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Data obtained through Sentinel are intended to complement other types of evidence such as preclinical studies, clinical trials, postmarket studies, and adverse event reports, all of which are used by FDA to inform regulatory decisions regarding medical product safety. The information contained in this report is provided as part of FDA's commitment to place knowledge acquired from Sentinel in the public domain as soon as possible. Any public health actions taken by FDA regarding products involved in Sentinel queries will continue to be communicated through existing channels.

FDA wants to emphasize that the fact that FDA has initiated a query involving a medical product and is reporting findings related to that query does not mean that FDA is suggesting health care practitioners should change their prescribing practices for the medical product or that patients taking the medical product should stop using it. Patients who have questions about the use of an identified medical product should contact their health care practitioners.

The following report contains a description of the request, request specifications, and results from the modular program run(s).

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Overview for Request cder_mpl1p_wp009_nsdp_v01

Request ID: cder_mpl1p_wp009_nsdp_v01

Request Description: This report contains estimates of multiple sclerosis (MS) drug use before, during, and after pregnancies resulting in a live-born delivery, among women in the Sentinel Distributed Database (SDD).

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.0.5, with additional ad hoc programming.

Data Source: Data from January 1, 2001 to August 31, 2017 from 16 Data Partners contributing to the SDD were included in this report. See Appendix A for a list of the dates of available data for each Data Partner. This request was distributed to Data Partners on November 20, 2017.

Study Design: The total number of pregnancies and the number and percentage of pregnancies with multiple sclerosis drug exposure were assessed among women of reproductive age. Results were stratified by exposure during the 183 to 91 and 90 to 1 days prior to pregnancy start, pregnancy trimester, and during the 90 and 91 to 183 days after delivery. Additionally, the results were stratified by maternal age at delivery, and by calendar year of delivery. An age-matched cohort of non-pregnant women was used as a comparator during the same time period in which pregnancy episodes were assessed.

Cohort Eligibility Criteria: Women members in the following age groups were included in the cohort: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 years. Eligible women were required to be enrolled in plans with medical and drug coverage for 484 days before their delivery date and 183 days after their delivery date, with gaps in coverage of up to 45 days allowed.

Women were eligible for the non-pregnant cohort when they had no evidence of a live-birth delivery during their matched comparator's pregnancy time period. Pregnancy episodes are matched within Data Partner, to the first enrollment episode without a live birth that meets all inclusion/exclusion criteria, is the same (integer) age, and where pregnancy index date overlaps the eligible enrollment span.

Pregnancy Episode Creation: A claims-based algorithm was used to identify pregnancies ending in a live birth.[1] This algorithm used International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnosis codes indicative of weeks of gestation, and International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and ICD-10-CM diagnosis codes for pre-term and post-term deliveries, to calculate the length of the pregnancy episode. Codes had to occur within 7 days of a delivery date in the inpatient setting. In absence of pre-/post-term codes, pregnancy duration was set to 273 days. Pregnancies were excluded from the cohort if there was evidence of a prior delivery in the 301 days before the delivery date of interest. Please see Appendix B for a list of ICD-9-CM and ICD-10-CM codes used in the gestational age algorithm, and Appendix C for codes to define live-born delivery using Current Procedural Terminology, Fourth Edition (CPT-4) procedure codes, and ICD-9-CM and ICD-10-CM diagnosis and procedure codes.

Exposure Identification During Pregnancy: Prevalent use during pregnancy of twelve MS drugs were identified as exposures of interest in this request. MS drugs were grouped by the following generic names: dimethyl fumarate, dalfampridine, fingolimod, glatiramer acetate, interferon beta-1a with or without albumin, interferon beta-1b, peginterferon beta-1a, teriflunomide, alemtuzumab, natalizumab, daclizumab, and mitoxantrone. Drugs were defined using National Drug Codes (NDCs) and Healthcare Common Procedure Coding System (HCPCS) codes. Please see Appendix D for a list of HCPCS codes and Appendix E for a list of drug names used to define MS drug exposures.

Sensitivity Analysis: An additional sensitivity analysis investigated MS drug exposure among all women of the ages 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 years, regardless of pregnancy status. No enrollment requirement was enforced for this cohort.

Please see Appendix F for the specifications of parameters used in this request.

Limitations: Algorithms used to define pregnancy start and exposure use are imperfect; thus, it is possible that there may be misclassification. Therefore, data should be interpreted with this limitation in mind.

Notes: Please contact the Sentinel Operations Center Query Fulfillment Team (qf@sentinelsystem.org) for questions and to provide comments/suggestions for future enhancements to this document.

[1]Andrade SE, Davis RL, Cheetham TC, et al. Medication Exposure in Pregnancy Risk Evaluation Program. Matern Child Health J. 2012 Oct;16(7):1349-54. doi: 10.1007/s10995-011-0902-x

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Glossary of Terms for Analyses Using
Cohort Identification and Descriptive Analysis (CIDA) Tool*

Amount Supplied - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing.

Blackout Period - number of days at the beginning of a treatment episode that events are to be ignored. If an event occurs during the blackout period, the episode is excluded.

Care Setting - type of medical encounter or facility where the exposure, event, or condition code was recorded. Possible care settings include: Inpatient Hospital Stay (IP), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA). For laboratory results, possible care settings include: Emergency department (E), Home (H), Inpatient (I), Outpatient (O), or Unknown or Missing (U). Along with the Principal Diagnosis Indicator, forms the Care Setting/PDX parameter.

> **Ambulatory Visit (AV) -** includes visits at outpatient clinics, same-day surgeries, urgent care visits, and other same-day ambulatory hospital encounters, but excludes emergency department encounters.

> **Emergency Department (ED) -** includes ED encounters that become inpatient stays (in which case inpatient stays would be a separate encounter). Excludes urgent care visits.

> **Inpatient Hospital Stay (IP) -** includes all inpatient stays, same-day hospital discharges, hospital transfers, and acute hospital care where the discharge is after the admission date.

> **Non-Acute Institutional Stay (IS) -** includes hospice, skilled nursing facility (SNF), rehab center, nursing home, residential, overnight non-hospital dialysis and other non-hospital stays.

> **Other Ambulatory Visit (OA) -** includes other non overnight AV encounters such as hospice visits, home health visits, skilled nursing facility visits, other non-hospital visits, as well as telemedicine, telephone and email consultations.

Cohort Definition (drug/exposure) - indicates how the cohort will be defined: (1): Cohort includes only the first valid treatment episode during the query period; (2): Cohort includes all valid treatment episodes during the query period; (3): Cohort includes all valid treatment episodes during the query period until an event occurs.

Days Supplied - number of days supplied for all dispensings in qualifying treatment episodes.

Eligible Members - number of members eligible for an incident treatment episode (defined by the drug/exposure and event washout periods) with drug and medical coverage during the query period.

Enrollment Gap - number of days allowed between two consecutive enrollment periods without breaking a "continuously enrolled" sequence.

Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive dispensings bridged by the episode gap.

Episode Gap - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be considered the same treatment episode.

Event Deduplication - specifies how events are counted by the MP algorithm: (0): Counts all occurrences of an HOI during an exposure episode; (1): de-duplicates occurrences of the same HOI code and code type on the same day; (2): de-duplicates occurrences of the same HOI group on the same day (e.g., de-duplicates at the group level).

Exposure Episode Length - number of days after exposure initiation that is considered "exposed time."

Exposure Extension Period - number of days post treatment period in which the outcomes/events are counted for a treatment episode. Extensions days are added after any episode gaps have been bridged.

Lookback Period - number of days wherein a member is required to have evidence of pre-existing condition (diagnosis/procedure/drug dispensing).

Maximum Episode Duration - truncates exposure episodes after a requester-specified number of exposed days. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

Member-Years - sum of all days of enrollment with medical and drug coverage in the query period preceded by an exposure washout period all divided by 365.25.

Minimum Days Supplied - specifies a minimum number of days in length of the days supplied for the episode to be considered.

Minimum Episode Duration - specifies a minimum number of days in length of the episode for it to be considered. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

Monitoring Period - used to define time periods of interest for both sequential analysis and simple cohort characterization requests.

Principal Diagnosis (PDX) - diagnosis or condition established to be chiefly responsible for admission of the patient to the hospital. 'P' = principal diagnosis, 'S' = secondary diagnosis, 'X' = unspecified diagnosis, '.' = blank. Along with the Care Setting values, forms the Caresetting/PDX parameter.

Query Period - period in which the modular program looks for exposures and outcomes of interest.

Treatment Episode Truncation Indicator - indicates whether the exposure episode will be truncated at the occurrence of a requester-specified code.

Washout Period (drug/exposure) - number of days a user is required to have no evidence of prior exposure (drug dispensing/procedure) and continuous drug and medical coverage prior to an incident treatment episode.

Washout Period (event/outcome) - number of days a user is required to have no evidence of a prior event (procedure/diagnosis) and continuous drug and medical coverage prior to an incident treatment episode.

Years at Risk - number of days supplied plus any episode gaps and exposure extension periods all divided by 365.25.

*not all terms may be used in this report

Table 1. Prevalence of Multiple Sclerosis (MS) Drug Use among Women with Live-Birth Deliveries in the Sentinel Distributed Database, by Trimester

Pregnant Cohort	Use in the 183 - 91 Days Pre-pregnancy	Use in the 90 Days Pre-pregnancy	Any Use During Pregnancy	Any Use, 1st Trimester	Any Use, 2nd Trimester	Any Use, 3rd Trimester	Use in the 90 Days Post-pregnancy	Use in the 91 - 183 Days Post-pregnancy
Total Pregnancies	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,203,324 (100.0%%)	2,205,383 (100.0%)	2,205,383 (100.0%)
Drug of Interest								
Any multiple sclerosis drugs	1,407 (0.06%)	1,243 (0.06%)	1,011 (0.05%)	944 (0.04%)	269 (0.01%)	246 (0.01%%)	958 (0.04%)	1,330 (0.06%)
Dalfampridine	9 (0.00%)	10 (0.00%)	6 (0.00%)	6 (0.00%)	1 (0.00%)	0 (0.00%%)	7 (0.00%)	14 (0.00%)
Dimethyl fumarate	58 (0.00%)	54 (0.00%)	51 (0.00%)	45 (0.00%)	9 (0.00%)	11 (0.00%%)	63 (0.00%)	113 (0.01%)
Fingolimod	33 (0.00%)	26 (0.00%)	20 (0.00%)	20 (0.00%)	2 (0.00%)	2 (0.00%%)	30 (0.00%)	60 (0.00%)
Glatiramer acetate	602 (0.03%)	564 (0.03%)	501 (0.02%)	470 (0.02%)	171 (0.01%)	164 (0.01%%)	427 (0.02%)	538 (0.02%)
Interferon beta-1a with or without albumin	502 (0.02%)	421 (0.02%)	307 (0.01%)	283 (0.01%)	61 (0.00%)	51 (0.00%%)	302 (0.01%)	419 (0.02%)
Interferon beta-1b	126 (0.01%)	104 (0.00%)	78 (0.00%)	74 (0.00%)	10 (0.00%)	5 (0.00%%)	72 (0.00%)	104 (0.00%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%%)	2 (0.00%)	6 (0.00%)
Teriflunomide	2 (0.00%)	3 (0.00%)	2 (0.00%)	2 (0.00%)	2 (0.00%)	2 (0.00%%)	3 (0.00%)	7 (0.00%)
Alemtuzumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%%)	0 (0.00%)	1 (0.00%)
Natalizumab	99 (0.00%)	91 (0.00%)	61 (0.00%)	55 (0.00%)	14 (0.00%)	11 (0.00%%)	81 (0.00%)	120 (0.01%)
Daclizumab	1 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	3 (0.00%)	1 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%%)	1 (0.00%)	1 (0.00%)

Table 2. Prevalence of Multiple Sclerosis (MS) Drug Use among Non-Pregnant Cohort in the Sentinel Distributed Database, by Matched Comparator's Trimester

Non-Pregnant Cohort[1,2]	Use in the 183 - 91 Days Pre-pregnancy	Use in the 90 Days Pre-pregnancy	Any Use During Pregnancy	Any Use, 1st Trimester	Any Use, 2nd Trimester	Any Use, 3rd Trimester	Use in the 90 Days Post-pregnancy	Use in the 91 - 183 Days Post-pregnancy
Total of Episodes	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,205,383 (100.0%)	2,203,324 (100.0%%)	2,205,383 (100.0%)	2,205,383 (100.0%)
Drug of Interest								
Any multiple sclerosis drugs	2,673 (0.12%)	2,772 (0.13%)	3,503 (0.16%)	3,000 (0.14%)	3,101 (0.14%)	3,188 (0.14%%)	3,226 (0.15%)	3,273 (0.15%)
Dalfampridine	31 (0.00%)	30 (0.00%)	59 (0.00%)	38 (0.00%)	50 (0.00%)	51 (0.00%%)	53 (0.00%)	60 (0.00%)
Dimethyl fumarate	135 (0.01%)	164 (0.01%)	298 (0.01%)	195 (0.01%)	227 (0.01%)	263 (0.01%%)	279 (0.01%)	296 (0.01%)
Fingolimod	122 (0.01%)	126 (0.01%)	212 (0.01%)	158 (0.01%)	175 (0.01%)	195 (0.01%%)	200 (0.01%)	224 (0.01%)
Glatiramer acetate	898 (0.04%)	931 (0.04%)	1,214 (0.06%)	979 (0.04%)	1,023 (0.05%)	1,038 (0.05%%)	1,050 (0.05%)	1,070 (0.05%)
Interferon beta-1a with or without albumin	1,086 (0.05%)	1,089 (0.05%)	1,349 (0.06%)	1,171 (0.05%)	1,175 (0.05%)	1,158 (0.05%%)	1,144 (0.05%)	1,135 (0.05%)
Interferon beta-1b	260 (0.01%)	272 (0.01%)	353 (0.02%)	289 (0.01%)	294 (0.01%)	296 (0.01%%)	278 (0.01%)	267 (0.01%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	7 (0.00%)	0 (0.00%)	4 (0.00%)	7 (0.00%%)	10 (0.00%)	13 (0.00%)
Teriflunomide	7 (0.00%)	12 (0.00%)	30 (0.00%)	18 (0.00%)	21 (0.00%)	27 (0.00%%)	28 (0.00%)	33 (0.00%)
Alemtuzumab	0 (0.00%)	0 (0.00%)	2 (0.00%)	1 (0.00%)	1 (0.00%)	0 (0.00%%)	3 (0.00%)	2 (0.00%)
Natalizumab	217 (0.01%)	237 (0.01%)	331 (0.02%)	256 (0.01%)	254 (0.01%)	278 (0.01%%)	293 (0.01%)	304 (0.01%)
Daclizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	13 (0.00%)	15 (0.00%)	23 (0.00%)	17 (0.00%)	17 (0.00%)	10 (0.00%%)	10 (0.00%)	9 (0.00%)

[1]Trimester time periods in the non-pregnant cohort are determined by the corresponding trimester period in each woman's matched pregnant comparator.

[2]Women in non-pregnant cohort may be pregnant at some point during the request period. Women were eligible for the non-pregnant cohort if they had no evidence of a live-born delivery during the time period of their matched comparator's pregnancy.

Table 3. Prevalence of Multiple Sclerosis (MS) Drug Use among Women with Live-Birth Deliveries in the Sentinel Distributed Database, by Maternal Age at Delivery

Pregnant Cohort	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
Number of Pregnancies	116,609 (100.0%)	289,734 (100.0%)	547,521 (100.0%)	743,631 (100.0%)	406,602 (100.0%)	92,907 (100.0%)	8,379 (100.0%)
Drug of Interest							
Any multiple sclerosis drugs	7 (0.01%)	54 (0.02%)	211 (0.04%)	384 (0.05%)	273 (0.07%)	69 (0.07%)	13 (0.16%)
Dalfampridine	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (0.00%)	2 (0.00%)	1 (0.00%)	1 (0.01%)
Dimethyl fumarate	1 (0.00%)	0 (0.00%)	9 (0.00%)	20 (0.00%)	15 (0.00%)	6 (0.01%)	0 (0.00%)
Fingolimod	0 (0.00%)	2 (0.00%)	2 (0.00%)	11 (0.00%)	2 (0.00%)	1 (0.00%)	2 (0.02%)
Glatiramer acetate	0 (0.00%)	23 (0.01%)	98 (0.02%)	190 (0.03%)	153 (0.04%)	32 (0.03%)	5 (0.06%)
Interferon beta-1a with or without albumin	2 (0.00%)	25 (0.01%)	69 (0.01%)	112 (0.02%)	73 (0.02%)	21 (0.02%)	5 (0.06%)
Interferon beta-1b	3 (0.00%)	3 (0.00%)	19 (0.00%)	32 (0.00%)	15 (0.00%)	6 (0.01%)	0 (0.00%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Teriflunomide	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	1 (0.00%)	0 (0.00%)	0 (0.00%)
Alemtuzumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Natalizumab	1 (0.00%)	3 (0.00%)	16 (0.00%)	22 (0.00%)	14 (0.00%)	4 (0.00%)	1 (0.01%)
Daclizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Table 4. Prevalence of Multiple Sclerosis (MS) Drug Use among Non-Pregnant Cohort in the Sentinel Distributed Database, by Age at Matched Comparator's Delivery

Non-Pregnant Cohort[1,2]	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
Number of Episodes	116,609 (100.0%)	289,734 (100.0%)	547,521 (100.0%)	743,631 (100.0%)	406,602 (100.0%)	92,907 (100.0%)	8,379 (100.0%)
Drug of Interest							
Any multiple sclerosis drugs	12 (0.01%)	133 (0.05%)	642 (0.12%)	1,414 (0.19%)	957 (0.24%)	314 (0.34%)	31 (0.37%)
Dalfampridine	0 (0.00%)	2 (0.00%)	4 (0.00%)	18 (0.00%)	24 (0.01%)	10 (0.01%)	1 (0.01%)
Dimethyl fumarate	0 (0.00%)	7 (0.00%)	58 (0.01%)	134 (0.02%)	68 (0.02%)	30 (0.03%)	1 (0.01%)
Fingolimod	1 (0.00%)	4 (0.00%)	37 (0.01%)	94 (0.01%)	64 (0.02%)	10 (0.01%)	2 (0.02%)
Glatiramer acetate	1 (0.00%)	31 (0.01%)	225 (0.04%)	502 (0.07%)	336 (0.08%)	111 (0.12%)	8 (0.10%)
Interferon beta-1a with or without albumin	6 (0.01%)	68 (0.02%)	254 (0.05%)	514 (0.07%)	362 (0.09%)	129 (0.14%)	16 (0.19%)
Interferon beta-1b	2 (0.00%)	14 (0.00%)	66 (0.01%)	146 (0.02%)	94 (0.02%)	28 (0.03%)	3 (0.04%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	0 (0.00%)	3 (0.00%)	4 (0.00%)	0 (0.00%)	0 (0.00%)
Teriflunomide	0 (0.00%)	1 (0.00%)	3 (0.00%)	10 (0.00%)	12 (0.00%)	4 (0.00%)	0 (0.00%)
Alemtuzumab	0 (0.00%)	1 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)
Natalizumab	2 (0.00%)	16 (0.01%)	54 (0.01%)	141 (0.02%)	93 (0.02%)	24 (0.03%)	1 (0.01%)
Daclizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	0 (0.00%)	7 (0.00%)	6 (0.00%)	5 (0.00%)	4 (0.00%)	1 (0.00%)	0 (0.00%)

[1]Age at delivery for the non-pregnant cohort is defined as age at the time of each woman's matched pregnant comparator's live-birth delivery date. Both matched women should be the same (integer) age at the time of the pregnant woman's delivery.

[2]Women in non-pregnant cohort may be pregnant at some point during the request period. Women were eligible for the non-pregnant cohort if they had no evidence of a live-born delivery during the time period of their matched comparator's pregnancy.

Table 5. Prevalence of Multiple Sclerosis (MS) Drug Use among Women with Live-Birth Deliveries in the Sentinel Distributed Database, by Calendar Year of Delivery

Pregnant Cohort	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of Pregnancies	36,320 (100.0%)	53,949 (100.0%)	53,926 (100.0%)	53,408 (100.0%)	55,750 (100.0%)	58,082 (100.0%)	102,831 (100.0%)	124,258 (100.0%)	199,623 (100.0%)	225,349 (100.0%)	217,112 (100.0%)	212,535 (100.0%)	215,030 (100.0%)	220,479 (100.0%)	222,415 (100.0%)	150,982 (100.0%)	3,334 (100.0%)
Drug of Interest																	
Any multiple sclerosis drugs	5 (0.01%)	7 (0.01%)	15 (0.03%)	12 (0.02%)	19 (0.03%)	18 (0.03%)	47 (0.05%)	72 (0.06%)	71 (0.04%)	113 (0.05%)	110 (0.05%)	113 (0.05%)	104 (0.05%)	110 (0.05%)	113 (0.05%)	80 (0.05%)	2 (0.06%)
Dalfampridine	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	2 (0.00%)	0 (0.00%)	2 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)
Dimethyl fumarate	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	16 (0.01%)	16 (0.01%)	18 (0.01%)	0 (0.00%)
Fingolimod	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	4 (0.00%)	2 (0.00%)	4 (0.00%)	6 (0.00%)	3 (0.00%)	0 (0.00%)
Glatiramer acetate	1 (0.00%)	0 (0.00%)	6 (0.01%)	9 (0.02%)	12 (0.02%)	8 (0.01%)	18 (0.02%)	33 (0.03%)	39 (0.02%)	57 (0.03%)	51 (0.02%)	49 (0.02%)	55 (0.03%)	62 (0.03%)	58 (0.03%)	43 (0.03%)	0 (0.00%)
Interferon beta-1a with or without albumin	4 (0.01%)	6 (0.01%)	7 (0.01%)	3 (0.01%)	6 (0.01%)	8 (0.01%)	24 (0.02%)	29 (0.02%)	24 (0.01%)	42 (0.02%)	39 (0.02%)	41 (0.02%)	27 (0.01%)	20 (0.01%)	18 (0.01%)	8 (0.01%)	1 (0.03%)
Interferon beta-1b	0 (0.00%)	1 (0.00%)	2 (0.00%)	0 (0.00%)	1 (0.00%)	2 (0.00%)	5 (0.00%)	8 (0.01%)	3 (0.00%)	11 (0.00%)	10 (0.00%)	13 (0.01%)	13 (0.01%)	3 (0.00%)	3 (0.00%)	2 (0.00%)	1 (0.03%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Teriflunomide	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (0.00%)	0 (0.00%)
Alemtuzumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Natalizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (0.00%)	6 (0.00%)	4 (0.00%)	9 (0.00%)	6 (0.00%)	8 (0.00%)	6 (0.00%)	13 (0.01%)	7 (0.00%)	0 (0.00%)
Daclizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Table 6. Prevalence of Multiple Sclerosis (MS) Drug Use among Non-Pregnant Cohort in the Sentinel Distributed Database, by Calendar Year of Matched Comparator's Delivery

Non-Pregnant Cohort[1,2]	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of Episodes	36,320 (100.0%)	53,949 (100.0%)	53,926 (100.0%)	53,408 (100.0%)	55,750 (100.0%)	58,082 (100.0%)	102,831 (100.0%)	124,258 (100.0%)	199,623 (100.0%)	225,349 (100.0%)	217,112 (100.0%)	212,535 (100.0%)	215,030 (100.0%)	220,479 (100.0%)	222,415 (100.0%)	150,982 (100.0%)	3,334 (100.0%)
Drug of Interest																	
Any multiple sclerosis drugs	36 (0.10%)	75 (0.14%)	84 (0.16%)	89 (0.17%)	75 (0.13%)	83 (0.14%)	135 (0.13%)	206 (0.17%)	328 (0.16%)	333 (0.15%)	344 (0.16%)	356 (0.17%)	367 (0.17%)	377 (0.17%)	357 (0.16%)	254 (0.17%)	4 (0.12%)
Dalfampridine	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	6 (0.00%)	11 (0.01%)	7 (0.00%)	10 (0.00%)	9 (0.00%)	6 (0.00%)	10 (0.01%)	0 (0.00%)
Dimethyl fumarate	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	42 (0.02%)	92 (0.04%)	92 (0.04%)	70 (0.05%)	2 (0.06%)
Fingolimod	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	16 (0.01%)	26 (0.01%)	37 (0.02%)	40 (0.02%)	47 (0.02%)	46 (0.03%)	0 (0.00%)
Glatiramer acetate	10 (0.03%)	24 (0.04%)	27 (0.05%)	29 (0.05%)	27 (0.05%)	39 (0.07%)	41 (0.04%)	72 (0.06%)	126 (0.06%)	137 (0.06%)	145 (0.07%)	120 (0.06%)	125 (0.06%)	118 (0.05%)	104 (0.05%)	68 (0.05%)	2 (0.06%)
Interferon beta-1a with or without albumin	14 (0.04%)	36 (0.07%)	44 (0.08%)	51 (0.10%)	42 (0.08%)	38 (0.07%)	73 (0.07%)	105 (0.08%)	152 (0.08%)	145 (0.06%)	146 (0.07%)	155 (0.07%)	123 (0.06%)	108 (0.05%)	76 (0.03%)	41 (0.03%)	0 (0.00%)
Interferon beta-1b	12 (0.03%)	18 (0.03%)	14 (0.03%)	16 (0.03%)	10 (0.02%)	11 (0.02%)	24 (0.02%)	34 (0.03%)	50 (0.03%)	34 (0.02%)	34 (0.02%)	38 (0.02%)	22 (0.01%)	13 (0.01%)	14 (0.01%)	9 (0.01%)	0 (0.00%)
Peginterferon beta-1a	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	4 (0.00%)	3 (0.00%)	0 (0.00%)
Teriflunomide	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	9 (0.00%)	8 (0.00%)	7 (0.00%)	6 (0.00%)	0 (0.00%)
Alemtuzumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)
Natalizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)	9 (0.01%)	8 (0.01%)	25 (0.01%)	36 (0.02%)	37 (0.02%)	36 (0.02%)	56 (0.03%)	46 (0.02%)	52 (0.02%)	25 (0.02%)	0 (0.00%)
Daclizumab	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Mitoxantrone	1 (0.00%)	4 (0.01%)	3 (0.01%)	4 (0.01%)	0 (0.00%)	1 (0.00%)	4 (0.00%)	1 (0.00%)	1 (0.00%)	1 (0.00%)	0 (0.00%)	1 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)	1 (0.00%)	0 (0.00%)

[1] Calendar year of delivery for the non-pregnant cohort is defined as the year of each woman's matched pregnant comparator's live-birth delivery date.

[2] Women in non-pregnant cohort may be pregnant at some point during the request period. Women were eligible for the non-pregnant cohort if they had no evidence of a live-born delivery during the time period of their matched comparator's pregnancy.

Table 7. Sensitivity Analysis of the Total Number of Eligible Pregnant Women, Pregnancy Episodes, and Women of Reproductive age with Multiple Sclerosis Drug Use, in the Sentinel Distributed Database, from January 1, 2001 to August 31, 2017

Characteristics	Number
Total unique women with a pregnancy episode	4,343,347
Total unique pregnancy episodes	5,345,592
Total women of reproductive age exposed to any multiple sclerosis drug	81,066
Dalfampridine	4,184
Dimethyl fumarate	11,465
Fingolimod	6,997
Glatiramer acetate	32,656
Interferon beta-1a with or without albumin	31,481
Interferon beta-1b	8,262
Peginterferon beta-1a	627
Teriflunomide	2,466
Alemtuzumab	355
Natalizumab	9,706
Daclizumab	39
Mitoxantrone	795

Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date (November 20, 2017)

Data Partner ID	Start Date[1]	End Date[1]
DP001	1/1/2008	3/31/2017
DP002	1/1/2012	6/30/2016
DP003	1/1/2006	4/30/2017
DP004	1/1/2000	7/31/2017
DP005	1/1/2000	6/30/2016
DP006	1/1/2000	1/31/2017
DP007	1/1/2000	5/31/2015
DP008	6/1/2007	10/31/2014
DP009	1/1/2000	1/31/2017
DP010	1/1/2000	3/31/2017
DP011	1/1/2005	7/31/2017
DP012	1/1/2000	3/31/2017
DP013	1/1/2000	7/31/2017
DP014	1/1/2004	8/31/2017
DP015	1/1/2008	12/31/2016
DP016	1/1/2000	12/31/2015

[1]Start Date and End Date are first calculated by individual table (enrollment, dispensing, etc). End Date is defined as the greatest year-month with a record count that is within 80% of the previous year-month. After Start Date and End Dates are calculated by individual tables, the overall End Date is the minimum of all the table End Dates.

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define the Gestational Age Algorithm in this Request

Code	Code Type	Duration (Days)	Description	Priority Group 1	Priority Group 2	Priority
O48.1	ICD-10-CM	294	Prolonged pregnancy	0	1	1
P08.22	ICD-10-CM	294	Prolonged gestation of newborn	0	1	1
Z3A.49	ICD-10-CM	301	Greater than 42 weeks gestation of pregnancy	1	0	1
O48.0	ICD-10-CM	287	Post-term pregnancy	0	1	2
P08.21	ICD-10-CM	287	Post-term newborn	0	1	2
Z3A.42	ICD-10-CM	298	42 weeks gestation of pregnancy	1	0	2
Z3A.41	ICD-10-CM	291	41 weeks gestation of pregnancy	1	0	3
Z3A.40	ICD-10-CM	284	40 weeks gestation of pregnancy	1	0	4
Z3A.39	ICD-10-CM	277	39 weeks gestation of pregnancy	1	0	5
Z3A.38	ICD-10-CM	270	38 weeks gestation of pregnancy	1	0	6
Z3A.37	ICD-10-CM	263	37 weeks gestation of pregnancy	1	0	7
P07.39	ICD-10-CM	256	Preterm newborn, gestational age 36 completed weeks	1	0	8
Z3A.36	ICD-10-CM	256	36 weeks gestation of pregnancy	1	0	8
P07.38	ICD-10-CM	249	Preterm newborn, gestational age 35 completed weeks	1	0	9
Z3A.35	ICD-10-CM	249	35 weeks gestation of pregnancy	1	0	9
P07.37	ICD-10-CM	242	Preterm newborn, gestational age 34 completed weeks	1	0	10
Z3A.34	ICD-10-CM	242	34 weeks gestation of pregnancy	1	0	10
P07.36	ICD-10-CM	235	Preterm newborn, gestational age 33 completed weeks	1	0	11
Z3A.33	ICD-10-CM	235	33 weeks gestation of pregnancy	1	0	11
P07.35	ICD-10-CM	228	Preterm newborn, gestational age 32 completed weeks	1	0	12
Z3A.32	ICD-10-CM	228	32 weeks gestation of pregnancy	1	0	12
P07.34	ICD-10-CM	221	Preterm newborn, gestational age 31 completed weeks	1	0	13
Z3A.31	ICD-10-CM	221	31 weeks gestation of pregnancy	1	0	13
P07.33	ICD-10-CM	214	Preterm newborn, gestational age 30 completed weeks	1	0	14
Z3A.30	ICD-10-CM	214	30 weeks gestation of pregnancy	1	0	14
P07.32	ICD-10-CM	207	Preterm newborn, gestational age 29 completed weeks	1	0	15
Z3A.29	ICD-10-CM	207	29 weeks gestation of pregnancy	1	0	15
P07.31	ICD-10-CM	200	Preterm newborn, gestational age 28 completed weeks	1	0	16
Z3A.28	ICD-10-CM	200	28 weeks gestation of pregnancy	1	0	16
P07.26	ICD-10-CM	193	Extreme immaturity of newborn, gestational age 27 completed weeks	1	0	17
Z3A.27	ICD-10-CM	193	27 weeks gestation of pregnancy	1	0	17
P07.25	ICD-10-CM	186	Extreme immaturity of newborn, gestational age 26 completed weeks	1	0	18
Z3A.26	ICD-10-CM	186	26 weeks gestation of pregnancy	1	0	18
P07.24	ICD-10-CM	179	Extreme immaturity of newborn, gestational age 25 completed weeks	1	0	19
Z3A.25	ICD-10-CM	179	25 weeks gestation of pregnancy	1	0	19
P07.23	ICD-10-CM	172	Extreme immaturity of newborn, gestational age 24 completed weeks	1	0	20
Z3A.24	ICD-10-CM	172	24 weeks gestation of pregnancy	1	0	20
P07.22	ICD-10-CM	165	Extreme immaturity of newborn, gestational age 23 completed weeks	1	0	21
Z3A.23	ICD-10-CM	165	23 weeks gestation of pregnancy	1	0	21
P07.21	ICD-10-CM	158	Extreme immaturity of newborn, gestational age less than 23 completed weeks	1	0	22

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define the Gestational Age Algorithm in this Request

Code	Code Type	Duration (Days)	Description	Priority Group 1	Priority Group 2	Priority
Z3A.22	ICD-10-CM	158	22 weeks gestation of pregnancy	1	0	22
Z3A.21	ICD-10-CM	151	21 weeks gestation of pregnancy	1	0	23
Z3A.20	ICD-10-CM	144	20 weeks gestation of pregnancy	1	0	24
P07.20	ICD-10-CM	196	Extreme immaturity of newborn, unspecified weeks of gestation	1	0	25
O60.13X0	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X1	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X2	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X3	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X4	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X5	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.13X9	ICD-10-CM	245	Preterm labor second trimester with preterm delivery third trimester	1	0	26
O60.14X0	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X1	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X2	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X3	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X4	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X5	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
O60.14X9	ICD-10-CM	245	Preterm labor third trimester with preterm delivery third trimester	1	0	26
P07.30	ICD-10-CM	245	Preterm newborn, unspecified weeks of gestation	1	0	26
O60.12X0	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X1	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X2	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X3	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X4	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X5	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
O60.12X9	ICD-10-CM	168	Preterm labor second trimester with preterm delivery second trimester	1	0	27
645.2	ICD-9-CM	294	Prolonged pregnancy	0	1	28
645.21	ICD-9-CM	294	Prolonged pregnancy	0	1	28
645.23	ICD-9-CM	294	Prolonged pregnancy	0	1	28
765.28	ICD-9-CM	252	35-36 completed weeks of gestation	1	0	28
766.22	ICD-9-CM	294	Prolonged gestation of infant	0	1	28
645.1	ICD-9-CM	287	Post term pregnancy	0	1	29
645.11	ICD-9-CM	287	Post term pregnancy	0	1	29
645.13	ICD-9-CM	287	Post term pregnancy	0	1	29
765.27	ICD-9-CM	238	33-34 completed weeks of gestation	1	0	29
766.21	ICD-9-CM	287	Post-term infant	0	1	29
765.26	ICD-9-CM	224	31-32 completed weeks of gestation	1	0	30
765.25	ICD-9-CM	210	29-30 completed weeks of gestation	1	0	31
765.24	ICD-9-CM	196	27-28 completed weeks of gestation	1	0	32
765.23	ICD-9-CM	182	25-26 completed weeks of gestation	1	0	33
765.21	ICD-9-CM	168	Less than 24 completed weeks of gestation	1	0	34

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define the Gestational Age Algorithm in this Request

Code	Code Type	Duration (Days)	Description	Priority Group 1	Priority Group 2	Priority
765.22	ICD-9-CM	168	24 completed weeks of gestation	1	0	34
765.00	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.01	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.02	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.03	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.04	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.05	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.06	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.07	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.08	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
765.09	ICD-9-CM	196	Extreme immaturity, by weight	1	0	35
644.21	ICD-9-CM	245	Early onset of delivery, delivered, with or without mention of antepartum condition	1	0	36
765.1	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.11	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.12	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.13	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.14	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.15	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.16	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.17	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.18	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.19	ICD-9-CM	245	Other preterm infants, by weight	1	0	36
765.2	ICD-9-CM	245	Unspecified weeks of gestation	1	0	36

Appendix C. List of Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes, International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes, and International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) Diagnosis and Procedure Codes Used to Define Live-Born Deliveries in this Request

Code	Code Type	Code Category	Description
594	CPT-4	Procedure	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care
59409	CPT-4	Procedure	Vaginal delivery only (with or without episiotomy and/or forceps)
5941	CPT-4	Procedure	Vaginal delivery only (with or without episiotomy and/or forceps); including postpartum
5951	CPT-4	Procedure	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care
59514	CPT-4	Procedure	Cesarean delivery only
59515	CPT-4	Procedure	Cesarean delivery only; including postpartum care
5961	CPT-4	Procedure	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery
59612	CPT-4	Procedure	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps)
59614	CPT-4	Procedure	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps); including postpartum care
59618	CPT-4	Procedure	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery
5962	CPT-4	Procedure	Cesarean delivery only, following attempted vaginal delivery after previous cesarean
59622	CPT-4	Procedure	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery; including postpartum care
650	ICD-9-CM	Diagnosis	Normal delivery
763	ICD-9-CM	Diagnosis	Fetus or newborn affected by breech delivery and extraction
763.2	ICD-9-CM	Diagnosis	Fetus or newborn affected by forceps delivery
763.3	ICD-9-CM	Diagnosis	Fetus or newborn affected by delivery by vacuum extractor
763.4	ICD-9-CM	Diagnosis	Fetus or newborn affected by cesarean delivery
763.6	ICD-9-CM	Diagnosis	Fetus or newborn affected by precipitate delivery
768	ICD-9-CM	Diagnosis	Fetal death from asphyxia or anoxia before onset of labor or at unspecified time
768.1	ICD-9-CM	Diagnosis	Fetal death from asphyxia or anoxia during labor
641.01	ICD-9-CM	Diagnosis	Placenta previa without hemorrhage, with delivery
641.11	ICD-9-CM	Diagnosis	Hemorrhage from placenta previa, with delivery
641.21	ICD-9-CM	Diagnosis	Premature separation of placenta, with delivery
641.31	ICD-9-CM	Diagnosis	Antepartum hemorrhage associated with coagulation defects, with delivery
641.81	ICD-9-CM	Diagnosis	Other antepartum hemorrhage, with delivery
641.91	ICD-9-CM	Diagnosis	Unspecified antepartum hemorrhage, with delivery
642.01	ICD-9-CM	Diagnosis	Benign essential hypertension with delivery
642.02	ICD-9-CM	Diagnosis	Benign essential hypertension, with delivery, with current postpartum complication
642.11	ICD-9-CM	Diagnosis	Hypertension secondary to renal disease, with delivery
642.12	ICD-9-CM	Diagnosis	Hypertension secondary to renal disease, with delivery, with current postpartum complication
642.21	ICD-9-CM	Diagnosis	Other pre-existing hypertension, with delivery
642.22	ICD-9-CM	Diagnosis	Other pre-existing hypertension, with delivery, with current postpartum complication
642.31	ICD-9-CM	Diagnosis	Transient hypertension of pregnancy, with delivery

Appendix C. List of Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes, International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes, and International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) Diagnosis and Procedure Codes Used to Define Live-Born Deliveries in this Request

Code	Code Type	Code Category	Description
642.32	ICD-9-CM	Diagnosis	Transient hypertension of pregnancy, with delivery, with current postpartum complication
642.41	ICD-9-CM	Diagnosis	Mild or unspecified pre-eclampsia, with delivery
642.42	ICD-9-CM	Diagnosis	Mild or unspecified pre-eclampsia, with delivery, with current postpartum complication
642.51	ICD-9-CM	Diagnosis	Severe pre-eclampsia, with delivery
642.52	ICD-9-CM	Diagnosis	Severe pre-eclampsia, with delivery, with current postpartum complication
642.61	ICD-9-CM	Diagnosis	Eclampsia, with delivery
642.62	ICD-9-CM	Diagnosis	Eclampsia, with delivery, with current postpartum complication
642.71	ICD-9-CM	Diagnosis	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery
642.72	ICD-9-CM	Diagnosis	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery, with current postpartum complication
642.91	ICD-9-CM	Diagnosis	Unspecified hypertension, with delivery
642.92	ICD-9-CM	Diagnosis	Unspecified hypertension, with delivery, with current postpartum complication
643.01	ICD-9-CM	Diagnosis	Mild hyperemesis gravidarum, delivered
643.11	ICD-9-CM	Diagnosis	Hyperemesis gravidarum with metabolic disturbance, delivered
643.21	ICD-9-CM	Diagnosis	Late vomiting of pregnancy, delivered
643.81	ICD-9-CM	Diagnosis	Other vomiting complicating pregnancy, delivered
643.91	ICD-9-CM	Diagnosis	Unspecified vomiting of pregnancy, delivered
644.21	ICD-9-CM	Diagnosis	Early onset of delivery, delivered, with or without mention of antepartum condition
645.01	ICD-9-CM	Diagnosis	Prolonged pregnancy, with delivery
645.11	ICD-9-CM	Diagnosis	Post term pregnancy, delivered, with or without mention of antepartum condition
645.21	ICD-9-CM	Diagnosis	Prolonged pregnancy, delivered, with or without mention of antepartum condition
645.22	ICD-9-CM	Diagnosis	
646.01	ICD-9-CM	Diagnosis	Papyraceous fetus, delivered, with or without mention of antepartum condition
646.11	ICD-9-CM	Diagnosis	Edema or excessive weight gain in pregnancy, with delivery, with or without mention of antepartum complication
646.12	ICD-9-CM	Diagnosis	Edema or excessive weight gain in pregnancy, with delivery, with current postpartum complication
646.21	ICD-9-CM	Diagnosis	Unspecified renal disease in pregnancy, with delivery
646.22	ICD-9-CM	Diagnosis	Unspecified renal disease in pregnancy, with delivery, with current postpartum complication
646.31	ICD-9-CM	Diagnosis	Pregnancy complication, recurrent pregnancy loss, with or without mention of antepartum condition
646.41	ICD-9-CM	Diagnosis	Peripheral neuritis in pregnancy, with delivery
646.42	ICD-9-CM	Diagnosis	Peripheral neuritis in pregnancy, with delivery, with current postpartum complication
646.51	ICD-9-CM	Diagnosis	Asymptomatic bacteriuria in pregnancy, with delivery
646.52	ICD-9-CM	Diagnosis	Asymptomatic bacteriuria in pregnancy, with delivery, with current postpartum complication
646.61	ICD-9-CM	Diagnosis	Infections of genitourinary tract in pregnancy, with delivery

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Code	Code Type	Code Category	Description
646.62	ICD-9-CM	Diagnosis	Infections of genitourinary tract in pregnancy, with delivery, with current postpartum complication
646.71	ICD-9-CM	Diagnosis	Liver and biliary tract disorders in pregnancy, delivered, with or without mention of antepartum condition
646.81	ICD-9-CM	Diagnosis	Other specified complication of pregnancy, with delivery
646.82	ICD-9-CM	Diagnosis	Other specified complications of pregnancy, with delivery, with current postpartum complication
646.91	ICD-9-CM	Diagnosis	Unspecified complication of pregnancy, with delivery
647.01	ICD-9-CM	Diagnosis	Maternal syphilis, complicating pregnancy, with delivery
647.02	ICD-9-CM	Diagnosis	Maternal syphilis, complicating pregnancy, with delivery, with current postpartum complication
647.11	ICD-9-CM	Diagnosis	Maternal gonorrhea with delivery
647.12	ICD-9-CM	Diagnosis	Maternal gonorrhea, with delivery, with current postpartum complication
647.21	ICD-9-CM	Diagnosis	Other maternal venereal diseases with delivery
647.22	ICD-9-CM	Diagnosis	Other maternal venereal diseases with delivery, with current postpartum complication
647.31	ICD-9-CM	Diagnosis	Maternal tuberculosis with delivery
647.32	ICD-9-CM	Diagnosis	Maternal tuberculosis with delivery, with current postpartum complication
647.41	ICD-9-CM	Diagnosis	Maternal malaria with delivery
647.42	ICD-9-CM	Diagnosis	Maternal malaria with delivery, with current postpartum complication
647.51	ICD-9-CM	Diagnosis	Maternal rubella with delivery
647.52	ICD-9-CM	Diagnosis	Maternal rubella with delivery, with current postpartum complication
647.61	ICD-9-CM	Diagnosis	Other maternal viral disease with delivery
647.62	ICD-9-CM	Diagnosis	Other maternal viral disease with delivery, with current postpartum complication
647.81	ICD-9-CM	Diagnosis	Other specified maternal infectious and parasitic disease with delivery
647.82	ICD-9-CM	Diagnosis	Other specified maternal infectious and parasitic disease with delivery, with current postpartum complication
647.91	ICD-9-CM	Diagnosis	Unspecified maternal infection or infestation with delivery
647.92	ICD-9-CM	Diagnosis	Unspecified maternal infection or infestation with delivery, with current postpartum complication
648.01	ICD-9-CM	Diagnosis	Maternal diabetes mellitus with delivery
648.02	ICD-9-CM	Diagnosis	Maternal diabetes mellitus with delivery, with current postpartum complication
648.11	ICD-9-CM	Diagnosis	Maternal thyroid dysfunction with delivery, with or without mention of antepartum condition
648.12	ICD-9-CM	Diagnosis	Maternal thyroid dysfunction with delivery, with current postpartum complication
648.21	ICD-9-CM	Diagnosis	Maternal anemia, with delivery
648.22	ICD-9-CM	Diagnosis	Maternal anemia with delivery, with current postpartum complication
648.31	ICD-9-CM	Diagnosis	Maternal drug dependence, with delivery
648.32	ICD-9-CM	Diagnosis	Maternal drug dependence, with delivery, with current postpartum complication
648.41	ICD-9-CM	Diagnosis	Maternal mental disorders, with delivery
648.42	ICD-9-CM	Diagnosis	Maternal mental disorders, with delivery, with current postpartum complication

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Code	Code Type	Code Category	Description
648.51	ICD-9-CM	Diagnosis	Maternal congenital cardiovascular disorders, with delivery
648.52	ICD-9-CM	Diagnosis	Maternal congenital cardiovascular disorders, with delivery, with current postpartum complication
648.61	ICD-9-CM	Diagnosis	Other maternal cardiovascular diseases, with delivery
648.62	ICD-9-CM	Diagnosis	Other maternal cardiovascular diseases, with delivery, with current postpartum complication
648.71	ICD-9-CM	Diagnosis	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery
648.72	ICD-9-CM	Diagnosis	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery, with current postpartum complication
648.81	ICD-9-CM	Diagnosis	Abnormal maternal glucose tolerance, with delivery
648.82	ICD-9-CM	Diagnosis	Abnormal maternal glucose tolerance, with delivery, with current postpartum complication
648.91	ICD-9-CM	Diagnosis	Other current maternal conditions classifiable elsewhere, with delivery
648.92	ICD-9-CM	Diagnosis	Other current maternal conditions classifiable elsewhere, with delivery, with current postpartum complication
649.01	ICD-9-CM	Diagnosis	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
649.02	ICD-9-CM	Diagnosis	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
649.11	ICD-9-CM	Diagnosis	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
649.12	ICD-9-CM	Diagnosis	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
649.21	ICD-9-CM	Diagnosis	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
649.22	ICD-9-CM	Diagnosis	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
649.31	ICD-9-CM	Diagnosis	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
649.32	ICD-9-CM	Diagnosis	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
649.41	ICD-9-CM	Diagnosis	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
649.42	ICD-9-CM	Diagnosis	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
649.51	ICD-9-CM	Diagnosis	Spotting complicating pregnancy, delivered, with or without mention of antepartum condition
649.61	ICD-9-CM	Diagnosis	Uterine size date discrepancy, delivered, with or without mention of antepartum condition
649.62	ICD-9-CM	Diagnosis	Uterine size date discrepancy, delivered, with mention of postpartum complication

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Code	Code Type	Code Category	Description
649.71	ICD-9-CM	Diagnosis	Cervical shortening, delivered, with or without mention of antepartum condition
649.81	ICD-9-CM	Diagnosis	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
649.82	ICD-9-CM	Diagnosis	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
651.01	ICD-9-CM	Diagnosis	Twin pregnancy, delivered
651.11	ICD-9-CM	Diagnosis	Triplet pregnancy, delivered
651.21	ICD-9-CM	Diagnosis	Quadruplet pregnancy, delivered
651.31	ICD-9-CM	Diagnosis	Twin pregnancy with fetal loss and retention of one fetus, delivered
651.41	ICD-9-CM	Diagnosis	Triplet pregnancy with fetal loss and retention of one or more, delivered
651.51	ICD-9-CM	Diagnosis	Quadruplet pregnancy with fetal loss and retention of one or more, delivered
651.61	ICD-9-CM	Diagnosis	Other multiple pregnancy with fetal loss and retention of one or more fetus(es), delivered
651.71	ICD-9-CM	Diagnosis	Multiple gestation following (elective) fetal reduction, delivered, with or without mention of antepartum condition
651.81	ICD-9-CM	Diagnosis	Other specified multiple gestation, delivered
651.91	ICD-9-CM	Diagnosis	Unspecified multiple gestation, delivered
652.01	ICD-9-CM	Diagnosis	Unstable lie of fetus, delivered
652.11	ICD-9-CM	Diagnosis	Breech or other malpresentation successfully converted to cephalic presentation, delivered
652.21	ICD-9-CM	Diagnosis	Breech presentation without mention of version, delivered
652.31	ICD-9-CM	Diagnosis	Transverse or oblique fetal presentation, delivered
652.41	ICD-9-CM	Diagnosis	Fetal face or brow presentation, delivered
652.51	ICD-9-CM	Diagnosis	High fetal head at term, delivered
652.61	ICD-9-CM	Diagnosis	Multiple gestation with malpresentation of one fetus or more, delivered
652.71	ICD-9-CM	Diagnosis	Prolapsed arm of fetus, delivered
652.81	ICD-9-CM	Diagnosis	Other specified malposition or malpresentation of fetus, delivered
652.91	ICD-9-CM	Diagnosis	Unspecified malposition or malpresentation of fetus, delivered
653.01	ICD-9-CM	Diagnosis	Major abnormality of bony pelvis, not further specified, delivered
653.11	ICD-9-CM	Diagnosis	Generally contracted pelvis in pregnancy, delivered
653.21	ICD-9-CM	Diagnosis	Inlet contraction of pelvis in pregnancy, delivered
653.31	ICD-9-CM	Diagnosis	Outlet contraction of pelvis in pregnancy, delivered
653.41	ICD-9-CM	Diagnosis	Fetopelvic disproportion, delivered
653.51	ICD-9-CM	Diagnosis	Unusually large fetus causing disproportion, delivered
653.61	ICD-9-CM	Diagnosis	Hydrocephalic fetus causing disproportion, delivered
653.71	ICD-9-CM	Diagnosis	Other fetal abnormality causing disproportion, delivered
653.81	ICD-9-CM	Diagnosis	Fetal disproportion of other origin, delivered
653.91	ICD-9-CM	Diagnosis	Unspecified fetal disproportion, delivered

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Code	Code Type	Code Category	Description
654.01	ICD-9-CM	Diagnosis	Congenital abnormalities of pregnant uterus, delivered
654.02	ICD-9-CM	Diagnosis	Congenital abnormalities of pregnant uterus, delivered, with mention of postpartum complication
654.11	ICD-9-CM	Diagnosis	Tumors of body of uterus, delivered
654.12	ICD-9-CM	Diagnosis	Tumors of body of uterus, delivered, with mention of postpartum complication
654.21	ICD-9-CM	Diagnosis	Previous cesarean delivery, delivered, with or without mention of antepartum condition
654.31	ICD-9-CM	Diagnosis	Retroverted and incarcerated gravid uterus, delivered
654.32	ICD-9-CM	Diagnosis	Retroverted and incarcerated gravid uterus, delivered, with mention of postpartum complication
654.41	ICD-9-CM	Diagnosis	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered
654.42	ICD-9-CM	Diagnosis	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered, with mention of postpartum complication
654.51	ICD-9-CM	Diagnosis	Cervical incompetence, delivered
654.52	ICD-9-CM	Diagnosis	Cervical incompetence, delivered, with mention of postpartum complication
654.61	ICD-9-CM	Diagnosis	Other congenital or acquired abnormality of cervix, with delivery
654.62	ICD-9-CM	Diagnosis	Other congenital or acquired abnormality of cervix, delivered, with mention of postpartum complication
654.71	ICD-9-CM	Diagnosis	Congenital or acquired abnormality of vagina, with delivery
654.72	ICD-9-CM	Diagnosis	Congenital or acquired abnormality of vagina, delivered, with mention of postpartum complication
654.81	ICD-9-CM	Diagnosis	Congenital or acquired abnormality of vulva, with delivery
654.82	ICD-9-CM	Diagnosis	Congenital or acquired abnormality of vulva, delivered, with mention of postpartum complication
654.91	ICD-9-CM	Diagnosis	Other and unspecified abnormality of organs and soft tissues of pelvis, with delivery
654.92	ICD-9-CM	Diagnosis	Other and unspecified abnormality of organs and soft tissues of pelvis, delivered, with mention of postpartum complication
655.01	ICD-9-CM	Diagnosis	Central nervous system malformation in fetus, with delivery
655.11	ICD-9-CM	Diagnosis	Chromosomal abnormality in fetus, affecting management of mother, with delivery
655.21	ICD-9-CM	Diagnosis	Hereditary disease in family possibly affecting fetus, affecting management of mother, with delivery
655.31	ICD-9-CM	Diagnosis	Suspected damage to fetus from viral disease in mother, affecting management of mother, with delivery
655.41	ICD-9-CM	Diagnosis	Suspected damage to fetus from other disease in mother, affecting management of mother, with delivery
655.51	ICD-9-CM	Diagnosis	Suspected damage to fetus from drugs, affecting management of mother, delivered
655.61	ICD-9-CM	Diagnosis	Suspected damage to fetus from radiation, affecting management of mother, delivered
655.71	ICD-9-CM	Diagnosis	Decreased fetal movements, affecting management of mother, delivered
655.81	ICD-9-CM	Diagnosis	Other known or suspected fetal abnormality, not elsewhere classified, affecting management of mother, delivery

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Code	Code Type	Code Category	Description
655.91	ICD-9-CM	Diagnosis	Unspecified fetal abnormality affecting management of mother, delivery
656.01	ICD-9-CM	Diagnosis	Fetal-maternal hemorrhage, with delivery
656.11	ICD-9-CM	Diagnosis	Rhesus isoimmunization affecting management of mother, delivered
656.21	ICD-9-CM	Diagnosis	Isoimmunization from other and unspecified blood-group incompatibility, affecting management of mother, delivered
656.31	ICD-9-CM	Diagnosis	Fetal distress affecting management of mother, delivered
656.41	ICD-9-CM	Diagnosis	Intrauterine death affecting management of mother, delivered
656.51	ICD-9-CM	Diagnosis	Poor fetal growth, affecting management of mother, delivered
656.61	ICD-9-CM	Diagnosis	Excessive fetal growth affecting management of mother, delivered
656.71	ICD-9-CM	Diagnosis	Other placental conditions affecting management of mother, delivered
656.81	ICD-9-CM	Diagnosis	Other specified fetal and placental problems affecting management of mother, delivered
656.91	ICD-9-CM	Diagnosis	Unspecified fetal and placental problem affecting management of mother, delivered
657.01	ICD-9-CM	Diagnosis	Polyhydramnios, with delivery
658.01	ICD-9-CM	Diagnosis	Oligohydramnios, delivered
658.11	ICD-9-CM	Diagnosis	Premature rupture of membranes in pregnancy, delivered
658.21	ICD-9-CM	Diagnosis	Delayed delivery after spontaneous or unspecified rupture of membranes, delivered
658.31	ICD-9-CM	Diagnosis	Delayed delivery after artificial rupture of membranes, delivered
658.41	ICD-9-CM	Diagnosis	Infection of amniotic cavity, delivered
658.81	ICD-9-CM	Diagnosis	Other problem associated with amniotic cavity and membranes, delivered
658.91	ICD-9-CM	Diagnosis	Unspecified problem associated with amniotic cavity and membranes, delivered
659.01	ICD-9-CM	Diagnosis	Failed mechanical induction of labor, delivered
659.11	ICD-9-CM	Diagnosis	Failed medical or unspecified induction of labor, delivered
659.21	ICD-9-CM	Diagnosis	Unspecified maternal pyrexia during labor, delivered
659.31	ICD-9-CM	Diagnosis	Generalized infection during labor, delivered
659.41	ICD-9-CM	Diagnosis	Grand multiparity, delivered, with or without mention of antepartum condition
659.51	ICD-9-CM	Diagnosis	Elderly primigravida, delivered
659.61	ICD-9-CM	Diagnosis	Elderly multigravida, delivered, with mention of antepartum condition
659.71	ICD-9-CM	Diagnosis	Abnormality in fetal heart rate or rhythm, delivered, with or without mention of antepartum condition
659.81	ICD-9-CM	Diagnosis	Other specified indication for care or intervention related to labor and delivery, delivered
659.91	ICD-9-CM	Diagnosis	Unspecified indication for care or intervention related to labor and delivery, delivered
660.01	ICD-9-CM	Diagnosis	Obstruction caused by malposition of fetus at onset of labor, delivered
660.11	ICD-9-CM	Diagnosis	Obstruction by bony pelvis during labor and delivery, delivered
660.21	ICD-9-CM	Diagnosis	Obstruction by abnormal pelvic soft tissues during labor and delivery, delivered
660.31	ICD-9-CM	Diagnosis	Deep transverse arrest and persistent occipitoposterior position during labor and deliver, delivered
660.41	ICD-9-CM	Diagnosis	Shoulder (girdle) dystocia during labor and deliver, delivered
660.51	ICD-9-CM	Diagnosis	Locked twins, delivered
660.61	ICD-9-CM	Diagnosis	Unspecified failed trial of labor, delivered
660.71	ICD-9-CM	Diagnosis	Unspecified failed forceps or vacuum extractor, delivered

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Code	Code Type	Code Category	Description
660.81	ICD-9-CM	Diagnosis	Other causes of obstructed labor, delivered
660.91	ICD-9-CM	Diagnosis	Unspecified obstructed labor, with delivery
661.01	ICD-9-CM	Diagnosis	Primary uterine inertia, with delivery
661.11	ICD-9-CM	Diagnosis	Secondary uterine inertia, with delivery
661.21	ICD-9-CM	Diagnosis	Other and unspecified uterine inertia, with delivery
661.31	ICD-9-CM	Diagnosis	Precipitate labor, with delivery
661.41	ICD-9-CM	Diagnosis	Hypertonic, incoordinate, or prolonged uterine contractions, with delivery
661.91	ICD-9-CM	Diagnosis	Unspecified abnormality of labor, with delivery
662.01	ICD-9-CM	Diagnosis	Prolonged first stage of labor, delivered
662.11	ICD-9-CM	Diagnosis	Unspecified prolonged labor, delivered
662.21	ICD-9-CM	Diagnosis	Prolonged second stage of labor, delivered
662.31	ICD-9-CM	Diagnosis	Delayed delivery of second twin, triplet, etc., delivered
663.01	ICD-9-CM	Diagnosis	Prolapse of cord, complicating labor and delivery, delivered
663.11	ICD-9-CM	Diagnosis	Cord around neck, with compression, complicating labor and delivery, delivered
663.21	ICD-9-CM	Diagnosis	Other and unspecified cord entanglement, with compression, complicating labor and delivery, delivered
663.31	ICD-9-CM	Diagnosis	Other and unspecified cord entanglement, without mention of compression, complicating labor and delivery, delivered
663.41	ICD-9-CM	Diagnosis	Short cord complicating labor and delivery, delivered
663.51	ICD-9-CM	Diagnosis	Vasa previa complicating labor and delivery, delivered
663.61	ICD-9-CM	Diagnosis	Vascular lesions of cord complicating labor and delivery, delivered
663.81	ICD-9-CM	Diagnosis	Other umbilical cord complications during labor and delivery, delivered
663.91	ICD-9-CM	Diagnosis	Unspecified umbilical cord complication during labor and delivery, delivered
664.01	ICD-9-CM	Diagnosis	First-degree perineal laceration, with delivery
664.11	ICD-9-CM	Diagnosis	Second-degree perineal laceration, with delivery
664.21	ICD-9-CM	Diagnosis	Third-degree perineal laceration, with delivery
664.31	ICD-9-CM	Diagnosis	Fourth-degree perineal laceration, with delivery
664.41	ICD-9-CM	Diagnosis	Unspecified perineal laceration, with delivery
664.51	ICD-9-CM	Diagnosis	Vulvar and perineal hematoma, with delivery
664.61	ICD-9-CM	Diagnosis	Anal sphincter tear complicating delivery, not associated with third-degree perineal laceration, delivered, with or without mention of antepartum condition
664.81	ICD-9-CM	Diagnosis	Other specified trauma to perineum and vulva, with delivery
664.91	ICD-9-CM	Diagnosis	Unspecified trauma to perineum and vulva, with delivery
665.01	ICD-9-CM	Diagnosis	Rupture of uterus before onset of labor, with delivery
665.11	ICD-9-CM	Diagnosis	Rupture of uterus during labor, with delivery
665.22	ICD-9-CM	Diagnosis	Inversion of uterus, delivered with postpartum complication
665.31	ICD-9-CM	Diagnosis	Laceration of cervix, with delivery
665.41	ICD-9-CM	Diagnosis	High vaginal laceration, with delivery
665.51	ICD-9-CM	Diagnosis	Other injury to pelvic organs, with delivery
665.61	ICD-9-CM	Diagnosis	Damage to pelvic joints and ligaments, with delivery

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Code	Code Type	Code Category	Description
665.71	ICD-9-CM	Diagnosis	Pelvic hematoma, with delivery
665.72	ICD-9-CM	Diagnosis	Pelvic hematoma, delivered with postpartum complication
665.81	ICD-9-CM	Diagnosis	Other specified obstetrical trauma, with delivery
665.82	ICD-9-CM	Diagnosis	Other specified obstetrical trauma, delivered, with postpartum
665.91	ICD-9-CM	Diagnosis	Unspecified obstetrical trauma, with delivery
665.92	ICD-9-CM	Diagnosis	Unspecified obstetrical trauma, delivered, with postpartum complication
666.02	ICD-9-CM	Diagnosis	Third-stage postpartum hemorrhage, with delivery
666.12	ICD-9-CM	Diagnosis	Other immediate postpartum hemorrhage, with delivery
666.22	ICD-9-CM	Diagnosis	Delayed and secondary postpartum hemorrhage, with delivery
666.32	ICD-9-CM	Diagnosis	Postpartum coagulation defects, with delivery
667.02	ICD-9-CM	Diagnosis	Retained placenta without hemorrhage, with delivery, with mention of postpartum complication
667.1.2	ICD-9-CM	Diagnosis	Retained portions of placenta or membranes, without hemorrhage, delivered, with mention of postpartum complication
668.01	ICD-9-CM	Diagnosis	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered
668.02	ICD-9-CM	Diagnosis	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
668.11	ICD-9-CM	Diagnosis	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered
668.12	ICD-9-CM	Diagnosis	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
668.21	ICD-9-CM	Diagnosis	Central nervous system complications of the administration of anesthesia or other sedation in labor and delivery, delivered
668.22	ICD-9-CM	Diagnosis	Central nervous system complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
668.81	ICD-9-CM	Diagnosis	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered
668.82	ICD-9-CM	Diagnosis	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
668.91	ICD-9-CM	Diagnosis	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered
668.92	ICD-9-CM	Diagnosis	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
669.01	ICD-9-CM	Diagnosis	Maternal distress, with delivery, with or without mention of antepartum condition
669.02	ICD-9-CM	Diagnosis	Maternal distress, with delivery, with mention of postpartum complication
669.11	ICD-9-CM	Diagnosis	Shock during or following labor and delivery, with delivery, with or without mention of antepartum condition
669.12	ICD-9-CM	Diagnosis	Shock during or following labor and delivery, with delivery, with mention of postpartum complication

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Code	Code Type	Code Category	Description
669.21	ICD-9-CM	Diagnosis	Maternal hypotension syndrome, with delivery, with or without mention of antepartum condition
669.22	ICD-9-CM	Diagnosis	Maternal hypotension syndrome, with delivery, with mention of postpartum complication
669.32	ICD-9-CM	Diagnosis	Acute kidney failure following labor and delivery, delivered, with mention of postpartum complication
669.41	ICD-9-CM	Diagnosis	Other complications of obstetrical surgery and procedures, with delivery, with or without mention of antepartum condition
669.42	ICD-9-CM	Diagnosis	Other complications of obstetrical surgery and procedures, with delivery, with mention of postpartum complication
669.51	ICD-9-CM	Diagnosis	Forceps or vacuum extractor delivery without mention of indication, delivered, with or without mention of antepartum condition
669.61	ICD-9-CM	Diagnosis	Breech extraction, without mention of indication, delivered, with or without mention of antepartum condition
669.71	ICD-9-CM	Diagnosis	Cesarean delivery, without mention of indication, delivered, with or without mention of antepartum condition
669.81	ICD-9-CM	Diagnosis	Other complication of labor and delivery, delivered, with or without mention of antepartum condition
669.82	ICD-9-CM	Diagnosis	Other complication of labor and delivery, delivered, with mention of postpartum complication
669.91	ICD-9-CM	Diagnosis	Unspecified complication of labor and delivery, with delivery, with or without mention of antepartum condition
669.92	ICD-9-CM	Diagnosis	Unspecified complication of labor and delivery, with delivery, with mention of postpartum complication
670.02	ICD-9-CM	Diagnosis	Major puerperal infection, unspecified, delivered, with mention of postpartum complication
670.12	ICD-9-CM	Diagnosis	Puerperal endometritis, delivered, with mention of postpartum complication
670.22	ICD-9-CM	Diagnosis	Puerperal sepsis, delivered, with mention of postpartum complication
670.32	ICD-9-CM	Diagnosis	Puerperal septic thrombophlebitis, delivered, with mention of postpartum complication
670.82	ICD-9-CM	Diagnosis	Other major puerperal infection, delivered, with mention of postpartum complication
671.01	ICD-9-CM	Diagnosis	Varicose veins of legs, with delivery, with or without mention of antepartum condition
671.02	ICD-9-CM	Diagnosis	Varicose veins of legs, with delivery, with mention of postpartum complication
671.11	ICD-9-CM	Diagnosis	Varicose veins of vulva and perineum, with delivery, with or without mention of antepartum condition
671.12	ICD-9-CM	Diagnosis	Varicose veins of vulva and perineum, with delivery, with mention of postpartum complication
671.21	ICD-9-CM	Diagnosis	Superficial thrombophlebitis with delivery, with or without mention of antepartum condition
671.22	ICD-9-CM	Diagnosis	Superficial thrombophlebitis with delivery, with mention of postpartum complication
671.31	ICD-9-CM	Diagnosis	Deep phlebothrombosis, antepartum, with delivery

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Code	Code Type	Code Category	Description
671.42	ICD-9-CM	Diagnosis	Deep phlebothrombosis, postpartum, with delivery
671.51	ICD-9-CM	Diagnosis	Other phlebitis and thrombosis with delivery, with or without mention of antepartum condition
671.52	ICD-9-CM	Diagnosis	Other phlebitis and thrombosis with delivery, with mention of postpartum complication
671.81	ICD-9-CM	Diagnosis	Other venous complication, with delivery, with or without mention of antepartum condition
671.82	ICD-9-CM	Diagnosis	Other venous complication, with delivery, with mention of postpartum complication
671.91	ICD-9-CM	Diagnosis	Unspecified venous complication, with delivery, with or without mention of antepartum condition
671.92	ICD-9-CM	Diagnosis	Unspecified venous complication, with delivery, with mention of postpartum complication
672.02	ICD-9-CM	Diagnosis	Puerperal pyrexia of unknown origin, delivered, with mention of postpartum complication
673.01	ICD-9-CM	Diagnosis	Obstetrical air embolism, with delivery, with or without mention of antepartum condition
673.02	ICD-9-CM	Diagnosis	Obstetrical air embolism, with delivery, with mention of postpartum complication
673.11	ICD-9-CM	Diagnosis	Amniotic fluid embolism, with delivery, with or without mention of antepartum condition
673.12	ICD-9-CM	Diagnosis	Amniotic fluid embolism, with delivery, with mention of postpartum complication
673.21	ICD-9-CM	Diagnosis	Obstetrical blood-clot embolism, with delivery, with or without mention of antepartum condition
673.22	ICD-9-CM	Diagnosis	Obstetrical blood-clot embolism, with mention of postpartum complication
673.31	ICD-9-CM	Diagnosis	Obstetrical pyemic and septic embolism, with delivery, with or without mention of antepartum condition
673.32	ICD-9-CM	Diagnosis	Obstetrical pyemic and septic embolism, with delivery, with mention of postpartum complication
673.81	ICD-9-CM	Diagnosis	Other obstetrical pulmonary embolism, with delivery, with or without mention of antepartum condition
673.82	ICD-9-CM	Diagnosis	Other obstetrical pulmonary embolism, with delivery, with mention of postpartum complication
674.01	ICD-9-CM	Diagnosis	Cerebrovascular disorder, with delivery, with or without mention of antepartum condition
674.02	ICD-9-CM	Diagnosis	Cerebrovascular disorder, with delivery, with mention of postpartum complication
674.12	ICD-9-CM	Diagnosis	Disruption of cesarean wound, with delivery, with mention of postpartum complication
674.22	ICD-9-CM	Diagnosis	Disruption of perineal wound, with delivery, with mention of postpartum complication
674.32	ICD-9-CM	Diagnosis	Other complication of obstetrical surgical wounds, with delivery, with mention of postpartum complication
674.42	ICD-9-CM	Diagnosis	Placental polyp, with delivery, with mention of postpartum complication
674.51	ICD-9-CM	Diagnosis	Peripartum cardiomyopathy, delivered, with or without mention of antepartum condition

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Code	Code Type	Code Category	Description
674.52	ICD-9-CM	Diagnosis	Peripartum cardiomyopathy, delivered, with mention of postpartum condition
674.82	ICD-9-CM	Diagnosis	Other complication of puerperium, with delivery, with mention of postpartum complication
674.92	ICD-9-CM	Diagnosis	Unspecified complications of puerperium, with delivery, with mention of postpartum complication
675.01	ICD-9-CM	Diagnosis	Infection of nipple associated with childbirth, delivered, with or without mention of antepartum condition
675.02	ICD-9-CM	Diagnosis	Infection of nipple associated with childbirth, delivered with mention of postpartum complication
675.11	ICD-9-CM	Diagnosis	Abscess of breast associated with childbirth, delivered, with or without mention of antepartum condition
675.12	ICD-9-CM	Diagnosis	Abscess of breast associated with childbirth, delivered, with mention of postpartum complication
675.21	ICD-9-CM	Diagnosis	Nonpurulent mastitis, delivered, with or without mention of antepartum condition
675.22	ICD-9-CM	Diagnosis	Nonpurulent mastitis, delivered, with mention of postpartum complication
675.81	ICD-9-CM	Diagnosis	Other specified infection of the breast and nipple associated with childbirth, delivered, with or without mention of antepartum condition
675.82	ICD-9-CM	Diagnosis	Other specified infection of the breast and nipple associated with childbirth, delivered, with mention of postpartum complication
675.91	ICD-9-CM	Diagnosis	Unspecified infection of the breast and nipple, delivered, with or without mention of antepartum condition
675.92	ICD-9-CM	Diagnosis	Unspecified infection of the breast and nipple, delivered, with mention of postpartum complication
676.01	ICD-9-CM	Diagnosis	Retracted nipple, delivered, with or without mention of antepartum condition
676.02	ICD-9-CM	Diagnosis	Retracted nipple, delivered, with mention of postpartum complication
676.11	ICD-9-CM	Diagnosis	Cracked nipple, delivered, with or without mention of antepartum condition
676.12	ICD-9-CM	Diagnosis	Cracked nipple, delivered, with mention of postpartum complication
676.21	ICD-9-CM	Diagnosis	Engorgement of breasts, delivered, with or without mention of antepartum condition
676.22	ICD-9-CM	Diagnosis	Engorgement of breasts, delivered, with mention of postpartum complication
676.31	ICD-9-CM	Diagnosis	Other and unspecified disorder of breast associated with childbirth, delivered, with or without mention of antepartum condition
676.32	ICD-9-CM	Diagnosis	Other and unspecified disorder of breast associated with childbirth, delivered, with mention of postpartum complication
676.41	ICD-9-CM	Diagnosis	Failure of lactation, with delivery, with or without mention of antepartum condition
676.42	ICD-9-CM	Diagnosis	Failure of lactation, with delivery, with mention of postpartum complication
676.51	ICD-9-CM	Diagnosis	Suppressed lactation, with delivery, with or without mention of antepartum condition
676.52	ICD-9-CM	Diagnosis	Suppressed lactation, with delivery, with mention of postpartum complication
676.61	ICD-9-CM	Diagnosis	Galactorrhea, with delivery, with or without mention of antepartum condition
676.62	ICD-9-CM	Diagnosis	Galactorrhea, with delivery, with mention of postpartum complication

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Code	Code Type	Code Category	Description
676.81	ICD-9-CM	Diagnosis	Other disorder of lactation, with delivery, with or without mention of antepartum condition
676.82	ICD-9-CM	Diagnosis	Other disorder of lactation, with delivery, with mention of postpartum complication
676.91	ICD-9-CM	Diagnosis	Unspecified disorder of lactation, with delivery, with or without mention of antepartum condition
72	ICD-9-CM	Procedure	Forceps, vacuum, and breech delivery
73	ICD-9-CM	Procedure	Other procedures inducing or assisting delivery
720	ICD-9-CM	Procedure	Low forceps operation
721	ICD-9-CM	Procedure	Low forceps operation with episiotomy
722	ICD-9-CM	Procedure	Mid forceps operation
723	ICD-9-CM	Procedure	High forceps operation
724	ICD-9-CM	Procedure	Forceps rotation of fetal head
725	ICD-9-CM	Procedure	Breech extraction
726	ICD-9-CM	Procedure	Forceps application to aftercoming head
727	ICD-9-CM	Procedure	Vacuum extraction
728	ICD-9-CM	Procedure	Other specified instrumental delivery
729	ICD-9-CM	Procedure	Unspecified instrumental delivery
730	ICD-9-CM	Procedure	Artificial rupture of membranes
731	ICD-9-CM	Procedure	Other surgical induction of labor
732	ICD-9-CM	Procedure	Internal and combined version and extraction
733	ICD-9-CM	Procedure	Failed forceps
734	ICD-9-CM	Procedure	Medical induction of labor
735	ICD-9-CM	Procedure	Manually assisted delivery
736	ICD-9-CM	Procedure	Episiotomy
738	ICD-9-CM	Procedure	Operations on fetus to facilitate delivery
739	ICD-9-CM	Procedure	Other operations assisting delivery
740	ICD-9-CM	Procedure	Classical cesarean section
741	ICD-9-CM	Procedure	Low cervical cesarean section
742	ICD-9-CM	Procedure	Extraperitoneal cesarean section
744	ICD-9-CM	Procedure	Cesarean section of other specified type
749	ICD-9-CM	Procedure	Cesarean section of unspecified type
722.1	ICD-9-CM	Procedure	Mid forceps operation with episiotomy
722.9	ICD-9-CM	Procedure	Other mid forceps operation
723.1	ICD-9-CM	Procedure	High forceps operation with episiotomy
723.9	ICD-9-CM	Procedure	Other high forceps operation
725.1	ICD-9-CM	Procedure	Partial breech extraction with forceps to aftercoming head
725.2	ICD-9-CM	Procedure	Other partial breech extraction
725.3	ICD-9-CM	Procedure	Total breech extraction with forceps to aftercoming head
725.4	ICD-9-CM	Procedure	Other total breech extraction
727.1	ICD-9-CM	Procedure	Vacuum extraction with episiotomy

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Code	Code Type	Code Category	Description
727.9	ICD-9-CM	Procedure	Other vacuum extraction
730.1	ICD-9-CM	Procedure	Induction of labor by artificial rupture of membranes
730.9	ICD-9-CM	Procedure	Other artificial rupture of membranes
732.1	ICD-9-CM	Procedure	Internal and combined version without extraction
732.2	ICD-9-CM	Procedure	Internal and combined version with extraction
735.1	ICD-9-CM	Procedure	Manual rotation of fetal head
735.9	ICD-9-CM	Procedure	Other manually assisted delivery
739.1	ICD-9-CM	Procedure	External version to assist delivery
739.2	ICD-9-CM	Procedure	Replacement of prolapsed umbilical cord
739.3	ICD-9-CM	Procedure	Incision of cervix to assist delivery
739.4	ICD-9-CM	Procedure	Pubiotomy to assist delivery
739.9	ICD-9-CM	Procedure	Other operations to assist delivery
749.9	ICD-9-CM	Procedure	Other cesarean section of unspecified type
676.92	ICD-9-CM	Diagnosis	Unspecified disorder of lactation, with delivery, with mention of postpartum complication
678.01	ICD-9-CM	Diagnosis	Fetal hematologic conditions, delivered, with or without mention of antepartum condition
678.11	ICD-9-CM	Diagnosis	Fetal conjoined twins, delivered, with or without mention of antepartum condition
679.01	ICD-9-CM	Diagnosis	Maternal complications from in utero procedure, delivered, with or without mention of antepartum condition
679.02	ICD-9-CM	Diagnosis	Maternal complications from in utero procedure, delivered, with mention of postpartum complication
679.11	ICD-9-CM	Diagnosis	Fetal complications from in utero procedure, delivered, with or without mention of antepartum condition
679.12	ICD-9-CM	Diagnosis	Fetal complications from in utero procedure, delivered, with mention of postpartum complication
V27	ICD-9-CM	Diagnosis	Outcome of delivery
V27.0	ICD-9-CM	Diagnosis	Outcome of delivery, single liveborn
V27.1	ICD-9-CM	Diagnosis	Outcome of delivery, single stillborn
V27.2	ICD-9-CM	Diagnosis	Outcome of delivery, twins, both liveborn
V27.3	ICD-9-CM	Diagnosis	Outcome of delivery, twins, one liveborn and one stillborn
V27.4	ICD-9-CM	Diagnosis	Outcome of delivery, twins, both stillborn
V27.5	ICD-9-CM	Diagnosis	Outcome of delivery, other multiple birth, all liveborn
V27.6	ICD-9-CM	Diagnosis	Outcome of delivery, other multiple birth, some liveborn
V27.7	ICD-9-CM	Diagnosis	Outcome of delivery, other multiple birth, all stillborn
V27.9	ICD-9-CM	Diagnosis	Outcome of delivery, unspecified
V30	ICD-9-CM	Diagnosis	Single liveborn
V30.0	ICD-9-CM	Diagnosis	Single liveborn, born in hospital
V30.00	ICD-9-CM	Diagnosis	Single liveborn, born in hospital, delivered without mention of cesarean delivery
V30.01	ICD-9-CM	Diagnosis	Single liveborn, born in hospital, delivered by cesarean delivery

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Code	Code Type	Code Category	Description
V30.1	ICD-9-CM	Diagnosis	Single liveborn, born before admission to hospital
V30.2	ICD-9-CM	Diagnosis	Single liveborn, born outside hospital and not hospitalized
V31	ICD-9-CM	Diagnosis	Twin birth, mate liveborn
V31.0	ICD-9-CM	Diagnosis	Twin, mate liveborn, born in hospital
V31.00	ICD-9-CM	Diagnosis	Twin, mate liveborn, born in hospital, delivered without mention of cesarean delivery
V31.01	ICD-9-CM	Diagnosis	Twin, mate liveborn, born in hospital, delivered by cesarean delivery
V31.1	ICD-9-CM	Diagnosis	Twin birth, mate liveborn, born before admission to hospital
V31.2	ICD-9-CM	Diagnosis	Twin birth, mate liveborn, born outside hospital and not hospitalized
V32	ICD-9-CM	Diagnosis	Twin birth, mate stillborn
V32.0	ICD-9-CM	Diagnosis	Twin, mate stillborn, born in hospital
V32.00	ICD-9-CM	Diagnosis	Twin, mate stillborn, born in hospital, delivered without mention of cesarean delivery
V32.01	ICD-9-CM	Diagnosis	Twin, mate stillborn, born in hospital, delivered by cesarean delivery
V32.1	ICD-9-CM	Diagnosis	Twin birth, mate stillborn, born before admission to hospital
V32.2	ICD-9-CM	Diagnosis	Twin birth, mate stillborn, born outside hospital and not hospitalized
V33	ICD-9-CM	Diagnosis	Twin birth, unspecified whether mate liveborn or stillborn
V33.0	ICD-9-CM	Diagnosis	Twin, unspecified, born in hospital
V33.00	ICD-9-CM	Diagnosis	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery
V33.01	ICD-9-CM	Diagnosis	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered by cesarean delivery
V33.1	ICD-9-CM	Diagnosis	Twin birth, unspecified whether mate liveborn or stillborn, born before admission to hospital
V33.2	ICD-9-CM	Diagnosis	Twin birth, unspecified whether mate liveborn or stillborn, born outside hospital and not hospitalized
V34	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all liveborn
V34.0	ICD-9-CM	Diagnosis	Other multiple, mates all liveborn, born in hospital
V34.00	ICD-9-CM	Diagnosis	Other multiple, mates all liveborn, born in hospital, delivered without mention of cesarean delivery
V34.01	ICD-9-CM	Diagnosis	Other multiple, mates all liveborn, born in hospital, delivered by cesarean delivery
V34.1	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all liveborn, born before admission to hospital
V34.2	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all liveborn, born outside hospital and not hospitalized
V35	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all stillborn
V35.0	ICD-9-CM	Diagnosis	Other multiple, mates all stillborn, born in hospital
V35.00	ICD-9-CM	Diagnosis	Other multiple, mates all stillborn, born in hospital, delivered without mention of cesarean delivery
V35.01	ICD-9-CM	Diagnosis	Other multiple, mates all stillborn, born in hospital, delivered by cesarean delivery
V35.1	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all stillborn, born before admission to hospital

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Code	Code Type	Code Category	Description
V35.2	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates all stillborn, born outside of hospital and not hospitalized
V36	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates liveborn and stillborn
V36.0	ICD-9-CM	Diagnosis	Other multiple, mates liveborn and stillborn, born in hospital
V36.00	ICD-9-CM	Diagnosis	Other multiple, mates liveborn and stillborn, born in hospital, delivered without mention of cesarean delivery
V36.01	ICD-9-CM	Diagnosis	Other multiple, mates liveborn and stillborn, born in hospital, delivered by cesarean delivery
V36.1	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates liveborn and stillborn, born before admission to hospital
V36.2	ICD-9-CM	Diagnosis	Other multiple birth (three or more), mates liveborn and stillborn, born outside hospital and not hospitalized
V37	ICD-9-CM	Diagnosis	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn
V37.0	ICD-9-CM	Diagnosis	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital
V37.00	ICD-9-CM	Diagnosis	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery
V37.01	ICD-9-CM	Diagnosis	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered by cesarean delivery
V37.1	ICD-9-CM	Diagnosis	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born before admission to hospital
V37.2	ICD-9-CM	Diagnosis	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born outside of hospital
V39	ICD-9-CM	Diagnosis	Liveborn, unspecified whether single, twin, or multiple
V39.0	ICD-9-CM	Diagnosis	Other liveborn, unspecified whether single, twin, or multiple, born in hospital
V39.00	ICD-9-CM	Diagnosis	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered without mention of cesarean delivery
V39.01	ICD-9-CM	Diagnosis	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered by cesarean
V39.1	ICD-9-CM	Diagnosis	Liveborn, unspecified whether single, twin or multiple, born before admission to hospital
V39.2	ICD-9-CM	Diagnosis	Liveborn, unspecified whether single, twin or multiple, born outside hospital and not hospitalized
O10.02	ICD-10-CM	Diagnosis	Pre-existing essential hypertension complicating childbirth
O10.12	ICD-10-CM	Diagnosis	Pre-existing hypertensive heart disease complicating childbirth
O10.22	ICD-10-CM	Diagnosis	Pre-existing hypertensive chronic kidney disease complicating childbirth
O10.32	ICD-10-CM	Diagnosis	Pre-existing hypertensive heart and chronic kidney disease complicating childbirth
O10.42	ICD-10-CM	Diagnosis	Pre-existing secondary hypertension complicating childbirth
O10.92	ICD-10-CM	Diagnosis	Unspecified pre-existing hypertension complicating childbirth
O11.4	ICD-10-CM	Diagnosis	Pre-existing hypertension with pre-eclampsia, complicating childbirth
O12.04	ICD-10-CM	Diagnosis	Gestational edema, complicating childbirth
O12.14	ICD-10-CM	Diagnosis	Gestational proteinuria, complicating childbirth

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Code	Code Type	Code Category	Description
O12.24	ICD-10-CM	Diagnosis	Gestational edema with proteinuria, complicating childbirth
O13.4	ICD-10-CM	Diagnosis	Gestational [pregnancy-induced] hypertension without significant proteinuria, complicating childbirth
O14.04	ICD-10-CM	Diagnosis	Mild to moderate pre-eclampsia, complicating childbirth
O14.14	ICD-10-CM	Diagnosis	Severe pre-eclampsia complicating childbirth
O14.24	ICD-10-CM	Diagnosis	HELLP syndrome, complicating childbirth
O14.94	ICD-10-CM	Diagnosis	Unspecified pre-eclampsia, complicating childbirth
O16.4	ICD-10-CM	Diagnosis	Unspecified maternal hypertension, complicating childbirth
O24.02	ICD-10-CM	Diagnosis	Pre-existing type 1 diabetes mellitus, in childbirth
O24.12	ICD-10-CM	Diagnosis	Pre-existing type 2 diabetes mellitus, in childbirth
O24.32	ICD-10-CM	Diagnosis	Unspecified pre-existing diabetes mellitus in childbirth
O24.420	ICD-10-CM	Diagnosis	Gestational diabetes mellitus in childbirth, diet controlled
O24.424	ICD-10-CM	Diagnosis	Gestational diabetes mellitus in childbirth, insulin controlled
O24.425	ICD-10-CM	Diagnosis	Gestational diabetes mellitus in childbirth, controlled by oral hypoglycemic drugs
O24.429	ICD-10-CM	Diagnosis	Gestational diabetes mellitus in childbirth, unspecified control
O24.82	ICD-10-CM	Diagnosis	Other pre-existing diabetes mellitus in childbirth
O24.92	ICD-10-CM	Diagnosis	Unspecified diabetes mellitus in childbirth
O25.2	ICD-10-CM	Diagnosis	Malnutrition in childbirth
O26.62	ICD-10-CM	Diagnosis	Liver and biliary tract disorders in childbirth
O26.72	ICD-10-CM	Diagnosis	Subluxation of symphysis (pubis) in childbirth
O60.12X0	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, not applicable or unspecified
O60.12X1	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, fetus 1
O60.12X2	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, fetus 2
O60.12X3	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, fetus 3
O60.12X4	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, fetus 4
O60.12X5	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, fetus 5
O60.12X9	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery second trimester, other fetus
O60.13X0	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, not applicable or unspecified
O60.13X1	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, fetus 1
O60.13X2	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, fetus 2
O60.13X3	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, fetus 3
O60.13X4	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, fetus 4
O60.13X5	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, fetus 5
O60.13X9	ICD-10-CM	Diagnosis	Preterm labor second trimester with preterm delivery third trimester, other fetus
O60.14X0	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, not applicable or unspecified
O60.14X1	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, fetus 1
O60.14X2	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, fetus 2

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Code	Code Type	Code Category	Description
O60.14X3	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, fetus 3
O60.14X4	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, fetus 4
O60.14X5	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, fetus 5
O60.14X9	ICD-10-CM	Diagnosis	Preterm labor third trimester with preterm delivery third trimester, other fetus
O60.22X0	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, not applicable or unspecified
O60.22X1	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, fetus 1
O60.22X2	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, fetus 2
O60.22X3	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, fetus 3
O60.22X4	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, fetus 4
O60.22X5	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, fetus 5
O60.22X9	ICD-10-CM	Diagnosis	Term delivery with preterm labor, second trimester, other fetus
O60.23X0	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, not applicable or unspecified
O60.23X1	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, fetus 1
O60.23X2	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, fetus 2
O60.23X3	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, fetus 3
O60.23X4	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, fetus 4
O60.23X5	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, fetus 5
O60.23X9	ICD-10-CM	Diagnosis	Term delivery with preterm labor, third trimester, other fetus
O63.2	ICD-10-CM	Diagnosis	Delayed delivery of second twin, triplet, etc
O67.0	ICD-10-CM	Diagnosis	Intrapartum hemorrhage with coagulation defect
O67.8	ICD-10-CM	Diagnosis	Other intrapartum hemorrhage
O67.9	ICD-10-CM	Diagnosis	Intrapartum hemorrhage, unspecified
O68.	ICD-10-CM	Diagnosis	Labor and delivery complicated by abnormality of fetal acid-base balance
O69.0XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, not applicable or unspecified
O69.0XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, fetus 1
O69.0XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, fetus 2
O69.0XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, fetus 3
O69.0XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, fetus 4
O69.0XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, fetus 5
O69.0XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by prolapse of cord, other fetus
O69.1XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, not applicable or unspecified
O69.1XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, fetus 1
O69.1XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, fetus 2
O69.1XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, fetus 3
O69.1XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, fetus 4
O69.1XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, fetus 5
O69.1XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, with compression, other fetus
O69.2XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, not applicable or unspecified

Appendix C. List of Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes, International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes, and International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) Diagnosis and Procedure Codes Used to Define Live-Born Deliveries in this Request

Code	Code Type	Code Category	Description
O69.2XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, fetus 1
O69.2XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, fetus 2
O69.2XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, fetus 3
O69.2XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, fetus 4
O69.2XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, fetus 5
O69.2XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, with compression, other fetus
O69.3XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, not applicable or unspecified
O69.3XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, fetus 1
O69.3XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, fetus 2
O69.3XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, fetus 3
O69.3XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, fetus 4
O69.3XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, fetus 5
O69.3XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by short cord, other fetus
O69.4XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, not applicable or unspecified
O69.4XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, fetus 1
O69.4XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, fetus 2
O69.4XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, fetus 3
O69.4XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, fetus 4
O69.4XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, fetus 5
O69.4XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by vasa previa, other fetus
O69.5XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, not applicable or unspecified
O69.5XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, fetus 1
O69.5XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, fetus 2
O69.5XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, fetus 3
O69.5XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, fetus 4
O69.5XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, fetus 5
O69.5XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by vascular lesion of cord, other fetus
O69.81X0	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, not applicable or unspecified
O69.81X1	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, fetus 1
O69.81X2	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, fetus 2
O69.81X3	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, fetus 3
O69.81X4	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, fetus 4
O69.81X5	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, fetus 5
O69.81X9	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord around neck, without compression, other fetus
O69.82X0	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, not applicable or unspecified
O69.82X1	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, fetus 1

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Code	Code Type	Code Category	Description
O69.82X2	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, fetus 2
O69.82X3	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, fetus 3
O69.82X4	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, fetus 4
O69.82X5	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, fetus 5
O69.82X9	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord entanglement, without compression, other fetus
O69.89X0	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, not applicable or unspecified
O69.89X1	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, fetus 1
O69.89X2	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, fetus 2
O69.89X3	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, fetus 3
O69.89X4	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, fetus 4
O69.89X5	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, fetus 5
O69.89X9	ICD-10-CM	Diagnosis	Labor and delivery complicated by other cord complications, other fetus
O69.9XX0	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, not applicable or unspecified
O69.9XX1	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, fetus 1
O69.9XX2	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, fetus 2
O69.9XX3	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, fetus 3
O69.9XX4	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, fetus 4
O69.9XX5	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, fetus 5
O69.9XX9	ICD-10-CM	Diagnosis	Labor and delivery complicated by cord complication, unspecified, other fetus
O70.0	ICD-10-CM	Diagnosis	First degree perineal laceration during delivery
O70.1	ICD-10-CM	Diagnosis	Second degree perineal laceration during delivery
O70.20	ICD-10-CM	Diagnosis	Third degree perineal laceration during delivery, unspecified
O70.21	ICD-10-CM	Diagnosis	Third degree perineal laceration during delivery, IIIa
O70.22	ICD-10-CM	Diagnosis	Third degree perineal laceration during delivery, IIIb
O70.23	ICD-10-CM	Diagnosis	Third degree perineal laceration during delivery, IIIc
O70.3	ICD-10-CM	Diagnosis	Fourth degree perineal laceration during delivery
O70.4	ICD-10-CM	Diagnosis	Anal sphincter tear complicating delivery, not associated with third degree laceration
O70.9	ICD-10-CM	Diagnosis	Perineal laceration during delivery, unspecified
O74.0	ICD-10-CM	Diagnosis	Aspiration pneumonitis due to anesthesia during labor and delivery
O74.1	ICD-10-CM	Diagnosis	Other pulmonary complications of anesthesia during labor and delivery
O74.2	ICD-10-CM	Diagnosis	Cardiac complications of anesthesia during labor and delivery
O74.3	ICD-10-CM	Diagnosis	Central nervous system complications of anesthesia during labor and delivery
O74.4	ICD-10-CM	Diagnosis	Toxic reaction to local anesthesia during labor and delivery

Appendix C. List of Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes, International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes, and International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) Diagnosis and Procedure Codes Used to Define Live-Born Deliveries in this Request

Code	Code Type	Code Category	Description
O74.5	ICD-10-CM	Diagnosis	Spinal and epidural anesthesia-induced headache during labor and delivery
O74.6	ICD-10-CM	Diagnosis	Other complications of spinal and epidural anesthesia during labor and delivery
O74.7	ICD-10-CM	Diagnosis	Failed or difficult intubation for anesthesia during labor and delivery
O74.8	ICD-10-CM	Diagnosis	Other complications of anesthesia during labor and delivery
O74.9	ICD-10-CM	Diagnosis	Complication of anesthesia during labor and delivery, unspecified
O75.0	ICD-10-CM	Diagnosis	Maternal distress during labor and delivery
O75.1	ICD-10-CM	Diagnosis	Shock during or following labor and delivery
O75.5	ICD-10-CM	Diagnosis	Delayed delivery after artificial rupture of membranes
O75.81	ICD-10-CM	Diagnosis	Maternal exhaustion complicating labor and delivery
O75.82	ICD-10-CM	Diagnosis	Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section
O75.89	ICD-10-CM	Diagnosis	Other specified complications of labor and delivery
O75.9	ICD-10-CM	Diagnosis	Complication of labor and delivery, unspecified
O76.	ICD-10-CM	Diagnosis	Abnormality in fetal heart rate and rhythm complicating labor and delivery
O77.0	ICD-10-CM	Diagnosis	Labor and delivery complicated by meconium in amniotic fluid
O77.8	ICD-10-CM	Diagnosis	Labor and delivery complicated by other evidence of fetal stress
O77.9	ICD-10-CM	Diagnosis	Labor and delivery complicated by fetal stress, unspecified
O80.	ICD-10-CM	Diagnosis	Encounter for full-term uncomplicated delivery
O82.	ICD-10-CM	Diagnosis	Encounter for cesarean delivery without indication
O88.02	ICD-10-CM	Diagnosis	Air embolism in childbirth
O88.12	ICD-10-CM	Diagnosis	Amniotic fluid embolism in childbirth
O88.22	ICD-10-CM	Diagnosis	Thromboembolism in childbirth
O88.32	ICD-10-CM	Diagnosis	Pyemic and septic embolism in childbirth
O88.82	ICD-10-CM	Diagnosis	Other embolism in childbirth
O98.02	ICD-10-CM	Diagnosis	Tuberculosis complicating childbirth
O98.12	ICD-10-CM	Diagnosis	Syphilis complicating childbirth
O98.22	ICD-10-CM	Diagnosis	Gonorrhea complicating childbirth
O98.32	ICD-10-CM	Diagnosis	Other infections with a predominantly sexual mode of transmission complicating childbirth
O98.42	ICD-10-CM	Diagnosis	Viral hepatitis complicating childbirth
O98.52	ICD-10-CM	Diagnosis	Other viral diseases complicating childbirth
O98.62	ICD-10-CM	Diagnosis	Protozoal diseases complicating childbirth
O98.72	ICD-10-CM	Diagnosis	Human immunodeficiency virus [HIV] disease complicating childbirth
O98.82	ICD-10-CM	Diagnosis	Other maternal infectious and parasitic diseases complicating childbirth
O98.92	ICD-10-CM	Diagnosis	Unspecified maternal infectious and parasitic disease complicating childbirth
O99.02	ICD-10-CM	Diagnosis	Anemia complicating childbirth
O99.12	ICD-10-CM	Diagnosis	Other diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism complicating childbirth
O99.214	ICD-10-CM	Diagnosis	Obesity complicating childbirth
O99.284	ICD-10-CM	Diagnosis	Endocrine, nutritional and metabolic diseases complicating childbirth

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Code	Code Type	Code Category	Description
O99.314	ICD-10-CM	Diagnosis	Alcohol use complicating childbirth
O99.324	ICD-10-CM	Diagnosis	Drug use complicating childbirth
O99.334	ICD-10-CM	Diagnosis	Smoking (tobacco) complicating childbirth
O99.344	ICD-10-CM	Diagnosis	Other mental disorders complicating childbirth
O99.354	ICD-10-CM	Diagnosis	Diseases of the nervous system complicating childbirth
O99.42	ICD-10-CM	Diagnosis	Diseases of the circulatory system complicating childbirth
O99.52	ICD-10-CM	Diagnosis	Diseases of the respiratory system complicating childbirth
O99.62	ICD-10-CM	Diagnosis	Diseases of the digestive system complicating childbirth
O99.72	ICD-10-CM	Diagnosis	Diseases of the skin and subcutaneous tissue complicating childbirth
O99.814	ICD-10-CM	Diagnosis	Abnormal glucose complicating childbirth
O99.824	ICD-10-CM	Diagnosis	Streptococcus B carrier state complicating childbirth
O99.834	ICD-10-CM	Diagnosis	Other infection carrier state complicating childbirth
O99.844	ICD-10-CM	Diagnosis	Bariatric surgery status complicating childbirth
O9A.12	ICD-10-CM	Diagnosis	Malignant neoplasm complicating childbirth
O9A.22	ICD-10-CM	Diagnosis	Injury, poisoning and certain other consequences of external causes complicating childbirth
O9A.32	ICD-10-CM	Diagnosis	Physical abuse complicating childbirth
O9A.42	ICD-10-CM	Diagnosis	Sexual abuse complicating childbirth
O9A.52	ICD-10-CM	Diagnosis	Psychological abuse complicating childbirth
P03.0	ICD-10-CM	Diagnosis	Newborn affected by breech delivery and extraction
P03.2	ICD-10-CM	Diagnosis	Newborn affected by forceps delivery
P03.3	ICD-10-CM	Diagnosis	Newborn affected by delivery by vacuum extractor [ventouse]
P03.4	ICD-10-CM	Diagnosis	Newborn affected by Cesarean delivery
P03.5	ICD-10-CM	Diagnosis	Newborn affected by precipitate delivery
P07.00	ICD-10-CM	Diagnosis	Extremely low birth weight newborn, unspecified weight
P07.01	ICD-10-CM	Diagnosis	Extremely low birth weight newborn, less than 500 grams
P07.02	ICD-10-CM	Diagnosis	Extremely low birth weight newborn, 500-749. grams
P07.03	ICD-10-CM	Diagnosis	Extremely low birth weight newborn, 750-999 grams
P07.10	ICD-10-CM	Diagnosis	Other low birth weight newborn, unspecified weight
P07.14	ICD-10-CM	Diagnosis	Other low birth weight newborn, 1000-1249 grams
P07.15	ICD-10-CM	Diagnosis	Other low birth weight newborn, 1250-1499 grams
P07.16	ICD-10-CM	Diagnosis	Other low birth weight newborn, 1500-1749. grams
P07.17	ICD-10-CM	Diagnosis	Other low birth weight newborn, 1750-1999 grams
P07.18	ICD-10-CM	Diagnosis	Other low birth weight newborn, 2000-2499 grams
P07.20	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, unspecified weeks of gestation
P07.21	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age less than 23 completed weeks
P07.22	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age 23 completed weeks
P07.23	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age 24 completed weeks
P07.24	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age 25 completed weeks
P07.25	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age 26 completed weeks

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Code	Code Type	Code Category	Description
P07.26	ICD-10-CM	Diagnosis	Extreme immaturity of newborn, gestational age 27 completed weeks
P07.30	ICD-10-CM	Diagnosis	Preterm newborn, unspecified weeks of gestation
P07.31	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 28 completed weeks
P07.32	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 29 completed weeks
P07.33	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 30 completed weeks
P07.34	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 31 completed weeks
P07.35	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 32 completed weeks
P07.36	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 33 completed weeks
P07.37	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 34 completed weeks
P07.38	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 35 completed weeks
P07.39	ICD-10-CM	Diagnosis	Preterm newborn, gestational age 36 completed weeks
P08.21	ICD-10-CM	Diagnosis	Post-term newborn
P08.22	ICD-10-CM	Diagnosis	Prolonged gestation of newborn
Z37.0	ICD-10-CM	Diagnosis	Single live birth
Z37.2	ICD-10-CM	Diagnosis	Twins, both liveborn
Z37.3	ICD-10-CM	Diagnosis	Twins, one liveborn and one stillborn
Z37.50	ICD-10-CM	Diagnosis	Multiple births, unspecified, all liveborn
Z37.51	ICD-10-CM	Diagnosis	Triplets, all liveborn
Z37.52	ICD-10-CM	Diagnosis	Quadruplets, all liveborn
Z37.53	ICD-10-CM	Diagnosis	Quintuplets, all liveborn
Z37.54	ICD-10-CM	Diagnosis	Sextuplets, all liveborn
Z37.59	ICD-10-CM	Diagnosis	Other multiple births, all liveborn
Z37.60	ICD-10-CM	Diagnosis	Multiple births, unspecified, some liveborn
Z37.61	ICD-10-CM	Diagnosis	Triplets, some liveborn
Z37.62	ICD-10-CM	Diagnosis	Quadruplets, some liveborn
Z37.63	ICD-10-CM	Diagnosis	Quintuplets, some liveborn
Z37.64	ICD-10-CM	Diagnosis	Sextuplets, some liveborn
Z37.69	ICD-10-CM	Diagnosis	Other multiple births, some liveborn
Z37.9	ICD-10-CM	Diagnosis	Outcome of delivery, unspecified
Z38.00	ICD-10-CM	Diagnosis	Single liveborn infant, delivered vaginally
Z38.01	ICD-10-CM	Diagnosis	Single liveborn infant, delivered by cesarean
Z38.1	ICD-10-CM	Diagnosis	Single liveborn infant, born outside hospital
Z38.2	ICD-10-CM	Diagnosis	Single liveborn infant, unspecified as to place of birth
Z38.30	ICD-10-CM	Diagnosis	Twin liveborn infant, delivered vaginally
Z38.31	ICD-10-CM	Diagnosis	Twin liveborn infant, delivered by cesarean
Z38.4	ICD-10-CM	Diagnosis	Twin liveborn infant, born outside hospital
Z38.5	ICD-10-CM	Diagnosis	Twin liveborn infant, unspecified as to place of birth
Z38.61	ICD-10-CM	Diagnosis	Triplet liveborn infant, delivered vaginally
Z38.62	ICD-10-CM	Diagnosis	Triplet liveborn infant, delivered by cesarean
Z38.63	ICD-10-CM	Diagnosis	Quadruplet liveborn infant, delivered vaginally

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Code	Code Type	Code Category	Description
Z38.64	ICD-10-CM	Diagnosis	Quadruplet liveborn infant, delivered by cesarean
Z38.65	ICD-10-CM	Diagnosis	Quintuplet liveborn infant, delivered vaginally
Z38.66	ICD-10-CM	Diagnosis	Quintuplet liveborn infant, delivered by cesarean
Z38.68	ICD-10-CM	Diagnosis	Other multiple liveborn infant, delivered vaginally
Z38.69	ICD-10-CM	Diagnosis	Other multiple liveborn infant, delivered by cesarean
Z38.7	ICD-10-CM	Diagnosis	Other multiple liveborn infant, born outside hospital
Z38.8	ICD-10-CM	Diagnosis	Other multiple liveborn infant, unspecified as to place of birth
0W8NXZZ	ICD-10-PCS	Procedure	Division of Female Perineum, External Approach
10900ZC	ICD-10-PCS	Procedure	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Open Approach
10903ZC	ICD-10-PCS	Procedure	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Percutaneous Approach
10904ZC	ICD-10-PCS	Procedure	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Percutaneous Endoscopic Approach
10907ZC	ICD-10-PCS	Procedure	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Via Natural or Artificial Opening
10908ZC	ICD-10-PCS	Procedure	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Via Natural or Artificial Opening Endoscopic
10D00Z0	ICD-10-PCS	Procedure	Extraction of Products of Conception, Classical, Open Approach
10D00Z1	ICD-10-PCS	Procedure	Extraction of Products of Conception, Low Cervical, Open Approach
10D00Z2	ICD-10-PCS	Procedure	Extraction of Products of Conception, Extraperitoneal, Open Approach
10D07Z3	ICD-10-PCS	Procedure	Extraction of Products of Conception, Low Forceps, Via Natural or Artificial Opening
10D07Z4	ICD-10-PCS	Procedure	Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening
10D07Z5	ICD-10-PCS	Procedure	Extraction of Products of Conception, High Forceps, Via Natural or Artificial Opening
10D07Z6	ICD-10-PCS	Procedure	Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening
10D07Z7	ICD-10-PCS	Procedure	Extraction of Products of Conception, Internal Version, Via Natural or Artificial Opening
10D07Z8	ICD-10-PCS	Procedure	Extraction of Products of Conception, Other, Via Natural or Artificial Opening
10E0XZZ	ICD-10-PCS	Procedure	Delivery of Products of Conception, External Approach
10S07ZZ	ICD-10-PCS	Procedure	Reposition Products of Conception, Via Natural or Artificial Opening

Appendix D. List of Healthcare Common Procedure Coding System (HCPCS) Procedure Codes used to Define the Exposures in this Request

Code	Code Category	Code Type	Description
Q9979	Procedure	HCPCS	Injection, Alemtuzumab, 1 mg
J0202	Procedure	HCPCS	Injection, alemtuzumab, 1 mg
J9010	Procedure	HCPCS	Injection, alemtuzumab, 10 mg
S0087	Procedure	HCPCS	Injection, alemtuzumab, 30 mg
C9110	Procedure	HCPCS	Injection, alemtuzumab, per 10 mg/ ml
J1595	Procedure	HCPCS	Injection, glatiramer acetate, 20 mg
Q2010	Procedure	HCPCS	Injection, glatiramer acetate, per dose
Q3027	Procedure	HCPCS	Injection, interferon beta-1a, 1 mcg for intramuscular use
Q3028	Procedure	HCPCS	Injection, interferon beta-1a, 1 mcg for subcutaneous use
Q3025	Procedure	HCPCS	Injection, interferon beta-1a, 11 mcg for intramuscular use
Q3026	Procedure	HCPCS	Injection, interferon beta-1a, 11 mcg for subcutaneous use
J1826	Procedure	HCPCS	Injection, interferon beta-1a, 30 mcg
J1825	Procedure	HCPCS	Injection, interferon beta-1a, 33 mcg
J1830	Procedure	HCPCS	Injection interferon beta-1b, 0.25 mg
J2323	Procedure	HCPCS	Injection, natalizumab, 1 mg
Q4079	Procedure	HCPCS	Injection, natalizumab, 1 mg
C9126	Procedure	HCPCS	Injection natalizumab per 5 mg
J9293	Procedure	HCPCS	INJECTION MITOXANTRONE HCL PER 5 MG

Appendix E. List of Generic and Brand Drug Names used to Define the Exposures in this Request

Generic Name	Brand Name
ALEMTUZUMAB	Campath
ALEMTUZUMAB	Lemtrada
DACLIZUMAB	Zenapax
DACLIZUMAB	Zinbryta
DALFAMPRIDINE	Ampyra
DIMETHYL FUMARATE	Tecfidera
DIMETHYL FUMARATE	dimethyl fumarate (bulk)
FINGOLIMOD HCL	Gilenya
GLATIRAMER ACETATE	Copaxone
GLATIRAMER ACETATE	Glatopa
INTERFERON BETA-1A	Avonex
INTERFERON BETA-1A/ALBUMIN HUMAN	Avonex (with albumin)
INTERFERON BETA-1A/ALBUMIN HUMAN	Rebif (with albumin)
INTERFERON BETA-1A/ALBUMIN HUMAN	Rebif Rebidose
INTERFERON BETA-1A/ALBUMIN HUMAN	Rebif Titration Pack
INTERFERON BETA-1B	Betaseron
INTERFERON BETA-1B	Extavia
NATALIZUMAB	Tysabri
PEGINTERFERON BETA-1A	Plegridy
TERIFLUNOMIDE	Aubagio
MITOXANTRONE HCL	mitoxantrone
MITOXANTRONE HCL	Novantrone

Appendix F. Specifications for Parameters for this Request

This request executed the Cohort Identification and Descriptive Analysis (CIDA) Tool, version 5.0.5, to estimate multiple sclerosis drug use before, during, and after pregnancy, among pregnant women in the Sentinel Distributed Database (SDD).

Age Groups (calculated at age at delivery date)	15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49 years
Query Period	January 1, 2001 - August 31, 2017
Coverage Requirement	Medical and Drug
Enrollment Requirement Prior to Delivery Date	484 Days (301 day delivery length + 183 day pre-pregnancy exposure assessment period)
Enrollment Requirement Following Delivery Date	183 days
Enrollment Gap	45 Days

	Pregnancy Episode Creation					Exposure Episode Creation				Event		
Scenario	**Delivery Definition**	**Delivery Washout Period**	**Pregnancy Duration Definition**	**Pre/ PostTerm Evaluation Window**	**Pregnancy Duration in Absence of Specific Code**	**Exposure**	**Incident with respect to**	**Washout**	**Incident Exposure**	**Washout (days)**	**Care Setting**	**Cohort Definition**
1	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	All multiple sclerosis drugs	N/A	None	All multiple sclerosis drugs	0	Any	01
2	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Dalfampridine	N/A	None	Dalfampridine	0	Any	01
3	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Dimethyl fumarate	N/A	None	Dimethyl fumarate	0	Any	01
4	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Fingolimod	N/A	None	Fingolimod	0	Any	01
5	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Glatiramer acetate	N/A	None	Glatiramer acetate	0	Any	01
6	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Interferon beta-1a with or without albumin	N/A	None	Interferon beta-1a with or without albumin	0	Any	01
7	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Interferon beta-1b	N/A	None	Interferon beta-1b	0	Any	01
8	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Peginterferon beta-1a	N/A	None	Peginterferon beta-1a	0	Any	01
9	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Teriflunomide	N/A	None	Teriflunomide	0	Any	01
10	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Alemtuzumab	N/A	None	Alemtuzumab	0	Any	01
11	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Natalizumab	N/A	None	Natalizumab	0	Any	01
12	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Daclizumab	N/A	None	Daclizumab	0	Any	01
13	Algorithm Codes	301 Days	Algorithm Codes	7 Days	273 Days	Mitoxantrone	N/A	None	Mitoxantrone	0	Any	01

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), ICD-10-CM, Healthcare Common Procedure Coding System (HCPCS), and Current Procedural Terminology (CPT) codes are provided by Optum360.

National Drug Codes (NDCs) are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."