**Using Insurance Claims Data to Identify and Estimate Critical Periods in Pregnancy: An Application to Antidepressants**

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**Supplemental Information**

Table A1. International Classification of Diseases, Ninth Revision (ICD-9) Diagnosis Codes Used to Identify End of Pregnancies

Table A2. Procedure Codes used to Identify Pregnancies

**Table A1. International Classification of Diseases, Ninth Revision (ICD-9) Diagnosis Codes Used to Identify Pregnancy Outcomes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Description** | **Pregnancy Outcomea** | **Gestational Age** | **Reference for Assignment of Gestational Age** |
| 631.XX | Other abnormal products of conception | SAB | 8 | Authors |
| 632.XX | Missed abortion | SAB | 20 | Korelitz et al. |
| 633.XX | Ectopic pregnancy | ECT | 8 | Korelitz et al. |
| 634.XX | Spontaneous abortion | SAB | 8 | Korelitz et al. |
| 635.XX | Legally induced abortion | TAB | 10 | Korelitz et al. |
| 636.XX | Illegally induced abortion | TAB | 10 | Korelitz et al. |
| 637.XX | Legally unspecified abortion | TAB | 10 | Korelitz et al. |
| 644.21 | Early onset of delivery, delivered, with or without mention of antepartum condition | LB | 34 | Hornbrook et al. |
| 645.11 | Post term pregnancy, delivered, with or without mention of antepartum condition | LB | 42 | Authors |
| 645.21 | Prolonged pregnancy, delivered, with or without mention of antepartum condition | LB | 43 | Authors |
| 649.81 | Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section, delivered, with or without mention of antepartum condition | LB | 38 | Authors |
| 649.82 | Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section, delivered, with mention of postpartum complication | LB | 38 | Authors |
| 650 | Normal delivery | LB | 40b | Korelitz et al. |
| 651.01 | Twin pregnancy, delivered, with or without mention of antepartum condition | LB | 36 | Hornbrook et al. |
| 651.11 | Triplet pregnancy, delivered, with or without mention of antepartum condition | LB | 33 | Hornbrook et al. |
| 651.21 | Quadruplet pregnancy, delivered, with or without mention of antepartum condition | LB | 31 | Hornbrook et al. |
| 651.31 | Twin pregnancy with fetal loss and retention of one fetus, delivered, with or without mention of antepartum condition | LBandSB | 36 | Hornbrook et al. |
| 651.41 | Triplet pregnancy with fetal loss and retention of one or more fetus(es), delivered, with or without mention of antepartum condition | LBandSB | 33 | Hornbrook et al. |
| 651.51 | Quadruplet pregnancy with fetal loss and retention of one or more fetus(es), delivered, with or without mention of antepartum condition | LBandSB | 31 | Hornbrook et al. |
| 656.4X | Intrauterine death, affecting management of mother, delivered, with or without mention of antepartum condition | SB | 28 | Likis et al. |
| 669.70 | Cesarean delivery, without mention of indication, unspecified as to episode of care or not applicable | LB | 40b | Authors |
| 669.71 | Cesarean delivery, without mention of indication, delivered, with or without mention of antepartum condition | LB | 40b | Authors |
| 765.0Xc | Extreme immaturity | LB | 28 | Li et al. |
| 765.10c | Other preterm infants, unspecified [weight ] | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.11c | Other preterm infants, less than 500 grams | LB | 23 | Authors |
| 765.12c | Other preterm infants, 500-749 grams | LB | 25 | Authors |
| 765.13c | Other preterm infants, 750-999 grams | LB | 27 | Authors |
| 765.14c | Other preterm infants, 1,000-1,249 grams | LB | 29 | Authors |
| 765.15c | Other preterm infants, 1,250-1,499 grams | LB | 31 | Authors |
| 765.16c | Other preterm infants, 1,500-1,749 grams | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.17c | Other preterm infants, 1,750-1,999 grams | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.18c | Other preterm infants, 2,000-2,499 grams | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.19c | Other preterm infants, 2,500 grams and over | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.20c | Unspecified weeks of gestation | LB | 34 | Korelitz et al. and Hornbrook et al. |
| 765.21c | Less than 24 completed weeks of gestation | LB | 23 | Authors |
| 765.22c | 24 completed weeks of gestation | LB | 24 | Li et al. |
| 765.23c | 25-26 completed weeks of gestation | LB | 26 | Li et al. |
| 765.24c | 27-28 completed weeks of gestation | LB | 28 | Li et al. |
| 765.25c | 29-30 completed weeks of gestation | LB | 30 | Li et al. |
| 765.26c | 31-32 completed weeks of gestation | LB | 32 | Li et al. |
| 765.27c | 33-34 completed weeks of gestation | LB | 34 | Li et al. |
| 765.28c | 35-36 completed weeks of gestation | LB | 36 | Li et al. |
| 765.29]c | 37 or more completed weeks of gestation | LB | 40 | Authors |
| 766.21c | Postterm infant | LB | 42 | Authors |
| 766.22c | Prolonged gestation of infant | LB | 43 | Authors |
| V270 | Outcome of delivery, single liveborn | LB | 40b | Authors |
| V27.1 | Outcome of delivery, single stillborn | SB | 28 | Authors |
| V27.2 | Outcome of delivery, twins, both liveborn | LB | 36 | Hornbrook et al. |
| V27.3 | Outcome of delivery, twins, one liveborn and one stillborn | LBandSB | 36 | Authors |
| V27.4 | Outcome of delivery, twins, both stillborn | SB | 36 | Authors |
| V27.5 | Outcome of delivery, other multiple birth, all liveborn | LB | 33 | Authors |
| V27.6 | Outcome of delivery, other multiple birth, some liveborn | LBandSB | 33 | Authors |
| V27.7 | Outcome of delivery, other multiple birth, all stillborn | SB | 33 | Authors |
| V30.0c | Single liveborn-in hospital | LB | 40b | Authors |
| V30.00c | Single liveborn, born in hospital, delivered without mention of cesarean section | LB | 40b | Authors |
| V30.01c | Single liveborn, born in hospital, delivered by cesarean section | LB | 40b | Authors |
| V31.0c | Twin, mate lb-in hospital | LB | 36 | Hornbrook et al. |
| V31.00c | Twin birth, mate liveborn, born in hospital, delivered without mention of cesarean section | LB | 36 | Hornbrook et al. |
| V31.01c | Twin birth, mate liveborn, born in hospital, delivered by cesarean section | LB | 36 | Hornbrook et al. |
| V32.0c | Twin, mate sb-in hospital | LBandSB | 36 | Hornbrook et al. |
| V32.00c | Twin birth, mate stillborn, born in hospital, delivered without mention of cesarean section | LBandSB | 36 | Hornbrook et al. |
| V32.01c | Twin birth, mate stillborn, born in hospital, delivered by cesarean section | LBandSB | 36 | Hornbrook et al. |
| V33c | Twin NOS | LB | 36 | Hornbrook et al. |
| V33.0c | Twin NOS-in hospital | LB | 36 | Hornbrook et al. |
| V33.00c | Twin birth, unspecified whether mate liveborn or stillborn, born in hospital, delivered without mention of cesarean section | LB | 36 | Hornbrook et al. |
| V33.01c | Twin birth, unspecified whether mate liveborn or stillborn, born in hospital, delivered by cesarean section | LB | 36 | Hornbrook et al. |
| V34.0c | Other multiple nb-in hospital | LB | 33 | Hornbrook et al. |
| V34.00c | Other multiple birth (three or more), mates all liveborn, born in hospital, delivered without mention of cesarean section | LB | 33 | Hornbrook et al. |
| V34.01c | Other multiple birth (three or more), mates all liveborn, born in hospital, delivered by cesarean section | LB | 33 | Hornbrook et al. |
| V35.0c | Other multiple sb-in hospital | LBandSB | 33 | Hornbrook et al. |
| V35.00c | Other multiple birth (three or more), mates all still born, born in hospital, delivered without mention of cesarean section | LBandSB | 33 | Hornbrook et al. |
| V35.01c | Other multiple birth (three or more), mates all still born, born in hospital, delivered by cesarean section | LBandSB | 33 | Hornbrook et al. |
| V36.0c | Multiple nb/sb-in hospital | LBandSB | 33 | Hornbrook et al. |
| V36.00c | Other multiple birth (three or more), mates liveborn and stillborn, born in hospital, delivered without mention of cesarean section | LBandSB | 33 | Hornbrook et al. |
| V36.01c | Other multiple birth (three or more), mates liveborn and stillborn, born in hospital, delivered without mention of cesarean section | LBandSB | 33 | Hornbrook et al. |
| V37c | Other/unspecified multiple births | LB | 33 | Hornbrook et al. |
| V37.0c | Multiple birth NOS-in hospital | LB | 33 | Hornbrook et al. |
| V37.00c | Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born in hospital, delivered without mention of cesarean section | LB | 33 | Hornbrook et al. |
| V37.01 | Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born in hospital, delivered by cesarean section | LB | 33 | Hornbrook et al. |
| V39.0c | Liveborn NOS-in hospital | LB | 40b | Authors |
| V39.00c | Liveborn, unspecified whether single, twin or multiple, born in hospital, delivered without mention of cesarean section | LB | 40b | Authors |
| V39.01c | Liveborn, unspecified whether single, twin or multiple, born in hospital, delivered by cesarean section | LB | 40b | Authors |

Notes: ECT=ectopic pregnancy; LBandSB=live birth and still birth; LB/lb=live birth; SAB=spontaneous abortion; SB/sb=still birth; TAB=induced abortion; NOS=not otherwise specified

a If a claim or visit included codes with different pregnancy outcomes, we prioritized code types in the following order: 1) information from diagnosis codes, 2) information from DRG codes, and 3) information from procedure codes. If pregnancy outcomes were still discrepant, we assigned a pregnancy outcome using the following hierarchy: 1) stillbirth, 2) live birth, 3) induced abortion, 4) spontaneous abortion, 5) abortion of unknown type, and 6) ectopic pregnancy.

b Unless the visit had a code indicating a pre- or postterm delivery

c Infant code

**Table A2. Procedure Codes Used to Identify Pregnancies**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Procedure Code Description** | **Pregnancy Outcomea** | **Gestational Age** | **Reference for Assignment of Gestational Age** |
| **Current Procedural Terminology (CPT) Codes** | | | | |
| **59100** | Surgical treatment of ectopic pregnancy: tubal or ovarian, requiring salpingectomy and/or oophorectomy, abdominal or vaginal approach | ECT | 8 | Korelitz et al. |
| **59120** | Surgical treatment of ectopic pregnancy: tubal or ovarian, without salpingectomy and/or oophorectomy | ECT | 8 | Korelitz et al. |
| **59121** | Surgical treatment of ectopic pregnancy: abdominal pregnancy | ECT | 8 | Korelitz et al. |
| **59130** | Surgical treatment of ectopic pregnancy: interstitial, uterine pregnancy requiring total hysterectomy | ECT | 8 | Korelitz et al. |
| **59135** | Surgical treatment of ectopic pregnancy: interstitial, uterine pregnancy with partial resection of uterus | ECT | 8 | Korelitz et al. |
| **59136** | Surgical treatment of ectopic pregnancy: cervical, with evacuation | ECT | 8 | Korelitz et al. |
| **59140** | Laparoscopic treatment of ectopic pregnancy: without salpingectomy and/or oophorectomy | ECT | 8 | Korelitz et al. |
| **59150** | Laparoscopic treatment of ectopic pregnancy: with salpingectomy and/or oophorectomy | ECT | 8 | Korelitz et al. |
| **59820** | Treatment of missed abortion, completed surgically (1st trimester) | SAB | 10 | Korelitz et al. |
| **59840** | Induced abortion, by dilation and curettage | TAB | 10 | Korelitz et al. |
| **59841** | Induced abortion, by dilation and evacuation | TAB | 15 | Authors |
| **59850** | Induced abortion, by one or more intra-amniotic injections (amniocentesis-injections), including hospital admission and visits, delivery of fetus and secundines) | TAB | 15 | Authors |
| **59851** | Induced abortion, by one or more intra-amniotic injections (amniocentesis-injections), including hospital admission and visits, delivery of fetus and secundines) with dilation and curettage and/orevacuation | TAB | 15 | Authors |
| **59852** | Induced abortion, by one or more intra-amniotic injections (amniocentesis-injections), including hospital admission and visits, delivery of fetus and secundines) with hysterotomy (failed intra-amniotic injection) | TAB | 15 | Authors |
| **59855** | Induced abortion, by one or more vaginal suppositories (e.g., prostaglandin) with or without cervical dilation (e.g., laminaria), including hospital admission and visits, delivery of fetus and secundines | TAB | 15 | Authors |
| **59856** | Induced abortion, by one or more vaginal suppositories (e.g., prostaglandin) with or without cervical dilation (e.g., laminaria), including hospital admission and visits, delivery of fetus and secunidine with dilation and curettage | TAB | 15 | Authors |
| **59857** | Induced abortion, by one or more vaginal suppositories (e.g., prostaglandin) with or without cervical dilation (e.g., laminaria), including hospital admission and visits, delivery of fetus and secunidines) with hysterotomy | TAB | 15 | Authors |
| **59812** | Treatment of incomplete abortion, any trimester, completed surgically | SAB | 15 | Korelitz et al. |
| **59830** | Treatment of septic abortion, completed surgically | SAB | 15 | Korelitz et al. |
| **59821** | Treatment of missed abortion, completed surgically (2nd trimester) | SAB | 20 | Korelitz et al. |
| **59612** | Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps) | LB | 40b | Authors |
| **59614** | Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps) including postpartum care | LB | 40b | Authors |
| **59620** | Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery | LB | 40b | Authors |
| **Healthcare Common Procedure Coding System (HCPC)** | | | | |
| **S0199** | Medically induced abortion by oral ingestion of medication including all associated services and supplies (e.g., patient counseling, office visits, confirmation of pregnancy by HCG, ultrasound to confirm duration of pregnancy | TAB | 10 | Korelitz et al. |
| **S2260** | Induced abortion, 17 to 24 weeks | TAB | 24 | Authors |
| **S2265** | Induced abortion, 25 to 28 weeks | TAB | 28 | Authors |
| **S2262** | Abortion for maternal indication, 25 weeks or greater | TAB | 28 | Korelitz et al. |
| **S2266** | Induced abortion, 29 to 31 weeks | TAB | 31 | Authors |
| **S2267** | Induced abortion, 32 weeks or greater | TAB | 33 | Korelitz et al. |
| **ICD9 Procedure Codes** | | | | |
| **66.62** | Salpingectomy with removal of tubal pregnancy | ECT | 8 | Korelitz et al. |
| **69.01** | Dilation and curettage for termination of pregnancy | TAB | 10 | Authors |
| **69.51** | Aspiration curettage of uterus for termination of pregnancy | SAB | 10 | Authors |
| **69.52** | Aspiration curettage following delivery or abortion | ABT | 10 | Authors |
| **72.0** | Low forceps operation | LB | 40b | Authors |
| **72.1** | Low forceps operation with episiotomy | LB | 40b | Authors |
| **72.2** | Mid forceps operation | LB | 40b | Authors |
| **72.21** | Mid forceps operation with episiotomy | LB | 40b | Authors |
| **72.29** | Other mid forceps operation | LB | 40b | Authors |
| **72.3** | High forceps operation | LB | 40b | Authors |
| **72.31** | High forceps operation with episiotomy | LB | 40b | Authors |
| **72.39** | Other high forceps operation | LB | 40b | Authors |
| **72.4** | Forceps rotation of fetal head | LB | 40b | Authors |
| **72.5** | Breech extraction | LB | 40b | Authors |
| **72.51** | Partial breech extraction with forceps to after coming head | LB | 40b | Authors |
| **72.52** | Other partial breech extraction | LB | 40b | Authors |
| **72.53** | Total breech extraction with forceps to after coming head | LB | 40b | Authors |
| **72.54** | Other total breech extraction | LB | 40b | Authors |
| **72.6** | Forceps application to after coming head | LB | 40b | Authors |
| **72.7** | Vacuum extraction | LB | 40b | Authors |
| **72.71** | Vacuum extraction with episiotomy | LB | 40b | Authors |
| **72.79** | Other vacuum extraction | LB | 40b | Authors |
| **72.8** | Other specified instrumental delivery | LB | 40b | Authors |
| **72.9** | Unspecified instrumental delivery | LB | 40b | Authors |
| **73.0** | Artificial rupture of membrane | LB | 40b | Authors |
| **73.01** | Induction of labor by artificial rupture of membranes | LB | 40b | Authors |
| **73.09** | Other artificial rupture of membranes | LB | 40b | Authors |
| **73.1** | Other surgical induction of labor | LB | 40b | Authors |
| **73.2** | Internal and combined version and extraction | LB | 40b | Authors |
| **73.22** | Internal and combined version with extraction | LB | 40b | Authors |
| **73.3** | Failed forceps | LB | 40b | Authors |
| **73.4** | Medical induction of labor | LB | 40b | Authors |
| **73.5** | Manually assisted delivery | LB | 40b | Authors |
| **73.51** | Manual rotation of fetal head | LB | 40b | Authors |
| **73.59** | Other manually assisted delivery | LB | 40b | Authors |
| **73.6** | Episiotomy | LB | 40b | Authors |
| **73.8** | Operations on fetus to facilitate delivery | LB | 40b | Authors |
| **73.9** | Other operations assisting delivery | LB | 40b | Authors |
| **73.91** | External version assisting delivery | LB | 40b | Authors |
| **73.92** | Replacement of prolapsed umbilical cord | LB | 40b | Authors |
| **73.93** | Incision of cervix to assist delivery | LB | 40b | Authors |
| **73.94** | Pubiotomy to assist delivery | LB | 40b | Authors |
| **73.99** | Other operations assisting delivery | LB | 40b | Authors |
| **74** | Classical cesarean section, transperitoneal | LB | 40b | Authors |
| **74.0** | Classical cesarean section | LB | 40b | Authors |
| **74.1** | Low cervical cesarean section | LB | 40b | Authors |
| **74.2** | Extraperitoneal cesarean section | LB | 40b | Authors |
| **74.3** | Removal of extratubal ectopic pregnancy | ECT | 8 | Korelitz et al. |
| **74.4** | Cesarean section of other specified type | LB | 40b | Authors |
| **74.9** | Cesarean section of unspecified type | LB | 40b | Authors |
| **74.91** | Hysterotomy to terminate pregnancy | TAB | 15 | Authors |
| **74.99** | Other cesarean section of unspecified type | LB | 40b | Authors |
| **75.0** | Intra-amniotic injection for abortion | TAB | 15 | Authors |
| **Diagnosis Related Group (MS-DRG codes, version 25)** | |  |  |  |
| **770** | Abortion with dilation and curettage, aspiration curettage or hysterotomy | ABT | 8 | Korelitz et al. |
| **777** | Ectopic pregnancy | ECT | 8 | Korelitz et al. |
| **779** | Abortion without dilation and curettage | ABT | 8 | Korelitz et al. |
| **790**c | Extreme immaturity or respiratory distress syndrome, neonate | LB | 32 | Korelitz et al. |
| **791**c | Prematurity with major problems | LB | 34 | Korelitz et al. |
| **792**c | Prematurity without major problems | LB | 34 | Korelitz et al. |
| **793**c | Full term neonate with major problems | LB | 40 | Korelitz et al. |
| **795**c | Normal newborn | LB | 40 | Korelitz et al. |
| **765** | Cesarean section with cc/mcc | LB | 40b | Authors |
| **766** | Cesarean section without cc/mcc | LB | 40b | Authors |
| **767** | Vaginal delivery with sterilization and/or dilation and curettage | LB | 40b | Authors |
| **768** | Vaginal delivery w O.R. procedure except sterilization and/or dilation and curettage | LB | 40b | Authors |
| **774** | Vaginal delivery with complicating diagnoses | LB | 40b | Authors |
| **775** | Vaginal delivery without complicating diagnoses | LB | 40b | Authors |

Notes: ABT=abortion; ECT=ectopic pregnancy; HCG= human chorionic gonadotropin; LBandSB=live birth and stillbirth; LB=live birth; SAB=spontaneous abortion

a If a claim or visit included codes with different pregnancy outcomes, we prioritized code types in the following order: 1) information from diagnosis codes, 2) information from DRG codes, and 3) information from procedure codes. If pregnancy outcomes were still discrepant, we assigned a pregnancy outcome using the following hierarchy: 1) stillbirth, 2) live birth, 3) induced abortion, 4) spontaneous abortion, 5) abortion of unknown type, and 6) ectopic pregnancy.

b Unless the visit had a code indicating a pre- or postterm delivery

c Infant code