	Fetal maturity - A/N
295297	Bottle feeding started
295298	Post natal care NOS
295299	P/N - second day visit
295300	Antenatal blood tests
295301	Gestation >24 weeks
295302	Twins - 1 still + 1 live born
295303	Female baby
295304	1 male + 2 female babies
295305	Baby v. Premature 32-36 weeks
295306	Baby BW = < 3% (under 2500g)
295307	Apgar at 1 minute
295308	Maternal alcohol abuse
295309	Mother has a social worker
295310	Fraternal twin
295311	Identical twin
295312	Normal birth
295313	Apgar normal
295398	Genetic counselling
295401	Maternity grant advice
295402	Ante-natal relaxation classes
296049	Open removal of products of conception from uterus NEC
296052	Dilation of cervix uteri and curettage of uterus NEC
296053	Dilation of cervix and extraction termination of pregnancy
296054	Evacuation of contents of uterus NOS
296055	Introduction of abortifacient into uterine cavity OS
296089	Diagnostic endoscopic examination of fetus using fetoscope
296090	Other specified diagnostic percutaneous examination of fetus
296091	Shirodkar suture in pregnancy
296092	External version of breech
296093	Elective caesarian delivery
296094	Elective lower uterine segment caesarean delivery
296095	High forceps cephalic delivery NEC
296096	Mid forceps cephalic delivery with rotation
296097	Trial of forceps delivery
296098	Low vacuum delivery
296099	Caesarian hysterectomy
296100	Other operations on delivered uterus
296101	Manual exploration of delivered uterus NEC
296102	Pack to control postnatal vaginal bleeding
296103	Obstetric uterine tamponade
296104	Fetal heart monitoring NEC
296105	Other specified obstetric monitoring
296106	Obstetric monitoring NOS
296839	Refer to TOP counselling
296989	Adoption-birth history report
297951	Constantly crying baby
298805	Membranous pregnancy
298806	Mesometric pregnancy
298807	Ectopic pregnancy NOS
298808	Unspecified spontaneous abortion with renal failure
298809	Unspecified spontaneous abortion with metabolic disorder
298810	Incomplete spontaneous abortion with embolism
298811	Spontaneous abortion complete
298812	Complete spontaneous abortion with shock
298813	Complete spontaneous abortion with complication NOS
298814	Incom inev abor complicated by delayed or excessive haemorr

298815 Incomplete inevitable abortion complicated by embolism
298816 Inevitable miscarriage complete
298817 Medal abortion - incomplete
298818 Legal abortion complete
298819 Self-induced abortion
298820 Unspec illegal abortion + genital tract or pelvic infection
298821 Incomplete illegal abortion + delayed/excessive haemorrhage
298822 Incomplete illegal abortion with no mention of complication
298823 Complete illegal abortion with embolism
298824 Unspecified abortion with damage to pelvic organs or tissues
298825 Unspecified abortion incomplete
298826 Unspecified incomplete abortion with renal failure
298827 Unspecified incomplete abortion NOS
298828 Unspecified complete abortion with metabolic disorder
298829 Unspecified complete abortion + other specified complication
298830 Failed attempted abortion + genital tract/pelvic infection
298831 Complications following abortion/ectopic/molar pregnancies
298832 Bladder damage following abortive pregnancy
298833 Oliguria following abortive pregnancy
298834 Acute renal failure following abortive pregnancy
298835 Metabolic disorder following abortive pregnancy
298836 Pyaemic embolism following abortive pregnancy
298837 Embolism NOS following abortive pregnancy
298838 Other specified complication NOS follow abortive pregnancy
298839 Failed medical abortion, without complication
298840 Bleeding in early pregnancy
298841 Early pregnancy haemorrhage NOS unspecified
298842 Placenta praevia without haemorrhage - not delivered
298843 Placental abruption
298844 Antepartum haemorrhage with trauma - not delivered
298845 Antepartum haemorrhage NOS - not deliv
298846 Antepartum haemorrhage NOS
298847 Transient hypertension of pregnancy - delivered
298848 Transient hypertension of pregnancy - deliv with p/n comp
298849 Transient hypertension of pregnancy NOS
298850 Eclampsia - delivered with postnatal complication
298851 Pre-eclampsia or eclampsia with hypertension - del+p/n comp
298852 Pre-eclampsia or eclampsia + pre-existing hypertension NOS
298853 Mild hyperemesis gravidarum NOS
298854 Hyperemesis gravidarum with metabolic disturbance
298855 Premature labour
298856 Post-term pregnancy - delivered
298857 Post-term pregnancy NOS
298858 Oedema/excessive weight gain in preg+postnatal complication
298859 Habitual aborter - not delivered
298860 Urinary tract infection complicating pregnancy
298861 Fatigue during pregnancy with postnatal complication
298862 Pregnancy pruritus
298863 Maternal gonorrhoea in puerperium-baby previously delivered
298864 Other maternal venereal disease, unspec pregnancy/puerperium
298865 Maternal malaria in puerperium - baby previously delivered
298866 Maternal rubella during pregnancy - baby not yet delivered
298867 Other mat.infect/parasit dis in puerperium - baby delivered
298868 Mat infect/parasitic dis NOS in preg/childbirth/puerp NOS
298869 Pre-existing diabetes mellitus, insulin-dependent
298870 Thyroid dysfunction in puerperium - baby delivered
298871 Thyroid dysfunction in pregnancy - baby not yet delivered
298872 Anaemia during pregnancy, childbirth and the puerperium
298873 Congenital cardiovascular disorder in preg/childb/puerp NOS
298874 Orthopaedic disorder - unsp whether in pregnancy/puerperium
298875 Abnormal GTT during pregnancy - baby delivered
298876 Dis resp syst comp pregnancy, childbirth & puerperium
298877 Endocrine nutrition+metab dis complic pregn,childbirth+puerp
298878 Complications of pregnancy/childbirth/puerperium NOS
298879 Normal delivery but ante- or post- natal conditions present
298880 Gestation - multiple
298881 Quadruplet pregnancy with antenatal problem
298882 Multiple pregnancy NOS, unspecified
298883 Cephalic version NOS, unspecified
298884 Prolapsed arm unspecified
298885 Other fetal malposition and malpresentation
298886 Generally contracted pelvis NOS
298887 Inlet pelvic contraction
298888 Outlet pelvic contraction with antenatal problem
298889 Large fetus causing disproportion
298890 Pelvic soft tissue abnormality in pregnancy/childbirth/puerp
298891 Uterine fibroid in pregnancy/childbirth/puerperium NOS

298892 Uterine operation scar in pregnancy/childbirth/puerp - deliv
298893 Retroverted incarcerated gravid uterus
298894 Rectocele affecting obstetric care
298895 Other cervical abnormality in pregnancy/childbirth/puerp
298896 Stenosis of vagina affecting obstetric care
298897 Stenosis of vagina - baby delivered+postpartum complication
298898 Vaginal abnormality complicating a/n care-baby not delivered
298899 Rigid perineum complicating p/n care - baby delivered prev
298900 Fetus with central nervous system malformation + a/n problem
298901 Fetus with chromosomal abnormality NOS
298902 Fetus with hereditary disease
298903 Fetus with hereditary disease unspecified
298904 Fetus with viral damage via mother - delivered
298905 Fetus with drug damage - delivered
298906 Fetus with radiation damage - delivered
298907 Fetus with damage due to IUCD NOS
298908 Fetus with other damage NEC - delivered
298909 Fetus with damage NOS
298910 Maternal care for fetal hypoxia
298911 Fetal distress NOS
298912 Intrauterine death NOS
298913 Placental infarct
298914 Prem rupture of membranes onset of labour within 24 hours
298915 Prem rupture of membranes onset of labour after 24 hours
298916 Prolonged spont/unspec rupture of membranes with a/n problem
298917 Prolonged artificial rupture of membranes unspecified
298918 Failed mechanical induction of labour
298919 Unspecified maternal pyrexia during labour with a/n problem
298920 Septicaemia during labour with antenatal problem
298921 Grand multiparity - delivered
298922 Elderly primigravida NOS
298923 Risk factors in pregnancy NOS
298924 Obstructed labour due to fetal malposition
298925 Obstructed labour due to face presentation
298926 Obstructed labour due to brow presentation
298927 Obstructed labour caused by bony pelvis with a/n problem
298928 Obstructed labour caused by bony pelvis NOS
298929 Obstructed labour caused by pelvic soft tissues
298930 Deep transverse arrest with antenatal problem
298931 Shoulder dystocia unspecified
298932 Other failed trial of labour unspecified
298933 Failed trial of labour NOS
298934 Other causes of obstructed labour
298935 Other causes of obstructed labour - delivered
298936 Precipitate labour with antenatal problem
298937 Precipitate labour NOS
298938 Hypertonic uterine inertia - delivered
298939 Prolonged first stage NOS
298940 Unspecified prolonged labour, unspecified
298941 Prolonged second stage unspecified
298942 Delayed delivery second twin etc NOS
298943 Prolapse of cord
298944 Vasa praevia
298945 Other umbilical cord complications NOS
298946 Trauma to perineum and vulva during delivery
298947 Perineal muscle tear
298948 Third degree perineal tear during delivery NOS
298949 Vulval and perineal haematoma during delivery, unspecified
298950 Vulval/perineal trauma during delivery NOS
298951 Obstetric inversion of uterus NOS
298952 Obstetric laceration of cervix
298953 Obstetric laceration of cervix with postnatal problem
298954 Other immediate postpartum haemorrhage
298955 Other immediate postpartum haemorrhage - deliv with p/n prob
298956 Secondary and delayed postpartum haemorrhage
298957 Obstetric anaesthesia with cardiac complications - delivered
298958 Obstetric anaesthesia with CNS comp with antenatal problem
298959 Obstetric toxic reaction to local anaesthesia
298960 Obstetric spinal and epidural anaesthesia-induced headache
298961 Maternal distress NOS
298962 Acute renal failure following labour and delivery
298963 Post-delivery acute renal failure - delivered with p/n prob
298964 Haematoma of obstetric wound
298965 Other complications of obstetric procedures NOS
298966 Neville - Barnes forceps delivery
298967 Vacuum extractor delivery
298968 Breech extraction NOS
298969 Complications of labour and delivery NOS
298970 Intrapartum haemorrhage with coagulation defect
298971 Puerperal salpingitis unspecified

298972 Puerperal salpingitis with postnatal complication
298973 Puerperal peritonitis - delivered with postnatal comp
298974 Puerperal peritonitis NOS
298975 Puerperal septicaemia unspecified
298976 Major puerperal infection NOS
298977 Venous complications of pregnancy and the puerperium
298978 Varicose veins of legs in pregnancy/puerperium unspecified
298979 Varicose veins of legs in pregnancy/puerperium - delivered
298980 Varicose veins of legs in pregnancy/puerperium + a/n comp
298981 Vulval varices in the puerperium
298982 Superficial thrombophlebitis in pregnancy/puerperium -deliv
298983 DVT - deep venous thrombosis, postnatal
298984 Postnatal deep vein thrombosis - delivered with p/n comp
298985 Other phlebitis/thrombosis in preg/puerperium -del +p/n comp
298986 Haemorrhoids in pregnancy and the puerperium NOS
298987 Venous complication of pregnancy, unspecified
298988 Puerperal pyrexia of unknown origin
298989 Obstetric air pulmonary embolism NOS
298990 Obstetric blood-clot pulm embolism - delivered with p/n comp
298991 Obstetric pyaemic and septic pulmonary embolism
298992 Other obstetric pulmonary embolism - delivered + p/n comp
298993 Breakdown of perineum
298994 Placental polyp unspecified
298995 Nipple infection - obstetric
298996 Obstetric breast abscess with postnatal complication
298997 Obstetric nonpurulent mastitis - deliv with p/n complication
298998 Obstetric nonpurulent mastitis with postnatal complication
298999 Other obstetric breast infections
299000 Fissure of nipple
299001 Cracked nipple in pregnancy/puerperium/lactation + a/n comp
299002 Cracked nipple in pregnancy/puerperium/lactation + p/n comp
299003 Breast engorgement in pregnancy/puerperium/lactation NOS
299004 Other breast disorder in pregnancy/puerperium/lact unspec
299005 Other breast disorder in pregnancy/puerperium/lact +a/n comp
299006 Failure of lactation NOS
299007 Suppressed lactation
299008 Suppressed lactation with antenatal complication
299009 Suppressed lactation with postnatal complication
299010 Maternal care for hydrops fetalis
299011 [X]Other+unspcf failed induced abortion,complicated/embolism
299012 [X]Oedema,proteinuria+hypertens in pregnancy,childbrth,puerp
299013 [X]Oth complicatns/spinal+epidural anaesthsia during pregncy
299014 [X]Other failed induction of labour
299015 [X]Other abnormalities of forces of labour
299016 [X]Labour+delivery complicated by other cord entanglement
299017 [X]Other complications of obstetric surgery and procedures
299018 [X]delivery
299019 [X]Other multiple delivery
299088 Alopecia of pregnancy
299153 Adult-onset Still's disease
299600 Other specified birthmark
299649 Fetus affected by maternal toxaemia
299650 Fetus/neonate affected by placental/breast transfer alcohol
299651 Fetal alcohol syndrome
299652 Fetus/neonate affected-placental/breast transfer antibiotic
299653 Fetus/neonate affected-placental/breast transfer immune sera
299654 Fetus or neonate affected by maternal incompetent cervix
299655 Fetus or neonate affected by unspecified ectopic pregnancy
299656 Fetus/neonate affected by intraperitoneal ectopic pregnancy
299657 Fetus or neonate affected by unspecified malpresentation
299658 Fetus/neonate affected by antepartum haemorrhage unspecified
299659 Fetus/neonate affected by placental abnormality NEC
299660 Fetus or neonate affected by placental dysfunction
299661 Fetus or neonate affected by placental abnormality OS
299662 Fetus/neonate affected by placental transfusion syndrome NOS
299663 Fetus affected by breech delivery
299664 Fetus affected by malpresentation during delivery
299665 Fetus/neonate affected by mat bony pelvis abn in labour/del
299666 Fetus/neonate affected by mat contract pelvis in labour/del
299667 Fetus or neonate affected by transverse lie in labour/deliv
299668 Fetus or neonate affected by precipitate delivery
299669 Fetus/neonate affected by abnormal uterine contractions OS
299670 Fetus/neonate affected by abnormality maternal soft tissue
299671 Baby born premature
299672 Very premature - less than 1000g or less than 28 weeks
299673 Premature - weight 1000g-2499g or gestation of 28-37weeks

299674	Large or postmature infant NOS
299675	Intracranial haemorrhage in fetus or newborn
299676	Local subdural haematoma due to birth trauma
299677	Birth brain damage NOS
299678	Scalp bruising, due to birth trauma
299679	Other dislocation or subluxation due to birth trauma
299680	Liver subcapsular haematoma due to birth trauma
299681	Liver rupture due to birth trauma
299682	Spleen injury due to birth trauma
299683	Sternomastoid injury due to birth injury
299684	Fetal distress before labour - liveborn
299685	Liveborn with prelabour fetal distress NOS
299686	Fetal distress in labour - liveborn
299687	Congenital pneumonia
299688	Aspiration of liquor in newborn
299689	Perinatal pneumomediastinum
299690	Perinatal bronchopulmonary dysplasia
299691	Perinatal respiratory failure NOS
299692	Perinatal acrocyanosis
299693	Other specified respiratory problems in fetus or neonate
299694	Neonatal dacryocystitis
299695	Neonatal conjunctivitis due to staphylococcus
299696	Ophthalmia neonatorum - bacterial NEC
299697	Ophthalmia neonatorum - chlamydial
299698	Neonatal candida infection NOS
299699	Clostridial intra-amniotic fetal infection
299700	Group B haemolytic streptococcal intra-amniotic infect. NEC
299701	Congenital viral hepatitis NOS
299702	Congenital sepsis NOS
299703	Septicaemia of newborn
299704	Perinatal intraventricular haemorrhage
299705	Intraventricular haemorrhage due to birth injury
299706	Perinatal adrenal haemorrhage
299707	Haemolytic disease due to isoimmunisation NOS
299708	Late anaemia of newborn due to isoimmunisation
299709	Other perinatal jaundice
299710	Perinatal jaundice from other excessive haemolysis
299711	Perinatal jaundice from polycythaemia
299712	Delayed conjugation causing neonatal jaundice + disease EC
299713	Neonatal jaundice with Gilbert's syndrome
299714	Neonatal jaundice with porphyria
299715	Perinatal jaundice due to hepatocellular damage NOS
299716	Kernicterus not due to isoimmunisation
299717	Bilirubin encephalopathy
299718	Perinatal endocrine and metabolic problems
299719	Neonatal thyrotoxicosis
299720	Neonatal phosphate-loading hypocalcaemia
299721	Cow's milk hypocalcaemia in newborn
299722	Neonatal hypocalcaemia NOS
299723	Neonatal dehydration
299724	Transitory neonatal hyponatraemia
299725	Transitory metabolic disturbance of newborn, unspecified
299726	Transitory metabolic disturbance-infant pre-diabetic mother
299727	Polycythaemia due to donor twin transfusion
299728	Perinatal necrotising enterocolitis
299729	Newborn dehydration fever
299730	Hyperthermia in newborn, unspecified
299731	Newborn temperature regulation disorder NOS
299732	Congenital hydrocele
299733	Overfeeding in newborn
299734	Newborn drug reaction and intoxication
299735	Neonatal cerebral ischaemia
299736	Congenital cardiac failure
299737	Wide cranial sutures
299738	[X]Fetus+newborn affectd/oth+unspcfd conditns/umbilical cord
299739	[X]Birth injury to central nervous system, unspecified
299740	[X]Cardiovasc disord origin in the perinat period, unspecif
299741	[X]Other specified fetal and neonatal haemorrhages
299742	[X]Other haemolytic diseases of fetus and newborn
299743	[X]Other specified kernicterus
299744	[X]Neonatal jaundice due/other specifd excessive haemolysis
299745	[X]Other specified perinatal digestive system disorders
299746	[X]Disorder of muscle tone of newborn, unspecified
299747	[X]Complications of intrauterine procedures NEC
299798	[D]wind
301600	[V]PH comp of pregnancy, childbirth and the puerperium
301612	[V]Pregnancy with other poor obstetric history
301619	[V]Live birth
301620	[V]Single stillbirth
301622	[V]Other multiple birth, born in hospital, mates live born
301623	[V]Other multiple birth, mates live and stillborn
301624	[V]Other multiple birth, before hospital, mates live+still
301755	Vacuum aspiration abortion
301757	Bougie induction labour

301758	S f d
301759	Symphysiotomy
301760	Trachelorrhaphy obstetric
301822	Separation conjoined twins
301859	Az test negative
301860	Placental function test normal
301936	Contraception sheath failure
301949	Contraception i u c d failure
302018	Problem housing inadequate facilities
302061	Pregnancy with i u d in place
302083	Extramarital pregnancy/birth
302088	Problem pregnancy
302121	Clinic baby
302151	Rubella contact in early pregnancy
302169	Pregnancy prophylactic therapy prescribe
302170	Pregnancy prenatal care normal
302171	Medical examination pregnancy
302172	Antenatal care
302173	Booking antenatal
302174	Breast examination
302175	Foetal heart heard
302176	Foetal heart normal
302177	Foetal movements stopped
302178	Postpartum care
302181	Twin mate liveborn
302194	Normal delivery
302219	Spontaneous vaginal delivery
302224	Early stage of pregnancy
302225	Delivered by caesarean section - pregnancy at term
302245	Concealed pregnancy
302260	Mother delivered
302261	Delivery normal
302262	SVD - Spontaneous vaginal delivery
302282	Occasional uterine tightenings
302283	FTND - Full term normal delivery
302312	Weeks pregnant
302331	Type 1 dip
302367	Blood clots in membranes
302372	Antenatal care
302417	Referral to midwife
302426	Umbilical cord problem
302446	Delivered by low forceps delivery
302496	Old meconium staining liquor
302531	Spontaneous vertex delivery
302532	Bloodstained liquor
302535	Advice relating to pregnancy and fertility
302558	Delivered by mid-cavity forceps delivery
302571	Niggling uterine contractions
302675	Deliveries by spontaneous breech delivery
302683	Pregnant abdomen observation
302695	Baby overdue
302699	Intermittent uterine contractions
302724	GENTAMICIN + HYDROCORTISONE ear drops
302753	Number of previous pregnancies
302789	Confirmation of pregnancy
302790	Delivery observations
302805	Painful uterine contractions
302899	Triple test not wanted
302964	Umbilical sepsis
303393	Postnatal depression
304055	Atelectasis (not neonatal)
304474	Pregnancy genital infection
304475	Pregnancy ectopic
304476	Threatened miscarrage
304477	Pregnancy bleeding
304479	Pregnancy iron-deficiency anaemia
304480	Pregnancy anaemia
304482	Missed abortion
304483	Intrauterine death
304484	Twin pregnancy
304485	Labour premature
304486	Pregnancy infection during
304487	Pregnancy pre-eclampsia
304488	Pregnancy hypertension
304489	Pregnancy eclampsia
304490	Toxaemia pregnancy
304491	Sickness pregnancy
304492	Pregnancy morning sickness
304493	Vomiting pregnancy
304494	Pregnancy nausea
304495	Therapeutic abortion
304496	Termination pregnancy psychiatric reason
304497	Termination of pregnancy requested
304498	Top (termination of pregnancy)
304499	Unmarried termination pregnancy
304500	Induced abortion
304501	Spontaneous abortion
304502	Miscarriage
304503	Inevitable abortion
304504	Incomplete abortion
304505	Abortion
304506	Complete abortion
304507	Rpc (retained products conception)
304508	Pregnancy normal delivery
304509	Normal delivery (mother)
304510	Labour premature normal delivery
304511	Premature labour

304512	Normal birth (confinement)
304513	Delivery in hospital (mother)
304514	Pph (postpartum haemorrhage)
304515	Delivery breech
304516	Delivery breech (mother)
304517	Prolonged labour
304518	Twin pregnancy delivery
304519	Twins identical delivered
304520	Delivery delay in second stage
304521	Ruptured uterus complicating delivery
304522	Premature delivery (mother)
304523	Puerperal anaemia
304524	Puerperal breast abscess
304525	Galactorrhoea
304526	Lactorrhoea
305031	Twin low birthweight
305032	Damage brain child congenital
305033	Syndrome respiratory distress (newborn)
305034	Premature baby
305035	Premature delivery (child)
305036	Low birthweight
305037	Normal baby
305038	Normal baby delivered normally
305039	Breech birth (baby)
305040	Caesarian section birth (baby)
305041	Caesarian section (baby)
305042	Forceps birth (baby)
305043	Failure to thrive perinatal
305045	Normal birth (baby)
305046	Floppy baby
305047	Neonatal jaundice
305048	Stillbirth
305237	Jaundice
305238	Jaundice painless
306097	Birthmark
306098	Portwine stain
306211	Pseudocyesis
306215	Pregnancy fear
306823	Pregnancy complication
306824	Blighted ovum
306825	Pregnancy abnormal
306826	Triplet pregnancy
306827	Labour false
306828	Pregnancy glycosuria
306829	Pregnancy hyperemesis
306830	Termination pregnancy medical indication
306831	Termination pregnancy prostaglandin
306832	Septic abortion
306833	Habitual abortion
306834	Labour
306835	Svd (spontaneous vertex delivery)
306836	Delivery no details
306837	Placenta adherent complicating delivery
306838	Retained placenta
306839	Presentation breech (mother)
306840	Postmature at delivery (mother)
306843	Overweight baby mother's record
306844	Retained placenta fragments puerperium
306845	Syndrome chiari- frommel
307157	Cord compressed (baby)
307158	Cephalhaematoma
307159	Haemolytic disease newborn
307161	Foetal movements decreased
307162	Prematurity (newborn)
307163	Born small
307164	Baby normal at birth
307165	Newborn cyanotic attack
307167	Special care baby unit
307168	Birth no details
307170	Ventouse birth extraction (baby)
307493	Jaundice drug induced
307912	Moderate uterine contractions
307913	CTG observations
307930	Type 2 dip
307958	Performs breast-feeding
307984	Multiple birth
308035	Ability to position baby at breast for feeding
308068	Irregular uterine contractions
308137	Difficulty performing breast-feeding
308146	Uterine contractions present
308147	Deliveries by forceps - delivered
308171	Incomplete placenta at delivery
308373	Abnormal delivery
308377	Care relating to reproduction and pregnancy
308378	Face to pubes birth
308389	Breast feeding problem
308408	Regular uterine contractions
308511	Reactive CTG tracing
308517	Intrauterine pregnancy
308556	LOCORTEN -VIOFORM ear drops 1% + 0.02%
308610	Maternal blood loss minimal
308659	Country of birth (European)
308661	Fundal height equal to dates
308662	Vaginal delivery
308684	Multiple birth delivery
308686	Observation of amniotic fluid
308693	Duration of pregnancy

308697	Does not perform breast-feeding
308723	Pelvic assessment - childbirth
308748	Maternity care
308749	Delivery place planned
308759	Observation of position of pregnancy
308760	Waters broken
308797	Deliveries by vacuum extractor
308845	Relation of onset of labour to due date
308893	SOFRADEX ear drops
308912	Country of birth (African)
308942	Postnatal examination observations
308949	Onset of contractions
308982	Domino delivery
308985	Number of caesarean sections
309012	Deliv caes following prev caes
309035	Number of spontaneous abortions
309076	Antenatal class
309118	Umbilical cord not around baby's neck at delivery
309127	Number of abortions
309142	Country of birth (Australasian)
309200	Variable strength uterine contractions
309252	Fetal heart baseline pattern
309272	Other obstetric pelvic organ damage
309277	Country of birth (Asian)
309281	Normal pregnancy
309288	Antenatal education
309380	Pregnancy
309381	Pregnancy normal
309382	Pregnant
309459	Pregnancy with uncertain dates
309477	Reduced amniotic fluid
309484	Pregnancy problem
309501	Able to perform breast-feeding
309590	Preconception care
309591	Gravid uterus normal
309630	Continuous contractions
309657	Pregnancy review
309697	Routine antenatal care
309801	Antenatal HIV screening
309817	Fetal heart acceleration
309835	Apnoea of newborn
309865	Rapid progress in first stage of labour
309915	Late neonatal death
310015	Uterine observation in labour
310057	Premature uterine contraction
310087	Pendulous pregnant abdomen
310116	Early neonatal death
310123	Stale retroplacental clot
310126	Does perform breast-feeding
331536	ND - Normal delivery
331569	Home delivery planned
331595	Antenatal screening
331641	Erb's palsy
331700	Neonatal apnoeic attack
331716	Fetal heart deceleration
331717	Performs breast-feeding
331765	Retroplacental clot
331777	Midwife unit delivery booking
331803	Number of live deliveries
331845	Pregnancy, childbirth and puerperium observations
331860	Identical twins
331897	Onset of labour pains
331942	Multiparous
331975	Born by caesarean section
331985	Non-viable pregnancy
331986	Fundus firm
331987	Time waters ruptured
331988	Umbilical cord normal
332005	Rapid first stage of labour
332011	Suppression of lactation
332054	O/E - Umbilical stump - neonatal
332806	Hypertonic lower uterine segment during labour
332951	Cardiotochogram observation
332954	Continuing pregnancy after abortion of sibling fetus
333039	Postnatal care
333040	Postnatal depression counselling
333042	High risk pregnancy
333043	Length of gestation
333053	Primigravida
333077	Onset of labour induced
333094	Post miscarriage counselling
333105	Delivery place booked
333122	EPDS - Edinburgh postnatal depression scale
333188	Meconium stained liquor
333194	Gravid uterus present
333216	Observation of pattern of pregnancy
333445	Appearance of placenta
333462	Birth history
333483	Viable pregnancy
333484	Ruptured membranes
333509	Not pregnant
333510	Presentation of pregnancy
333511	Reported conception - pregnancy
333512	Number of miscarriages
333513	Date symptom of pregnancy first noted
333514	CTG reactivity
333577	Teenage pregnancy

333578 Unplanned pregnancy
335362 Gravid uterus large-for-dates
335363 Maternal blood loss moderate
335364 Delivery problem
335427 Observation of viability of pregnancy
335428 Umbilical cord observations
335961 Uncertain viability of pregnancy
335997 Application of cold compresses to female perineum
339597 Null
339605 ROM - Ruptured membranes
339618 Irritable uterus
339629 Edinburgh postnatal depression scale at 8 months declined
339675 Discharge from neonatal unit
339709 Pregnancy care
339750 Edinburgh postnatal depression scale
339779 Null
339780 Null
339782 Puls umb cord palp intac membr
339857 Number of lost pregnancies
340072 Pregnancy advice
340082 Wanted pregnancy
340083 Query viability of pregnancy
340107 Precipitate delivery
340143 Fetal heart rate variability
340188 Postnatal counselling
340260 Low risk pregnancy
340309 Tender scar of lower uterine segment
340381 Start of labour
340435 Undiagnosed twin
340436 Estimated date of delivery from last period
340476 Lactation management
340508 AP - Anteroposterior diameter of pelvic outlet
340665 Thick meconium stained liquor
340681 Single pregnancy
340706 Anterior posterior diameter of sacral outlet
340715 Surrogate pregnancy
340753 Biochemical pregnancy
340806 Diabetes: shared care in pregnancy - diabetol and obstet
340816 Obstetric investigative observation
340845 Pregnancy observations
340866 Concave sacral curve
340890 Fundal height low for dates
340936 Positions baby at breast for feeding
340937 Ability to latch on to breast for feeding
340955 Observation of height of gravid uterus
340956 Gravid uterus problem
340988 Number of fetal deaths
341085 Born by emergency caesarean section
341092 Normal fetal heart baseline pattern
341093 Drying female perineal area with hair dryer
341094 Application of egg white to female perineal area
341234 Non-pregnant state
341265 Postmature labour
341266 Suppressing milk
341305 Fair uterine contractions
341306 Gestational sac present
341307 Obstetric pelvic observation
341410 Unwanted pregnancy
341476 Maternal blood loss heavy
341616 Spontaneous hindwater rupture of membranes
341668 Multip
341717 Antenatal deep vein thrombosis
341729 Number of umbilical arteries
341735 Accidental pregnancy
341737 Binovular twins
341775 Unable to perform breast-feeding
341808 Neonatal screening test
341932 Estimated maternal blood loss
341949 Placenta offensive odour
341957 Incomplete delivery of placenta
342018 Labour not established
342048 Uterine contractions ceased
342092 EBL - Estimated maternal blood loss
342141 Number of blood vessels in umbilical cord
342161 Duration of gestation
342162 Labour established
342206 Intact membranes
342218 Monozygotic twins
342226 Placenta normal
342250 Latches on to breast-feed
342341 Placenta calcified
342386 Undiagnosed pregnancy
342399 Diabetic pre-pregnancy counselling
342481 Gravid uterus not observed
342482 Fundal height high for dates
342544 Mother not delivered
342568 Primip
342569 Observation of gestational sac
342570 Small pubic arch
342571 Prominent ischial spines
342595 Uterus contracted
342596 Spontaneous forewater rupture of membranes
342618 Able to latch on to breast for feeding
342628 Frequency of uterine contractions

342677 Null
342728 Placenta problem
342742 Not pushing well in labour
342767 Hypertonic contractions
342779 FHRV - Fetal heart rate variability
342819 Time vaginal show detected
342842 Amount of liquor
342903 Dizygotic twins
342909 Uterine activity
342910 Quantity of liquor
342973 Female perineal area care procedures
343022 Uterine contractions stopped
343072 Pregnancy duration
343089 Onset of second stage of labour
343102 Labour problem
343172 Maternal blood loss within normal limits
343200 Failure to progress in second stage of labour
343265 DZ - Dizygotic twins
343289 Fresh retroplacental clot
343314 Deliveries by breech extraction
343324 Angle of subpubic arch
343346 Observation of structures of conception
343373 Observation of blood loss in labour
343401 Edinburgh postnatal depression scale declined
343439 Gravid uterus small-for-dates
343493 Placental observation
343533 Delayed expulsion of placenta
343560 Observation of uterine contractions
343561 Non-effective uterine contractions
343598 Difficulty positioning baby at breast for feeding
343677 Uterine contraction duration
343690 Emergency caesarean section
343729 Number of umbilical veins
343762 Duration of pregnancy at time of previous miscarriage
343763 No progress with delivery
343791 General shape of pelvis
343835 Multigravida
343907 H/O: medical termination of pregnancy
343909 Uterine contraction frequency
343923 Observation of shape of pregnant abdomen
343942 Normal CTG tracing
343977 Labour observations
344010 Progress of labour - first stage
344020 Face delivery
344066 First stage of labour problem
344125 Uterine contractions problem
344126 Slow rate of delivery
344157 Technically poor CTG
344173 Difficulty latching on to breast for feeding
344229 Duration of labour
344276 Time contractions became regular
344311 Beat to beat variability
344336 Amniotic fluid normal
344379 Ability to perform breast-feeding
344417 Uterine contractions absent
344437 Observation of second stage of labour
344512 Divergent pelvic side walls
344524 Late onset of labour
344603 Referral for termination of pregnancy
344635 Neonatal abstinence syndrome
344647 Missed miscarriage
344675 Observation of quantity of liquor
344684 Placenta healthy
344787 Transversely enlarged pregnant abdomen
344847 Nuchal scan
344917 Membranes complete
344939 Contin pregnancy after intrauterine death of sibling fetus
344953 Position of ischial tuberosities
344986 Periventricular leucomalacia
345008 Observation of sensation of gravid uterus
345009 Does not latch on to breast for feeding
345034 Girth of pregnant abdomen
345098 Uterus lax
345099 Observation of pattern of uterine contractions
345114 Periventricular leukomalacia
345116 Length of gestation at birth
345118 Slow progress in first stage of labour
345175 Unsatisfactory CTG tracing
345184 EDC - Estimated date of conception
345275 First stage of labour not established
345336 Estimated date of conception
345342 Observation of pattern of delivery
345356 Rapid second stage of labour
345362 Anteroposterior diameter of pelvic outlet
345363 Vulval toilet
345402 Rate of delivery
345436 Subpubic arch
345460 Observation of gravid uterus
345520 [M]Papilloma NOS(excl.bladder)
345547 Null
345548 Null
345549 Placental infection
345551 Uterus not contracted
345554 Observation of measures of pregnancy

345598 Number of stillbirths
345614 Fraternal twins
345758 Onset of labour first stage
345789 Refer to early pregnancy unit
345808 Desire to push
345835 Observation of completeness of placenta
345881 Normal liquor volume
345901 Brow delivery
345906 Gravid uterus absent
345907 Normal labour
345908 Fresh meconium staining liquor
345912 Number of chorions in membranes
345955 Number of vessels entering umbilical cord
346051 Gestational sac absent
346234 Uterine membrane observations
346279 Oblique pelvis
346311 Mild uterine contractions
346379 Observation of size of gravid uterus
346392 Condition of amniotic liquor
346407 Old retroplacental clot
346425 Problem of pelvis for delivery
346480 Able to position baby at breast for feeding
346518 Estimated date of delivery from last normal period
346613 Size of placenta
346689 Normal position of gravid uterus
346695 Primiparous
346718 Condition of amniotic fluid
346719 Patient advised to have pregnancy test
346728 Painless uterine contractions
346734 Sinusoidal pattern of fetal heart
346764 Ability to push in labour
346765 Excessive amniotic fluid
346843 Observation of size of female pelvis
346856 First stage of labour established
346897 Flat sacral curve
347026 Date false contractions first detected
347053 Cholestasis of pregnancy
347066 Observation of quantity of pregnancy
347092 Tender scar of gravid uterus
347184 Placenta gritty
347208 Anembryonic pregnancy

Appendix D: Pregnancy Care Marker Codes

GPRD_Medical_Codes	GP_Medical_Term
246504	[V]Antenatal screening
283103	[V]First normal pregnancy supervision
274048	[V]High-risk pregnancy supervision
228376	[V]Illegitimate pregnancy
255697	[V]Normal pregnancy
210188	[V]Other normal pregnancy supervision
255706	[V]Other specified antenatal screening
283105	[V]Other specified high-risk pregnancy
228321	[V]Other specified pregnant state
292281	[V]Other unwanted pregnancy
219233	[V]Personal history of perinatal problems
264873	[V]Pregnancy confirmed
237381	[V]Pregnancy examination and test
264960	[V]Pregnancy examination or test, pregnancy unconfirmed
210284	[V]Pregnancy not (yet) confirmed
219251	[V]Pregnancy with history of abortion
228322	[V]Pregnancy with history of hydatidiform mole
210189	[V]Pregnancy with history of infertility
264874	[V]Pregnancy with history of trophoblastic disease
292230	[V]Pregnancy with history of vesicular mole
301612	[V]Pregnancy with other poor obstetric history
292231	[V]Pregnancy with other poor reproductive history
274046	[V]Pregnant state, incidental
283143	[V]Problems related to unwanted pregnancy
246490	[V]Supervision of high-risk pregnancy due to social problems
292229	[V]Supervision of normal pregnancy
274047	[V]Supervision of other normal pregnancy
228323	[V]Supervisn/pregnancy wth history insufficnt antenatal care
255705	[V]Unspecified delivery outcome
292232	[V]Unspecified high-risk pregnancy
255698	[V]Unspecified pregnant state
216734	[X]Abnormal finding on antenatal screening of mother
207746	[X]Additional preg,cldbirth+puerperium diseas clssfctn terms
225817	[X]Complications predominantly related to the puerperium
217455	[X]Congenital pneumonia due to other bacterial agents
262303	[X]Infections of other parts of urinary tract in pregnancy
262306	[X]Intrapartum haemorrhage, unspecified
243914	[X]Maternal care for other abnormalities of cervix
243915	[X]Maternal care for other abnormalities of gravid uterus
216735	[X]Maternal care for other isoimmunization
207748	[X]Maternal care for other malpresentation of fetus
234925	[X]Maternal care relat to fetus+amniotic cavity+deliv prob
253096	[X]Maternal care/(suspected)damage/fetus/oth medicl procedur
243916	[X]Maternal care/known or suspected fetal problem,unspecifd
234927	[X]Maternal care/oth spcf known or suspected fetal problems
225813	[X]Maternal care/other(suspected)fetal abnormality+damage
207750	[X]Obstructd labour due to oth maternal pelvic abnormalities
289729	[X]Obstructed labour due to other abnormalities of fetus
207749	[X]Obstructed labour due/other malposition+malpresentation
216739	[X]Oth d/bld+bld-form org+c d inv im mch cm preg,cldbir+puer
216740	[X]Oth spcf dis+conditns complicat preg,childbirth+puerperum
243913	[X]Other abnormal findings on antenatal screening of mother
234932	[X]Other and unspecified disorders of lactation
234928	[X]Other antepartum haemorrhage
262305	[X]Other complications specific to multiple gestation
272302	[X]Other congenital malaria
225814	[X]Other disorders of amniotic fluid and membranes
208475	[X]Other fetal blood loss
253094	[X]Other haemorrhage in early pregnancy
225815	[X]Other intrapartum haemorrhage
234926	[X]Other multiple gestation
216738	[X]Other obstetric conditions, not elsewhere classified
289728	[X]Other premature separation of placenta
207747	[X]Other specified abnormal products of conception
217462	[X]Other specified conditions originat in perinatal period
243917	[X]Other specified obstructed labour
225818	[X]Other specified puerperal infection
234924	[X]Other venous complications in pregnancy
207756	[X]Other viral diseases complicating preg,cldbirth+puerperum
234923	[X]Other vomiting complicating pregnancy
262304	[X]Other+unspcf genitourinary tract infection in pregnancy
237401	[X]Supervision of other normal pregnancy
213097	A/N - shared care

286095	A/N 12 weeks examination
258664	A/N 16 week examination
213115	A/N 20 week examination
286096	A/N 24 week examination
213116	A/N 28 week examination
286097	A/N 30 week examination
276953	A/N 32 week examination
231260	A/N 34 week examination
295295	A/N 35 week examination
258665	A/N 36 week examination
258666	A/N 37 week examination
240246	A/N 38 week examination
213117	A/N 39 week examination
213118	A/N 40 week examination
258667	A/N 41 week examination
276954	A/N 42 week examination
295287	A/N amnio. for ? chrom.abnorm.
213102	A/N amnio. for ? neural tube
295286	A/N amniocentesis - abnormal
276945	A/N amniocentesis - awaited
249452	A/N amniocentesis - normal
258655	A/N amniocentesis - not wanted
276944	A/N amniocentesis - offered
249451	A/N amniocentesis -not offered
213101	A/N amniocentesis wanted
276952	A/N blood gp screen not done
231258	A/N blood group screen done
231259	A/N blood group screen NOS
295294	A/N booking examination
222178	A/N care from consultant
267900	A/N care from G.P.
267901	A/N care midwifery led
295281	A/N care provider
286088	A/N care provider NOS
295276	A/N care: elderly primip.
240226	A/N care: grand multip
231249	A/N care: gynae. risk
295279	A/N care: H/O child abuse
267899	A/N care: H/O infertility
295274	A/N care: H/O perinatal death
204090	A/N care: H/O stillbirth
240227	A/N care: H/O trophoblast.dis.
295278	A/N care: late booker
258651	A/N care: medical risk
286086	A/N care: multip. > 35 years
240225	A/N care: obstetric risk
267898	A/N care: obstetric risk NOS
204091	A/N care: poor A/N attender
295277	A/N care: poor home conditions
295275	A/N care: poor obstetr history
249446	A/N care: precious preg. NOS
222176	A/N care: precious pregnancy
213096	A/N care: primip. < 17 years
249449	A/N care: primip. > 30 years
286085	A/N care: recurrent aborter
249447	A/N care: risk NOS
222177	A/N care: social risk
258650	A/N care: social risk NOS
213095	A/N care: uncertain dates
295280	A/N care: under 5ft tall
249448	A/N care:10yrs+since last preg
258660	A/N Rh antibody screen
213107	A/N Rh antibody screen NOS
276947	A/N Rh screen not offered
295290	A/N Rh screen offered
286087	A/N risk NOS
258662	A/N sickle cell screen done
213114	A/N sickle cell screen NOS
295293	A/N sickle screen not done
276951	A/N syphilis screen not done
240244	A/N syphilis screen-blood sent
213104	A/N U/S scan abnormal
231254	A/N U/S scan awaited
222182	A/N U/S scan for ? abnormality
249453	A/N U/S scan for slow growth
258658	A/N U/S scan normal +? dates
276946	A/N U/S scan normal += dates
258656	A/N U/S scan not offered
213103	A/N U/S scan not wanted
258657	A/N U/S scan offered
286092	A/N U/S scan wanted
234775	Abdominal pain in pregnancy
216507	Abdominal pregnancy
289661	Abnormal biochemical finding on antenatal screen of mother
234846	Abnormal chromosomal and genet find/antenat screen of mother
207663	Abnormal cytological finding on antenatal screen of mother
253008	Abnormal finding on antenatal screening of mother
207662	Abnormal findings on antenatal screening of mother
207602	Abnormal glucose tolerance test in pregnancy/childb/puerp
252960	Abnormal GTT during pregnancy - baby not yet delivered
225677	Abnormal GTT in pregnancy/childbirth/puerperium NOS
271499	Abnormal haematologic find on antenatal screening of mother
207664	Abnormal radiological finding on antenatal screen of mother
234845	Abnormal ultrasonic finding on antenatal screening of mother

216657	Abnormality of forces of labour NOS unspecified
207672	Abnormality of forces of labour NOS with antenatal problem
277074	Abortion counselling
341735	Accidental pregnancy
302535	Advice relating to pregnancy and fertility
249454	AFP - blood sent
213110	AFP blood test NOS
240239	AFP blood test not offered
204096	AFP blood test not wanted
276949	AFP blood test offered
240240	AFP blood test wanted
213109	AFP test - antenatal
216558	Albuminuria in pregnancy without hypertension
299088	Alopecia of pregnancy
213108	Alpha-feto protein blood test
255948	ALPHA-FETO PROTEIN HIGH
274296	ALPHA-FETO PROTEIN LOW
203769	Alpha-feto protein normal
265122	ALPHA-FETO PROTEIN NORMAL
240238	Alpha-feto protein test - A/N
228475	AMNIOCENTESIS
241132	Amniocentesis NEC
234838	Amnion nodosum
280534	Amnionitis
277823	Amnioscopy
234841	Amniotic cavity and membrane problem NOS
234840	Amniotic cavity and membrane problem NOS with a/n problem
262210	Amniotic cavity and membrane problem NOS, unspecified
271495	Amniotic cavity and membrane problems NOS
271494	Amniotic cavity infection
234837	Amniotic cavity infection NOS
262209	Amniotic cavity infection unspecified
234836	Amniotic cavity infection with antenatal problem
225731	Amniotic cyst
207657	Amniotic fluid leaking
253069	Amniotic fluid pulmonary embolism
216712	Amniotic fluid pulmonary embolism NOS
243898	Amniotic fluid pulmonary embolism unspecified
271552	Amniotic fluid pulmonary embolism with a/n complication
289610	Anaemia - unspecified whether in pregnancy or the puerperium
289611	Anaemia during pregnancy - baby not yet delivered
347208	Anembryonic pregnancy
243742	Angular pregnancy
262205	Anhydramnios
240234	Antenatal amniocentesis
240235	Antenatal amniocentesis NOS
240245	Antenatal blood group screen
295300	Antenatal blood tests
219833	ANTENATAL BOOKING
204088	Antenatal care
302172	ANTENATAL CARE
302372	Antenatal care
295273	Antenatal care: 2nd pregnancy
240223	Antenatal care: 3rd pregnancy
249445	Antenatal care: gravida No.
240224	Antenatal care: gravida NOS
222175	Antenatal care: multip
240229	Ante-natal care: not attended
240228	Ante-natal care: not offered
258652	Ante-natal care: not wanted
240222	Antenatal care: primigravida
309076	Antenatal class
253062	Antenatal deep vein thrombosis
341717	Antenatal deep vein thrombosis
253063	Antenatal deep vein thrombosis NOS
280584	Antenatal deep vein thrombosis unspecified
234895	Antenatal deep vein thrombosis with antenatal complication
309288	Antenatal education
231261	Antenatal examination NOS
258663	Antenatal examinations
269430	Ante-natal exercises
309801	Antenatal HIV screening
283260	ANTENATAL OPERATION
295402	Ante-natal relaxation classes
231214	Antenatal scan unable to confirm pregnancy
331595	Antenatal screening
213113	Antenatal sickle cell screen
240243	Antenatal syphilis screen
231257	Antenatal syphilis screen NOS
204049	Antenatal ultrasound confirms ectopic pregnancy
213054	Antenatal ultrasound confirms intra-uterine pregnancy
204048	Antenatal ultrasound result received
295288	Antenatal ultrasound scan
286093	Antenatal ultrasound scan at 17-22 weeks
295289	Antenatal ultrasound scan at 22-40 weeks
258659	Antenatal ultrasound scan at 9-16 weeks
286094	Antenatal ultrasound scan NOS
231255	Antenatal ultrasounds scan at 4-8 weeks
216534	Antepartum bleeding
271413	Antepartum haemorrhage

225644	Antepartum haemorrhage NOS
298846	Antepartum haemorrhage NOS
298845	Antepartum haemorrhage NOS - not deliv
262126	Antepartum haemorrhage NOS, unspecified
289569	Antepartum haemorrhage with afibrinogenaemia
289568	Antepartum haemorrhage with coagulation defect
280454	Antepartum haemorrhage with coagulation defect - not deliv
252921	Antepartum haemorrhage with coagulation defect unspecified
225642	Antepartum haemorrhage with fibroid
271416	Antepartum haemorrhage with hyperfibrinolysis
262125	Antepartum haemorrhage with hypofibrinogenaemia
280455	Antepartum haemorrhage with trauma
298844	Antepartum haemorrhage with trauma - not delivered
225640	Antepartum haemorrhage with trauma NOS
252923	Antepartum haemorrhage with trauma unspecified
216539	Antepartum haemorrhage with uterine fibroid
225641	Antepartum haemorrhage with uterine leiomyoma
280456	Antepartum haemorrhage with uterine leiomyoma - not deliv
234754	Antepartum haemorrhage with uterine leiomyoma unspecified
262124	Antepartum haemorrhage, abruptio placentae, placenta praevia
255853	ANTEPARTUM OPERATION
340508	AP - Anteroposterior diameter of pelvic outlet
259541	Artificial rupture of membranes
211616	ASPHYXIA ANTENATAL
262146	Asymptomatic bacteriuria in pregnancy
234770	Asymptomatic bacteriuria in pregnancy - not delivered
234771	Asymptomatic bacteriuria in pregnancy NOS
207583	Asymptomatic bacteriuria in pregnancy unspecified
265128	AZ TEST
301859	AZ TEST NEGATIVE
219491	AZ TEST POSITIVE
302695	Baby overdue
234855	Bandl's retraction ring
240258	Barts test
225646	Benign essential hypertension in preg/childb/puerp NOS
216540	Benign essential hypertension in preg/childb/puerp unspec
225645	Benign essential hypertension in pregnancy/childbirth/puerp
207619	Bicornuate uterus affecting obstetric care
280511	Bicornuate uterus complicating a/n care, baby not delivered
234807	Bicornuate uterus in pregnancy, childbirth or puerperium NOS
340753	Biochemical pregnancy
333462	Birth history
298840	Bleeding in early pregnancy
302367	Blood clots in membranes
234910	Blood dyscrasia puerperal
302173	BOOKING ANTENATAL
243790	Braxton-Hicks contractions
207739	Breast engorgement in pregnancy, the puerperium or lactation
253087	Breast engorgement in pregnancy/puerperium/lact + a/n comp
225809	Breast engorgement in pregnancy/puerperium/lactation unspec
247033	BREAST SCREENING EXAMINATION ABNORMAL
207610	Breech presentation unspecified
225685	Breech presentation with antenatal problem
207612	Brow presentation with antenatal problem
210965	CANNABIS INGESTION IN PREGNANCY
216583	Cardiomyopathy in the puerperium
332951	Cardiotochogram observation
268042	Care of teeth advice -in preg.
308377	Care relating to reproduction and pregnancy
225684	Cephalic version NOS
234792	Cephalic version NOS with antenatal problem
298883	Cephalic version NOS, unspecified
268720	Cerclage of cervix of gravid uterus
207720	Cerebral venous thrombosis in the puerperium
216716	Cerebrovascular disorders in the puerperium
289634	Cervical incompetence
207624	Cervical incompetence unspecified
234817	Cervical incompetence with antenatal problem
280430	Cervical pregnancy
347053	Cholestasis of pregnancy
207656	Chorioamnionitis
274200	CHORIONIC VILLOUS SAMPLING
299699	Clostridial intra-amniotic fetal infection
252885	Combined or heterotopic pregnancy
262271	Complications of labour and delivery NOS, unspecified
234911	Complications of the puerperium NOS, unspecified
234786	Complications specific to multiple gestation
207614	Compound presentation
293429	CONCEALED PREGNANCY
302245	Concealed pregnancy
302789	Confirmation of pregnancy

234806	Cong abnorm uterus complicating a/n care, baby not delivered
290467	Congenital anaemia
225673	Congenital cardiovasc dis - unsp whether in preg/puerperium
280485	Congenital cardiovasc dis in pregnancy - baby not delivered
234783	Congenital cardiovasc dis in puerp - baby previously deliv
207596	Congenital heart disease in pregnancy
243819	Congenital/acquired abnormality vulva in preg/childb/puerp
216594	Conjoined twins causing disproportion
249450	Consultant unit booking
252962	Continuing preg after intrauterine death one fetus or more
234787	Continuing pregnancy after abortion of one fetus or more
332954	Continuing pregnancy after abortion of sibling fetus
309630	Continuous contractions
292577	CONTRACEPTION CAP FAILURE
301949	CONTRACEPTION I U C D FAILURE
301936	CONTRACEPTION SHEATH FAILURE
207679	Cord tangled or knotted with compression
234862	Cord tangled or knotted with compression NOS
262228	Cord tangled with compression with antenatal problem
207678	Cord tight round neck NOS
234861	Cord tight round neck unspecified
207677	Cord tight round neck with antenatal problem
289543	Cornual pregnancy
219701	COUNSELLING ABORTION
252919	Couvelaire uterus
225808	Cracked nipple in pregnancy, the puerperium or lactation
299001	Cracked nipple in pregnancy/puerperium/lactation + a/n comp
307913	CTG observations
333514	CTG reactivity
262148	Cystitis of pregnancy
216598	Cystocele affecting obstetric care
216599	Cystocele complicating antenatal care - baby not delivered
243815	Cystocele in pregnancy, childbirth and the puerperium
347026	Date false contractions first detected
333513	Date symptom of pregnancy first noted
258606	Dating/booking US scan
219750	DECIDED AGAINST TERMINATION PREGNANCY
202611	DECREASED FOETAL MOVEMENTS
225740	Deep transverse arrest NOS
298930	Deep transverse arrest with antenatal problem
271508	Delayed delivery second twin with antenatal problem
213099	Deliv.booking - length of stay
204093	Delivery booking - place NOS
286090	Delivery booking - stay NOS
204092	Delivery booking place
231251	Delivery booking place changed
333105	Delivery place booked
267912	Delivery place planned
308749	Delivery place planned
231250	Delivery: no place booked
216578	Diabetes mellitus - unspec whether in pregnancy/puerperium
280481	Diabetes mellitus arising in pregnancy
289607	Diabetes mellitus during pregnancy - baby not yet delivered
252954	Diabetes mellitus in pregnancy/childbirth/puerperium NOS
229070	DIABETES PREGNANCY
340806	Diabetes: shared care in pregnancy - diabetol and obstet
241128	Diagnost endoscopic examination foetus using foetoscope NOS
241131	Diagnostic amniocentesis
213966	Diagnostic endoscopic examination fetus using fetoscope NOS
222971	Diagnostic endoscopic examination fetus using fetoscope OS
296089	Diagnostic endoscopic examination of fetus using fetoscope
286995	Diagnostic endoscopic examination of foetus using fetoscope
222974	Diagnostic percutaneous examination of fetus
222975	Diagnostic percutaneous examination of fetus NOS
277822	Diagnostic percutaneous examination of placenta
286246	Diet in pregnancy advice
216584	Dis nervous syst complic pregnancy,childbirth and puerperium
207603	Dis of the digestive sys comp preg childbirth and puerp
207604	Dis of the skin and subcut tis comp preg childbrth puerp
271568	Disorder of lactation NOS with antenatal complication
216592	Disproportion - major pelvic abnormality
207616	Disproportion - major pelvic abnormality unspecified
216593	Disproportion - major pelvic abnormality with antenatal prob
234805	Disproportion NOS
289625	Disproportion NOS with antenatal problem
216596	Disproportion NOS, unspecified
258669	Double test
213124	Double test not offered
267911	Double test not wanted
204103	Double test offered
231264	Double test wanted

276960 Downs screen - blood test
204105 Downs screen blood test abnormal
240259 Downs screen blood test normal
231265 Downs screening - blood sent
240260 Downs screening blood test NOS
286999 Drainage of amniotic cavity
262170 Drug dependence during pregnancy - baby not yet delivered
277084 Drugs in pregnancy advice
207718 DVT - deep venous thrombosis, antenatal
234852 Dystocia NOS
216554 Early onset of delivery unspecified
243781 Early or threatened labour
280469 Early or threatened labour NOS
216533 Early pregnancy haemorrhage NOS
271412 Early pregnancy haemorrhage NOS
243770 Early pregnancy haemorrhage NOS - not delivered
298841 Early pregnancy haemorrhage NOS unspecified
302224 Early stage of pregnancy
342092 EBL - Estimated maternal blood loss
234760 Eclampsia
234761 Eclampsia - not delivered
243779 Eclampsia in pregnancy
207570 Eclampsia NOS
252930 Eclampsia unspecified
234265 Ectopic beats unspecified
298807 Ectopic pregnancy NOS
216641 Elderly primigravida with antenatal problem
241130 Electrode applied to fetal scalp
232506 Entonox analgesia in labour
244641 Eschericha coli intra-amniotic fetal infection
345336 Estimated date of conception
239425 Estimated date of delivery
346518 Estimated date of delivery from last normal period
340436 Estimated date of delivery from last period
341932 Estimated maternal blood loss
237877 EXAMINATION PRENATAL
262135 Excessive pregnancy vomiting
216568 Excessive weight gain in pregnancy
252938 Excessive weight gain in pregnancy
244622 Extradural haemorrhage in fetus or newborn
302083 EXTRAMARITAL PREGNANCY/BIRTH
208428 Extreme immaturity
243802 Face presentation unspecified
225686 Face presentation with antenatal problem
262221 Failed forceps NOS
271496 Failed mechanical induction NOS
216637 Failed mechanical induction unspecified
262212 Failed mechanical induction with antenatal problem
271497 Failed medical or unspecified induction with a/n problem
271528 Failed or difficult intubation during pregnancy
243909 Failure of lactation with antenatal complication
341305 Fair uterine contractions
207529 Fallopian tube pregnancy
252934 False labour
225798 Fat embolism - obstetric
243786 Fatigue during pregnancy
289595 Fatigue during pregnancy - not delivered
289596 Fatigue during pregnancy NOS
252945 Fatigue during pregnancy unspecified
233783 Fear of pregnancy
295284 Feeding intention
213100 Feeding intention - bottle
295285 Feeding intention - breast
240233 Feeding intention - unsure
253837 Fet newborn affect mat exposure to environml chem subs
207640 Fetal acidosis
299651 Fetal alcohol syndrome
208411 Fetal and neonatal conditions
281294 Fetal blood loss
208450 Fetal blood loss from cut co-twin's cord
290450 Fetal blood loss from ruptured cord
208452 Fetal blood loss from vasa praevia
235621 Fetal blood loss NOS
281295 Fetal blood loss, unspecified
216619 Fetal bradycardia
252998 Fetal distress - affecting management
298911 Fetal distress NOS
225723 Fetal distress unspecified
207642 Fetal distress with antenatal problem
281296 Fetal exsanguination
262990 Fetal growth retardation NOS
309817 Fetal heart acceleration
309252 Fetal heart baseline pattern
331716 Fetal heart deceleration
213979 Fetal heart monitoring in labour
296104 Fetal heart monitoring NEC
340143 Fetal heart rate variability
217390 Fetal malnutrition
290424 Fetal malnutrition without mention of "light for dates"
208427 Fetal malnutrition, no mention light or small for gest age

207615	Fetal malposition and malpresentation NOS
216591	Fetal malposition and malpresentation NOS with a/n problem
234797	Fetal malposition and malpresentation NOS, unspecified
295296	Fetal maturity - A/N
249456	Fetal maturity: dates = size
240247	Fetal maturity: dates not=size
232136	Fetal monitoring
276955	Fetal movements felt
286098	Fetal movements seen
208451	Fetal placental blood loss
207641	Fetal tachycardia
240180	Fetal U-S scan
252996	Fetal-maternal haemorrhage
243827	Fetal-maternal haemorrhage NOS
271480	Fetal-maternal haemorrhage unspecified
234827	Fetal-maternal haemorrhage with antenatal problem
225730	Feto-placental problems NOS
262201	Feto-placental problems NOS
253001	Feto-placental problems NOS with antenatal problem
207647	Feto-placental problems NOS, unspecified
222969	Fetoscopic blood transfusion of fetus
222970	Fetoscopic examination of fetus and biopsy of fetus
259537	Fetoscopic examination of fetus and sampling of fetal blood
286996	Fetoscopy NEC
234791	Fetus - unstable lie
277821	Fetus & gravid uterus ops
281258	Fetus affected by APH - antepartum haemorrhage
235586	Fetus affected by cord problems
253822	Fetus affected by hydramnios
299649	Fetus affected by maternal toxaemia
253826	Fetus affected by placental abruption
253828	Fetus affected by placental insufficiency
277820	Fetus and gravid uterus operations
232116	Fetus and gravid uterus operations NOS
253836	Fetus and newborn affected by maternal use of tobacco
259535	Fetus operations
235592	Fetus or neonate affected by abnormal uterine contractions
244609	Fetus or neonate affected by amnionitis
253825	Fetus or neonate affected by external version before labour
244606	Fetus or neonate affected by face presentation before labour
244614	Fetus or neonate affected by hypertonic uterine dysfunction
208417	Fetus or neonate affected by knot in cord
253832	Fetus or neonate affected by long cord
262978	Fetus or neonate affected by malpresentation before labour
244613	Fetus or neonate affected by maternal contraction ring
208413	Fetus or neonate affected by maternal hypertensive disease
226508	Fetus or neonate affected by maternal medical problem NOS
244603	Fetus or neonate affected by maternal medical problems
235587	Fetus or neonate affected by membranitis
226509	Fetus or neonate affected by multiple pregnancy
244605	Fetus or neonate affected by oblique lie before labour
253830	Fetus or neonate affected by other specified cord problems
244608	Fetus or neonate affected by placental insufficiency
244616	Fetus or neonate affected by previous pelvic surgery
253829	Fetus or neonate affected by prolapsed cord
208418	Fetus or neonate affected by short cord
262980	Fetus or neonate affected by transverse lie before labour
226510	Fetus or neonate affected by unspecified multiple pregnancy
235593	Fetus or neonate affected by uterine inertia or dysfunction
253831	Fetus or neonate affected by velamentous insertion of cord
235598	Fetus small-for-dates (SFD) with signs of malnutrition
235597	Fetus small-for-dates with signs of malnutrition
290423	Fetus small-for-dates, without mention of malnutrition
262198	Fetus with central nervous system malformation
298900	Fetus with central nervous system malformation + a/n problem
234822	Fetus with central nervous system malformation NOS
280524	Fetus with central nervous system malformation unspecified
280525	Fetus with chromosomal abnormality
298901	Fetus with chromosomal abnormality NOS
243821	Fetus with chromosomal abnormality unspecified
280526	Fetus with chromosomal abnormality with antenatal problem
271478	Fetus with damage due to coil
225716	Fetus with damage due to intra-uterine contraceptive device
252992	Fetus with damage due to intra-uterine contraceptive device
298907	Fetus with damage due to IUCD NOS
225717	Fetus with damage due to IUCD unspecified
225718	Fetus with damage due to IUCD with antenatal problem

280527	Fetus with damage due to other maternal disease
225714	Fetus with damage due to other maternal disease + a/n prob
225715	Fetus with damage due to other maternal disease NOS
271477	Fetus with damage due to other maternal disease unspecified
252994	Fetus with damage NOS
298909	Fetus with damage NOS
280529	Fetus with damage NOS with antenatal problem
225720	Fetus with damage NOS, unspecified
252991	Fetus with drug damage
289644	Fetus with drug damage NOS
234823	Fetus with drug damage unspecified
289643	Fetus with drug damage with antenatal problem
298902	Fetus with hereditary disease
252990	Fetus with hereditary disease NOS
298903	Fetus with hereditary disease unspecified
216612	Fetus with hereditary disease with antenatal problem
207638	Fetus with other damage NEC
225719	Fetus with other damage NEC NOS
252993	Fetus with other damage NEC with antenatal problem
271479	Fetus with other damage NEC, unspecified
207636	Fetus with radiation damage
207637	Fetus with radiation damage NOS
280528	Fetus with radiation damage unspecified
234825	Fetus with radiation damage with antenatal problem
216613	Fetus with suspected rubella damage via mother
271475	Fetus with viral damage via mother
216614	Fetus with viral damage via mother NOS
262199	Fetus with viral damage via mother unspecified
243824	Fetus with viral damage via mother with antenatal problem
226507	Fetus/neonate affected - poison transfer placenta/breast OS
244615	Fetus/neonate affected by abnormal uterine contractions NOS
244610	Fetus/neonate affected by abnormalities chorion/amnion NOS
281256	Fetus/neonate affected by breech presentation before labour
208416	Fetus/neonate affected by feto-maternal transplacental trans
244607	Fetus/neonate affected by malpresentation before labour NOS
226511	Fetus/neonate affected by malpresentation before labour OS
208412	Fetus/neonate affected by maternal problem unrelated to preg
226512	Fetus/neonate affected by materno-fetal transplacental trans
208415	Fetus/neonate affected by placental damage-amniocentesis
235588	Fetus/neonate affected other abnormalities of chorion/amnion
244604	Fetus/neonate affected-plac./breast transfer addictive drug
208414	Fetus/neonate affected-plac./breast transfer anticoagulant
226506	Fetus/neonate affect-plac./breast transf hypoglycaemic agent
226516	Fetus+newborn affected/other maternal noxious influences
342779	FHRV - Fetal heart rate variability
229743	FOETAL DISTRESS
302175	FOETAL HEART HEARD
302176	FOETAL HEART NORMAL
232137	Foetal monitoring
307161	FOETAL MOVEMENTS DECREASED
283682	FOETAL MOVEMENTS FELT
219834	FOETAL MOVEMENTS NORMAL
220656	FOETAL MOVEMENTS NOT FELT
302177	FOETAL MOVEMENTS STOPPED
204990	Foetoscopic examination foetus and sampling of foetal blood
255955	FOLLICULAR STIMULATING HORMONE LEVEL
232118	Fore water rupture of amniotic membrane
240231	Full stay delivery booking
222179	G.P. unit delivery booking
214389	Gas and air analgesia in labour
298886	Generally contracted pelvis NOS
243806	Generally contracted pelvis unspecified
234798	Generally contracted pelvis with antenatal problem
295398	Genetic counselling
289697	Genital varices in pregnancy
280474	Genitourinary tract infection in pregnancy - not delivered
216563	Genitourinary tract infection in pregnancy NOS
289590	Genitourinary tract infection in pregnancy unspecified
280473	Genitourinary tract infections in pregnancy
298880	Gestation - multiple
276961	Gestation = 24 weeks
295301	Gestation >24 weeks
207594	Gestational diabetes mellitus
289609	Gestational diabetes mellitus
207567	Gestational hypertension
289585	Gestational oedema
216567	Gestational oedema with proteinuria
234898	Gestational phlebitis NOS
271551	Gestational phlebopathy NOS
225662	Gestational proteinuria
341306	Gestational sac present
262281	Gestational thrombosis NOS
345034	Girth of pregnant abdomen

262152	Glycosuria during pregnancy
207585	Glycosuria during pregnancy - delivered
252946	Glycosuria during pregnancy - not delivered
243789	Glycosuria during pregnancy NOS
216566	Glycosuria during pregnancy unspecified
234843	Grand multiparity
216640	Grand multiparity unspecified
262215	Grand multiparity with antenatal problem
309591	Gravid uterus normal
253875	Group A haemolytic streptococcal intra-amniotic infect. NEC
299700	Group B haemolytic streptococcal intra-amniotic infect. NEC
298859	Habitual aborter - not delivered
217431	Haemolytic disease due to ABO isoimmunisation
208456	Haemolytic disease due to rhesus isoimmunisation
208455	Haemorrhage of fetus and newborn NOS
225791	Haemorrhoids in pregnancy
243892	Haemorrhoids in pregnancy and puerperium with a/n comp
207719	Haemorrhoids in pregnancy and puerperium with p/n comp
216708	Haemorrhoids in the puerperium
207599	Heart disease during pregnancy
243787	Herpes gestationis
289597	Herpes gestationis - not delivered
289598	Herpes gestationis NOS
216565	Herpes gestationis unspecified
247605	HICK'S CONTRACTIONS
216589	High head at term with antenatal problem
333042	High risk pregnancy
267651	High sensitivity urine pregnancy test
204996	Hind water rupture of amniotic membrane
213098	Home delivery booked
231266	Home delivery planned
331569	Home delivery planned
225752	Hourglass uterine contraction
228592	HUMAN PLACENTAL LACTOGEN LEVEL ABNORMAL
283362	HUMAN PLACENTAL LACTOGEN LEVEL NORMAL
207649	Hydramnios
234804	Hydrocephalic disproportion NOS
280508	Hydrocephalic disproportion with antenatal problem
226558	Hydrops fetalis due to isoimmunisation
208458	Hydrops fetalis due to other+unspcfd haemolytic disease
229504	HYPERCHROMIC ANAEMIA PREGNANCY
252932	Hyperemesis gravidarum
298854	Hyperemesis gravidarum with metabolic disturbance
262138	Hyperemesis gravidarum with metabolic disturbance - not del
234764	Hyperemesis gravidarum with metabolic disturbance NOS
207574	Hyperemesis gravidarum with metabolic disturbance unsp
271422	Hyperemesis of pregnancy
243774	Hypertension complicating pregnancy/childbirth/puerperium
216654	Hypertonic uterine inertia
271505	Hypertonic uterine inertia with antenatal problem
294349	Illegitimate pregnancy
234856	Incoordinate uterine action
259542	Induction of labour using prostaglandins
207589	Infections of bladder in pregnancy
289591	Infections of kidney in pregnancy
207584	Infections of the genital tract in pregnancy
289605	Infections of urethra in pregnancy
216570	Infective/parasitic disease in preg/childbirth/puerperium
240248	Initial booking of patient
298887	Inlet pelvic contraction
289623	Inlet pelvic contraction NOS
234799	Inlet pelvic contraction unspecified
289622	Inlet pelvic contraction with antenatal problem
256250	INSTRUCTION ANTENATAL
237876	INSTRUCTION ANTENATAL GIVEN
342206	Intact membranes
286091	Intends to bottle feed
302699	Intermittent uterine contractions
281292	Intra-amniotic fetal infection
244642	Intra-amniotic fetal infection NOS
208446	Intra-amniotic fetal infection, unspecified
208430	Intracerebral haemorrhage in fetus or newborn
234725	Intraligamentous pregnancy
298912	Intrauterine death NOS
281293	Intrauterine fetal sepsis, unspecified
238425	INTRAUTERINE GROWTH RETARDATION
253838	Intrauterine growth retardation
244627	Intrauterine hypoxia
308517	Intrauterine pregnancy
207696	Inversion of uterus - obstetric
232730	Iron supplement in pregnancy
308068	Irregular uterine contractions
228838	IUCD FAILED
295262	IUD failure - pregnant
207680	Knot in cord
207633	Known or suspected fetal abnormality

238432	LABOUR
342162	Labour established
306827	LABOUR FALSE
232117	Labour operations
221207	Labourer NOS
289624	Large fetus causing disproportion with antenatal problem
271486	Large-for-dates fetus in pregnancy
243832	Large-for-dates NOS
234834	Large-for-dates unspecified
253000	Large-for-dates with antenatal problem
262139	Late pregnancy vomiting - not delivered
289581	Late pregnancy vomiting NOS
216549	Late pregnancy vomiting unspecified
252933	Late vomiting of pregnancy
284338	LEAKING AMNIOTIC FLUID
213125	Length of labour
290425	Light for gestational age
216628	Lithopaedian
262149	Liver disorder in pregnancy
262150	Liver disorder in pregnancy - not delivered
289593	Liver disorder in pregnancy NOS
216564	Liver disorder in pregnancy unspecified
225744	Locked twins NOS
225743	Locked twins with antenatal problem
340260	Low risk pregnancy
234847	Low weight gain in pregnancy
292488	LUTEINIZATION HORMONE LEVEL
216701	Major puerperal infection
216702	Major puerperal infection NOS, unspecified
234848	Malnutrition in pregnancy
262178	Malposition and malpresentation of fetus
225683	Malpresentation of fetus
290451	Massive umbilical haemorrhage
295308	Maternal alcohol abuse
341476	Maternal blood loss heavy
308610	Maternal blood loss minimal
335363	Maternal blood loss moderate
343172	Maternal blood loss within normal limits
234824	Maternal care for (suspected) damage to fetus from alcohol
289640	Maternal care for chromosomal abnormality in fetus
225711	Maternal care for CNS malformation in fetus
271476	Maternal care for damage to fetus from maternal rubella
253092	Maternal care for diminished fetal movements
234826	Maternal care for fetal abnormality and damage, unspecified
216621	Maternal care for fetal acidosis during pregnancy
271482	Maternal care for fetal bradycardia during pregnancy
252999	Maternal care for fetal decelerations during pregnancy
234830	Maternal care for fetal hypoxia
298910	Maternal care for fetal hypoxia
225724	Maternal care for fetal tachycardia during pregnancy
262299	Maternal care for fetus
234833	Maternal care for intrauterine growth retardation
253091	Maternal care for other known or suspected fetal problems
207745	Maternal care for poor fetal growth
243831	Maternal care for poor fetal growth
207643	Maternal care for reduced fetal heart rate during pregnancy
252995	Maternal care for suspect fetal abnormal and damage, unspec
243823	Maternal care for suspected chromosomal abnormality in fetus
252989	Maternal care for suspected CNS malformation in fetus
262300	Maternal care for viable fetus in abdominal pregnancy
249465	Maternal care NOS
234920	Maternal care/known or suspected fetal problem,unspecifd
243866	Maternal distress
271530	Maternal distress unspecified
271532	Maternal distress with antenatal problem
249479	Maternal drug abuse
262270	Maternal exhaustion
207588	Maternal gonorrhoea during pregnancy/childbirth/puerperium
280477	Maternal gonorrhoea in pregnancy - baby not yet delivered
253049	Maternal hypotension syndrome
243873	Maternal hypotension syndrome NOS
216690	Maternal hypotension syndrome unspecified
243872	Maternal hypotension syndrome with antenatal problem
216574	Maternal malaria during pregnancy - baby not yet delivered
262143	Maternal obesity syndrome
244617	Maternal problem unrelated preg affecting fetus/neonate NOS
226517	Maternal problems unrelated preg affecting fetus/neonate OS
298866	Maternal rubella during pregnancy - baby not yet delivered
225666	Maternal rubella in pregnancy, childbirth and the puerperium
225667	Maternal rubella in pregnancy/childbirth/puerperium NOS
207587	Maternal syphilis during pregnancy - baby not yet delivered
216571	Maternal syphilis in pregnancy/childbirth/puerperium NOS
249478	Maternal tobacco abuse

216573	Maternal tuberculosis in pregnancy - baby not yet delivered
216572	Maternal tuberculosis in pregnancy/childbirth/puerperium
234778	Maternal tuberculosis in pregnancy/childbirth/puerperium NOS
231398	Maternity benefit advice
286084	Maternity care
295401	Maternity grant advice
214712	Maternity services admin.
250297	McDonald cerclage of cervix
225722	Meconium stained liquor
216585	Medical condition NOS in pregnancy - baby not yet delivered
225678	Medical condition NOS in pregnancy/childbirth/puerperium
265462	MEDICAL EXAMINATION ANTENATAL
302171	MEDICAL EXAMINATION PREGNANCY
344917	Membranes complete
289655	Membranitis
298805	Membranous pregnancy
207705	Mendelson's syndrome
216582	Mental disorder - unspec whether in pregnancy/puerperium
225672	Mental disorder during pregnancy - baby not yet delivered
234782	Mental disorders in pregnancy, childbirth and the puerperium
243803	Mentum presentation
207531	Mesenteric pregnancy
298806	Mesometric pregnancy
331777	Midwife unit delivery booking
216548	Mild hyperemesis gravidarum
298853	Mild hyperemesis gravidarum NOS
262136	Mild hyperemesis unspecified
225652	Mild hyperemesis-not delivered
234758	Mild or unspecified pre-eclampsia
207568	Mild or unspecified pre-eclampsia - not delivered
252929	Mild or unspecified pre-eclampsia NOS
243777	Mild or unspecified pre-eclampsia unspecified
289573	Mild pre-eclampsia
289575	Mild pre-eclampsia
231262	Misc. antenatal data
231263	Misc. antenatal data NOS
234802	Mixed feto-pelvic disproportion
234803	Mixed feto-pelvic disproportion NOS
262186	Mixed feto-pelvic disproportion with antenatal problem
234763	Moderate pre-eclampsia
307912	Moderate uterine contractions
243780	Morning sickness
249595	Mothercraft advice
293432	MULTIPARA
266076	MULTIPARITY
331942	Multiparous
271448	Multiple pregnancy
225682	Multiple pregnancy NOS
271451	Multiple pregnancy NOS
262177	Multiple pregnancy NOS with antenatal problem
298882	Multiple pregnancy NOS, unspecified
243805	Multiple pregnancy with malpresentation
225688	Multiple pregnancy with malpresentation unspecified
252970	Multiple pregnancy with malpresentation with antenatal prob
225611	Mural pregnancy
208445	Neonatal candidiasis of lung
208444	Neonatal candidiasis of perineum
216559	Nephropathy NOS in pregnancy without hypertension
258653	No A/N care: not known preg.
276942	No ante-natal care
240230	No ante-natal care NOS
226577	Non-immune hydrops fetalis
331985	Non-viable pregnancy
343942	Normal CTG tracing
341092	Normal fetal heart baseline pattern
309281	Normal pregnancy
283681	NORMAL PREGNANCY PRENATAL CARE THROUGHOU
344847	Nuchal scan
279376	Nutritional deficiencies
221558	O/E - breech presentation
258032	O/E - fetal movements
248862	O/E - fetal movements felt
203493	O/E - fetal movements NOS
230631	O/E - fetal movements seen
234793	Oblique lie with antenatal problem
308686	Observation of amniotic fluid
342569	Observation of gestational sac
345554	Observation of measures of pregnancy
333216	Observation of pattern of pregnancy
308759	Observation of position of pregnancy
347066	Observation of quantity of pregnancy
335427	Observation of viability of pregnancy
234900	Obstetric air pulmonary embolism
243897	Obstetric air pulmonary embolism with a/n complication
216684	Obstetric anaesthesia with cardiac comp with antenatal prob
216683	Obstetric anaesthesia with cardiac complications
298958	Obstetric anaesthesia with CNS comp with antenatal problem
225776	Obstetric anaesthesia with CNS complications unspecified

225774	Obstetric anaesthesia with pulmonary comp with a/n problem
216682	Obstetric anaesthesia with pulmonary complications unsp
207709	Obstetric anaesthetic complications NOS
216687	Obstetric anaesthetic complications NOS
253047	Obstetric anaesthetic complications NOS with a/n problem
216713	Obstetric blood-clot pulmonary embolism
243900	Obstetric blood-clot pulmonary embolism + a/n complication
234901	Obstetric blood-clot pulmonary embolism unspecified
207735	Obstetric breast abscess with antenatal complication
225805	Obstetric breast infection NOS
225806	Obstetric breast infection NOS, unspecified
216709	Obstetric cerebral venous thrombosis
216673	Obstetric damage to pelvic joints and ligaments NOS
234868	Obstetric high vaginal laceration
234869	Obstetric high vaginal laceration NOS
216670	Obstetric high vaginal laceration unspecified
293431	OBSTETRIC HISTORY BAD
216669	Obstetric inversion of uterus unspecified
225764	Obstetric laceration of cervix NOS
296106	Obstetric monitoring NOS
207731	Obstetric nipple infection with antenatal complication
207737	Obstetric nonpurulent mastitis NOS
225802	Obstetric nonpurulent mastitis with antenatal complication
207698	Obstetric pelvic haematoma unspecified
225795	Obstetric pulmonary embolism
234904	Obstetric pulmonary embolism NOS with antenatal complication
207722	Obstetric pulmonary embolus
289709	Obstetric pyaemic and septic pulm embolism + a/n comp
243903	Obstetric pyaemic and septic pulmonary embolism NOS
207711	Obstetric shock unspecified
234881	Obstetric shock with antenatal problem
234871	Obstetric trauma causing pelvic haematoma
225769	Obstetric trauma causing pelvic haematoma NOS
216671	Obstetric trauma damaging pelvic joints and ligaments
243857	Obstetric trauma NOS with antenatal problem
243840	Obstruct labour due pelvic outlet and mid-cavity contract
216646	Obstructed labour caused by bony pelvis unspecified
298927	Obstructed labour caused by bony pelvis with a/n problem
253013	Obstructed labour caused by pelvic soft tissues + a/n prob
262219	Obstructed labour caused by pelvic soft tissues unspecified
207665	Obstructed labour due abnormality of maternal pelv organs
271500	Obstructed labour due to fetal malposition NOS
253009	Obstructed labour due to fetal malposition unspecified
243839	Obstructed labour due to fetal malposition with a/n problem
216647	Obstructed labour due to pelvic inlet contraction
207670	Obstructed labour NOS with antenatal problem
252940	Oedema or excessive weight gain in pregnancy - not delivered
225657	Oedema or excessive weight gain in pregnancy no hypertension
289586	Oedema or excessive weight gain in pregnancy NOS
252939	Oedema or excessive weight gain in pregnancy, unspecified
207652	Oligohydramnios
243833	Oligohydramnios NOS
207653	Oligohydramnios unspecified
271489	Oligohydramnios with antenatal problem
308949	Onset of contractions
331897	Onset of labour pains
232114	Operation on gravid uterus NOS
232113	Operations on gravid uterus
208443	Ophthalmia neonatorum - staphylococcal
271443	Orthopaedic disorder in pregnancy - baby not yet delivered
234785	Orthopaedic disorder in pregnancy/childbirth/puerperium NOS
216636	Other amniotic/membrane problem with antenatal problem
208439	Other and unspecified perinatal atelectasis
243773	Other antepartum haemorrhage
234755	Other antepartum haemorrhage - not delivered
234756	Other antepartum haemorrhage NOS
280457	Other antepartum haemorrhage unspecified
234828	Other blood-group isoimmunisation
271481	Other blood-group isoimmunisation
289645	Other blood-group isoimmunisation NOS
252997	Other blood-group isoimmunisation unspecified
225721	Other blood-group isoimmunisation with antenatal problem
299005	Other breast disorder in pregnancy/puerperium/lact +a/n comp
207741	Other breast disorder in pregnancy/puerperium/lactation
234915	Other breast disorder in pregnancy/puerperium/lactation NOS
234784	Other cardiovascular dis - unsp whether in preg/puerperium

207600	Other cardiovascular dis in pregnancy - baby not delivered
207601	Other cardiovascular disease in pregnancy/childb/puerp NOS
207598	Other cardiovascular diseases in pregnancy/childbirth/puerp
225749	Other causes of obstructed labour NOS
253017	Other causes of obstructed labour with antenatal problem
216603	Other cervical abn complicating a/n care- baby not delivered
234908	Other complication of obstetric surgical wound unspecified
289691	Other complications of obstetric anaesthesia + a/n problem
216691	Other complications of obstetric procedures unspecified
216722	Other complications of the puerperium NOS
207681	Other cord entanglement
216658	Other cord entanglement NOS
289675	Other cord entanglement with antenatal problem
243810	Other disproportion
207618	Other disproportion NOS
216595	Other disproportion with antenatal problem
207530	Other ectopic pregnancy
289666	Other failed forceps with antenatal problem
207668	Other failed forceps, unspecified
225745	Other failed trial of labour with antenatal problem
225747	Other failed ventouse extraction with antenatal problem
262222	Other failed ventouse extraction, unspecified
262187	Other fetal abnormality causing disproportion
243809	Other fetal abnormality causing disproportion unspecified
262188	Other fetal abnormality causing disproportion with a/n prob
207639	Other fetal and placental problems
298885	Other fetal malposition and malpresentation
216590	Other fetal malposition and malpresentation unspecified
225689	Other fetal malposition and malpresentation with a/n prob
225727	Other fetal problems
225729	Other fetal problems
271487	Other feto-placental problems
234835	Other feto-placental problems NOS
280533	Other feto-placental problems unspecified
289653	Other feto-placental problems with antenatal problem
243769	Other haemorrhage in early pregnancy
216532	Other haemorrhage in early pregnancy - not delivered
252916	Other haemorrhage in early pregnancy unspecified
252953	Other mat infective/parasit dis in pregnancy - not delivered
225669	Other mat. infective/parasitic disease in preg/puerp unspec
216576	Other maternal viral dis. in pregnancy/childbirth/puerp. NOS
234779	Other maternal viral dis.in pregnancy-baby not yet delivered
225670	Other medical condition in pregnancy/childbirth/puerperium
262175	Other multiple pregnancy
234790	Other multiple pregnancy NOS
262176	Other multiple pregnancy unspecified
243801	Other multiple pregnancy with antenatal problem
253082	Other obstetric breast infection with antenatal complication
234870	Other obstetric pelvic organ damage NOS
225765	Other obstetric pelvic organ damage unspecified
225797	Other obstetric pulmonary embolism
216715	Other obstetric pulmonary embolism NOS
253071	Other obstetric pulmonary embolism with antenatal comp
207700	Other obstetric trauma NOS
234873	Other obstetric trauma OS
262245	Other obstetric trauma with antenatal problem
204992	Other operation on amniotic cavity NOS
268718	Other operations on amniotic cavity
243890	Other phlebitis in pregnancy
225790	Other phlebitis in the puerperium
225789	Other phlebitis/thrombosis in preg/puerperium + a/n comp
225728	Other placental conditions NOS
216624	Other placental conditions unspecified
289650	Other placental conditions with antenatal problem
207566	Other pre-exist hypertension in preg/childb/puerp-not deliv
216544	Other pre-existing hypertension in preg/childb/puerp unspec
216543	Other pre-existing hypertension in preg/childbirth/puerp
271429	Other pregnancy complication - not delivered
207579	Other pregnancy complication NEC
280476	Other pregnancy complication NOS
225664	Other pregnancy complication unspecified
225663	Other pregnancy complications
216551	Other pregnancy vomiting
207575	Other pregnancy vomiting - not delivered
207576	Other pregnancy vomiting NOS
271423	Other pregnancy vomiting unspecified
207658	Other problem of amniotic cavity and membranes NOS
253005	Other problem of amniotic cavity and membranes unspecified

216643	Other problems affecting labour
280535	Other problems affecting labour
243837	Other problems affecting labour NOS
207661	Other problems affecting labour unspecified
262218	Other problems affecting labour with antenatal problem
243835	Other problems of amniotic cavity and membranes
262204	Other problems of amniotic cavity and membranes
296090	Other specified diagnostic percutaneous examination of fetus
281297	Other specified fetal blood loss
296105	Other specified obstetric monitoring
204994	Other specified operation on gravid uterus
232115	Other specified operations on fetus or gravid uterus
259539	Other specified other operation on amniotic cavity
290453	Other specified perinatal cutaneous haemorrhage
216645	Other specified risk factors in pregnancy
232119	Other specified surgical induction of labour
268715	Other specified therapeutic fetoscopic operation
259538	Other specified therapeutic percutaneous operation on fetus
262141	Other threatened labour
207577	Other threatened labour - not delivered
252935	Other threatened labour NOS
225654	Other threatened labour unspecified
216662	Other umbilical cord complications unspecified
225758	Other umbilical cord complications with antenatal problem
262226	Other uterine inertia with antenatal problem
216600	Other uterine/pelvic floor abn in preg/childb/puerp NOS
243792	Other venereal diseases in pregnancy/childbirth/puerperium
289704	Other venous comp of pregnancy/puerperium + a/n comp
234897	Other venous complication of pregnancy/puerperium unsp
271457	Outlet pelvic contraction
207617	Outlet pelvic contraction NOS
234800	Outlet pelvic contraction unspecified
298888	Outlet pelvic contraction with antenatal problem
252884	Ovarian pregnancy
262142	Papyraceous fetus
252937	Papyraceous fetus - not delivered
225656	Papyraceous fetus NOS
271426	Papyraceous fetus unspecified
231253	Parent craft - group class
295282	Parent craft class attended
222181	Parent craft class NOS
258654	Parent craft class not offered
222180	Parent craft classes
231252	Parent craft classes offered
295283	Parent craft -individual class
240232	Parent craft not wanted
240220	Patient ? pregnant
346719	Patient advised to have pregnancy test
213093	Patient currently pregnant
203268	Patient Pregnant
231247	Patient pregnant
240221	Patient pregnant NOS
216608	Pelvic soft tissue abnorm in preg/childb/puerp with a/n prob
207632	Pelvic soft tissue abnormality in preg/childb/puerp unspec
216607	Pelvic soft tissue abnormality in pregnancy/childbirth/puerp
310087	Pendulous pregnant abdomen
268717	Percutaneous biopsy of fetus
222973	Percutaneous blood transfusion of fetus
286998	Percutaneous insertion of fetal pleuroamniotic shunt
232111	Percutaneous insertion of fetal vesicoamniotic shunt
250296	Percutaneous sampling of chorionic villus
232112	Percutaneous sampling of fetal blood
213968	Percutaneous sampling of foetal blood
208441	Perinatal apnoeic spells NOS
208440	Perinatal chronic respiratory disease NOS
208454	Perinatal cutaneous ecchymoses
208453	Perinatal gastrointestinal haemorrhage NOS
217447	Perinatal skin disorder NOS
216703	Perineal varices in pregnancy
225786	Perineal varices in the puerperium
216561	Peripheral neuritis in pregnancy
207582	Peripheral neuritis in pregnancy - not delivered
289588	Peripheral neuritis in pregnancy NOS
216562	Peripheral neuritis in pregnancy unspecified
272296	Persistent fetal circulation
252986	Persistent hymen affecting obstetric care
262195	Persistent hymen complicating a/n care - baby not delivered
207630	Persistent hymen in pregnancy/childbirth/puerperium NOS
216649	Persistent occipitopost/occipitoant position + a/n problem
234849	Persistent occipitopost/occipitoant position, unspecified
225741	Persistent occipitoposterior/occipitoanterior position NOS

216706	Piles - obstetric
247600	PLACENTA ABRUPTIO
289652	Placenta gritty
225643	Placenta praevia
238418	PLACENTA PRAEVIA CENTRAL
247599	PLACENTA PRAEVIA LATERAL
266073	PLACENTA PRAEVIA MARGINAL
271414	Placenta praevia with haemorrhage
243771	Placenta praevia with haemorrhage - not delivered
216537	Placenta praevia with haemorrhage NOS
252917	Placenta praevia without haemorrhage
298842	Placenta praevia without haemorrhage - not delivered
225637	Placenta praevia without haemorrhage NOS
252918	Placenta praevia without haemorrhage unspecified
295237	Placenta U-S scan
298843	Placental abruption
252920	Placental abruption - not delivered
225639	Placental abruption NOS
216538	Placental abruption unspecified
255956	PLACENTAL FUNCTION TEST
210444	PLACENTAL FUNCTION TEST ABNORMAL
301860	PLACENTAL FUNCTION TEST NORMAL
298913	Placental infarct
216625	Placental infarction
345549	Placental infection
289651	Placental transfusion syndromes
216634	Placentitis
281316	Polycythaemia due to maternal fetal transfusion
216630	Polyhydramnios
207648	Polyhydramnios and hydramnios
207651	Polyhydramnios NOS
262203	Polyhydramnios NOS
207650	Polyhydramnios unspecified
216631	Polyhydramnios with antenatal problem
207626	Polyp of cervix complicating a/n care-baby not delivered
225701	Polyp of cervix in pregnancy, childbirth and the puerperium
220416	POSSIBLE LABOUR
278444	Post partum care
225655	Post-term pregnancy - not delivered
271425	Post-term pregnancy unspecified
340107	Precipitate delivery
216653	Precipitate labour unspecified
298936	Precipitate labour with antenatal problem
265240	PRECONCEPTION ADVICE
292753	PRE-CONCEPTION COUNSELLING CLINIC
265426	PRE-CONCEPTION COUNSELLING CLINIC ATTEND
298852	Pre-eclampsia or eclampsia + pre-existing hypertension NOS
280462	Pre-eclampsia or eclampsia with hypertension - not delivered
207572	Pre-eclampsia or eclampsia with hypertension + p/n comp
262133	Pre-eclampsia or eclampsia with hypertension unspecified
207571	Pre-eclampsia or eclampsia with pre-existing hypertension
225649	Pre-eclampsia, unspecified
289608	Pre-existing malnutrition-related diabetes mellitus
204244	Preg. prescription exempt adv.
204234	Preg. termination counselling
237874	PREGNANCY
309380	PREGNANCY
275201	PREGNANCY ABNORMAL
306825	PREGNANCY ABNORMAL
238657	PREGNANCY ACCIDENT AFFECTING BABY
277083	Pregnancy advice
340072	Pregnancy advice
213258	Pregnancy advice NOS
202344	PREGNANCY ALBUMINURIA
204243	Pregnancy alcohol advice
304480	PREGNANCY ANAEMIA
238420	PREGNANCY ANAEMIA HYPOCHROMIC
247601	PREGNANCY ANAEMIA MEGALOBLASTIC
234781	Pregnancy and drug dependence
283680	PREGNANCY ANTENATAL CARE NORMAL
257775	Pregnancy benefit NOS
203250	Pregnancy benefits
211355	PREGNANCY BICORNATE UTERUS
256840	PREGNANCY BLEEDING
304477	PREGNANCY BLEEDING
265463	PREGNANCY BOOKING CONSULTATION
293436	PREGNANCY BP RAISED AT END OF
240216	Pregnancy care
339709	Pregnancy care
280472	Pregnancy care of habitual aborter
306823	PREGNANCY COMPLICATION
216569	Pregnancy complication NOS
262122	Pregnancy complications
231248	Pregnancy confirmed
275203	PREGNANCY CYSTITIS
202645	PREGNANCY DELUSIONS
258799	Pregnancy dental advice
201997	PREGNANCY DEPRESSION

202339	PREGNANCY DISPROPORTION
304489	PREGNANCY ECLAMPSIA
304475	PREGNANCY ECTOPIC
274597	PREGNANCY EXAMINATION NORMAL
240393	Pregnancy exercise advice
306215	PREGNANCY FEAR
304474	PREGNANCY GENITAL INFECTION
306828	PREGNANCY GLYCOSURIA
220414	PREGNANCY HAEMORRHAGE
210605	PREGNANCY HIGH RISK
247611	PREGNANCY HYPEREMESIS
306829	PREGNANCY HYPEREMESIS
304488	PREGNANCY HYPERTENSION
243791	Pregnancy induced oedema+proteinuria without hypertension
304486	PREGNANCY INFECTION DURING
304479	PREGNANCY IRON-DEFICIENCY ANAEMIA
229503	PREGNANCY MACROCYTIC ANAEMIA
238421	PREGNANCY MALPOSITION FOETUS
229506	PREGNANCY MILK LEG
304492	PREGNANCY MORNING SICKNESS
202338	PREGNANCY MULTIPLE
304494	PREGNANCY NAUSEA
293437	PREGNANCY NAUSEA & VOMITING
211357	PREGNANCY NEPHRITIS
237875	PREGNANCY NORMAL
309381	PREGNANCY NORMAL
340845	Pregnancy observations
274493	PREGNANCY OPERATION DURING
286994	Pregnancy operations
265387	PREGNANCY OUT OF WEDLOCK
284333	PREGNANCY PELVIS BONY ABNORMAL
293028	PREGNANCY PHANTOM
247607	PREGNANCY PHLEBITIS
266077	PREGNANCY PHLEBOTHROMBOSIS
220413	PREGNANCY PLACENTA PRAEVIA
265237	PREGNANCY PLANNED
304487	PREGNANCY PRE-ECLAMPSIA
265461	PREGNANCY PRENATAL CARE
302170	PREGNANCY PRENATAL CARE NORMAL
309484	Pregnancy problem
204098	Pregnancy prolonged - 41 weeks
278426	Pregnancy prophylactic therapy
302169	PREGNANCY PROPHYLACTIC THERAPY PRESCRIBE
298862	Pregnancy pruritus
309657	Pregnancy review
249594	Pregnancy smoking advice
265241	PREGNANCY SYMPTOMS
283361	PREGNANCY TEST
210514	PREGNANCY TEST DONE
237550	PREGNANCY TEST NEGATIVE
246719	PREGNANCY TEST POSITIVE
265129	PREGNANCY TEST SENT (AWAITING RESULT)
219746	PREGNANCY UNMARRIED
283455	PREGNANCY UNPLANNED
295272	Pregnancy unplanned ? wanted
246832	PREGNANCY UNWANTED
269396	Pregnancy vitamin/iron prophyl
202341	PREGNANCY WEIGHT GAIN EXCESSIVE
302061	PREGNANCY WITH I U D IN PLACE
309459	Pregnancy with uncertain dates
237790	PREGNANCY/BIRTH EXTRAMARITAL
283679	PREGNANT
309382	PREGNANT
204089	Pregnant - ? planned
267896	Pregnant - blood test confirms
222174	Pregnant - on abdom. palpation
240217	Pregnant - on history
267897	Pregnant - planned
240218	Pregnant - unplanned - wanted
295271	Pregnant - urine test confirms
258649	Pregnant - V.E. confirms
302683	Pregnant abdomen observation
240219	Pregnant -unplanned-not wanted
240212	Pregnant, diaphragm failure
213085	Pregnant, IUD failure
295264	Pregnant, sheath failure
202340	PREMATURE LABOUR UNDELIVERED
289654	Premature rupture of membranes
253004	Premature rupture of membranes NOS
216632	Premature rupture of membranes unspecified
207654	Premature rupture of membranes with antenatal problem
262206	Premature rupture of membranes, labour delayed by therapy
310057	Premature uterine contraction
210745	PRENATAL CARE NORMAL PREGNANCY
292808	PRENATAL CARE REGULARLY ATTENDED
228930	PRENATAL EXAMINATION
258794	Pre-pregnancy counselling
333510	Presentation of pregnancy
234853	Primary uterine inertia NOS
225750	Primary uterine inertia unspecified

262223	Primary uterine inertia with antenatal problem
247604	PRIMIPARA OLD
346695	Primiparous
276943	Private home delivery booking
302088	PROBLEM PREGNANCY
237791	PROBLEM PREGNANCY UNMARRIED
219747	PROBLEM UNMARRIED PREGNANCY
234844	Problems affecting labour NOS
216644	Problems affecting labour NOS unspecified
243838	Problems affecting labour NOS with antenatal problem
207676	Prolapse of cord NOS
280550	Prolapse of cord with antenatal problem
271455	Prolapsed arm NOS
298884	Prolapsed arm unspecified
280504	Prolapsed arm with antenatal problem
266078	PROLAPSED UTERUS PREGNANCY
243834	Prolonged artificial rupture of membranes
271493	Prolonged artificial rupture of membranes NOS
298917	Prolonged artificial rupture of membranes unspecified
262208	Prolonged artificial rupture of membranes with a/n problem
207673	Prolonged first stage unspecified
225754	Prolonged first stage with antenatal problem
225756	Prolonged labour NOS
234860	Prolonged labour NOS
271424	Prolonged or post-term pregnancy
252936	Prolonged pregnancy NOS
262227	Prolonged second stage NOS
234859	Prolonged second stage with antenatal problem
262207	Prolonged spont/unspec rupture of membranes unspecified
298916	Prolonged spont/unspec rupture of membranes with a/n problem
207655	Prolonged spontaneous or unspecified rupture of membranes
216633	Prolonged spontaneous/unspecified rupture of membranes NOS
247032	PROPHYLACTIC THERAPY PREGNANCY
289578	Proteinuric hypertension of pregnancy
238480	PRURITUS OF PREGNANCY
225766	Pubic symphysis separation
234906	Puerperal cerebrovascular disorder unspecified
216718	Puerperal cerebrovascular disorder with antenatal comp
238427	PUERPERAL CYSTITIS
262272	Puerperal endometritis
225783	Puerperal peritonitis unspecified
225794	Puerperal pyrexia NOS
207714	Puerperal septicaemia
234889	Puerperal septicaemia NOS
211356	PYELITIS PREGNANCY
238426	PYELOCYSTITIS PREGNANCY
289615	Quadruplet pregnancy
225681	Quadruplet pregnancy NOS
271449	Quadruplet pregnancy unspecified
298881	Quadruplet pregnancy with antenatal problem
340083	Query viability of pregnancy
249455	Quickening
225732	Ragged membranes
216626	Ragged placenta
308511	Reactive CTG tracing
278628	Reason for termination of pregnancy
298894	Rectocele affecting obstetric care
225699	Rectocele complicating antenatal care - baby not delivered
309477	Reduced amniotic fluid
216627	Reduced fetal movements
345789	Refer to early pregnancy unit
296839	Refer to TOP counselling
344603	Referral for termination of pregnancy
205674	Referral to antenatal clinic
278530	Referral to fertility clinic
302417	Referral to midwife
219551	REFERRED TO ANTENATAL CLINIC
308408	Regular uterine contractions
204993	Removal of Shirodkar suture
271419	Renal hypertension in preg/childbirth/puerp - not delivered
207565	Renal hypertension in pregnancy/childbirth/puerp unspecified
333511	Reported conception - pregnancy
255850	REPOSITIONING FOETUS
259540	Repositioning of retroverted gravid uterus
219702	REQUESTS ABORTION
260262	Requests pregnancy termination
280537	Retained intrauterine contraceptive device in pregnancy
289719	Retracted nipple in pregnancy/puerperium/lact with a/n comp
298893	Retroverted incarcerated gravid uterus
225698	Retroverted incarcerated gravid uterus NOS
289629	Retroverted incarcerated gravid uterus unspecified
289630	Retroverted incarcerated gravid uterus with antenatal prob
213106	Rh - 6/12 after anti-D sample
240237	Rh - random, non-preg. sample
240236	Rh screen - 1st preg. sample

213105	Rh screen - 2nd preg. sample
276948	Rh screen - 3rd preg. sample
219680	RHESUS ANTI-D GIVEN
238424	RHESUS INCOMPATIBILITY PREGNANCY/PUERPER
216616	Rhesus isoimmunisation
216618	Rhesus isoimmunisation NOS
280530	Rhesus isoimmunisation unspecified
216617	Rhesus isoimmunisation with antenatal problem
252987	Rigid perineum affecting obstetric care
207631	Rigid perineum in pregnancy/childbirth/puerperium NOS
262173	Risk factors in pregnancy
298923	Risk factors in pregnancy NOS
339605	ROM - Ruptured membranes
309697	Routine antenatal care
302151	RUBELLA CONTACT IN EARLY PREGNANCY
237854	RUBELLA CONTACT IN PREGNANCY
271433	Rubella contact in pregnancy
240241	Rubella screen
295292	Rubella screen - blood sent
213112	Rubella screen NOS
258661	Rubella screen not offered
240242	Rubella screen not wanted
213111	Rubella screen offered
231256	Rubella screen wanted
276950	Rubella status not known
216668	Rupture of uterus before labour NOS
243852	Rupture of uterus before labour with antenatal problem
234867	Rupture of uterus during and after labour unspecified
333484	Ruptured membranes
207691	Ruptured uterus before labour
268719	Sampling of chorionic villus NEC
219785	SCREENING BABY ABNORMAL
292758	SCREENING BABY EXAMINATION NORMAL
262225	Secondary uterine inertia NOS
262224	Secondary uterine inertia unspecified
234854	Secondary uterine inertia with antenatal problem
232952	Seen in antenatal clinic
292542	SEEN IN ANTENATAL CLINIC
271469	Septate vagina affecting obstetric care
243818	Septate vagina complicating a/n care- baby not yet delivered
225704	Septate vagina in pregnancy, childbirth and the puerperium
225708	Septate vagina in pregnancy/childbirth/puerperium NOS
262214	Septicaemia during labour
216639	Septicaemia during labour unspecified
298920	Septicaemia during labour with antenatal problem
267565	Serum pregnancy test (B-HCG)
212739	Serum pregnancy test equivocal
258309	Serum pregnancy test negative
285773	Serum pregnancy test NOS
267566	Serum pregnancy test positive
262131	Severe pre-eclampsia
243778	Severe pre-eclampsia NOS
271420	Severe pre-eclampsia unspecified
296091	Shirodkar suture in pregnancy
216659	Short cord NOS
243845	Short cord unspecified
207682	Short cord with antenatal problem
286089	Short stay delivery booking
234850	Shoulder dystocia
207666	Shoulder dystocia NOS
304491	SICKNESS PREGNANCY
340681	Single pregnancy
346734	Sinusoidal pattern of fetal heart
272237	Slow fetal growth and fetal malnutrition
229507	SMALL FOR DATES (FOETUS)
271485	Small-for-dates fetus in pregnancy
207645	Small-for-dates NOS
234832	Small-for-dates unspecified
207644	Small-for-dates with antenatal problem
280571	Spinal+epidural anaesthesia-inducd headache during pregnancy
342596	Spontaneous forewater rupture of membranes
341616	Spontaneous hindwater rupture of membranes
222183	Spontaneous membrane rupture
253874	Staphylococcal intra-amniotic infection NEC
204097	Static weight gain pregnancy
256844	STATIC WEIGHT GAIN PREGNANCY
280520	Stenosis of cervix complicating a/n care- baby not delivered
216605	Stenosis of cervix in pregnancy/childbirth/puerperium NOS
298896	Stenosis of vagina affecting obstetric care
207627	Stenosis of vagina complicating a/n care- baby not delivered
225799	Stroke in the puerperium
289699	Superficial thrombophlebitis in preg/puerperium + a/n comp
243886	Superficial thrombophlebitis in pregnancy
234894	Superficial thrombophlebitis in pregnancy and puerperium NOS
207717	Superficial thrombophlebitis in pregnancy and the puerperium
234893	Superficial thrombophlebitis in the puerperium
204995	Surgical induction of labour
340715	Surrogate pregnancy

216611	Suspect cystic fibrosis fetus
216610	Suspect fetal anencephaly
289642	Suspect fetal damage from maternal alcohol
207635	Suspect fetal damage from maternal toxoplasmosis
271474	Suspect fetal hydrocephaly
225710	Suspect fetal spina bifida
225712	Suspect mongol fetus
207646	Suspected macroscopic fetus
225767	Symphysis pubis separation
202345	SYNDROME NEPHROTIC PREGNANCY
235629	Syndrome of infant of mother with gestational diabetes
259543	Syntocinon induction of labour
225763	Tear of cervix - obstetric
344157	Technically poor CTG
221281	Teenage pregnancy
333577	Teenage pregnancy
222291	Termination counselling
229509	TERMINATION OF PREGNANCY REQUESTED
304497	TERMINATION OF PREGNANCY REQUESTED
241127	Therapeutic endoscopic operations on fetus
204989	Therapeutic fetoscopic operation NOS
250295	Therapeutic fetoscopic operations on fetus
259536	Therapeutic foetoscopic operations on fetus
241129	Therapeutic percutaneous operation on fetus NOS
204991	Therapeutic percutaneous operations on fetus
216704	Thombophlebitis of legs in the puerperium
280452	Threatened Abortion
271411	Threatened abortion - not delivered
243768	Threatened abortion NOS
289566	Threatened abortion unspecified
304476	THREATENED MISCARRAGE
216552	Threatened premature labour
280467	Threatened premature labour - not delivered
216553	Threatened premature labour NOS
243782	Threatened premature labour unspecified
289701	Thrombophlebitis of legs in pregnancy
284340	THROMBOSIS PREGNANCY
252955	Thyroid dysfunction - unspec whether in pregnancy/puerperium
298871	Thyroid dysfunction in pregnancy - baby not yet delivered
225671	Thyroid dysfunction in pregnancy/childbirth/puerperium NOS
268040	TOP counselling
293434	TOXAEMIA PRE-ECLAMPTIC
220417	TOXAEMIA PREGNANCY
304490	TOXAEMIA PREGNANCY
229738	TOXAEMIA PREGNANCY AFFECTING FOETUS/NEWB
262259	Toxic reaction to local anaesthesia during pregnancy
243776	Transient hypertension of pregnancy
252928	Transient hypertension of pregnancy
225648	Transient hypertension of pregnancy - not delivered
298849	Transient hypertension of pregnancy NOS
243775	Transient hypertension of pregnancy unspecified
234796	Transverse lie NOS
234795	Transverse lie with antenatal problem
344787	Transversely enlarged pregnant abdomen
204102	Triple test
267910	Triple test not offered
204104	Triple test not wanted
302899	Triple test not wanted
213123	Triple test offered
222191	Triple test wanted
216587	Triplet pregnancy
306826	TRIPLET PREGNANCY
280492	Triplet pregnancy NOS
207607	Triplet pregnancy unspecified
243800	Triplet pregnancy with antenatal problem
292592	TRYING TO CONCEIVE
225696	Tumour of uterine body affecting obstetric care
234809	Tumour of uterine body complicating a/n care, baby not deliv
243812	Tumour of uterine body in pregnancy/childbirth/puerperium
280491	Twin pregnancy
304484	TWIN PREGNANCY
216586	Twin pregnancy NOS
207606	Twin pregnancy unspecified
225680	Twin pregnancy with antenatal problem
258604	Ultrasound in obstetric diagn.
240181	Ultra-sound scan - obstetric
216664	Umbilical cord complications NOS with antenatal problem
262230	Umbilical cord complications NOS, unspecified
302426	Umbilical cord problem
208442	Umbilical sepsis NOS
214774	Unborn child at risk physi/ment abnormal serious handicap
335961	Uncertain viability of pregnancy
342386	Undiagnosed pregnancy
213094	Unplanned pregnancy
333578	Unplanned pregnancy
345175	Unsatisfactory CTG tracing

262134	Unspecified hypertension in preg/childb/puerp - not deliv
207573	Unspecified hypertension in preg/childb/puerp unspecified
207659	Unspecified maternal pyrexia during labour NOS
298919	Unspecified maternal pyrexia during labour with a/n problem
225653	Unspecified pregnancy vomiting
234765	Unspecified pregnancy vomiting - not delivered
262140	Unspecified pregnancy vomiting NOS
289582	Unspecified pregnancy vomiting unspecified
225755	Unspecified prolonged labour with antenatal problem
234768	Unspecified renal disease in pregnancy
280470	Unspecified renal disease in pregnancy - not delivered
207581	Unspecified renal disease in pregnancy unspecified
207609	Unstable lie NOS
271453	Unstable lie with antenatal problem
276071	Unwanted pregnancy
341410	Unwanted pregnancy
252941	Uraemia in pregnancy without hypertension
229508	URINARY INFECION PUERPERIUM
202343	URINARY INFECTION PREGNANCY
298860	Urinary tract infection complicating pregnancy
258377	Urine pregnancy test
230992	Urine pregnancy test equivocal
276693	Urine pregnancy test negative
249219	Urine pregnancy test NOS
258378	Urine pregnancy test positive
267650	Urine pregnancy test requested
222139	U-S obstetric diagn. scan NOS
286053	U-S obstetric scan abnormal
231213	U-S obstetric scan normal
295236	U-S obstetric scan requested
222138	U-S scan - fetal abnormality
204044	U-S scan - fetal cephalometry
204045	U-S scan - fetal maturity
204046	U-S scan - fetal presentation
258605	U-S scan - multiple fetus
213053	U-S scan - obstetric, diagn.
222137	U-S scan -placental localisatn
342048	Uterine contractions ceased
308146	Uterine contractions present
225697	Uterine fibroid affecting obstetric care
234810	Uterine fibroid complicating a/n care, baby not delivered
216597	Uterine fibroids in pregnancy, childbirth and the puerperium
207620	Uterine operation scar in pregnancy/childb/puerp + a/n prob
234813	Uterine operation scar in pregnancy/childbirth/puerp NOS
216656	Uterine or cervical spasm
271427	UTI - urinary tract infection in pregnancy
276956	Vaginal "show"
249457	Vaginal "show" - A/N
225705	Vaginal abnormality affecting obstetric care
298898	Vaginal abnormality complicating a/n care-baby not delivered
262276	Vaginal varices in pregnancy
275198	VAGINITIS PREGNANCY
309200	Variable strength uterine contractions
207715	Varicose veins of legs in pregnancy
298980	Varicose veins of legs in pregnancy/puerperium + a/n comp
229505	VARICOSE VEINS PREGNANCY
284341	VARIX COMPLICATING PREGNANCY
216660	Vasa praevia NOS
262229	Vasa praevia unspecified
289676	Vasa praevia with antenatal problem
216661	Vascular lesions of cord unspecified
253028	Vascular lesions of cord with antenatal problem
234863	Velamentous insertion of cord
225793	Venous complication in the puerperium, unspecified
216711	Venous complication of pregnancy and puerperium NOS
271550	Venous complication pregnancy/puerperium NOS + a/n comp
204047	Viability US scan
333483	Viable pregnancy
216575	Viral hepatitis comp pregnancy, childbirth & the puerperium
278427	Vitamin supplement - pregnancy
284343	VOMITING PERNICIOUS PREGNANCY
275204	VOMITING PREGNANCY
304493	VOMITING PREGNANCY
262194	Vulval abn complicating a/n care - baby not yet delivered
234819	Vulval abnormality affecting obstetric care
207629	Vulval abnormality in pregnancy/childbirth/puerperium NOS
225785	Vulval obstetric varicose veins
234892	Vulval varices in pregnancy
207716	VV's of perineum/vulva in pregnancy/puerperium + a/n comp
234891	VV's of perineum/vulva in pregnancy/puerperium unspecified
340082	Wanted pregnancy
308760	Waters broken
302312	Weeks pregnant
274465	WIFE PREGNANT
204051	U-S abdominal scan

219469 ULTRASOUND SCAN ABNORMAL
228576 ULTRASOUND SCAN
240181 Ultra-sound scan - obstetric
246703 ULTRASOUND SCAN ABDOMEN
249419 Ultrasound scan normal
258604 Ultrasound in obstetric diagn.
258616 Ultrasound scan
276910 Ultrasound scan abnormal

Appendix E: End-Of-Pregnancy Event Codes

GPRD Medical Codes	GP Medical Term
208471	Stillbirth NEC
226530	Fetal death due to prelabour anoxia
226583	[X]Macerated stillbirth
235647	[X] stillbirth
235648	[X]Fresh stillbirth
238662	Asphyxia birth
238671	Stillbirth
251108	Medical cert. Of still-birth
253055	Obstetric death of unspecified cause
255703	[V]stillbirth
258675	Single stillbirth
263003	Fetal death due to labour anoxia
271483	Fetal death in utero
289647	Intrauterine death - delivered
301620	[V]Single stillbirth
305048	Stillbirth
274060	[V]Twin, mate stillborn
210202	[V]Twin, born in hospital, mate stillborn
219255	[V]Twins, both stillborn
219256	[V]Other multiple birth, all stillborn
219262	[V]Twin, not hospitalised, mate stillborn
219264	[V]Other multiple birth,born before hospital,mates stillborn
237317	[V]Twin, mate stillborn, NOS
237319	[V]Other multiple birth, mates stillborn, NOS
237320	[V]Other multiple birth, born in hospital, mates live+still
237321	[V]Other multiple birth, not hospitalised, mates live+still
246591	[X]Other multiple births, all stillborn
264883	[V]Other multiple birth, mates stillborn
274062	[V]Other multiple birth, not hospitalised, mates stillborn
274600	Twin mate stillborn
283114	[V]Twins, one live born and one stillborn
283122	[V]Twin, born before admission to hospital, mate stillborn
283125	[V]Other multiple birth, born in hospital, mates stillborn
283126	[V]Other multiple birth, mates live and stillborn NOS
286114	Twins - both still born
295302	Twins - 1 still + 1 live born
301623	[V]Other multiple birth, mates live and stillborn
301624	[V]Other multiple birth, before hospital, mates live+still
207608	Multiple delivery, all spontaneous
207667	Locked twins
211613	Twin conjoined
213126	1 male + 1 female baby
213127	2 male + 1 female babies
213142	Heterozygous twin
216594	Conjoined twins causing disproportion
220428	Twins non identical delivered
222192	Triplet birth
225743	Locked twins with antenatal problem
225744	Locked twins NOS
228933	Twin
228934	Twin (non identical)
231268	Twin birth
231269	Triplets - all live born
234789	Multiple delivery, all by forceps and vacuum extractor
237881	Twin (identical)
240262	2 male babies
240275	Monozygous twin
243799	Twin pregnancy - delivered
252963	Multiple delivery, all by caesarean section
253022	Delayed delivery second twin unspecified
255704	[V]Twins, both live born
258676	Twins - both live born
258679	2 female babies
267915	3 male babies
271450	Multiple pregnancy NOS - delivered
271502	Locked twins unspecified
274057	[V]Other multiple birth, all live born
276965	3 female babies
286126	One of twins
295304	1 male + 2 female babies
301822	Separation conjoined twins
304518	Twin pregnancy delivery
304519	Twins identical delivered
305031	Twin low birthweight
307984	Multiple birth
340435	Undiagnosed twin
342218	Monozygotic twins
342903	Dizygotic twins
343265	DZ - Dizygotic twins
202348	Delivery antepartum haemorrhage
202350	Labour difficult atony uterus
202351	Perineal laceration at delivery
202352	Pregnancy complicated delivery
204106	Birth details
204110	Baby BW = 3% - 9% (2500-2849g)
204113	Apgar at 10 minutes = 8
204116	Labour details
204117	Normal labour
204997	Low forceps cephalic delivery

204998	Kielland forceps cephalic delivery with rotation
205000	Episiotomy to facilitate delivery
205001	Induction and delivery operations NOS
205002	Normal delivery of placenta
205003	Other operation on delivered uterus NOS
207569	Eclampsia in labour
207592	Diabetes mellitus during pregnancy - baby delivered
207622	Rectocele - delivered with postpartum complication
207623	Rectocele complicating postpartum care - baby delivered prev
207634	Fetus with central nervous system malformation - delivered
207669	Other failed forceps - delivered
207674	Prolonged second stage - delivered
207684	Umbilical cord complications NOS - delivered
207685	First degree perineal tear during delivery with p/n problem
207686	Labial tear during delivery
207687	First degree perineal tear during delivery NOS
207688	Second degree perineal tear during delivery NOS
207689	Fourth degree perineal tear during delivery with p/n problem
207707	Spinal/epidural anesth-induced headache dur labour/delivery
207736	Obstetric nonpurulent mastitis - delivered
207754	[X]Infection of caesarian section wound following delivery
208431	Scalp injuries due to birth trauma
208432	Caput succedaneum due to birth trauma
208433	Other specified scalp injury due to birth trauma
208434	Fracture of radius or ulna due to birth trauma
208437	Subcutaneous fat necrosis due to birth injury
208438	Birth injury NOS
210352	Ventouse extraction delivery (baby)
210713	Newborn infant examination- normal
211363	Placenta praevia delivered
211368	Delivery bicornate uterus
211369	Laceration perineal at delivery slight
211371	Delivery sudden death (mother)
213130	Birthweight of baby
213131	Baby BW = 10%-24% (2850-3149g)
213132	Baby BW = 90%-96% (4050-4399g)
213136	Birth length
213139	Apgar at 1 minute = 3
213140	Apgar at 1 minute = 7
213141	Apgar at 1 minute = 10
213145	Birth details not known
213162	Baby normal at birth
213162	Baby normal at birth
213969	Lower uterine segment caesarean section (LSCS) NEC
213970	Extraperitoneal caesarean section
213971	Other specified other breech delivery
213972	Normal delivery
213973	Other method of delivery NOS
213974	Other obstetric operations
216536	Placenta praevia with haemorrhage - delivered
216541	Renal hypertension in pregnancy/childbirth/puerp - delivered
216546	Unspecified hypertension in preg/childb/puerp - delivered
216550	Late pregnancy vomiting - delivered
216580	Drug dependence during pregnancy - baby delivered
216588	Cephalic version NOS - delivered
216620	Labour+delivery complicatd by biochem evidence/fetal stress
216622	Small-for-dates - delivered
216623	Large-for-dates - delivered
216642	Vaginal delivery following previous caesarean section
216647	Obstructed labour due to pelvic inlet contraction
216652	Other uterine inertia - delivered
216666	First degree perineal tear during delivery - delivered
216693	Ventouse delivery
216694	Breech extraction
216697	Other complications of labour and delivery with p/n problem
216700	Complications of labour and delivery NOS
216707	Haemorrhoids in pregnancy and puerperium - deliv + p/n comp
217392	Birth trauma
217393	Tentorial tear due to birth trauma
217395	Fracture of clavicle due to birth trauma
217397	Other fractures due to birth trauma
217398	Other birth fracture
217399	Birth fracture of radius
217400	Fracture due to birth trauma NEC
217401	Fracture of nose due to birth trauma
217406	Liveborn with prelabour fetal distress
217408	Liveborn with labour fetal distress
217409	Liveborn with labour abnormal heart beat
219388	Delivery assisted breech
219689	Child born
219722	Labour induction nonsurgical
219798	Newborn clinic attendance
220420	Normal labour
220423	Placenta abruptio complicating delivery
220425	Disproportion at delivery
220659	Domiciliary confinement (baby)
220666	Low apgar rating
222193	Outcome of delivery NOS
222194	Birth of child

222195	Male baby
222197	Baby maturity NOS
222198	Baby BW = 50%-74% (3450-3749g)
222199	Baby BW = 75%-89% (3750-4049g)
222200	Apgar at 1 minute = 9
222201	Apgar at 5 minutes
222202	Apgar at 5 minutes NOS
222206	Apgar at 10 minutes = 6
222976	Spontaneous breech delivery
222977	High forceps cephalic delivery with rotation
222978	Vacuum delivery
222979	Trial of vacuum delivery
222981	Water birth delivery
223676	Discharged from hospital within 6 hours of delivery
223710	FP58 - newborn registration
225638	Placental abruption - delivered
225650	Severe pre-eclampsia - delivered
225661	Liver disorder in pregnancy - delivered
225679	Spontaneous vaginal delivery
225687	Brow presentation - delivered
225692	Mixed feto-pelvic disproportion - delivered
225733	Failed mechanical induction
225734	Failed medical induction of labour
225736	Obstructed labour due to breech presentation
225738	Obstructed labour due to generally contracted pelvis
225742	Shoulder dystocia - delivered
225746	Failed forceps unspecified
225748	Failed ventouse extraction NOS
225759	Vulval tear during delivery
225760	Third degree perineal tear during delivery - delivered
225762	Unspecified perineal laceration during delivery
225780	Caesarean delivery following previous Caesarean delivery
225782	Puerperal endometritis - delivered with postnatal comp
225811	Galactorrhoea in pregnancy and the puerperium - delivered
225816	[X]Other and unspecified forceps delivery
226513	Fetus or neonate affected by vacuum extraction delivery
226519	Low birthweight
226521	Birth trauma, asphyxia and hypoxia
226523	Scalp abrasions due to birth trauma
226525	Fracture of humerus due to birth trauma
226527	Birth injury to phrenic nerve
226528	Phrenic nerve palsy in newborn
226529	Cerebral oedema due to birth injury
228333	[V]Birth - type
228334	[V]Single live birth
228476	High foetal forceps delivery
228477	Rotation foetal head forceps
229515	Labour difficult
229517	Delivery obstetric trauma
229746	Infant condition normal
231267	Born before arrival
231273	Birthweight
231274	Weight - baby
231279	Apgar at 10 minutes = 10
231294	Birth exam. Abnormal -referred
232120	Other induction of labour
232121	Other caesarean delivery
232123	Manip cephalic vaginal deliv abnorm pres head without instrm
232125	Cephalic vagin deliv abnorm pres head without instrument OS
232126	Other specified normal delivery
232128	Symphysiotomy to facilitate delivery
232130	Other specified induction or delivery operations
232131	Instrumental removal products of concep delivered uterus OS
234762	Pre-eclampsia or eclampsia with hypertension - delivered
234766	Early onset of delivery
234773	Fatigue during pregnancy - delivered
234794	Transverse lie - delivered
234815	Rectocele - baby delivered
234829	Labour and delivery complicated by fetal heart rate anomaly
234831	Labour and delivery complic by meconium in amniotic fluid
234842	Unspecified maternal pyrexia during labour - delivered
234851	Failed ventouse extraction unspecified
234857	Abnormality of forces of labour NOS
234864	First degree perineal tear during delivery, unspecified
234865	Vulval and perineal haematoma during delivery
234866	Other vulval and perineal trauma during delivery
234876	Other immediate postpartum haemorrhage NOS
234877	Retained placenta or membranes with no haemorrhage NOS
234879	CNS comps of anaesthesia during labour and delivery
234882	Simpson's forceps delivery
234883	Forceps delivery - delivered
234884	Low forceps delivery
234885	Caesarean delivery unspecified
234886	Other complications of labour and delivery NOS
234905	Obstetric pulmonary embolism NOS with postnatal complication
234914	Breast engorgement in pregnancy/puerperium/lact + p/n comp
234930	[X]Labour+delivery complicat/oth evidence of fetal distress
235589	Fetus or neonate affected by breech delivery

	and extraction
235590	Fetus/neonate affect persistent occip-posterior - labour/del
235596	Fetus/neonate affected by complic labour/delivery NOS
235601	Subdural haemorrhage unspecified, due to birth trauma
235602	Scalpel wound due to birth trauma
235603	Birth injury to face
235606	Labour fetal anoxia
235608	Liveborn with unspecified fetal distress NOS
237450	Forceps extraction high
237451	Forceps extraction midcavity with episio
238434	Delivery after antepartum haemorrhage
238437	Delivery abnormal bony pelvis
238438	Foetopelvic disproportion complicating d
238439	Brow presentation
238441	Delay 2nd stage (labour)
238442	Laceration perineal at delivery extensiv
238659	Trauma birth
238664	Infant condition- required resusitation
238665	Infant condition- apgar score
238666	Face presentation birth (baby)
240261	Sex of baby
240263	Baby full term maturity
240266	Birth head circumference
240267	Birth HC = < 3rd centile
240269	Apgar at 1 minute = 2
240270	Apgar at 1 minute = 5
240271	Apgar at 5 minutes = 2
240272	Apgar at 5 minutes = 10
240273	Apgar at 10 minutes = 5
241135	Other specified other induction of labour
241136	Elective upper uterine segment caesarean delivery
241137	Failed forceps delivery
241138	Repositioning of inverted delivered uterus
241139	Instrumental exploration of delivered uterus NEC
243783	Early onset of delivery NOS
243784	Genitourinary tract infection in pregnancy - delivered
243796	Anaemia during pregnancy - baby delivered
243811	Bicornuate uterus - baby delivered
243817	Other cervical abnormality - baby delivered
243822	Fetus with chromosomal abnormality - delivered
243830	Fetal distress - delivered
243836	Failed medical or unspecified induction NOS
243849	Third degree perineal tear during delivery, unspecified
243851	Vulval/perineal trauma during delivery NOS
243859	Secondary and delayed postpartum haemorrhage NOS
243861	Retained placenta without haemorrhage
243875	Breech extraction unspecified
243876	Caesarean delivery - delivered
243877	Delivery by elective caesarean section
243878	Delivery by emergency caesarean section
243879	Other complications of labour and delivery
243908	Other breast disorder in pregnancy/puerperium/lact +p/n comp
244611	Fetus/neonate affected by shoulder presentation - labour/del
244612	Fetus or neonate affected by caesarean section
244618	Immature baby
244621	Subdural and cerebral haemorrhage due to birth trauma
244623	Cephalhaematoma due to birth trauma
244626	Toe injury NEC due to birth trauma
244629	Liveborn with meconium liquor, unspecified
246491	[V]Examination immediately after delivery
246634	Ventous assisted delivery
246635	Elective caesarian section
247619	Placenta praevia noted at delivery
247620	Presentation face delivery (mother)
247865	Intracranial injury at birth
247875	Delivery caesarian section (baby)
249469	Full term baby
249472	Birth HC = 90th-96th centile
249474	Apgar at 1 minute = 0
249475	Apgar at 5 minutes = 5
250298	Other induction of labour NOS
250299	Ventouse delivery
250300	Vacuum delivery NOS
250301	Cephalic vaginal deliv abnorm presentation head - no instrum
250302	Manually assisted vaginal delivery
250303	Drainage of hydrocephalus of fetus to facilitate delivery
250304	Other specified other method of delivery
250306	Manual removal of placenta from delivered uterus
250310	Monitoring during labour
252931	Unspecified hypertension in preg/childb/puerp -del +p/n comp
252947	Maternal syphilis during pregnancy - baby delivered
252952	Maternal rubella during pregnancy - baby delivered
252956	Anaemia in the puerperium - baby delivered
252966	Breech delivery
252968	Brow presentation
253003	Premature rupture of membranes - delivered
253007	Problems affecting labour NOS
253012	Obstructed labour caused by bony pelvis
253014	Persistent occipitopost/occipitoant position - delivered
253015	Failed trial of labour unspecified
253018	Obstructed labour NOS, unspecified

253019	Primary uterine inertia
253021	Precipitate labour
253033	Vaginal tear during delivery
253034	Second degree perineal tear during delivery - delivered
253036	Unspecified perineal laceration during delivery NOS
253042	Retained placenta NOS
253048	Other complications of labour and delivery NEC
253050	Keilland's forceps delivery
253051	Forceps delivery unspecified
253052	Caesarean delivery NOS
253078	Other complications of the puerperium - delivered + p/n comp
253080	Obstetric breast abscess - delivered
253086	Breast engorgement in pregnancy/puerperium/lactation - deliv
253099	[X]Other specified assisted single delivery
253101	[X]Cervicitis following delivery
253833	Fetus/neonate affected by face presentation during labour/de
253834	Fetus/neonate affected by maternal pethidine in labour/deliv
253835	Fetus/neonate affected by other maternal opiates in lab/del
253840	Birth weight 1000-2499 g
253845	Bruising of scalp due to birth injury
253849	Eye damage due to birth trauma
253853	Liveborn with birth asphyxia NOS
255705	[V]Unspecified delivery outcome
255851	Forceps extraction midcavity
255852	Forceps delivery
256848	Delivery contracted pelvis
257126	Erb's palsy due birth injury
258670	Born - place delivered
258671	Ambulance birth
258674	Outcome of delivery
258678	Baby female
258681	Birth HC = 50th-74th centile
258683	Apgar at 1 minute = 4
258684	Apgar at 1 minute = 6
258685	Apgar at 5 minutes = 1
258686	Apgar at 10 minutes = 9
258687	Apgar at 10 minutes NOS
258690	Birth details NOS
258705	Child exam. - birth
258706	Child not examined at birth
258707	Child birth exam. - normal
258708	Child exam. - birth NOS
259534	Childbirth operations
259544	Breech extraction delivery NOS
259545	Other specified forceps cephalic delivery
259546	Normal delivery NOS
259547	Cleidotomy of fetus to facilitate delivery
259548	Curettage of delivered uterus
259549	Manual removal retained products conception delivered uterus
259550	Manual removal products of conception delivered uterus NOS
262180	Spontaneous breech delivery
262183	Face presentation
262189	Disproportion NOS - delivered
262202	Polyhydramnios - delivered
262213	Failed medical or unspecified induction
262227	Prolonged second stage NOS
262231	Vulval delivery trauma
262232	Second degree perineal tear during delivery
262233	Fourth degree perineal tear during delivery
262234	Fourth degree perineal tear during delivery - delivered
262236	Vulval and perineal haematoma during delivery - delivered
262247	Secondary postpartum haemorrhage unspecified
262250	Retained membrane without haemorrhage
262251	Retained placenta with no haemorrhage unspecified
262254	Retained placenta with no haemorrhage NOS
262255	Retained products with no haemorrhage unspecified
262256	Retained products with no haemorrhage - deliv with p/n prob
262261	Cardiac comps of anaesthesia during labour and delivery
262265	Mid-cavity forceps delivery
262266	Delivery by combination of forceps and vacuum extractor
262267	Forceps delivery NOS
262308	[X]Other infection of genital tract following delivery
262991	Vacuum extraction chignon
262994	Fracture of skull due to birth trauma
262995	Spine or spinal cord injury due to birth trauma
262997	Brachial plexus palsy due to birth trauma
262998	Brachial palsy unspecified, due to birth trauma
263004	Fetal distress, unspecified when, liveborn
263005	Anoxia in newborn NOS
265026	Forceps extraction low
265027	Rotation foetal head manually
265028	Caesarean section classical upper segmen
265029	Retained placenta manual removal
266080	Delivery domicillary (mother)
266081	Delivery gp unit (mother)
266083	Shoulder presentation at delivery
266085	Inertia uterus complicating delivery
266086	Dystocia
266090	Traumatic birth incident
266091	Septicaemia puerperal

266330	Asphyxia newborn
267916	Sex of baby NOS
267917	Maturity of baby
267918	Baby BW = 25%-49% (3150-3449g)
267921	Birth length = < 3rd centile
267922	Apgar at 1 minute = 8
267923	Apgar at 10 minutes
267924	Spontaneous onset of labour
268721	Other specified elective caesarean delivery
268724	Other breech delivery NOS
268727	Cephalic vagin deliv abnorm pres head without instrument NOS
268728	Other methods of delivery
268730	Other operations to facilitate delivery
271417	Other antepartum haemorrhage - delivered
271418	Antepartum haemorrhage NOS - delivered
271447	Normal delivery in a completely normal case
271456	Generally contracted pelvis - delivered
271465	Cystocele - delivered with postpartum complication
271491	Delay deliv after spontaneous or unsp rupture of membranes
271504	Precipitate labour - delivered
271506	Prolonged labour unspecified
271507	Prolonged second stage
271514	Third degree perineal tear during delivery with p/n problem
271515	Vulval and perineal haematoma during delivery
271518	Rupture of uterus during and after labour - delivered
271524	Third-stage postpartum haemorrhage
271525	Secondary postpartum haemorrhage with postnatal problem
271538	Vacuum extractor delivery NOS
271539	Caesarean delivery
271542	Other specified complications of labour or delivery
271556	Obstetric perineal wound disruption - deliv + p/n comp
271571	Spontaneous vertex delivery
271572	Spontaneous breech delivery
271579	[X]Other single delivery by caesarean section
272229	Fetus/neonate affected by malposition/disproportion-delivery
272230	Fetus/neonate affected by disproportion during labour/delive
272240	Cerebral haemorrhage unspecified, due to birth trauma
272241	Fracture of tibia or fibula due to birth trauma
272242	Birth dislocation of the shoulder
272243	Birth plexus inj - Erb-Duchenne
272244	Birth plexus injury - Klumpke-Dejerine
272246	Birth plexus injury - whole plexus
272250	Torticollis due to birth injury
272252	Severe birth asphyxia - apgar score less than 4 at 1 minute
272253	Mild to moderate birth asphyxia - apgar score 4-7 at 1 min
272254	Hypoxia in newborn NOS
274059	[V]Twin, mate liveborn, NOS
274201	Version internal (assisted delivery)
274202	Forceps extraction low with episiotomy
274203	Ventouse extraction delivery (mother)
274204	Caesarian section lower segment
274568	Newborn infant examination
275209	Domiciliary confinement (mother)
275211	Placenta praevia complicating delivery
275212	Delivery accreta placenta
275213	Malpresentation at delivery
275217	Hydramnios at delivery
275224	Postpartum haemorrhage delayed
275225	Postnatal haemorrhage
275469	Injury birth
275472	Delivery domicillary (baby)
275478	Normal apgar rating
276962	Consultant unit birth
276964	Single live birth
276967	Baby BW = > 96% (over 4499g)
276969	Birth head circumference NOS
276971	Apgar at 5 minutes = 3
276972	Apgar at 5 minutes = 6
276973	Apgar at 5 minutes = 8
276984	Birth exam. Abnormal -for obs.
276984	Birth exam. Abnormal -for obs.
277826	Elective caesarean delivery NOS
277827	Upper uterine segment caesarean delivery NEC
277828	Lower uterine segment caesarean delivery NEC
277829	Breech extraction delivery
277830	Other breech delivery
277832	Forceps cephalic delivery NOS
280459	Mild or unspecified pre-eclampsia - delivered with p/n comp
280461	Eclampsia - delivered
280468	Early onset of delivery - delivered
280475	Other pregnancy complication - delivered with postnatal comp
280490	Normal delivery in completely normal case NOS
280493	Assisted breech delivery
280494	Breech presentation - delivered
280497	Shoulder presentation
280512	Uterine fibroid - baby delivered
280538	Complications occurring during labour and delivery
280539	Obstructed labour
280540	Shoulder dystocia with antenatal problem
280544	Atony of uterus

280545	Poor contractions
280547	Unspecified prolonged labour - delivered
280556	First degree perineal tear during delivery
280557	Fourchette tear during delivery
280558	Second degree perineal tear during delivery with p/n prob
280559	Third degree perineal tear during delivery
280561	Unspecified perineal laceration during delivery + p/n prob
280564	Other vulval/perineal trauma during delivery + p/n problem
280565	Vulval/perineal trauma during delivery NOS unspec
280574	Mid-cavity forceps with rotation
280575	Vacuum extractor delivery - delivered
280576	Breech extraction - delivered
280577	Caesarean section - pregnancy at term
280610	[X]Vaginitis following delivery
281262	Fetus/neonate affected-cephalopelvic disproportion lab./del.
281263	Fetus or neonate affected by forceps delivery
281267	Cerebral haematoma in fetus or newborn
281271	Vulval haematoma due to birth trauma
281273	Liveborn with fetal distress, unspecified
281275	Liveborn with fetal hypoxia, unspecified
281276	Birth asphyxia
283113	[V]Outcome of delivery
283261	Induction labour
283262	Episiotomy
283263	Delivery caesarian section (mother)
284337	Pregnancy induction labour failed
284342	Pyelocystitis puerperium
284346	Pregnancy uncomplicated delivery
284349	Obstructed labour
284350	Laceration perineal at delivery third de
284355	Puerperal coagulopathy
284576	Immaturity at birth
286108	Full term gestation - 40 weeks
286109	GP unit birth
286112	Livebirth
286116	Delivery - sex of baby
286117	Baby male
286119	Apgar at 1 minute = 1
286120	Apgar at 5 minutes = 4
286121	Apgar at 5 minutes = 7
286122	Apgar at 5 minutes = 9
286123	Apgar at 10 minutes = 2
286124	Apgar at 10 minutes = 3
286125	Apgar at 10 minutes = 7
287001	Induction and delivery operations
287002	Elective lower uterine segment caesarean section (LSCS)
287003	Other specified other caesarean delivery
287004	Other caesarean delivery NOS
287005	Assisted breech delivery
287006	Forceps cephalic delivery
287007	Mid forceps cephalic delivery NEC
289570	Benign essential hypertension in preg/childb/puerp - deliv
289592	Urinary tract infection following delivery
289599	Other pregnancy complication - delivered
289616	Multiple delivery
289616	Multiple delivery
289617	Breech presentation
289619	Face presentation - delivered
289632	Cystocele - baby delivered
289633	Cystocele complicating postpartum care - baby delivered prev
289658	Maternal pyrexia during labour, unspecified
289665	Persistent occipitoposterior or occipitoanterior position
289667	Other failed ventouse extraction - delivered
289669	Abnormal forces of labour
289670	Secondary uterine inertia
289673	Long labour
289674	Delayed delivery of second twin, triplet etc
289679	Second degree perineal tear during delivery, unspecified
289680	Unspecified perineal laceration during delivery, unspecified
289681	Other vulval/perineal trauma during delivery NOS
289686	Postpartum haemorrhage NOS
289687	Retained placenta with no haemorrhage
289693	Forceps delivery
289694	Delivery by caesarean hysterectomy
290421	Fetus or neonate affected by complication of labour/delivery
290422	Fetus or neonate affected by induction of labour
290426	Brain injury due to birth trauma NOS
290427	Cerebral injury due to birth trauma
290431	Facial nerve palsy due to birth trauma
290432	Peripheral nerve injury due to birth trauma
290435	Birth trauma, asphyxia or hypoxia NOS
292377	Forceps extraction high with episiotomy
292378	Forceps delivery (mother)
292379	Keillands delivery (mother)
292381	Forceps failed
293444	Malposition foetus complicating delivery
293452	Puerperal mastitis
295291	Rh screen - cord blood sample
295303	Female baby
295306	Baby BW = < 3% (under 2500g)
295307	Apgar at 1 minute
295312	Normal birth
295313	Apgar normal

296093	Elective caesarian delivery
296094	Elective lower uterine segment caesarean delivery
296095	High forceps cephalic delivery NEC
296096	Mid forceps cephalic delivery with rotation
296097	Trial of forceps delivery
296098	Low vacuum delivery
296100	Other operations on delivered uterus
298847	Transient hypertension of pregnancy - delivered
298850	Eclampsia - delivered with postnatal complication
298855	Premature labour
298867	Other mat.infect/parasit dis in puerperium - baby delivered
298879	Normal delivery but ante- or post- natal conditions present
298914	Prem rupture of membranes onset of labour within 24 hours
298915	Prem rupture of membranes onset of labour after 24 hours
298924	Obstructed labour due to fetal malposition
298939	Prolonged first stage NOS
298946	Trauma to perineum and vulva during delivery
298948	Third degree perineal tear during delivery NOS
298949	Vulval and perineal haematoma during delivery, unspecified
298950	Vulval/perineal trauma during delivery NOS
298954	Other immediate postpartum haemorrhage
298956	Secondary and delayed postpartum haemorrhage
298962	Acute renal failure following labour and delivery
298966	Neville - Barnes forceps delivery
298967	Vacuum extractor delivery
298968	Breech extraction NOS
298969	Complications of labour and delivery NOS
298970	Intrapartum haemorrhage with coagulation defect
298996	Obstetric breast abscess with postnatal complication
298997	Obstetric nonpurulent mastitis - deliv with p/n complication
298998	Obstetric nonpurulent mastitis with postnatal complication
299018	[X]delivery
299663	Fetus affected by breech delivery
299667	Fetus or neonate affected by transverse lie in labour/deliv
299675	Intracranial haemorrhage in fetus or newborn
299676	Local subdural haematoma due to birth trauma
299679	Other dislocation or subluxation due to birth trauma
299683	Sternomastoid injury due to birth injury
299684	Fetal distress before labour - liveborn
299686	Fetal distress in labour - liveborn
301619	[V]Live birth
301619	[V]Live birth
302181	Twin mate liveborn
302194	Normal delivery
302219	Spontaneous vaginal delivery
302225	Delivered by caesarean section - pregnancy at term
302261	Delivery normal
302262	SVD - Spontaneous vaginal delivery
302283	FTND - Full term normal delivery
302446	Delivered by low forceps delivery
302531	Spontaneous vertex delivery
302558	Delivered by mid-cavity forceps delivery
302675	Deliveries by spontaneous breech delivery
302790	Delivery observations
304485	Labour premature
304508	Pregnancy normal delivery
304509	Normal delivery (mother)
304510	Labour premature normal delivery
304511	Premature labour
304512	Normal birth (confinement)
304513	Delivery in hospital (mother)
304515	Delivery breech
304516	Delivery breech (mother)
304517	Prolonged labour
304520	Delivery delay in second stage
304521	Ruptured uterus complicating delivery
305032	Damage brain child congenital
305036	Low birthweight
305037	Normal baby
305037	Normal baby
305038	Normal baby delivered normally
305038	Normal baby delivered normally
305039	Breech birth (baby)
305039	Breech birth (baby)
305040	Caesarian section birth (baby)
305040	Caesarian section birth (baby)
305041	Caesarian section (baby)
305041	Caesarian section (baby)
305042	Forceps birth (baby)
305042	Forceps birth (baby)
305045	Normal birth (baby)
305045	Normal birth (baby)
306834	Labour
306835	Svd (spontaneous vertex delivery)
306836	Delivery no details
306837	Placenta adherent complicating delivery
306838	Retained placenta
306839	Presentation breech (mother)
306843	Overweight baby mother's record
306844	Retained placenta fragments puerperium
307164	Baby normal at birth

307164	Baby normal at birth
307168	Birth no details
307170	Ventouse birth extraction (baby)
307170	Ventouse birth extraction (baby)
331975	Born by caesarean section
341085	Born by emergency caesarean section
237321	[V]Other multiple birth, not hospitalised, mates live+still
237320	[V]Other multiple birth, born in hospital, mates live+still
225737	Obstructed labour due to deformed pelvis
225739	Obstructed labour caused by pelvic soft tissues NOS
243785	Genitourinary tract infection in pregnancy - deliv +p/n comp
204950	Hysterotomy and termination of pregnancy
204953	Termination of pregnancy NEC
204957	Introduction of abortifacient into uterine cavity
205718	HSA1-therap. Abort. Green form
207538	Termination of pregnancy
207539	Unspecified legal abortion + delayed/excessive haemorrhage
207540	Unspecified legal abortion with no mention of complication
207541	Surgical abortion - incomplete
207542	Complete legal abortion + damage to pelvic organs or tissues
207543	Complete legal abortion NOS
207544	Unspecified illegal abortion with shock
207545	Incomplete illegal abortion with metabolic disorder
207546	Unspecified abortion with other specified complication
207547	Unspecified abortion complete
207556	Readmission for retained produc of concept, illegal abortion
207557	Failed medical abortion complic by genital tract/pelvic infn
207558	Failed medical abortion comp by delayed/excessive haem'ge
211359	Induced abortion legal
211362	Incomplete abortion
211373	Postabortion bleeding
213967	Selective destruction of fetus NOS
216517	Elective abortion
216518	Unspecified legal abortion with metabolic disorder
216519	Incomplete legal abortion with shock
216520	Incomplete legal abortion with embolism
216521	Complete legal abortion with other specified complication
216522	Incomplete illegal abortion with complication NOS
216523	Complete illegal abortion NOS
216524	Unspecified abortion with genital tract or pelvic infection
216525	Unspecified abortion with no mention of complication
216526	Unspecified complete abortion + pelvic organ/tissue damage
216527	Unspecified complete abortion + no mention of complication
216733	[X]Failed medical abortion,wth other+unspcfied complications
219389	Termination pregnancy caesarean section
222972	Selective destruction of fetus
225610	Tubal abortion
225619	Legal abortion unspecified
225620	Incomplete legal abortion + genital tract/pelvic infection
225621	Incomplete legal abortion with no mention of complication
225622	Complete legal abortion with delayed/excessive haemorrhage
225623	Illegal abortion unspecified
225624	Unspecified illegal abortion with embolism
225625	Incomplete illegal abortion + other specified complication
225626	Complete illegal abortion + genital tract/pelvic infection
225627	Complete illegal abortion with no mention of complication
225628	Unspecified abortion with renal failure
225629	Unspecified abortion with metabolic disorder
225630	Unspecified incomplete abortion +genital tract/pelvic infect
225631	Unspecified incomplete abortion + pelvic organ/tissue damage
225632	Unspecified complete abortion with embolism
229500	Tubal abortion
229510	Top (termination of pregnancy)
229511	Complete abortion
229512	Complicated abortion
232074	Vacuum termination of pregnancy
232108	Feticide
232109	Late selective feticide
232110	Other specified selective destruction of fetus
234733	Incomplete legal abortion with renal failure
234734	Incomplete legal abortion with metabolic disorder
234735	Incomplete legal abortion with complication NOS
234736	Surgical abortion - complete
234737	Complete legal abortion with shock
234738	Unspecified illegal abortion with no mention of complication
234739	Unspecified illegal abortion NOS
234740	Illegal abortion incomplete
234741	Incomplete illegal abortion with renal failure
234742	Complete illegal abortion with renal failure
234743	Complete illegal abortion with metabolic disorder
234744	Complete illegal abortion with shock
277789	Insertion of prostaglandin abortifacient pessary
286971	Intraamniotic injection of abortifacient NEC
296055	Introduction of abortifacient into uterine cavity OS
255848	Top hysterotomy

207532	Spontaneous abortion unspecified
207533	Complete spontaneous abortion + other specified complication
207534	Complete spontaneous abortion + no mention of complication
207535	Inevitable miscarriage unspecified
207536	Unspecified inevitable miscarriage with unspec complication
207537	Inevitable miscarriage incomp
211361	Inevitable abortion
216508	Unspecified spontaneous abortion with shock
216509	Unspecified spontaneous abortion with embolism
216510	Incomp spontaneous abortion + genital tract/pelvic infection
216512	Unspecified inevitable abortion with OS complication
216514	Incomplete inevitable abortion complicated by embolism
216515	Incomplete inevitable abortion with OS complication
216516	Inevitable abortion complete
225613	Incomplete spontaneous abortion NOS
225614	Complete spontaneous abortion + pelvic organ/tissue damage
225615	Unspec inevit abortion comp by delayed or excessive haemorr
225616	Unspecified inevitable abortion with unspec complication
225617	Incomplete inevitable miscarriage without complication
225618	Complete inevitable miscarriage without complication
232075	Dilation and curettage removal of missed abortion
234726	Unspecified spontaneous abortion with complication NOS
234727	Incomp spontaneous abortion + delayed/excessive haemorrhage
234728	Incomplete spontaneous abortion with complication NOS
234729	Complete spontaneous abortion with embolism
234730	Unspecified inevitable miscarriage complicated by embolism
234732	Complete inevitable miscarriage with unspecified comp
234745	Unspec incomplete abortion with other specified complication
234746	Failed attempted abortion with metabolic disorder
234751	Readmis for retain products of concept, spontaneous abortion
234752	Failed medical abortion, complicated by embolism
234753	Other specified pregnancy with abortive outcome
234921	[X]Oth+unspc fail induc abortn,complict/delay/exces h'morrhg
235646	Fetal death due to termination of pregnancy
238429	Pregnancy terminated medical reasons
243738	Pregnancy with abortive outcome
243743	Spontaneous abortion with heavy bleeding
243744	Unspecified spontaneous abortion NOS
243745	Incomplete spontaneous abortion with shock
243746	Complete spontaneous abortion + genital tract/pelvic infect
243747	Complete spontaneous abortion with renal failure
243748	Incomplete inevitable abortion without complication
243749	Therapeutic abortion
243750	Unspecified legal abortion with renal failure
243751	Unspecified illegal abortion with metabolic disorder
243752	Unspecified illegal abortion with complication NOS
243753	Incomplete illegal abortion + pelvic organ/tissue damage
243754	Incomplete illegal abortion with shock
243755	Illegal abortion complete
243756	Unspecified abortion with delayed or excessive haemorrhage
243757	Unspecified abortion with embolism
243758	Unspecified complete abortion NOS
243759	Failed attempted abortion with embolism
243760	Failed attempted abortion with complication NOS
246632	Termination pregnancy surgical induction
246953	Termination refused pregnancy
247603	Missed abortion
247614	Abortion induced with complications
252886	Spontaneous abortion
252887	Miscarriage
252888	Incomplete spontaneous abortion + pelvic organ/tissue damage
252889	Incomp spontaneous abortion with no mention of complication
252890	Complete spontaneous abortion NOS
252891	Inevitable abortion unspecified
252892	Unspecified inevitable abortion complicated by embolism
252893	Inevitable abortion incomplete
252894	Incomplete inev mis comp by delayed or excessive haemorrhage
252895	Complete inevitable miscarriage complicated by embolism
252896	Legally induced abortion
252897	Unspecified legal abortion with complication NOS
252898	Medical abortion - complete
252899	Complete legal abortion with embolism
252900	Criminal abortion
252901	Unspecified illegal abortion with renal failure
252902	Incomplete illegal abortion with embolism
252903	Unspecified abortion
252904	Unspecified complete abortion + genital tract/pelvic infect
252905	Unspecified complete abortion with renal failure
252906	Unspecified abortion NOS
252907	Failed attempted abortion
252908	Failed attempted abortion with no mention of complication

252909	Failed attempted abortion NOS
253093	[X]Other abortion
255854	Induction labour missed abortion
256845	Induced abortion medical indication
256846	Self-induced abortion
259503	Curettage of uterus for termination of pregnancy NEC
259506	Suction termination of pregnancy
260499	Abortive plague
262095	Blighted ovum
262098	Spontaneous abortion with sepsis
262099	Incomplete spontaneous abortion with metabolic disorder
262100	Incomp spontaneous abortion + other specified complication
262102	Unspecified inevitable miscarriage without complication
262105	Complete inevitable miscarriage with OS complication
262106	Spontaneous abortion NOS
262107	Unspecified legal abortion with other specified complication
262108	Legal abortion incomplete
262109	Complete legal abortion + genital tract or pelvic infection
262110	Complete legal abortion with no mention of complication
262111	Legally induced abortion NOS
262112	Illegally induced abortion
262113	Incomplete illegal abortion + genital tract/pelvic infection
262114	Unspecified abortion with complication NOS
262115	Unspecified incomplete abortion + no mention of complication
262116	Failed attempted abortion + damage to pelvic organs/tissues
262117	Failed attempted abortion with renal failure
262118	Failed attempted abortion with shock
262119	Failed attempted abortion with other specified complication
262121	Readmission for retained produc of concept, unspec abortion
262123	Inevitable abortion
265024	Abortion hysterotomy
268687	Dilation cervix uteri & curettage for termination pregnancy
268688	Curettage of uterus for termination of pregnancy NEC
271380	Missed abortion
271382	Unspec spontaneous abortion + genital tract/pelvic infection
271383	Unspec spontaneous abortion + delayed/excessive haemorrhage
271384	Unspec spontaneous abortion + pelvic organ/tissue damage
271385	Unspec spontaneous abortion without mention of complication
271386	Spontaneous abortion incomplete
271387	Retained products after spontaneous abortion
271388	Complete spontaneous abortion +delayed/excessive haemorrhage
271389	Unspec inev miscarriage comp by genital tract pelvic infec
271390	Unspecified inevitable miscarriage with OS complication
271391	Incomplete inevitable miscarriage with unspecified comp
271392	Incomplete inevitable miscarriage with other specified comp
271393	Unspecified legal abortion + genital tract/pelvic infection
271394	Unspecified legal abortion with shock
271395	Incomplete legal abortion + delayed or excessive haemorrhage
271396	Incomplete legal abortion + damage to pelvic organs/tissues
271397	Incomplete legal abortion NOS
271398	Complete legal abortion with renal failure
271399	Complete legal abortion with metabolic disorder
271400	Complete legal abortion with complication NOS
271401	Incomplete illegal abortion NOS
271402	Complete illegal abortion with other specified complication
271403	Unspecified abortion NOS
271404	Unspecified incomplete abortion with embolism
271405	Complications following abortion/ectopic/molar pregnancies
271410	Failed attempted abortion
274205	Abortion incomplete curettage
274206	Uterus evacution (abortion)
275206	Miscarriage
280431	Inevitable miscarriage
280432	Unspec spontaneous abortion + other specified complication
280433	Unspecified inevitable abortion without complication
280434	Complete inev abor comp by genital tract and pelvic infec
280435	Complete inevitable abortion with unspecified complication
280436	Complete inevitable abortion with OS complication
280437	Unspecified legal abortion + damage to pelvic organs/tissues
280438	Incomplete legal abortion with other specified complication
280439	Unspec illegal abortion + delayed or excessive haemorrhage
280440	Unspecified illegal abortion + pelvic organ/tissue damage
280441	Complete illegal abortion with complication NOS
280442	Unspecified abortion
280443	Unspecified incomplete abortion + delayed/excess haemorrhage
280444	Unspecified complete abortion +delayed/excessive haemorrhage
280447	Readmission for retained produc of concept, legal abortion
280451	Pregnancy with abortive outcome NOS
284344	Induced abortion social reasons
286971	Intraamniotic injection of abortifacient NEC

289544	Incomplete spontaneous abortion with renal failure
289545	Complete spontaneous abortion with metabolic disorder
289547	Incomplete inevitable abortion with unspecified complication
289548	Complete inevitable abortion complicated by embolism
289549	Complete inevitable abortion without complication
289550	Unspecified legal abortion with embolism
289551	Unspecified legal abortion NOS
289552	Unspecified illegal abortion + other specified complication
289553	Complete illegal abortion + delayed or excessive haemorrhage
289554	Complete illegal abortion + pelvic organ/tissue damage
289555	Illegally induced abortion NOS
289556	Unspecified abortion with shock
289557	Unspecified incomplete abortion with metabolic disorder
289558	Unspecified incomplete abortion with shock
289559	Unspecified incomplete abortion with complication NOS
289560	Unspecified complete abortion with shock
289561	Unspecified complete abortion with complication NOS
289562	Failed attempted abortion + delayed or excessive haemorrhage
289726	[X]Oth+unspcf failed inducd abort,complct gen tract+pelv inf
292376	Termination pregnancy intra-amniotic inj
293430	Products of conception passed
293439	Abortion induced social reasons unmarrie
293440	Spontaneous abortion
293441	Premature labour dead foetus under 28 we
296054	Evacuation of contents of uterus NOS
298808	Unspecified spontaneous abortion with renal failure
298809	Unspecified spontaneous abortion with metabolic disorder
298810	Incomplete spontaneous abortion with embolism
298811	Spontaneous abortion complete
298812	Complete spontaneous abortion with shock
298813	Complete spontaneous abortion with complication NOS
298814	Incom inev abor complicated by delayed or excessive haemorr
298815	Incomplete inevitable abortion complicated by embolism
298816	Inevitable miscarriage complete
298817	Medal abortion - incomplete
298818	Legal abortion complete
298819	Self-induced abortion
298820	Unspec illegal abortion + genital tract or pelvic infection
298821	Incomplete illegal abortion + delayed/excessive haemorrhage
298822	Incomplete illegal abortion with no mention of complication
298823	Complete illegal abortion with embolism
298824	Unspecified abortion with damage to pelvic organs or tissues
298825	Unspecified abortion incomplete
298826	Unspecified incomplete abortion with renal failure
298827	Unspecified incomplete abortion NOS
298828	Unspecified complete abortion with metabolic disorder
298829	Unspecified complete abortion + other specified complication
298830	Failed attempted abortion + genital tract/pelvic infection
298831	Complications following abortion/ectopic/molar pregnancies
298839	Failed medical abortion, without complication
299011	[X]Other+unspcf failed induced abortion,complicated/embolism
301755	Vacuum aspiration abortion
304482	Missed abortion
304495	Therapeutic abortion
304496	Termination pregnancy psychiatric reason
304498	Top (termination of pregnancy)
304499	Unmarried termination pregnancy
304500	Induced abortion
304501	Spontaneous abortion
304502	Miscarriage
304503	Inevitable abortion
304504	Incomplete abortion
304505	Abortion
304506	Complete abortion
304507	Rpc (retained products conception)
306824	Blighted ovum
333094	Post miscarriage counselling
344647	Missed miscarriage
204107	Baby premature 36-38 weeks
207578	Premature delivery
213128	Premature baby
213129	Baby extremely prem.28-32 week
222196	Postmature baby
226518	Short gestation and unspecified low birthweight problems
231271	Baby premature 26-28 weeks
244647	Preterm delivery associated jaundice
253841	Premature infant 28-37 weeks
253842	Born premature NOS
266082	Delivery premature in hospital/maternity
272238	Extreme prematurity - less than 28 weeks
275210	Delivery premature outside hospital
276966	Baby post-mature
284352	Labour premature with complications
284576	Immaturity at birth
295305	Baby v. Premature 32-36 weeks
298856	Post-term pregnancy - delivered

299671	Baby born premature
299672	Very premature - less than 1000g or less than 28 weeks
299673	Premature - weight 1000g-2499g or gestation of 28-37weeks
304522	Premature delivery (mother)
305034	Premature baby
305035	Premature delivery (child)
307162	Prematurity (newborn)

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