Disclaimer

The following report(s) provides findings from an FDA-initiated query using Sentinel. While Sentinel queries may be undertaken to assess potential medical product safety risks, they may also be initiated for various other reasons. Some examples include determining a rate or count of an identified health outcome of interest, examining medical product use, exploring the feasibility of future, more detailed analyses within Sentinel, and seeking to better understand Sentinel capabilities.

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_wp056

Request ID: cder_mpl1p_wp056

Request Description: In this report we describe exposure to multiple sclerosis (MS) drugs before, during and after pregnancies resulting in a live-born delivery among women in the Sentinel Distributed Database (SDD). We also describe MS drug use among matched women during episodes without evidence of a live-birth delivery.

Sentinel Routine Querying Module: Cohort Identification and Descriptive Analysis (CIDA) module, version 10.2.0, with custom programming.

Data Source: We distributed this request to six Sentinel Data Partners on June 25, 2021. These six Data Partners are a subset of the SDD and do not include patients with Medicare coverage. The study period included data from January 1, 2001 through December 31, 2020. Please see Appendix A for a list of dates of available data for each Data Partner.

Study Design: We identified females between the ages of 10 and 49 years of age with evidence of a live birth who had use of medications used to treat multiple sclerosis. We assessed use in the 91-183 days prior to pregnancy, 1-90 days prior to pregnancy, during pregnancy overall, by trimester, 1 - 90 days post-delivery and 91 – 183 days post-delivery. We also identified a comparator cohort of females of the same age who met all inclusion/exclusion criteria and who did not have evidence of a live birth during the study period and assessed their use of multiple sclerosis medications. This is a Type 4 analysis in the Query Request Package (QRP) documentation.

Pregnancy Episode Creation: We identified pregnancies ending in a live birth using a claims-based algorithm.[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 codes.

Exposure Identification During Pregnancy: We identified pregnancy episodes with multiple sclerosis drug dispensings using dispensing data in any care setting and National Drug Codes (NDCs) and Healthcare Common Procedure Coding System (HCPCS) codes. MS drugs were grouped by the following generic names: dalfampridine, dimethyl fumarate, fingolimod, glatiramer acetate, interferon beta-1a, interferon beta-1b, peginterferon beta-1a, teriflunomide, alemtuzumab, natalizumab, ocrelizumab, cladribine, siponimod, diroximel fumarate and mitoxantrone. All of the drugs together were assessed in the "Any MS Drugs" category. We calculated counts of dispensing episodes during the 183 days prior to pregnancy start, pregnancy trimester and 183 days after delivery. Furthermore, we reported the number of pregnancy episodes with a multiple sclerosis dispensing overall and stratified by age group, delivery year and gestational week. Please see Appendix D for a list of generic and brand names of medical products and Appendix E for a list of HCPCS codes used to define exposures in this request.

Cohort Eligibility Criteria: We required members to be enrolled in health plans with medical and drug coverage in the 484 days prior to their delivery date and 183 days after their delivery date in order to be included in the cohort; a gap in coverage of up to 45 days was allowed and treated as continuous enrollment. The following age groups were included in the cohort: 10-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49 years.

Baseline Characteristics: We assessed the following characteristics in the 183 days prior to and through the start of pregnancy: anxiety, arthritis, chronic lung disease, depression, diabetes, alcohol abuse (Elixhauser), gastrointestinal disorders, hyperlipidemia, hypertension and thyroid disease. Age and calendar year are assessed at delivery date. We identified these conditions by presence of a diagnosis in any care setting, and used ICD-9-CM and ICD-10-CM diagnosis codes to define these conditions. Please see Appendix F for a list of codes used to define baseline characteristics in this request.

Please see Appendices G-K for the specifications of parameters used in the analyses for this request.

Overview for Request: cder_mpl1p_wp056
Limitations: Algorithms used to estimate pregnancy duration and exposures 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 (info@sentinelsystem.org) for questions and to provide comments/suggestions for future enhancements to this document. For more information on Sentinel's routine querying modules, please refer to the documentation (https://dev.sentinelsystem.org/projects/SENTINEL/repos/sentinel-routine-querying-tool-documentation/browse).

[1] Li, Q., et al., Validation of an algorithm to estimate gestational age in electronic health plan databases. Pharmacoepidemiol Drug Saf, 2013. 22(5): p. 524-32.

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

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). The Care Setting, along with the Principal Diagnosis Indicator (PDX), 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.

Charlson/Elixhauser Combined Comorbidity Score - calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (e.g., in the 183 days prior to index).

Code Days - the minimum number of times the diagnosis must be found during the evaluation period in order to fulfill the algorithm to identify the corresponding patient characteristic.

Cohort Definition (drug/exposure) - indicates how the cohort will be defined: 01: Cohort includes only the first valid treatment episode during the query period; 02: Cohort includes all valid treatment episodes during the query period; 03: Cohort includes all valid treatment episodes during the query period until an event occurs.

Computed Start Marketing Date - represents the first observed dispensing date among all valid users within a GROUP (scenario) within each Data Partner site.

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 Modular Program (MP) algorithm: 0: Counts all occurrences of a health outcome of interest (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 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.

Switch Evaluation Step Value - value used to differentiate evaluation step. Each switch pattern can support up to 2 evaluation steps (0 = switch pattern evaluation start; 1 = first evaluation; 2 = second evaluation).

Switch Gap Inclusion Indicator - indicator for whether gaps in treatment episodes that are included in a switch episode will be counted as part of the switch episode duration.

Switch Pattern Cohort Inclusion Date - indicates which date to use for inclusion into the switch pattern cohort of interest as well as optionally as the index date of the treatment episode initiating the switch pattern. Valid options are the product approval date, product marketing date, other requester defined date, or computed start marketing date.

Switch Pattern Cohort Inclusion Strategy - indicates how the switch pattern cohort inclusion date will be used: 01: used only as a switch cohort entry date. First treatment episode dispensing date is used as index for computing time to first switch; 02: used as switch cohort entry date and as initial switch step index date for computing time to first switch.

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.

*all terms may not be used in this report

Table 1. Baseline Characteristics of the Pregnant Cohort and Matched Non-Pregnant Cohort Among All Pregnancies in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

Characteristic[1]	Pregnant cohort		Matched non-pregnant cohort	
	Number	Percent	Number	Percent
Number of patients	2,142,706	100.0%	2,140,869	100.0%
Total unique pregnancy episodes and matched non-pregnant episodes	2,630,485	100.0%	2,630,485	100.0%
Demographic Characteristics	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Mean maternal age at delivery date (or matched index date) (Years)	30.6	5.4	30.6	5.5
	Number	**Percent**	**Number**	**Percent**
Maternal age categories (Years)				
10-19	126,959	4.8%	126,959	4.8%
20-24	351,837	13.4%	351,837	13.4%
25-29	639,306	24.3%	639,306	24.3%
30-34	897,288	34.1%	897,288	34.1%
35-39	494,183	18.8%	494,183	18.8%
40-44	109,919	4.2%	109,919	4.2%
45-49	10,993	0.4%	10,993	0.4%
Year of delivery date (or matched index date)				
2001	25,675	1.0%	25,675	1.0%
2002	37,615	1.4%	37,615	1.4%
2003	37,084	1.4%	37,084	1.4%
2004	36,932	1.4%	36,932	1.4%
2005	37,463	1.4%	37,463	1.4%
2006	38,119	1.4%	38,119	1.4%
2007	80,214	3.0%	80,214	3.0%
2008	103,608	3.9%	103,608	3.9%
2009	176,342	6.7%	176,342	6.7%
2010	201,406	7.7%	201,406	7.7%
2011	192,254	7.3%	192,254	7.3%
2012	188,422	7.2%	188,422	7.2%
2013	185,173	7.0%	185,173	7.0%
2014	198,747	7.6%	198,747	7.6%
2015	218,163	8.3%	218,163	8.3%
2016	224,454	8.5%	224,454	8.5%
2017	224,836	8.5%	224,836	8.5%
2018	213,981	8.1%	213,981	8.1%
2019	173,097	6.6%	173,097	6.6%
2020	36,900	1.4%	36,900	1.4%
Race categories[2]				
American Indian or Alaska Native	3,290	0.2%	3,920	0.2%
Asian	92,976	4.3%	81,667	3.8%
Black or African American	77,202	3.6%	85,033	4.0%
Native Hawaiian or Other Pacific Islander	4,685	0.2%	4,451	0.2%
Unknown	1,649,872	77.0%	1,641,182	76.7%
White	314,681	14.7%	324,616	15.2%
Hispanic	103,215	4.8%	90,893	4.2%
Pregnancy Characteristics				
Preterm	207,182	7.9%	-	-
Term	587,400	22.3%	-	-
Postterm	480,646	18.3%	-	-
Unknown term	1,355,257	51.5%	-	-
Mean gestational age[3] at delivery	39.8	1.7	-	-

Table 1. Baseline Characteristics of the Pregnant Cohort and Matched Non-Pregnant Cohort Among All Pregnancies in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	Pregnant cohort		Matched non-pregnant cohort	
Baseline[4] Health Characteristics				
Alcohol Abuse (Elixhauser)	7,774	0.3%	9,013	0.3%
Anxiety	136,697	5.2%	164,728	6.3%
Arthritis	13,228	0.5%	18,488	0.7%
Chronic Lung Disease	85,901	3.3%	89,998	3.4%
Depression	108,323	4.1%	138,064	5.2%
Diabetes	30,423	1.2%	41,652	1.6%
GI Disorders	136,495	5.2%	141,394	5.4%
Hyperlipidemia	61,051	2.3%	78,151	3.0%
Hypertension	58,451	2.2%	84,144	3.2%
Thyroid Disease	133,671	5.1%	111,653	4.2%

[1]All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

[2]Race data may not be completely populated at all Data Partners; therefore, data about race may be incomplete.

[3]Gestational age estimated using a claims-
based algorithm, previously validated in the Medication Exposure in Pregnancy Risk Evaluation Program (MEPREP), to identify pregnancies ending in a live birth. ICD-10-CM diagnosis codes indicative of weeks of gestation, and ICD-9-CM and ICD-10-
CM diagnosis codes for preterm and postterm deliveries, were used 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

[4]Baseline period in reference to user defined index date (pregnancy start, exposure date, or delivery date)

Table 2. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

Exposure(s)	183-91 days Pre-pregnancy		90-1 days Pre-pregnancy		Use During Any Trimester		Use in First Trimester	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort								
All Pregnancies								
Any MS Drug	1,782	0.1	1,594	0.1	1,362	0.1	1,267	0.0
Dalfampridine	19	0.0	21	0.0	16	0.0	16	0.0
Dimethyl fumarate	196	0.0	176	0.0	146	0.0	136	0.0
Fingolimod	89	0.0	72	0.0	57	0.0	56	0.0
Glatiramer Acetate	726	0.0	703	0.0	666	0.0	614	0.0
Interferon beta-1a	486	0.0	408	0.0	305	0.0	281	0.0
Interferon beta-1b	119	0.0	100	0.0	73	0.0	69	0
Peginterferon beta-1a	4	0.0	4	0.0	4	0.0	3	0.0
Teriflunomide	9	0.0	11	0.0	8	0.0	7	0.0
Alemtuzumab	4	0.0	1	0.0	2	0.0	2	0.0
Natalizumab	168	0.0	146	0.0	115	0.0	107	0.0
Ocrelizumab	13	0.0	11	0.0	5	0.0	5	0.0
Cladribine	0	0.0	0	0.0	1	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	2	0.0	0	0.0	0	0.0	0	0.0
Matched Non-Pregnant Cohort								
All Pregnancies								
Any MS Drug	3,086	0.1	3,203	0.1	3,875	0.1	3,328	0.1
Dalfampridine	74	0.0	76	0.0	115	0.0	91	0.0
Dimethyl fumarate	374	0.0	402	0.0	569	0.0	448	0.0
Fingolimod	233	0.0	256	0.0	326	0.0	269	0.0
Glatiramer Acetate	954	0.0	974	0.0	1,208	0.0	986	0.0
Interferon beta-1a	936	0.0	939	0.0	1,134	0.0	973	0.0
Interferon beta-1b	233	0.0	232	0.0	269	0.0	232	0.0
Peginterferon beta-1a	17	0.0	21	0.0	31	0.0	26	0.0
Teriflunomide	49	0.0	63	0.0	98	0.0	72	0.0
Alemtuzumab	4	0.0	6	0.0	19	0.0	8	0.0
Natalizumab	316	0.0	342	0.0	436	0.0	363	0.0
Ocrelizumab	28	0.0	31	0.0	104	0.0	39	0.0
Cladribine	2	0.0	1	0.0	2	0.0	1	0.0
Siponimod	0	0.0	0	0.0	1	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	7	0.0	4	0.0	7	0.0	4	0.0

Percents displayed represent proportion of total pregnancy episodes/matched non-pregnant episodes.

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Table 2. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	Use in Second Trimester		Use in Third Trimester		Use in All Trimesters		Use Only During First Trimester	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort								
All Pregnancies								
Any MS Drug	417	0.0	394	0.0	245	0.0	812	0.0
Dalfampridine	7	0.0	2	0.0	2	0.0	9	0.0
Dimethyl fumarate	43	0.0	39	0.0	24	0.0	88	0.0
Fingolimod	20	0.0	15	0.0	14	0.0	36	0.0
Glatiramer Acetate	254	0.0	256	0.0	174	0.0	342	0.0
Interferon beta-1a	62	0.0	56	0.0	18	0.0	207	0.0
Interferon beta-1b	11	0.0	5	0.0	1	0.0	58	0.0
Peginterferon beta-1a	0	0.0	1	0.0	0	0.0	3	0.0
Teriflunomide	6	0.0	6	0.0	5	0.0	1	0.0
Alemtuzumab	0	0.0	0	0.0	0	0.0	2	0.0
Natalizumab	23	0.0	17	0.0	9	0.0	87	0.0
Ocrelizumab	0	0.0	0	0.0	0	0.0	5	0.0
Cladribine	0	0.0	1	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0
Matched Non-Pregnanct Cohort								
All Pregnancies								
Any MS Drug	3,425	0.1	3,483	0.1	2,933	0.1	154	0.0
Dalfampridine	93	0.0	93	0.0	70	0.0	11	0.0
Dimethyl fumarate	462	0.0	499	0.0	378	0.0	38	0.0
Fingolimod	288	0.0	295	0.0	237	0.0	11	0.0
Glatiramer Acetate	998	0.0	1,001	0.0	782	0.0	104	0.0
Interferon beta-1a	979	0.0	984	0.0	818	0.0	64	0.0
Interferon beta-1b	236	0.0	237	0.0	200	0.0	12	0.0
Peginterferon beta-1a	26	0.0	26	0.0	22	0.0	2	0.0
Teriflunomide	72	0.0	79	0.0	54	0.0	8	0.0
Alemtuzumab	6	0.0	5	0.0	0	0.0	8	0.0
Natalizumab	371	0.0	383	0.0	313	0.0	28	0.0
Ocrelizumab	55	0.0	47	0.0	3	0.0	13	0.0
Cladribine	1	0.0	1	0.0	0	0.0	0	0.0
Siponimod	1	0.0	1	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	3	0.0	5	0.0	1	0.0	2	0.0

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Table 2. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	Use Only During Second Trimester		Use Only During Third Trimester		1-90 days Post-pregnancy		91-183 days Post-pregnancy	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort								
All Pregnancies								
Any MS Drug	4	0.0	75	0.0	1,196	0.0	1,626	0.1
Dalfampridine	0	0.0	0	0.0	12	0.0	22	0.0
Dimethyl fumarate	0	0.0	10	0.0	140	0.0	214	0.0
Fingolimod	0	0.0	1	0.0	46	0.0	96	0.0
Glatiramer Acetate	3	0.0	37	0.0	507	0.0	630	0.0
Interferon beta-1a	0	0.0	22	0.0	288	0.0	383	0.0
Interferon beta-1b	0	0.0	4	0.0	69	0.0	93	0.0
Peginterferon beta-1a	0	0.0	1	0.0	6	0.0	8	0.0
Teriflunomide	0	0.0	1	0.0	8	0.0	19	0.0
Alemtuzumab	0	0.0	0	0.0	14	0.0	7	0.0
Natalizumab	2	0.0	3	0.0	128	0.0	197	0.0
Ocrelizumab	0	0.0	0	0.0	23	0.0	30	0.0
Cladribine	0	0.0	1	0.0	0	0.0	4	0.0
Siponimod	0	0.0	0	0.0	1	0.0	1	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	2	0.0	0	0.0
Matched Non-Pregnant Cohort								
All Pregnancies								
Any MS Drug	64	0.0	229	0.0	3588	0.1	3675	0.1
Dalfampridine	1	0.0	11	0.0	102	0.0	111	0.0
Dimethyl fumarate	5	0.0	64	0.0	531	0.0	534	0.0
Fingolimod	0	0.0	26	0.0	306	0.0	332	0.0
Glatiramer Acetate	12	0.0	97	0.0	1020	0.0	1054	0.0
Interferon beta-1a	9	0.0	77	0.0	978	0.0	979	0.0
Interferon beta-1b	4	0.0	17	0.0	235	0.0	221	0.0
Peginterferon beta-1a	1	0.0	3	0.0	32	0.0	31	0.0
Teriflunomide	2	0.0	17	0.0	87	0.0	97	0.0
Alemtuzumab	6	0.0	5	0.0	6	0.0	7	0.0
Natalizumab	6	0.0	34	0.0	402	0.0	415	0.0
Ocrelizumab	39	0.0	18	0.0	82	0.0	65	0.0
Cladribine	0	0.0	1	0.0	2	0.0	1	0.0
Siponimod	0	0.0	0	0.0	2	0.0	2	0.0
Diroximel fumarate	0	0.0	0	0.0	2	0.0	2	0.0
Mitoxantrone	0	0.0	1	0.0	4	0.0	8	0.0

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Table 3. Medical Product Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Age at Delivery, from January 1, 2001 to December 31, 2020

	Total Pregnancy Episodes		10-19 years		20-24 years		25-29 years		30-34 years		35-39 years		40-45 years		45-49 years	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort																
Medical Product of Interest																
Any MS Drug	1362	0.1	11	0.0	70	0.0	252	0.0	515	0.1	378	0.1	118	0.1	18	0.2
Dalfampridine	16	0.0	1	0.0	1	0.0	1	0.0	5	0.0	3	0.0	3	0.0	2	0.0
Dimethyl fumarate	146	0.0	2	0.0	7	0.0	26	0.0	51	0.0	38	0.0	19	0.0	3	0.0
Fingolimod	57	0.0	1	0.0	4	0.0	6	0.0	28	0.0	14	0.0	2	0.0	2	0.0
Glatiramer Acetate	666	0.0	2	0.0	30	0.0	116	0.0	252	0.0	203	0.0	55	0.1	8	0.1
Interferon beta-1a	305	0.0	2	0.0	21	0.0	66	0.0	112	0.0	77	0.0	23	0.0	4	0.0
Interferon beta-1b	73	0.0	3	0.0	3	0.0	20	0.0	29	0.0	13	0.0	5	0.0	0	0.0
Peginterferon beta-1a	4	0.0	0	0.0	0	0.0	0	0.0	1	0.0	2	0.0	1	0.0	0	0.0
Teriflunomide	8	0.0	0	0.0	0	0.0	0	0.0	2	0.0	3	0.0	3	0.0	0	0.0
Alemtuzumab	2	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0	0	0.0
Natalizumab	115	0.0	2	0.0	6	0.0	21	0.0	45	0.0	31	0.0	10	0.0	0	0.0
Ocrelizumab	5	0.0	0	0.0	0	0.0	1	0.0	2	0.0	0	0.0	1	0.0	1	0.0
Cladribine	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total Comparator Episodes		**10-19 years**		**20-24 years**		**25-29 years**		**30-34 years**		**35-39 years**		**40-45 years**		**45-49 years**	
Matched Comparator Cohort (Non-Pregnant)																
Medical Product of Interest																
Any MS Drug	3875	0.1	21	0.0	134	0.0	634	0.1	1602	0.2	1164	0.2	280	0.3	40	0.4
Dalfampridine	115	0.0	1	0.0	1	0.0	11	0.0	46	0.0	40	0.0	12	0.0	4	0.0
Dimethyl fumarate	569	0.0	3	0.0	17	0.0	79	0.0	229	0.0	194	0.0	41	0.0	6	0.1
Fingolimod	326	0.0	1	0.0	11	0.0	39	0.0	148	0.0	102	0.0	23	0.0	2	0.0
Glatiramer Acetate	1208	0.0	6	0.0	36	0.0	217	0.0	487	0.1	353	0.1	101	0.1	8	0.1
Interferon beta-1a	1134	0.0	10	0.0	57	0.0	213	0.0	473	0.1	301	0.1	68	0.1	12	0.1
Interferon beta-1b	269	0.0	2	0.0	9	0.0	49	0.0	96	0.0	91	0.0	18	0.0	4	0.0
Peginterferon beta-1a	31	0.0	0	0.0	1	0.0	6	0.0	12	0.0	8	0.0	3	0.0	1	0.0
Teriflunomide	98	0.0	0	0.0	2	0.0	9	0.0	34	0.0	44	0.0	8	0.0	1	0.0
Alemtuzumab	19	0.0	0	0.0	0	0.0	0	0.0	14	0.0	3	0.0	2	0.0	0	0.0
Natalizumab	436	0.0	2	0.0	16	0.0	69	0.0	206	0.0	117	0.0	20	0.0	6	0.1
Ocrelizumab	104	0.0	0	0.0	3	0.0	14	0.0	39	0.0	36	0.0	11	0.0	1	0.0
Cladribine	2	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0
Siponimod	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	7	0.0	0	0.0	0	0.0	1	0.0	3	0.0	2	0.0	1	0.0	0	0.0

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Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	Total Pregnancy Episodes		2001		2002		2003		2004		2005	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort												
Medical Product of Interest												
All MS Drugs	1362	0.1	4	0.0	6	0.0	7	0.0	5	0.0	7	0.0
Dalfampridine	16	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Dimethyl fumarate	146	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Fingolimod	57	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Glatiramer Acetate	666	0.0	1	0.0	0	0.0	2	0.0	3	0.0	4	0.0
Interferon beta-1a	305	0.0	3	0.0	5	0.0	3	0.0	2	0.0	2	0.0
Interferon beta-1b	73	0.0	0	0.0	1	0.0	2	0.0	0	0.0	1	0.0
Peginterferon beta-1a	4	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teriflunomide	8	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Alemtuzumab	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Natalizumab	115	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ocrelizumab	5	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Cladribine	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total Comparator Episodes		2001		2002		2003		2004		2005	
Matched Comparator Cohort (Non-Pregnant)												
Medical Product of Interest												
All MS Drugs	3875	0.1	22	0.1	21	0.1	25	0.1	35	0.1	42	0.1
Dalfampridine	115	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Dimethyl fumarate	569	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Fingolimod	326	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Glatiramer Acetate	1208	0.0	6	0.0	6	0.0	7	0.0	11	0.0	17	0.0
Interferon beta-1a	1134	0.0	14	0.1	13	0.0	15	0.0	20	0.1	26	0.1
Interferon beta-1b	269	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0
Peginterferon beta-1a	31	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teriflunomide	98	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Alemtuzumab	19	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Natalizumab	436	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Ocrelizumab	104	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

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	Total Pregnancy Episodes		2001		2002		2003		2004		2005	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Total Comparator Episodes		2001		2002		2003		2004		2005	
Matched Comparator Cohort (Non-Pregnant)												
Cladribine	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Siponimod	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	7	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0

Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2006		2007		2008		2009		2010		2011	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort												
Medical Product of Interest												
All MS Drugs	10	0.0	38	0.0	60	0.1	64	0.0	117	0.1	105	0.1
Dalfampridine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Dimethyl fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Fingolimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Glatiramer Acetate	4	0.0	12	0.0	29	0.0	34	0.0	62	0.0	47	0.0
Interferon beta-1a	5	0.0	21	0.0	23	0.0	22	0.0	40	0.0	37	0.0
Interferon beta-1b	1	0.0	5	0.0	4	0.0	3	0.0	12	0.0	10	0.0
Peginterferon beta-1a	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teriflunomide	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Alemtuzumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Natalizumab	0	0.0	0	0.0	4	0.0	5	0.0	4	0.0	11	0.0
Ocrelizumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Cladribine	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	2006		**2007**		**2008**		**2009**		**2010**		**2011**	
Matched Comparator Cohort (Non-Pregnant)												
Medical Product of Interest												
All MS Drugs	31	0.1	100	0.1	133	0.1	277	0.2	302	0.1	301	0.2
Dalfampridine	0	0.0	0	0.0	1	0.0	0	0.0	8	0.0	14	0.0
Dimethyl fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Fingolimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	20	0.0
Glatiramer Acetate	13	0.0	35	0.0	45	0.0	100	0.1	119	0.1	116	0.1
Interferon beta-1a	17	0.0	50	0.1	69	0.1	130	0.1	126	0.1	117	0.1
Interferon beta-1b	3	0.0	19	0.0	13	0.0	39	0.0	41	0.0	36	0.0
Peginterferon beta-1a	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teriflunomide	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Alemtuzumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Natalizumab	0	0.0	2	0.0	11	0.0	31	0.0	36	0.0	29	0.0
Ocrelizumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

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Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2006		2007		2008		2009		2010		2011	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	2006		2007		2008		2009		2010		2011	
Matched Comparator Cohort (Non-Pregnant)												
Cladribine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	1	0.0	1	0.0	1	0.0	0	0.0	1	0.0

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Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2012		2013		2014		2015		2016	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pregnant Cohort										
Medical Product of Interest										
All MS Drugs	93	0.0	84	0.0	101	0.1	113	0.1	121	0.1
Dalfampridine	2	0.0	0	0.0	3	0.0	0	0.0	2	0.0
Dimethyl fumarate	0	0.0	0	0.0	14	0.0	20	0.0	27	0.0
Fingolimod	3	0.0	1	0.0	6	0.0	6	0.0	3	0.0
Glatiramer Acetate	40	0.0	48	0.0	59	0.0	55	0.0	57	0.0
Interferon beta-1a	34	0.0	16	0.0	17	0.0	17	0.0	17	0.0
Interferon beta-1b	10	0.0	12	0.0	3	0.0	3	0.0	2	0.0
Peginterferon beta-1a	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Teriflunomide	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Alemtuzumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Natalizumab	5	0.0	8	0.0	4	0.0	13	0.0	18	0.0
Ocrelizumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Cladribine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	2012		**2013**		**2014**		**2015**		**2016**	
Matched Comparator Cohort (Non-Pregnant)										
Medical Product of Interest										
All MS Drugs	316	0.2	280	0.2	294	0.1	365	0.2	332	0.1
Dalfampridine	11	0.0	10	0.0	16	0.0	13	0.0	8	0.0
Dimethyl fumarate	0	0.0	25	0.0	84	0.0	123	0.1	75	0.0
Fingolimod	14	0.0	30	0.0	29	0.0	44	0.0	49	0.0
Glatiramer Acetate	126	0.1	84	0.0	90	0.0	97	0.0	92	0.0
Interferon beta-1a	130	0.1	101	0.1	75	0.0	67	0.0	56	0.0
Interferon beta-1b	21	0.0	20	0.0	19	0.0	13	0.0	7	0.0
Peginterferon beta-1a	0	0.0	0	0.0	0	0.0	3	0.0	6	0.0
Teriflunomide	0	0.0	6	0.0	6	0.0	8	0.0	18	0.0
Alemtuzumab	2	0.0	0	0.0	0	0.0	0	0.0	2	0.0
Natalizumab	35	0.0	38	0.0	28	0.0	46	0.0	50	0.0
Ocrelizumab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2012		2013		2014		2015		2016	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	2012		2013		2014		2015		2016	
Matched Comparator Cohort (Non-Pregnant)										
Cladribine	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0

Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2017		2018		2019		2020	
	Number	Percent	Number	Percent	Number	Percent	Percent	Percent
Pregnant Cohort								
Medical Product of Interest								
All MS Drugs	153	0.1	130	0.1	116	0.1	28	0.1
Dalfampridine	3	0.0	2	0.0	2	0.0	1	0.0
Dimethyl fumarate	28	0.0	33	0.0	18	0.0	6	0.0
Fingolimod	14	0.0	11	0.0	9	0.0	3	0.0
Glatiramer Acetate	77	0.0	60	0.0	61	0.0	11	0.0
Interferon beta-1a	16	0.0	14	0.0	8	0.0	3	0.0
Interferon beta-1b	4	0.0	0	0.0	0	0.0	0	0.0
Peginterferon beta-1a	2	0.0	1	0.0	1	0.0	0	0.0
Teriflunomide	0	0.0	3	0.0	3	0.0	1	0.0
Alemtuzumab	1	0.0	0	0.0	1	0.0	0	0.0
Natalizumab	13	0.0	9	0.0	13	0.0	8	0.0
Ocrelizumab	0	0.0	0	0.0	4	0.0	1	0.0
Cladribine	0	0.0	0	0.0	0	0.0	0	0.0
Siponimod	0	0.0	0	0.0	0	0.0	0	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0
	2017		**2018**		**2019**		**2020**	
Matched Comparator Cohort (Non-Pregnant)								
Medical Product of Interest								
All MS Drugs	342	0.2	294	0.1	306	0.2	57	0.2
Dalfampridine	13	0.0	7	0.0	13	0.0	1	0.0
Dimethyl fumarate	100	0.0	69	0.0	80	0.0	13	0.0
Fingolimod	55	0.0	45	0.0	33	0.0	7	0.0
Glatiramer Acetate	83	0.0	75	0.0	72	0.0	14	0.0
Interferon beta-1a	42	0.0	39	0.0	24	0.0	3	0.0
Interferon beta-1b	9	0.0	6	0.0	3	0.0	0	0.0
Peginterferon beta-1a	11	0.0	5	0.0	5	0.0	1	0.0
Teriflunomide	22	0.0	15	0.0	18	0.0	5	0.0
Alemtuzumab	8	0.0	3	0.0	2	0.0	1	0.0
Natalizumab	37	0.0	48	0.0	37	0.0	7	0.0
Ocrelizumab	2	0.0	22	0.0	68	0.0	12	0.0

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Table 4. Medical Product of Interest Use During Any Trimester and Matched Non-Pregnant Episodes in the Sentinel Distributed Database (SDD) Among the Pregnant Cohort and Matched Comparator Cohort, by Calendar Year, from January 1, 2001 to December 31, 2020

	2017		2018		2019		2020	
	Number	Percent	Number	Percent	Number	Percent	Percent	Percent
		2017		2018		2019		2020
Matched Comparator Cohort (Non-Pregnant)								
Cladribine	0	0.0	0	0.0	0	0.0	1	0.0
Siponimod	0	0.0	0	0.0	0	0.0	1	0.0
Diroximel fumarate	0	0.0	0	0.0	0	0.0	0	0.0
Mitoxantrone	0	0.0	0	0.0	0	0.0	0	0.0

Table 5. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use by Gestational Week in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4
									Number								
Pregnant Cohort																	
Medical Product of Interest																	
Any MS Drug	1227	1237	1202	1202	1185	1192	1184	1147	1141	1121	1088	1082	1055	1057	1028	1017	996
Dalfampridine	15	15	16	15	14	14	17	17	16	16	14	12	14	14	13	14	13
Dimethyl fumarate	153	150	149	143	147	145	138	132	131	127	123	126	122	123	115	109	108
Fingolimod	63	61	65	64	60	55	54	50	56	52	53	52	51	51	53	52	51
Glatiramer Acetate	544	550	532	541	534	546	549	538	542	545	541	536	530	528	523	510	512
Interferon beta-1a	344	345	340	332	324	328	321	306	296	288	270	274	262	253	244	250	232
Interferon beta-1b	76	78	76	75	73	75	80	76	73	71	67	59	56	59	58	58	55
Peginterferon beta-1a	5	4	4	4	4	4	4	4	3	2	2	2	2	2	2	2	2
Teriflunomide	7	8	7	9	10	10	10	10	9	8	8	6	6	6	7	6	6
Alemtuzumab	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	0
Natalizumab	33	38	28	31	31	30	29	29	30	29	23	26	24	33	23	26	25
Ocrelizumab	2	4	3	4	2	3	3	3	3	3	4	2	3	2	3	2	3
Cladribine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Siponimod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4
Matched Comparator Cohort (Non-Pregnant)																	
Medical Product of Interest																	
Any MS Drug	2409	2446	2446	2454	2488	2486	2491	2484	2497	2504	2547	2524	2580	2577	2559	2543	2599
Dalfampridine	61	63	60	58	58	61	63	62	64	64	62	62	64	67	70	72	74
Dimethyl fumarate	315	323	326	322	338	342	355	361	348	348	356	359	359	364	360	356	358
Fingolimod	219	220	224	233	234	233	226	224	219	223	229	226	224	230	228	225	235
Glatiramer Acetate	773	772	768	775	770	759	765	759	770	767	792	785	792	786	779	782	775
Interferon beta-1a	758	769	780	778	785	788	792	793	797	790	787	783	804	803	794	807	822
Interferon beta-1b	185	188	181	191	191	189	188	183	181	194	201	196	198	199	194	192	194
Peginterferon beta-1a	16	16	16	17	17	19	18	19	19	21	21	20	20	20	20	20	21
Teriflunomide	39	41	37	35	37	37	39	39	45	43	48	52	58	54	59	57	59
Alemtuzumab	1	0	0	0	0	1	2	4	2	1	0	0	0	0	0	2	2
Natalizumab	83	102	95	80	96	100	91	81	101	101	102	88	108	100	111	88	109
Ocrelizumab	2	3	4	5	7	8	7	10	3	6	2	5	4	5	3	5	4
Cladribine	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Siponimod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	0	0	0	0	1	0	0	1	0	0	0	1	1	1	0	0	1

*Defaults to use during any trimester, but use during other pregnancy periods can be user-defined (ANY#)

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Table 5. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use by Gestational Week in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
									Number											
Pregnant Cohort																				
Medical Product of Interest																				
Any MS Drug	975	898	812	720	608	514	454	420	391	351	332	316	305	291	287	276	273	256	249	242
Dalfampridine	15	15	14	13	13	8	7	7	7	7	4	4	4	5	4	4	4	3	2	2
Dimethyl fumarate	107	99	88	78	69	58	59	51	48	42	39	35	34	31	31	30	27	26	26	25
Fingolimod	50	49	46	39	33	26	23	21	21	19	17	14	15	15	15	14	14	14	15	15
Glatiramer Acetate	506	467	433	388	326	281	249	238	227	215	207	203	192	194	193	188	189	181	171	169
Interferon beta-1a	225	210	187	157	133	114	95	81	69	56	53	47	45	36	36	31	29	26	25	21
Interferon beta-1b	52	48	44	38	30	23	21	17	17	11	9	9	8	6	5	5	4	3	3	2
Peginterferon beta-1a	3	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Teriflunomide	6	6	5	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5
Alemtuzumab	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Natalizumab	20	13	6	9	8	7	3	8	5	3	3	4	7	5	3	4	5	2	5	6
Ocrelizumab	2	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladribine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Siponimod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Matched Comparator Cohort (Non-Pregnant)																				
Medical Product of Interest																				
Any MS Drug	2578	2604	2600	2633	2641	2631	2649	2629	2627	2633	2645	2638	2654	2661	2685	2684	2690	2672	2662	2681
Dalfampridine	73	73	75	75	76	76	79	77	70	68	70	76	68	70	74	69	70	72	72	78
Dimethyl fumarate	364	358	355	370	366	369	378	382	377	374	379	394	389	390	398	394	391	388	389	395
Fingolimod	237	247	241	243	248	251	249	252	249	247	250	257	257	256	253	249	249	250	247	253
Glatiramer Acetate	777	789	796	806	801	797	796	786	784	799	790	791	787	785	794	805	817	813	817	806
Interferon beta-1a	813	809	819	814	812	817	820	809	800	806	813	804	811	821	817	825	824	819	810	820
Interferon beta-1b	190	192	194	200	197	199	199	200	196	204	206	199	205	203	200	199	202	198	195	203
Peginterferon beta-1a	22	22	23	21	22	22	24	23	24	23	21	21	22	22	23	21	22	20	21	21
Teriflunomide	55	60	57	60	57	63	59	59	63	63	61	61	67	63	67	65	66	64	63	57
Alemtuzumab	1	0	0	1	1	0	2	2	0	0	0	0	0	1	1	0	2	1	1	2
Natalizumab	99	98	96	94	117	98	101	93	110	97	102	90	101	105	108	106	92	103	99	107
Ocrelizumab	1	8	4	6	4	3	5	2	9	8	10	5	3	6	8	8	11	4	5	3
Cladribine	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Siponimod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	1	2	1	2	1

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Table 5. Pregnancy Episodes and Matched Non-Pregnant Episodes with Multiple Sclerosis Drugs Use by Gestational Week in the Sentinel Distributed Database (SDD) from January 1, 2001 to December 31, 2020

	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
										Number										
Pregnant Cohort																				
Medical Product of Interest																				
Any MS Drug	232	236	229	231	231	229	227	222	221	224	234	245	250	272	286	278	248	230	203	172
Dalfampridine	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dimethyl fumarate	25	23	24	25	23	24	23	22	20	21	23	25	27	30	31	35	32	29	24	21
Fingolimod	14	14	13	14	14	14	13	12	12	11	11	10	10	10	10	10	9	9	9	8
Glatiramer Acetate	164	171	166	167	172	169	168	166	171	167	172	174	178	187	193	187	168	155	138	117
Interferon beta-1a	20	20	18	18	15	15	15	14	14	18	22	28	28	36	42	40	35	35	30	24
Interferon beta-1b	2	1	1	0	1	1	1	1	1	1	2	2	3	3	4	3	2	1	1	1
Peginterferon beta-1a	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
Teriflunomide	5	5	5	5	5	5	5	5	4	4	4	4	4	4	3	2	2	2	2	2
Alemtuzumab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Natalizumab	3	3	3	3	2	2	3	3	0	3	1	3	1	3	3	2	1	0	0	0
Ocrelizumab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladribine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Siponimod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Matched Comparator Cohort (Non-Pregnant)																				
Medical Product of Interest																				
Any MS Drug	2661	2701	2669	2707	2707	2705	2713	2737	2747	2736	2759	2742	2732	2707	2696	2551	2370	2178	1967	1776
Dalfampridine	79	81	76	80	74	73	74	76	72	73	74	76	75	73	78	76	72	67	63	55
Dimethyl fumarate	391	405	405	409	413	418	415	423	422	425	432	430	442	432	433	425	411	375	347	319
Fingolimod	254	252	253	251	246	251	260	264	262	261	268	270	269	262	266	255	247	231	215	189
Glatiramer Acetate	796	812	794	794	813	799	806	805	815	821	828	820	814	799	793	746	683	626	557	498
Interferon beta-1a	817	823	818	842	820	815	824	840	839	823	828	824	812	806	817	774	719	664	597	538
Interferon beta-1b	201	192	196	200	201	197	196	202	204	194	187	187	190	194	190	181	169	156	132	120
Peginterferon beta-1a	21	21	23	21	22	20	20	20	21	21	22	23	23	23	23	22	21	19	18	15
Teriflunomide	63	62	63	66	70	68	66	63	63	65	68	67	63	64	62	58	60	55	50	46
Alemtuzumab	2	0	0	0	1	2	2	0	0	0	1	0	0	0	1	0	0	0	0	0
Natalizumab	93	107	94	106	99	116	107	107	105	109	101	95	102	106	91	64	34	26	21	17
Ocrelizumab	7	8	6	5	6	8	3	7	7	7	7	6	5	6	5	9	4	2	2	2
Cladribine	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Siponimod	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Diroximel fumarate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mitoxantrone	1	0	1	0	0	0	0	0	1	2	2	1	1	1	0	0	0	0	0	0

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Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date (June 25, 2021)

DP ID	Start Date[1]	End Date[1]
DP01	1/1/2000	7/31/2019
DP02	1/1/2008	8/31/2020
DP03	1/1/2000	12/31/2018
DP04	1/1/2006	8/31/2020
DP05	1/1/2008	12/31/2020
DP06	1/1/2007	10/31/2020

[1]The start and end dates are based on the minimum and maximum dates within each DP. The month with the maximum date must have at least 80% of the number of records in the previous month.

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Gestational Age

Code	Description	Code Category	Code Type	Duration	Priority Group 1	Priority Group 2	Priority[1]
			Gestational Age Lookup Table				
O481	Prolonged pregnancy	Diagnosis	ICD-10-CM	294	0	1	1
P0822	Prolonged gestation of newborn	Diagnosis	ICD-10-CM	294	0	1	1
Z3A49	Greater than 42 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	301	1	0	1
O480	Post-term pregnancy	Diagnosis	ICD-10-CM	287	0	1	2
P0821	Post-term newborn	Diagnosis	ICD-10-CM	287	0	1	2
Z3A42	42 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	298	1	0	2
Z3A41	41 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	291	1	0	3
Z3A40	40 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	284	1	0	4
Z3A39	39 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	277	1	0	5
Z3A38	38 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	270	1	0	6
Z3A37	37 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	263	1	0	7
P0739	Preterm newborn, gestational age 36 completed weeks	Diagnosis	ICD-10-CM	256	1	0	8
Z3A36	36 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	256	1	0	8
P0738	Preterm newborn, gestational age 35 completed weeks	Diagnosis	ICD-10-CM	249	1	0	9
Z3A35	35 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	249	1	0	9
P0737	Preterm newborn, gestational age 34 completed weeks	Diagnosis	ICD-10-CM	242	1	0	10
Z3A34	34 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	242	1	0	10
P0736	Preterm newborn, gestational age 33 completed weeks	Diagnosis	ICD-10-CM	235	1	0	11
Z3A33	33 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	235	1	0	11
P0735	Preterm newborn, gestational age 32 completed weeks	Diagnosis	ICD-10-CM	228	1	0	12
Z3A32	32 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	228	1	0	12
P0734	Preterm newborn, gestational age 31 completed weeks	Diagnosis	ICD-10-CM	221	1	0	13
Z3A31	31 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	221	1	0	13
P0733	Preterm newborn, gestational age 30 completed weeks	Diagnosis	ICD-10-CM	214	1	0	14
Z3A30	30 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	214	1	0	14
P0732	Preterm newborn, gestational age 29 completed weeks	Diagnosis	ICD-10-CM	207	1	0	15
Z3A29	29 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	207	1	0	15
P0731	Preterm newborn, gestational age 28 completed weeks	Diagnosis	ICD-10-CM	200	1	0	16
Z3A28	28 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	200	1	0	16

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Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Gestational Age

Code	Description	Code Category	Code Type	Duration	Priority Group 1	Priority Group 2	Priority[1]
P0726	Extreme immaturity of newborn, gestational age 27 completed weeks	Diagnosis	ICD-10-CM	193	1	0	17
Z3A27	27 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	193	1	0	17
P0725	Extreme immaturity of newborn, gestational age 26 completed weeks	Diagnosis	ICD-10-CM	186	1	0	18
Z3A26	26 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	186	1	0	18
P0724	Extreme immaturity of newborn, gestational age 25 completed weeks	Diagnosis	ICD-10-CM	179	1	0	19
Z3A25	25 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	179	1	0	19
P0723	Extreme immaturity of newborn, gestational age 24 completed weeks	Diagnosis	ICD-10-CM	172	1	0	20
Z3A24	24 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	172	1	0	20
P0722	Extreme immaturity of newborn, gestational age 23 completed weeks	Diagnosis	ICD-10-CM	165	1	0	21
Z3A23	23 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	165	1	0	21
P0721	Extreme immaturity of newborn, gestational age less than 23 completed weeks	Diagnosis	ICD-10-CM	158	1	0	22
Z3A22	22 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	158	1	0	22
Z3A21	21 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	151	1	0	23
Z3A20	20 weeks gestation of pregnancy	Diagnosis	ICD-10-CM	144	1	0	24
P0720	Extreme immaturity of newborn, unspecified weeks of gestation	Diagnosis	ICD-10-CM	196	1	0	25
O6013X0	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X1	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X2	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X3	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X4	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X5	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6013X9	Preterm labor second trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X0	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X1	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X2	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X3	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X4	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X5	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26
O6014X9	Preterm labor third trimester with preterm delivery third trimester	Diagnosis	ICD-10-CM	245	1	0	26

Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Gestational Age

Code	Description	Code Category	Code Type	Duration	Priority Group 1	Priority Group 2	Priority[1]
P0730	Preterm newborn, unspecified weeks of gestation	Diagnosis	ICD-10-CM	245	1	0	26
O6012X0	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X1	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X2	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X3	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X4	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X5	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
O6012X9	Preterm labor second trimester with preterm delivery second trimester	Diagnosis	ICD-10-CM	168	1	0	27
64520	Prolonged pregnancy	Diagnosis	ICD-9-CM	294	0	1	28
64521	Prolonged pregnancy	Diagnosis	ICD-9-CM	294	0	1	28
64523	Prolonged pregnancy	Diagnosis	ICD-9-CM	294	0	1	28
76528	35-36 completed weeks of gestation	Diagnosis	ICD-9-CM	252	1	0	28
76622	Prolonged gestation of infant	Diagnosis	ICD-9-CM	294	0	1	28
64510	Post term pregnancy	Diagnosis	ICD-9-CM	287	0	1	29
64511	Post term pregnancy	Diagnosis	ICD-9-CM	287	0	1	29
64513	Post term pregnancy	Diagnosis	ICD-9-CM	287	0	1	29
76527	33-34 completed weeks of gestation	Diagnosis	ICD-9-CM	238	1	0	29
76621	Post-term infant	Diagnosis	ICD-9-CM	287	0	1	29
76526	31-32 completed weeks of gestation	Diagnosis	ICD-9-CM	224	1	0	30
76525	29-30 completed weeks of gestation	Diagnosis	ICD-9-CM	210	1	0	31
76524	27-28 completed weeks of gestation	Diagnosis	ICD-9-CM	196	1	0	32
76523	25-26 completed weeks of gestation	Diagnosis	ICD-9-CM	182	1	0	33
76521	Less than 24 completed weeks of gestation	Diagnosis	ICD-9-CM	168	1	0	34
76522	24 completed weeks of gestation	Diagnosis	ICD-9-CM	168	1	0	34
76500	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76501	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76502	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76503	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76504	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76505	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35

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Appendix B. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Codes Used to Define Gestational Age

Code	Description	Code Category	Code Type	Duration	Priority Group 1	Priority Group 2	Priority[1]
76506	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76507	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76508	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
76509	Extreme immaturity, by weight	Diagnosis	ICD-9-CM	196	1	0	35
64421	Early onset of delivery, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM	245	1	0	36
76510	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76511	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76512	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76513	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76514	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76515	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76516	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76517	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76518	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76519	Other preterm infants, by weight	Diagnosis	ICD-9-CM	245	1	0	36
76520	Unspecified weeks of gestation	Diagnosis	ICD-9-CM	245	1	0	36

[1]If multiple codes for specific weeks of gestation (Z codes), preterm delivery, and/or postterm delivery are available, the ICD-10 algorithm for gestational age prioritizes the following codes:

(1) **Codes that specify weeks of gestation, including all Z codes ranging from 20 weeks through >=42 weeks of gestation in one week increments, and codes that indicate preterm delivery with weeks of gestation specified in one week increments (other than Z codes)**. If multiple codes are observed, codes indicating longer gestational age are prioritized over those indicating shorter gestational age. We assumed the approximate mid-point of the specified gestational age [e.g., assumption of 263 days (37 weeks and 4 days) for 37 weeks gestation].

(2) **Codes that indicate preterm delivery without specifying weeks of gestation.** If multiple codes are observed, codes with more specificity (e.g., preterm delivery, 2nd trimester of pregnancy or 'extreme immaturity') are prioritized over those with less specificity (e.g., preterm newborn, unspecified weeks of gestation). Further, codes indicating longer gestational age are prioritized over those indicating shorter gestational age.

(3) **Codes that indicate postterm delivery without specifying weeks of gestation.** If multiple codes are observed, codes indicating longer gestational age are prioritized over those indicating shorter gestational age.

If no codes for preterm or postterm delivery are observed, then the default assumption for gestational age is 273 days. However, this assumption is user specified and can be modified.

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

Code	Description	Code Category	Code Type
	Live Birth Delivery		
0W8NXZZ	Division of Female Perineum, External Approach	Procedure	ICD-10-PCS
10900ZC	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Open Approach	Procedure	ICD-10-PCS
10903ZC	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Percutaneous Approach	Procedure	ICD-10-PCS
10904ZC	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Percutaneous Endoscopic Approach	Procedure	ICD-10-PCS
10907ZC	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10908ZC	Drainage of Amniotic Fluid, Therapeutic from Products of Conception, Via Natural or Artificial Opening Endoscopic	Procedure	ICD-10-PCS
10D00Z0	Extraction of Products of Conception, Classical, Open Approach	Procedure	ICD-10-PCS
10D00Z1	Extraction of Products of Conception, Low Cervical, Open Approach	Procedure	ICD-10-PCS
10D00Z2	Extraction of Products of Conception, Extraperitoneal, Open Approach	Procedure	ICD-10-PCS
10D07Z3	Extraction of Products of Conception, Low Forceps, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10D07Z4	Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10D07Z5	Extraction of Products of Conception, High Forceps, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10D07Z6	Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10D07Z7	Extraction of Products of Conception, Internal Version, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10D07Z8	Extraction of Products of Conception, Other, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
10E0XZZ	Delivery of Products of Conception, External Approach	Procedure	ICD-10-PCS
10S07ZZ	Reposition Products of Conception, Via Natural or Artificial Opening	Procedure	ICD-10-PCS
O1002	Pre-existing essential hypertension complicating childbirth	Diagnosis	ICD-10-CM
O1012	Pre-existing hypertensive heart disease complicating childbirth	Diagnosis	ICD-10-CM
O1022	Pre-existing hypertensive chronic kidney disease complicating childbirth	Diagnosis	ICD-10-CM
O1032	Pre-existing hypertensive heart and chronic kidney disease complicating childbirth	Diagnosis	ICD-10-CM
O1042	Pre-existing secondary hypertension complicating childbirth	Diagnosis	ICD-10-CM
O1092	Unspecified pre-existing hypertension complicating childbirth	Diagnosis	ICD-10-CM
O114	Pre-existing hypertension with pre-eclampsia, complicating childbirth	Diagnosis	ICD-10-CM
O1204	Gestational edema, complicating childbirth	Diagnosis	ICD-10-CM
O1214	Gestational proteinuria, complicating childbirth	Diagnosis	ICD-10-CM
O1224	Gestational edema with proteinuria, complicating childbirth	Diagnosis	ICD-10-CM
O134	Gestational [pregnancy-induced] hypertension without significant proteinuria, complicating childbirth	Diagnosis	ICD-10-CM
O1404	Mild to moderate pre-eclampsia, complicating childbirth	Diagnosis	ICD-10-CM
O1414	Severe pre-eclampsia complicating childbirth	Diagnosis	ICD-10-CM
O1424	HELLP syndrome, complicating childbirth	Diagnosis	ICD-10-CM
O1494	Unspecified pre-eclampsia, complicating childbirth	Diagnosis	ICD-10-CM
O164	Unspecified maternal hypertension, complicating childbirth	Diagnosis	ICD-10-CM
O2402	Pre-existing type 1 diabetes mellitus, in childbirth	Diagnosis	ICD-10-CM
O2412	Pre-existing type 2 diabetes mellitus, in childbirth	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
O2432	Unspecified pre-existing diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O24420	Gestational diabetes mellitus in childbirth, diet controlled	Diagnosis	ICD-10-CM
O24424	Gestational diabetes mellitus in childbirth, insulin controlled	Diagnosis	ICD-10-CM
O24425	Gestational diabetes mellitus in childbirth, controlled by oral hypoglycemic drugs	Diagnosis	ICD-10-CM
O24429	Gestational diabetes mellitus in childbirth, unspecified control	Diagnosis	ICD-10-CM
O2482	Other pre-existing diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O2492	Unspecified diabetes mellitus in childbirth	Diagnosis	ICD-10-CM
O252	Malnutrition in childbirth	Diagnosis	ICD-10-CM
O2662	Liver and biliary tract disorders in childbirth	Diagnosis	ICD-10-CM
O2672	Subluxation of symphysis (pubis) in childbirth	Diagnosis	ICD-10-CM
O6012X0	Preterm labor second trimester with preterm delivery second trimester, not applicable or unspecified	Diagnosis	ICD-10-CM
O6012X1	Preterm labor second trimester with preterm delivery second trimester, fetus 1	Diagnosis	ICD-10-CM
O6012X2	Preterm labor second trimester with preterm delivery second trimester, fetus 2	Diagnosis	ICD-10-CM
O6012X3	Preterm labor second trimester with preterm delivery second trimester, fetus 3	Diagnosis	ICD-10-CM
O6012X4	Preterm labor second trimester with preterm delivery second trimester, fetus 4	Diagnosis	ICD-10-CM
O6012X5	Preterm labor second trimester with preterm delivery second trimester, fetus 5	Diagnosis	ICD-10-CM
O6012X9	Preterm labor second trimester with preterm delivery second trimester, other fetus	Diagnosis	ICD-10-CM
O6013X0	Preterm labor second trimester with preterm delivery third trimester, not applicable or unspecified	Diagnosis	ICD-10-CM
O6013X1	Preterm labor second trimester with preterm delivery third trimester, fetus 1	Diagnosis	ICD-10-CM
O6013X2	Preterm labor second trimester with preterm delivery third trimester, fetus 2	Diagnosis	ICD-10-CM
O6013X3	Preterm labor second trimester with preterm delivery third trimester, fetus 3	Diagnosis	ICD-10-CM
O6013X4	Preterm labor second trimester with preterm delivery third trimester, fetus 4	Diagnosis	ICD-10-CM
O6013X5	Preterm labor second trimester with preterm delivery third trimester, fetus 5	Diagnosis	ICD-10-CM
O6013X9	Preterm labor second trimester with preterm delivery third trimester, other fetus	Diagnosis	ICD-10-CM
O6014X0	Preterm labor third trimester with preterm delivery third trimester, not applicable or unspecified	Diagnosis	ICD-10-CM
O6014X1	Preterm labor third trimester with preterm delivery third trimester, fetus 1	Diagnosis	ICD-10-CM
O6014X2	Preterm labor third trimester with preterm delivery third trimester, fetus 2	Diagnosis	ICD-10-CM
O6014X3	Preterm labor third trimester with preterm delivery third trimester, fetus 3	Diagnosis	ICD-10-CM
O6014X4	Preterm labor third trimester with preterm delivery third trimester, fetus 4	Diagnosis	ICD-10-CM
O6014X5	Preterm labor third trimester with preterm delivery third trimester, fetus 5	Diagnosis	ICD-10-CM
O6014X9	Preterm labor third trimester with preterm delivery third trimester, other fetus	Diagnosis	ICD-10-CM
O6022X0	Term delivery with preterm labor, second trimester, not applicable or unspecified	Diagnosis	ICD-10-CM
O6022X1	Term delivery with preterm labor, second trimester, fetus 1	Diagnosis	ICD-10-CM
O6022X2	Term delivery with preterm labor, second trimester, fetus 2	Diagnosis	ICD-10-CM
O6022X3	Term delivery with preterm labor, second trimester, fetus 3	Diagnosis	ICD-10-CM
O6022X4	Term delivery with preterm labor, second trimester, fetus 4	Diagnosis	ICD-10-CM
O6022X5	Term delivery with preterm labor, second trimester, fetus 5	Diagnosis	ICD-10-CM
O6022X9	Term delivery with preterm labor, second trimester, other fetus	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
O6023X0	Term delivery with preterm labor, third trimester, not applicable or unspecified	Diagnosis	ICD-10-CM
O6023X1	Term delivery with preterm labor, third trimester, fetus 1	Diagnosis	ICD-10-CM
O6023X2	Term delivery with preterm labor, third trimester, fetus 2	Diagnosis	ICD-10-CM
O6023X3	Term delivery with preterm labor, third trimester, fetus 3	Diagnosis	ICD-10-CM
O6023X4	Term delivery with preterm labor, third trimester, fetus 4	Diagnosis	ICD-10-CM
O6023X5	Term delivery with preterm labor, third trimester, fetus 5	Diagnosis	ICD-10-CM
O6023X9	Term delivery with preterm labor, third trimester, other fetus	Diagnosis	ICD-10-CM
O632	Delayed delivery of second twin, triplet, etc	Diagnosis	ICD-10-CM
O670	Intrapartum hemorrhage with coagulation defect	Diagnosis	ICD-10-CM
O678	Other intrapartum hemorrhage	Diagnosis	ICD-10-CM
O679	Intrapartum hemorrhage, unspecified	Diagnosis	ICD-10-CM
O68	Labor and delivery complicated by abnormality of fetal acid-base balance	Diagnosis	ICD-10-CM
O690XX0	Labor and delivery complicated by prolapse of cord, not applicable or unspecified	Diagnosis	ICD-10-CM
O690XX1	Labor and delivery complicated by prolapse of cord, fetus 1	Diagnosis	ICD-10-CM
O690XX2	Labor and delivery complicated by prolapse of cord, fetus 2	Diagnosis	ICD-10-CM
O690XX3	Labor and delivery complicated by prolapse of cord, fetus 3	Diagnosis	ICD-10-CM
O690XX4	Labor and delivery complicated by prolapse of cord, fetus 4	Diagnosis	ICD-10-CM
O690XX5	Labor and delivery complicated by prolapse of cord, fetus 5	Diagnosis	ICD-10-CM
O690XX9	Labor and delivery complicated by prolapse of cord, other fetus	Diagnosis	ICD-10-CM
O691XX0	Labor and delivery complicated by cord around neck, with compression, not applicable or unspecified	Diagnosis	ICD-10-CM
O691XX1	Labor and delivery complicated by cord around neck, with compression, fetus 1	Diagnosis	ICD-10-CM
O691XX2	Labor and delivery complicated by cord around neck, with compression, fetus 2	Diagnosis	ICD-10-CM
O691XX3	Labor and delivery complicated by cord around neck, with compression, fetus 3	Diagnosis	ICD-10-CM
O691XX4	Labor and delivery complicated by cord around neck, with compression, fetus 4	Diagnosis	ICD-10-CM
O691XX5	Labor and delivery complicated by cord around neck, with compression, fetus 5	Diagnosis	ICD-10-CM
O691XX9	Labor and delivery complicated by cord around neck, with compression, other fetus	Diagnosis	ICD-10-CM
O692XX0	Labor and delivery complicated by other cord entanglement, with compression, not applicable or unspecified	Diagnosis	ICD-10-CM
O692XX1	Labor and delivery complicated by other cord entanglement, with compression, fetus 1	Diagnosis	ICD-10-CM
O692XX2	Labor and delivery complicated by other cord entanglement, with compression, fetus 2	Diagnosis	ICD-10-CM
O692XX3	Labor and delivery complicated by other cord entanglement, with compression, fetus 3	Diagnosis	ICD-10-CM
O692XX4	Labor and delivery complicated by other cord entanglement, with compression, fetus 4	Diagnosis	ICD-10-CM
O692XX5	Labor and delivery complicated by other cord entanglement, with compression, fetus 5	Diagnosis	ICD-10-CM
O692XX9	Labor and delivery complicated by other cord entanglement, with compression, other fetus	Diagnosis	ICD-10-CM
O693XX0	Labor and delivery complicated by short cord, not applicable or unspecified	Diagnosis	ICD-10-CM
O693XX1	Labor and delivery complicated by short cord, fetus 1	Diagnosis	ICD-10-CM
O693XX2	Labor and delivery complicated by short cord, fetus 2	Diagnosis	ICD-10-CM
O693XX3	Labor and delivery complicated by short cord, fetus 3	Diagnosis	ICD-10-CM
O693XX4	Labor and delivery complicated by short cord, fetus 4	Diagnosis	ICD-10-CM
O693XX5	Labor and delivery complicated by short cord, fetus 5	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
O693XX9	Labor and delivery complicated by short cord, other fetus	Diagnosis	ICD-10-CM
O694XX0	Labor and delivery complicated by vasa previa, not applicable or unspecified	Diagnosis	ICD-10-CM
O694XX1	Labor and delivery complicated by vasa previa, fetus 1	Diagnosis	ICD-10-CM
O694XX2	Labor and delivery complicated by vasa previa, fetus 2	Diagnosis	ICD-10-CM
O694XX3	Labor and delivery complicated by vasa previa, fetus 3	Diagnosis	ICD-10-CM
O694XX4	Labor and delivery complicated by vasa previa, fetus 4	Diagnosis	ICD-10-CM
O694XX5	Labor and delivery complicated by vasa previa, fetus 5	Diagnosis	ICD-10-CM
O694XX9	Labor and delivery complicated by vasa previa, other fetus	Diagnosis	ICD-10-CM
O695XX0	Labor and delivery complicated by vascular lesion of cord, not applicable or unspecified	Diagnosis	ICD-10-CM
O695XX1	Labor and delivery complicated by vascular lesion of cord, fetus 1	Diagnosis	ICD-10-CM
O695XX2	Labor and delivery complicated by vascular lesion of cord, fetus 2	Diagnosis	ICD-10-CM
O695XX3	Labor and delivery complicated by vascular lesion of cord, fetus 3	Diagnosis	ICD-10-CM
O695XX4	Labor and delivery complicated by vascular lesion of cord, fetus 4	Diagnosis	ICD-10-CM
O695XX5	Labor and delivery complicated by vascular lesion of cord, fetus 5	Diagnosis	ICD-10-CM
O695XX9	Labor and delivery complicated by vascular lesion of cord, other fetus	Diagnosis	ICD-10-CM
O6981X0	Labor and delivery complicated by cord around neck, without compression, not applicable or unspecified	Diagnosis	ICD-10-CM
O6981X1	Labor and delivery complicated by cord around neck, without compression, fetus 1	Diagnosis	ICD-10-CM
O6981X2	Labor and delivery complicated by cord around neck, without compression, fetus 2	Diagnosis	ICD-10-CM
O6981X3	Labor and delivery complicated by cord around neck, without compression, fetus 3	Diagnosis	ICD-10-CM
O6981X4	Labor and delivery complicated by cord around neck, without compression, fetus 4	Diagnosis	ICD-10-CM
O6981X5	Labor and delivery complicated by cord around neck, without compression, fetus 5	Diagnosis	ICD-10-CM
O6981X9	Labor and delivery complicated by cord around neck, without compression, other fetus	Diagnosis	ICD-10-CM
O6982X0	Labor and delivery complicated by other cord entanglement, without compression, not applicable or unspecified	Diagnosis	ICD-10-CM
O6982X1	Labor and delivery complicated by other cord entanglement, without compression, fetus 1	Diagnosis	ICD-10-CM
O6982X2	Labor and delivery complicated by other cord entanglement, without compression, fetus 2	Diagnosis	ICD-10-CM
O6982X3	Labor and delivery complicated by other cord entanglement, without compression, fetus 3	Diagnosis	ICD-10-CM
O6982X4	Labor and delivery complicated by other cord entanglement, without compression, fetus 4	Diagnosis	ICD-10-CM
O6982X5	Labor and delivery complicated by other cord entanglement, without compression, fetus 5	Diagnosis	ICD-10-CM
O6982X9	Labor and delivery complicated by other cord entanglement, without compression, other	Diagnosis	ICD-10-CM
O6989X0	Labor and delivery complicated by other cord complications, not applicable or unspecified	Diagnosis	ICD-10-CM
O6989X1	Labor and delivery complicated by other cord complications, fetus 1	Diagnosis	ICD-10-CM
O6989X2	Labor and delivery complicated by other cord complications, fetus 2	Diagnosis	ICD-10-CM
O6989X3	Labor and delivery complicated by other cord complications, fetus 3	Diagnosis	ICD-10-CM
O6989X4	Labor and delivery complicated by other cord complications, fetus 4	Diagnosis	ICD-10-CM
O6989X5	Labor and delivery complicated by other cord complications, fetus 5	Diagnosis	ICD-10-CM
O6989X9	Labor and delivery complicated by other cord complications, other fetus	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
O699XX0	Labor and delivery complicated by cord complication, unspecified, not applicable or unspecified	Diagnosis	ICD-10-CM
O699XX1	Labor and delivery complicated by cord complication, unspecified, fetus 1	Diagnosis	ICD-10-CM
O699XX2	Labor and delivery complicated by cord complication, unspecified, fetus 2	Diagnosis	ICD-10-CM
O699XX3	Labor and delivery complicated by cord complication, unspecified, fetus 3	Diagnosis	ICD-10-CM
O699XX4	Labor and delivery complicated by cord complication, unspecified, fetus 4	Diagnosis	ICD-10-CM
O699XX5	Labor and delivery complicated by cord complication, unspecified, fetus 5	Diagnosis	ICD-10-CM
O699XX9	Labor and delivery complicated by cord complication, unspecified, other fetus	Diagnosis	ICD-10-CM
O700	First degree perineal laceration during delivery	Diagnosis	ICD-10-CM
O701	Second degree perineal laceration during delivery	Diagnosis	ICD-10-CM
O7020	Third degree perineal laceration during delivery, unspecified	Diagnosis	ICD-10-CM
O7021	Third degree perineal laceration during delivery, IIIa	Diagnosis	ICD-10-CM
O7022	Third degree perineal laceration during delivery, IIIb	Diagnosis	ICD-10-CM
O7023	Third degree perineal laceration during delivery, IIIc	Diagnosis	ICD-10-CM
O703	Fourth degree perineal laceration during delivery	Diagnosis	ICD-10-CM
O704	Anal sphincter tear complicating delivery, not associated with third degree laceration	Diagnosis	ICD-10-CM
O709	Perineal laceration during delivery, unspecified	Diagnosis	ICD-10-CM
O740	Aspiration pneumonitis due to anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O741	Other pulmonary complications of anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O742	Cardiac complications of anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O743	Central nervous system complications of anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O744	Toxic reaction to local anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O745	Spinal and epidural anesthesia-induced headache during labor and delivery	Diagnosis	ICD-10-CM
O746	Other complications of spinal and epidural anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O747	Failed or difficult intubation for anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O748	Other complications of anesthesia during labor and delivery	Diagnosis	ICD-10-CM
O749	Complication of anesthesia during labor and delivery, unspecified	Diagnosis	ICD-10-CM
O750	Maternal distress during labor and delivery	Diagnosis	ICD-10-CM
O751	Shock during or following labor and delivery	Diagnosis	ICD-10-CM
O755	Delayed delivery after artificial rupture of membranes	Diagnosis	ICD-10-CM
O7581	Maternal exhaustion complicating labor and delivery	Diagnosis	ICD-10-CM
O7582	Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section	Diagnosis	ICD-10-CM
O7589	Other specified complications of labor and delivery	Diagnosis	ICD-10-CM
O759	Complication of labor and delivery, unspecified	Diagnosis	ICD-10-CM
O76	Abnormality in fetal heart rate and rhythm complicating labor and delivery	Diagnosis	ICD-10-CM
O770	Labor and delivery complicated by meconium in amniotic fluid	Diagnosis	ICD-10-CM
O778	Labor and delivery complicated by other evidence of fetal stress	Diagnosis	ICD-10-CM
O779	Labor and delivery complicated by fetal stress, unspecified	Diagnosis	ICD-10-CM
O80	Encounter for full-term uncomplicated delivery	Diagnosis	ICD-10-CM
O82	Encounter for cesarean delivery without indication	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
O8802	Air embolism in childbirth	Diagnosis	ICD-10-CM
O8812	Amniotic fluid embolism in childbirth	Diagnosis	ICD-10-CM
O8822	Thromboembolism in childbirth	Diagnosis	ICD-10-CM
O8832	Pyemic and septic embolism in childbirth	Diagnosis	ICD-10-CM
O8882	Other embolism in childbirth	Diagnosis	ICD-10-CM
O9802	Tuberculosis complicating childbirth	Diagnosis	ICD-10-CM
O9812	Syphilis complicating childbirth	Diagnosis	ICD-10-CM
O9822	Gonorrhea complicating childbirth	Diagnosis	ICD-10-CM
O9832	Other infections with a predominantly sexual mode of transmission complicating childbirth	Diagnosis	ICD-10-CM
O9842	Viral hepatitis complicating childbirth	Diagnosis	ICD-10-CM
O9852	Other viral diseases complicating childbirth	Diagnosis	ICD-10-CM
O9862	Protozoal diseases complicating childbirth	Diagnosis	ICD-10-CM
O9872	Human immunodeficiency virus [HIV] disease complicating childbirth	Diagnosis	ICD-10-CM
O9882	Other maternal infectious and parasitic diseases complicating childbirth	Diagnosis	ICD-10-CM
O9892	Unspecified maternal infectious and parasitic disease complicating childbirth	Diagnosis	ICD-10-CM
O9902	Anemia complicating childbirth	Diagnosis	ICD-10-CM
O9912	Other diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism complicating childbirth	Diagnosis	ICD-10-CM
O99214	Obesity complicating childbirth	Diagnosis	ICD-10-CM
O99284	Endocrine, nutritional and metabolic diseases complicating childbirth	Diagnosis	ICD-10-CM
O99314	Alcohol use complicating childbirth	Diagnosis	ICD-10-CM
O99324	Drug use complicating childbirth	Diagnosis	ICD-10-CM
O99334	Smoking (tobacco) complicating childbirth	Diagnosis	ICD-10-CM
O99344	Other mental disorders complicating childbirth	Diagnosis	ICD-10-CM
O99354	Diseases of the nervous system complicating childbirth	Diagnosis	ICD-10-CM
O9942	Diseases of the circulatory system complicating childbirth	Diagnosis	ICD-10-CM
O9952	Diseases of the respiratory system complicating childbirth	Diagnosis	ICD-10-CM
O9962	Diseases of the digestive system complicating childbirth	Diagnosis	ICD-10-CM
O9972	Diseases of the skin and subcutaneous tissue complicating childbirth	Diagnosis	ICD-10-CM
O99814	Abnormal glucose complicating childbirth	Diagnosis	ICD-10-CM
O99824	Streptococcus B carrier state complicating childbirth	Diagnosis	ICD-10-CM
O99834	Other infection carrier state complicating childbirth	Diagnosis	ICD-10-CM
O99844	Bariatric surgery status complicating childbirth	Diagnosis	ICD-10-CM
O9A12	Malignant neoplasm complicating childbirth	Diagnosis	ICD-10-CM
O9A22	Injury, poisoning and certain other consequences of external causes complicating childbirth	Diagnosis	ICD-10-CM
O9A32	Physical abuse complicating childbirth	Diagnosis	ICD-10-CM
O9A42	Sexual abuse complicating childbirth	Diagnosis	ICD-10-CM
O9A52	Psychological abuse complicating childbirth	Diagnosis	ICD-10-CM
P030	Newborn affected by breech delivery and extraction	Diagnosis	ICD-10-CM
P032	Newborn affected by forceps delivery	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
P033	Newborn affected by delivery by vacuum extractor [ventouse]	Diagnosis	ICD-10-CM
P034	Newborn affected by Cesarean delivery	Diagnosis	ICD-10-CM
P035	Newborn affected by precipitate delivery	Diagnosis	ICD-10-CM
P0700	Extremely low birth weight newborn, unspecified weight	Diagnosis	ICD-10-CM
P0701	Extremely low birth weight newborn, less than 500 grams	Diagnosis	ICD-10-CM
P0702	Extremely low birth weight newborn, 500-749 grams	Diagnosis	ICD-10-CM
P0703	Extremely low birth weight newborn, 750-999 grams	Diagnosis	ICD-10-CM
P0710	Other low birth weight newborn, unspecified weight	Diagnosis	ICD-10-CM
P0714	Other low birth weight newborn, 1000-1249 grams	Diagnosis	ICD-10-CM
P0715	Other low birth weight newborn, 1250-1499 grams	Diagnosis	ICD-10-CM
P0716	Other low birth weight newborn, 1500-1749 grams	Diagnosis	ICD-10-CM
P0717	Other low birth weight newborn, 1750-1999 grams	Diagnosis	ICD-10-CM
P0718	Other low birth weight newborn, 2000-2499 grams	Diagnosis	ICD-10-CM
P0720	Extreme immaturity of newborn, unspecified weeks of gestation	Diagnosis	ICD-10-CM
P0721	Extreme immaturity of newborn, gestational age less than 23 completed weeks	Diagnosis	ICD-10-CM
P0722	Extreme immaturity of newborn, gestational age 23 completed weeks	Diagnosis	ICD-10-CM
P0723	Extreme immaturity of newborn, gestational age 24 completed weeks	Diagnosis	ICD-10-CM
P0724	Extreme immaturity of newborn, gestational age 25 completed weeks	Diagnosis	ICD-10-CM
P0725	Extreme immaturity of newborn, gestational age 26 completed weeks	Diagnosis	ICD-10-CM
P0726	Extreme immaturity of newborn, gestational age 27 completed weeks	Diagnosis	ICD-10-CM
P0730	Preterm newborn, unspecified weeks of gestation	Diagnosis	ICD-10-CM
P0731	Preterm newborn, gestational age 28 completed weeks	Diagnosis	ICD-10-CM
P0732	Preterm newborn, gestational age 29 completed weeks	Diagnosis	ICD-10-CM
P0733	Preterm newborn, gestational age 30 completed weeks	Diagnosis	ICD-10-CM
P0734	Preterm newborn, gestational age 31 completed weeks	Diagnosis	ICD-10-CM
P0735	Preterm newborn, gestational age 32 completed weeks	Diagnosis	ICD-10-CM
P0736	Preterm newborn, gestational age 33 completed weeks	Diagnosis	ICD-10-CM
P0737	Preterm newborn, gestational age 34 completed weeks	Diagnosis	ICD-10-CM
P0738	Preterm newborn, gestational age 35 completed weeks	Diagnosis	ICD-10-CM
P0739	Preterm newborn, gestational age 36 completed weeks	Diagnosis	ICD-10-CM
P0821	Post-term newborn	Diagnosis	ICD-10-CM
P0822	Prolonged gestation of newborn	Diagnosis	ICD-10-CM
Z370	Single live birth	Diagnosis	ICD-10-CM
Z372	Twins, both liveborn	Diagnosis	ICD-10-CM
Z373	Twins, one liveborn and one stillborn	Diagnosis	ICD-10-CM
Z3750	Multiple births, unspecified, all liveborn	Diagnosis	ICD-10-CM
Z3751	Triplets, all liveborn	Diagnosis	ICD-10-CM
Z3752	Quadruplets, all liveborn	Diagnosis	ICD-10-CM
Z3753	Quintuplets, all liveborn	Diagnosis	ICD-10-CM
Z3754	Sextuplets, all liveborn	Diagnosis	ICD-10-CM
Z3759	Other multiple births, all liveborn	Diagnosis	ICD-10-CM

Code	Description	Code Category	Code Type
Z3760	Multiple births, unspecified, some liveborn	Diagnosis	ICD-10-CM
Z3761	Triplets, some liveborn	Diagnosis	ICD-10-CM
Z3762	Quadruplets, some liveborn	Diagnosis	ICD-10-CM
Z3763	Quintuplets, some liveborn	Diagnosis	ICD-10-CM
Z3764	Sextuplets, some liveborn	Diagnosis	ICD-10-CM
Z3769	Other multiple births, some liveborn	Diagnosis	ICD-10-CM
Z379	Outcome of delivery, unspecified	Diagnosis	ICD-10-CM
Z3800	Single liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3801	Single liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z381	Single liveborn infant, born outside hospital	Diagnosis	ICD-10-CM
Z382	Single liveborn infant, unspecified as to place of birth	Diagnosis	ICD-10-CM
Z3830	Twin liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3831	Twin liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z384	Twin liveborn infant, born outside hospital	Diagnosis	ICD-10-CM
Z385	Twin liveborn infant, unspecified as to place of birth	Diagnosis	ICD-10-CM
Z3861	Triplet liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3862	Triplet liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z3863	Quadruplet liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3864	Quadruplet liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z3865	Quintuplet liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3866	Quintuplet liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z3868	Other multiple liveborn infant, delivered vaginally	Diagnosis	ICD-10-CM
Z3869	Other multiple liveborn infant, delivered by cesarean	Diagnosis	ICD-10-CM
Z387	Other multiple liveborn infant, born outside hospital	Diagnosis	ICD-10-CM
Z388	Other multiple liveborn infant, unspecified as to place of birth	Diagnosis	ICD-10-CM
59400	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care	Procedure	CPT-4
59409	Vaginal delivery only (with or without episiotomy and/or forceps);	Procedure	CPT-4
59410	Vaginal delivery only (with or without episiotomy and/or forceps); including postpartum care	Procedure	CPT-4
59510	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care	Procedure	CPT-4
59514	Cesarean delivery only;	Procedure	CPT-4
59515	Cesarean delivery only; including postpartum care	Procedure	CPT-4
59610	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery	Procedure	CPT-4
59612	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps);	Procedure	CPT-4
59614	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps); including postpartum care	Procedure	CPT-4
59618	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery	Procedure	CPT-4

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

Code	Description	Code Category	Code Type
59620	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery;	Procedure	CPT-4
59622	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery; including postpartum care	Procedure	CPT-4
650	Normal delivery	Diagnosis	ICD-9-CM
7630	Fetus or newborn affected by breech delivery and extraction	Diagnosis	ICD-9-CM
7632	Fetus or newborn affected by forceps delivery	Diagnosis	ICD-9-CM
7633	Fetus or newborn affected by delivery by vacuum extractor	Diagnosis	ICD-9-CM
7634	Fetus or newborn affected by cesarean delivery	Diagnosis	ICD-9-CM
7636	Fetus or newborn affected by precipitate delivery	Diagnosis	ICD-9-CM
7680	Fetal death from asphyxia or anoxia before onset of labor or at unspecified time	Diagnosis	ICD-9-CM
7681	Fetal death from asphyxia or anoxia during labor	Diagnosis	ICD-9-CM
64101	Placenta previa without hemorrhage, with delivery	Diagnosis	ICD-9-CM
64111	Hemorrhage from placenta previa, with delivery	Diagnosis	ICD-9-CM
64121	Premature separation of placenta, with delivery	Diagnosis	ICD-9-CM
64131	Antepartum hemorrhage associated with coagulation defects, with delivery	Diagnosis	ICD-9-CM
64181	Other antepartum hemorrhage, with delivery	Diagnosis	ICD-9-CM
64191	Unspecified antepartum hemorrhage, with delivery	Diagnosis	ICD-9-CM
64201	Benign essential hypertension with delivery	Diagnosis	ICD-9-CM
64202	Benign essential hypertension, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64211	Hypertension secondary to renal disease, with delivery	Diagnosis	ICD-9-CM
64212	Hypertension secondary to renal disease, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64221	Other pre-existing hypertension, with delivery	Diagnosis	ICD-9-CM
64222	Other pre-existing hypertension, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64231	Transient hypertension of pregnancy, with delivery	Diagnosis	ICD-9-CM
64232	Transient hypertension of pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64241	Mild or unspecified pre-eclampsia, with delivery	Diagnosis	ICD-9-CM
64242	Mild or unspecified pre-eclampsia, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64251	Severe pre-eclampsia, with delivery	Diagnosis	ICD-9-CM
64252	Severe pre-eclampsia, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64261	Eclampsia, with delivery	Diagnosis	ICD-9-CM
64262	Eclampsia, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64271	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery	Diagnosis	ICD-9-CM
64272	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64291	Unspecified hypertension, with delivery	Diagnosis	ICD-9-CM
64292	Unspecified hypertension, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64301	Mild hyperemesis gravidarum, delivered	Diagnosis	ICD-9-CM
64311	Hyperemesis gravidarum with metabolic disturbance, delivered	Diagnosis	ICD-9-CM
64321	Late vomiting of pregnancy, delivered	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
64381	Other vomiting complicating pregnancy, delivered	Diagnosis	ICD-9-CM
64391	Unspecified vomiting of pregnancy, delivered	Diagnosis	ICD-9-CM
64421	Early onset of delivery, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64501	Prolonged pregnancy, with delivery	Diagnosis	ICD-9-CM
64511	Post term pregnancy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64521	Prolonged pregnancy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64523	Prolonged pregnancy, antepartum condition or complication	Diagnosis	ICD-9-CM
64601	Papyraceous fetus, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64611	Edema or excessive weight gain in pregnancy, with delivery, with or without mention of antepartum complication	Diagnosis	ICD-9-CM
64612	Edema or excessive weight gain in pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64621	Unspecified renal disease in pregnancy, with delivery	Diagnosis	ICD-9-CM
64622	Unspecified renal disease in pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64631	Pregnancy complication, recurrent pregnancy loss, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64641	Peripheral neuritis in pregnancy, with delivery	Diagnosis	ICD-9-CM
64642	Peripheral neuritis in pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64651	Asymptomatic bacteriuria in pregnancy, with delivery	Diagnosis	ICD-9-CM
64652	Asymptomatic bacteriuria in pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64661	Infections of genitourinary tract in pregnancy, with delivery	Diagnosis	ICD-9-CM
64662	Infections of genitourinary tract in pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64671	Liver and biliary tract disorders in pregnancy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64681	Other specified complication of pregnancy, with delivery	Diagnosis	ICD-9-CM
64682	Other specified complications of pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64691	Unspecified complication of pregnancy, with delivery	Diagnosis	ICD-9-CM
64701	Maternal syphilis, complicating pregnancy, with delivery	Diagnosis	ICD-9-CM
64702	Maternal syphilis, complicating pregnancy, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64711	Maternal gonorrhea with delivery	Diagnosis	ICD-9-CM
64712	Maternal gonorrhea, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64721	Other maternal venereal diseases with delivery	Diagnosis	ICD-9-CM
64722	Other maternal venereal diseases with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64731	Maternal tuberculosis with delivery	Diagnosis	ICD-9-CM
64732	Maternal tuberculosis with delivery, with current postpartum complication	Diagnosis	ICD-9-CM

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Code	Description	Code Category	Code Type
64741	Maternal malaria with delivery	Diagnosis	ICD-9-CM
64742	Maternal malaria with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64751	Maternal rubella with delivery	Diagnosis	ICD-9-CM
64752	Maternal rubella with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64761	Other maternal viral disease with delivery	Diagnosis	ICD-9-CM
64762	Other maternal viral disease with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64781	Other specified maternal infectious and parasitic disease with delivery	Diagnosis	ICD-9-CM
64782	Other specified maternal infectious and parasitic disease with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64791	Unspecified maternal infection or infestation with delivery	Diagnosis	ICD-9-CM
64792	Unspecified maternal infection or infestation with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64801	Maternal diabetes mellitus with delivery	Diagnosis	ICD-9-CM
64802	Maternal diabetes mellitus with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64811	Maternal thyroid dysfunction with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64812	Maternal thyroid dysfunction with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64821	Maternal anemia, with delivery	Diagnosis	ICD-9-CM
64822	Maternal anemia with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64831	Maternal drug dependence, with delivery	Diagnosis	ICD-9-CM
64832	Maternal drug dependence, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64841	Maternal mental disorders, with delivery	Diagnosis	ICD-9-CM
64842	Maternal mental disorders, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64851	Maternal congenital cardiovascular disorders, with delivery	Diagnosis	ICD-9-CM
64852	Maternal congenital cardiovascular disorders, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64861	Other maternal cardiovascular diseases, with delivery	Diagnosis	ICD-9-CM
64862	Other maternal cardiovascular diseases, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64871	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery	Diagnosis	ICD-9-CM
64872	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64881	Abnormal maternal glucose tolerance, with delivery	Diagnosis	ICD-9-CM
64882	Abnormal maternal glucose tolerance, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64891	Other current maternal conditions classifiable elsewhere, with delivery	Diagnosis	ICD-9-CM
64892	Other current maternal conditions classifiable elsewhere, with delivery, with current postpartum complication	Diagnosis	ICD-9-CM
64901	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64902	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM

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Code	Description	Code Category	Code Type
64911	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64912	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
64921	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64922	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
64931	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64932	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
64941	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64942	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
64951	Spotting complicating pregnancy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64961	Uterine size date discrepancy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64962	Uterine size date discrepancy, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
64971	Cervical shortening, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
64981	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	Diagnosis	ICD-9-CM
64982	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	Diagnosis	ICD-9-CM
65101	Twin pregnancy, delivered	Diagnosis	ICD-9-CM
65111	Triplet pregnancy, delivered	Diagnosis	ICD-9-CM
65121	Quadruplet pregnancy, delivered	Diagnosis	ICD-9-CM
65131	Twin pregnancy with fetal loss and retention of one fetus, delivered	Diagnosis	ICD-9-CM
65141	Triplet pregnancy with fetal loss and retention of one or more, delivered	Diagnosis	ICD-9-CM
65151	Quadruplet pregnancy with fetal loss and retention of one or more, delivered	Diagnosis	ICD-9-CM
65161	Other multiple pregnancy with fetal loss and retention of one or more fetus(es), delivered	Diagnosis	ICD-9-CM
65171	Multiple gestation following (elective) fetal reduction, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
65181	Other specified multiple gestation, delivered	Diagnosis	ICD-9-CM
65191	Unspecified multiple gestation, delivered	Diagnosis	ICD-9-CM
65201	Unstable lie of fetus, delivered	Diagnosis	ICD-9-CM
65211	Breech or other malpresentation successfully converted to cephalic presentation, delivered	Diagnosis	ICD-9-CM

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Code	Description	Code Category	Code Type
65221	Breech presentation without mention of version, delivered	Diagnosis	ICD-9-CM
65231	Transverse or oblique fetal presentation, delivered	Diagnosis	ICD-9-CM
65241	Fetal face or brow presentation, delivered	Diagnosis	ICD-9-CM
65251	High fetal head at term, delivered	Diagnosis	ICD-9-CM
65261	Multiple gestation with malpresentation of one fetus or more, delivered	Diagnosis	ICD-9-CM
65271	Prolapsed arm of fetus, delivered	Diagnosis	ICD-9-CM
65281	Other specified malposition or malpresentation of fetus, delivered	Diagnosis	ICD-9-CM
65291	Unspecified malposition or malpresentation of fetus, delivered	Diagnosis	ICD-9-CM
65301	Major abnormality of bony pelvis, not further specified, delivered	Diagnosis	ICD-9-CM
65311	Generally contracted pelvis in pregnancy, delivered	Diagnosis	ICD-9-CM
65321	Inlet contraction of pelvis in pregnancy, delivered	Diagnosis	ICD-9-CM
65331	Outlet contraction of pelvis in pregnancy, delivered	Diagnosis	ICD-9-CM
65341	Fetopelvic disproportion, delivered	Diagnosis	ICD-9-CM
65351	Unusually large fetus causing disproportion, delivered	Diagnosis	ICD-9-CM
65361	Hydrocephalic fetus causing disproportion, delivered	Diagnosis	ICD-9-CM
65371	Other fetal abnormality causing disproportion, delivered	Diagnosis	ICD-9-CM
65381	Fetal disproportion of other origin, delivered	Diagnosis	ICD-9-CM
65391	Unspecified fetal disproportion, delivered	Diagnosis	ICD-9-CM
65401	Congenital abnormalities of pregnant uterus, delivered	Diagnosis	ICD-9-CM
65402	Congenital abnormalities of pregnant uterus, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65411	Tumors of body of uterus, delivered	Diagnosis	ICD-9-CM
65412	Tumors of body of uterus, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65421	Previous cesarean delivery, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
65431	Retroverted and incarcerated gravid uterus, delivered	Diagnosis	ICD-9-CM
65432	Retroverted and incarcerated gravid uterus, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65441	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered	Diagnosis	ICD-9-CM
65442	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65451	Cervical incompetence, delivered	Diagnosis	ICD-9-CM
65452	Cervical incompetence, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65461	Other congenital or acquired abnormality of cervix, with delivery	Diagnosis	ICD-9-CM
65462	Other congenital or acquired abnormality of cervix, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65471	Congenital or acquired abnormality of vagina, with delivery	Diagnosis	ICD-9-CM
65472	Congenital or acquired abnormality of vagina, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65481	Congenital or acquired abnormality of vulva, with delivery	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
65482	Congenital or acquired abnormality of vulva, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65491	Other and unspecified abnormality of organs and soft tissues of pelvis, with delivery	Diagnosis	ICD-9-CM
65492	Other and unspecified abnormality of organs and soft tissues of pelvis, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
65501	Central nervous system malformation in fetus, with delivery	Diagnosis	ICD-9-CM
65511	Chromosomal abnormality in fetus, affecting management of mother, with delivery	Diagnosis	ICD-9-CM
65521	Hereditary disease in family possibly affecting fetus, affecting management of mother, with delivery	Diagnosis	ICD-9-CM
65531	Suspected damage to fetus from viral disease in mother, affecting management of mother, with delivery	Diagnosis	ICD-9-CM
65541	Suspected damage to fetus from other disease in mother, affecting management of mother, with delivery	Diagnosis	ICD-9-CM
65551	Suspected damage to fetus from drugs, affecting management of mother, delivered	Diagnosis	ICD-9-CM
65561	Suspected damage to fetus from radiation, affecting management of mother, delivered	Diagnosis	ICD-9-CM
65571	Decreased fetal movements, affecting management of mother, delivered	Diagnosis	ICD-9-CM
65581	Other known or suspected fetal abnormality, not elsewhere classified, affecting management of mother, delivery	Diagnosis	ICD-9-CM
65591	Unspecified fetal abnormality affecting management of mother, delivery	Diagnosis	ICD-9-CM
65601	Fetal-maternal hemorrhage, with delivery	Diagnosis	ICD-9-CM
65611	Rhesus isoimmunization affecting management of mother, delivered	Diagnosis	ICD-9-CM
65621	Isoimmunization from other and unspecified blood-group incompatibility, affecting management of mother, delivered	Diagnosis	ICD-9-CM
65631	Fetal distress affecting management of mother, delivered	Diagnosis	ICD-9-CM
65641	Intrauterine death affecting management of mother, delivered	Diagnosis	ICD-9-CM
65651	Poor fetal growth, affecting management of mother, delivered	Diagnosis	ICD-9-CM
65661	Excessive fetal growth affecting management of mother, delivered	Diagnosis	ICD-9-CM
65671	Other placental conditions affecting management of mother, delivered	Diagnosis	ICD-9-CM
65681	Other specified fetal and placental problems affecting management of mother, delivered	Diagnosis	ICD-9-CM
65691	Unspecified fetal and placental problem affecting management of mother, delivered	Diagnosis	ICD-9-CM
65701	Polyhydramnios, with delivery	Diagnosis	ICD-9-CM
65801	Oligohydramnios, delivered	Diagnosis	ICD-9-CM
65811	Premature rupture of membranes in pregnancy, delivered	Diagnosis	ICD-9-CM
65821	Delayed delivery after spontaneous or unspecified rupture of membranes, delivered	Diagnosis	ICD-9-CM
65831	Delayed delivery after artificial rupture of membranes, delivered	Diagnosis	ICD-9-CM
65841	Infection of amniotic cavity, delivered	Diagnosis	ICD-9-CM
65881	Other problem associated with amniotic cavity and membranes, delivered	Diagnosis	ICD-9-CM
65891	Unspecified problem associated with amniotic cavity and membranes, delivered	Diagnosis	ICD-9-CM
65901	Failed mechanical induction of labor, delivered	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
65911	Failed medical or unspecified induction of labor, delivered	Diagnosis	ICD-9-CM
65921	Unspecified maternal pyrexia during labor, delivered	Diagnosis	ICD-9-CM
65931	Generalized infection during labor, delivered	Diagnosis	ICD-9-CM
65941	Grand multiparity, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
65951	Elderly primigravida, delivered	Diagnosis	ICD-9-CM
65961	Elderly multigravida, delivered, with mention of antepartum condition	Diagnosis	ICD-9-CM
65971	Abnormality in fetal heart rate or rhythm, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
65981	Other specified indication for care or intervention related to labor and delivery, delivered	Diagnosis	ICD-9-CM
65991	Unspecified indication for care or intervention related to labor and delivery, delivered	Diagnosis	ICD-9-CM
66001	Obstruction caused by malposition of fetus at onset of labor, delivered	Diagnosis	ICD-9-CM
66011	Obstruction by bony pelvis during labor and delivery, delivered	Diagnosis	ICD-9-CM
66021	Obstruction by abnormal pelvic soft tissues during labor and delivery, delivered	Diagnosis	ICD-9-CM
66031	Deep transverse arrest and persistent occipitoposterior position during labor and deliver, delivered	Diagnosis	ICD-9-CM
66041	Shoulder (girdle) dystocia during labor and deliver, delivered	Diagnosis	ICD-9-CM
66051	Locked twins, delivered	Diagnosis	ICD-9-CM
66061	Unspecified failed trial of labor, delivered	Diagnosis	ICD-9-CM
66071	Unspecified failed forceps or vacuum extractor, delivered	Diagnosis	ICD-9-CM
66081	Other causes of obstructed labor, delivered	Diagnosis	ICD-9-CM
66091	Unspecified obstructed labor, with delivery	Diagnosis	ICD-9-CM
66101	Primary uterine inertia, with delivery	Diagnosis	ICD-9-CM
66111	Secondary uterine inertia, with delivery	Diagnosis	ICD-9-CM
66121	Other and unspecified uterine inertia, with delivery	Diagnosis	ICD-9-CM
66131	Precipitate labor, with delivery	Diagnosis	ICD-9-CM
66141	Hypertonic, incoordinate, or prolonged uterine contractions, with delivery	Diagnosis	ICD-9-CM
66191	Unspecified abnormality of labor, with delivery	Diagnosis	ICD-9-CM
66201	Prolonged first stage of labor, delivered	Diagnosis	ICD-9-CM
66211	Unspecified prolonged labor, delivered	Diagnosis	ICD-9-CM
66221	Prolonged second stage of labor, delivered	Diagnosis	ICD-9-CM
66231	Delayed delivery of second twin, triplet, etc., delivered	Diagnosis	ICD-9-CM
66301	Prolapse of cord, complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66311	Cord around neck, with compression, complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66321	Other and unspecified cord entanglement, with compression, complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66331	Other and unspecified cord entanglement, without mention of compression, complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66341	Short cord complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66351	Vasa previa complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66361	Vascular lesions of cord complicating labor and delivery, delivered	Diagnosis	ICD-9-CM
66381	Other umbilical cord complications during labor and delivery, delivered	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
66391	Unspecified umbilical cord complication during labor and delivery, delivered	Diagnosis	ICD-9-CM
66401	First-degree perineal laceration, with delivery	Diagnosis	ICD-9-CM
66411	Second-degree perineal laceration, with delivery	Diagnosis	ICD-9-CM
66421	Third-degree perineal laceration, with delivery	Diagnosis	ICD-9-CM
66431	Fourth-degree perineal laceration, with delivery	Diagnosis	ICD-9-CM
66441	Unspecified perineal laceration, with delivery	Diagnosis	ICD-9-CM
66451	Vulvar and perineal hematoma, with delivery	Diagnosis	ICD-9-CM
66461	Anal sphincter tear complicating delivery, not associated with third-degree perineal laceration, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66481	Other specified trauma to perineum and vulva, with delivery	Diagnosis	ICD-9-CM
66491	Unspecified trauma to perineum and vulva, with delivery	Diagnosis	ICD-9-CM
66501	Rupture of uterus before onset of labor, with delivery	Diagnosis	ICD-9-CM
66511	Rupture of uterus during labor, with delivery	Diagnosis	ICD-9-CM
66522	Inversion of uterus, delivered with postpartum complication	Diagnosis	ICD-9-CM
66531	Laceration of cervix, with delivery	Diagnosis	ICD-9-CM
66541	High vaginal laceration, with delivery	Diagnosis	ICD-9-CM
66551	Other injury to pelvic organs, with delivery	Diagnosis	ICD-9-CM
66561	Damage to pelvic joints and ligaments, with delivery	Diagnosis	ICD-9-CM
66571	Pelvic hematoma, with delivery	Diagnosis	ICD-9-CM
66572	Pelvic hematoma, delivered with postpartum complication	Diagnosis	ICD-9-CM
66581	Other specified obstetrical trauma, with delivery	Diagnosis	ICD-9-CM
66582	Other specified obstetrical trauma, delivered, with postpartum	Diagnosis	ICD-9-CM
66591	Unspecified obstetrical trauma, with delivery	Diagnosis	ICD-9-CM
66592	Unspecified obstetrical trauma, delivered, with postpartum complication	Diagnosis	ICD-9-CM
66602	Third-stage postpartum hemorrhage, with delivery	Diagnosis	ICD-9-CM
66612	Other immediate postpartum hemorrhage, with delivery	Diagnosis	ICD-9-CM
66622	Delayed and secondary postpartum hemorrhage, with delivery	Diagnosis	ICD-9-CM
66632	Postpartum coagulation defects, with delivery	Diagnosis	ICD-9-CM
66702	Retained placenta without hemorrhage, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
66712	Retained portions of placenta or membranes, without hemorrhage, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66801	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered	Diagnosis	ICD-9-CM
66802	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66811	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered	Diagnosis	ICD-9-CM
66812	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
66821	Central nervous system complications of the administration of anesthesia or other sedation in labor and delivery, delivered	Diagnosis	ICD-9-CM
66822	Central nervous system complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66881	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered	Diagnosis	ICD-9-CM
66882	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66891	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered	Diagnosis	ICD-9-CM
66892	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66901	Maternal distress, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66902	Maternal distress, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
66911	Shock during or following labor and delivery, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66912	Shock during or following labor and delivery, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
66921	Maternal hypotension syndrome, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66922	Maternal hypotension syndrome, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
66932	Acute kidney failure following labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66941	Other complications of obstetrical surgery and procedures, with delivery, with or without m	Diagnosis	ICD-9-CM
66942	Other complications of obstetrical surgery and procedures, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
66951	Forceps or vacuum extractor delivery without mention of indication, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66961	Breech extraction, without mention of indication, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66971	Cesarean delivery, without mention of indication, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66981	Other complication of labor and delivery, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66982	Other complication of labor and delivery, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
66991	Unspecified complication of labor and delivery, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
66992	Unspecified complication of labor and delivery, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
67002	Major puerperal infection, unspecified, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67012	Puerperal endometritis, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67022	Puerperal sepsis, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67032	Puerperal septic thrombophlebitis, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67082	Other major puerperal infection, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67101	Varicose veins of legs, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67102	Varicose veins of legs, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67111	Varicose veins of vulva and perineum, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67112	Varicose veins of vulva and perineum, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67121	Superficial thrombophlebitis with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67122	Superficial thrombophlebitis with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67131	Deep phlebothrombosis, antepartum, with delivery	Diagnosis	ICD-9-CM
67142	Deep phlebothrombosis, postpartum, with delivery	Diagnosis	ICD-9-CM
67151	Other phlebitis and thrombosis with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67152	Other phlebitis and thrombosis with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67181	Other venous complication, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67182	Other venous complication, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67191	Unspecified venous complication, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67192	Unspecified venous complication, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67202	Puerperal pyrexia of unknown origin, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67301	Obstetrical air embolism, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67302	Obstetrical air embolism, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67311	Amniotic fluid embolism, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67312	Amniotic fluid embolism, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67321	Obstetrical blood-clot embolism, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67322	Obstetrical blood-clot embolism, with mention of postpartum complication	Diagnosis	ICD-9-CM
67331	Obstetrical pyemic and septic embolism, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67332	Obstetrical pyemic and septic embolism, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67381	Other obstetrical pulmonary embolism, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
67382	Other obstetrical pulmonary embolism, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67401	Cerebrovascular disorder, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67402	Cerebrovascular disorder, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67412	Disruption of cesarean wound, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67422	Disruption of perineal wound, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67432	Other complication of obstetrical surgical wounds, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67442	Placental polyp, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67451	Peripartum cardiomyopathy, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67452	Peripartum cardiomyopathy, delivered, with mention of postpartum condition	Diagnosis	ICD-9-CM
67482	Other complication of puerperium, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67492	Unspecified complications of puerperium, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67501	Infection of nipple associated with childbirth, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67502	Infection of nipple associated with childbirth, delivered with mention of postpartum complication	Diagnosis	ICD-9-CM
67511	Abscess of breast associated with childbirth, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67512	Abscess of breast associated with childbirth, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67521	Nonpurulent mastitis, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67522	Nonpurulent mastitis, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67581	Other specified infection of the breast and nipple associated with childbirth, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67582	Other specified infection of the breast and nipple associated with childbirth, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67591	Unspecified infection of the breast and nipple, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67592	Unspecified infection of the breast and nipple, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67601	Retracted nipple, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67602	Retracted nipple, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67611	Cracked nipple, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67612	Cracked nipple, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67621	Engorgement of breasts, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67622	Engorgement of breasts, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM

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

Code	Description	Code Category	Code Type
67631	Other and unspecified disorder of breast associated with childbirth, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67632	Other and unspecified disorder of breast associated with childbirth, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67641	Failure of lactation, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67642	Failure of lactation, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67651	Suppressed lactation, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67652	Suppressed lactation, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67661	Galactorrhea, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67662	Galactorrhea, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67681	Other disorder of lactation, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67682	Other disorder of lactation, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67691	Unspecified disorder of lactation, with delivery, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
72	Forceps, vacuum, and breech delivery	Procedure	ICD-9-CM
73	Other procedures inducing or assisting delivery	Procedure	ICD-9-CM
720	Low forceps operation	Procedure	ICD-9-CM
721	Low forceps operation with episiotomy	Procedure	ICD-9-CM
722	Mid forceps operation	Procedure	ICD-9-CM
723	High forceps operation	Procedure	ICD-9-CM
724	Forceps rotation of fetal head	Procedure	ICD-9-CM
725	Breech extraction	Procedure	ICD-9-CM
726	Forceps application to aftercoming head	Procedure	ICD-9-CM
727	Vacuum extraction	Procedure	ICD-9-CM
728	Other specified instrumental delivery	Procedure	ICD-9-CM
729	Unspecified instrumental delivery	Procedure	ICD-9-CM
730	Artificial rupture of membranes	Procedure	ICD-9-CM
731	Other surgical induction of labor	Procedure	ICD-9-CM
732	Internal and combined version and extraction	Procedure	ICD-9-CM
733	Failed forceps	Procedure	ICD-9-CM
734	Medical induction of labor	Procedure	ICD-9-CM
735	Manually assisted delivery	Procedure	ICD-9-CM
736	Episiotomy	Procedure	ICD-9-CM
738	Operations on fetus to facilitate delivery	Procedure	ICD-9-CM
739	Other operations assisting delivery	Procedure	ICD-9-CM
740	Classical cesarean section	Procedure	ICD-9-CM
741	Low cervical cesarean section	Procedure	ICD-9-CM
742	Extraperitoneal cesarean section	Procedure	ICD-9-CM
744	Cesarean section of other specified type	Procedure	ICD-9-CM
749	Cesarean section of unspecified type	Procedure	ICD-9-CM

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

Code	Description	Code Category	Code Type
7221	Mid forceps operation with episiotomy	Procedure	ICD-9-CM
7229	Other mid forceps operation	Procedure	ICD-9-CM
7231	High forceps operation with episiotomy	Procedure	ICD-9-CM
7239	Other high forceps operation	Procedure	ICD-9-CM
7251	Partial breech extraction with forceps to aftercoming head	Procedure	ICD-9-CM
7252	Other partial breech extraction	Procedure	ICD-9-CM
7253	Total breech extraction with forceps to aftercoming head	Procedure	ICD-9-CM
7254	Other total breech extraction	Procedure	ICD-9-CM
7271	Vacuum extraction with episiotomy	Procedure	ICD-9-CM
7279	Other vacuum extraction	Procedure	ICD-9-CM
7301	Induction of labor by artificial rupture of membranes	Procedure	ICD-9-CM
7309	Other artificial rupture of membranes	Procedure	ICD-9-CM
7321	Internal and combined version without extraction	Procedure	ICD-9-CM
7322	Internal and combined version with extraction	Procedure	ICD-9-CM
7351	Manual rotation of fetal head	Procedure	ICD-9-CM
7359	Other manually assisted delivery	Procedure	ICD-9-CM
7391	External version to assist delivery	Procedure	ICD-9-CM
7392	Replacement of prolapsed umbilical cord	Procedure	ICD-9-CM
7393	Incision of cervix to assist delivery	Procedure	ICD-9-CM
7394	Pubiotomy to assist delivery	Procedure	ICD-9-CM
7399	Other operations to assist delivery	Procedure	ICD-9-CM
7499	Other cesarean section of unspecified type	Procedure	ICD-9-CM
67692	Unspecified disorder of lactation, with delivery, with mention of postpartum complication	Diagnosis	ICD-9-CM
67801	Fetal hematologic conditions, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67811	Fetal conjoined twins, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67901	Maternal complications from in utero procedure, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67902	Maternal complications from in utero procedure, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
67911	Fetal complications from in utero procedure, delivered, with or without mention of antepartum condition	Diagnosis	ICD-9-CM
67912	Fetal complications from in utero procedure, delivered, with mention of postpartum complication	Diagnosis	ICD-9-CM
V27	Outcome of delivery	Diagnosis	ICD-9-CM
V270	Outcome of delivery, single liveborn	Diagnosis	ICD-9-CM
V271	Outcome of delivery, single stillborn	Diagnosis	ICD-9-CM
V272	Outcome of delivery, twins, both liveborn	Diagnosis	ICD-9-CM
V273	Outcome of delivery, twins, one liveborn and one stillborn	Diagnosis	ICD-9-CM
V274	Outcome of delivery, twins, both stillborn	Diagnosis	ICD-9-CM
V275	Outcome of delivery, other multiple birth, all liveborn	Diagnosis	ICD-9-CM
V276	Outcome of delivery, other multiple birth, some liveborn	Diagnosis	ICD-9-CM

Code	Description	Code Category	Code Type
V277	Outcome of delivery, other multiple birth, all stillborn	Diagnosis	ICD-9-CM
V279	Outcome of delivery, unspecified	Diagnosis	ICD-9-CM
V30	Single liveborn	Diagnosis	ICD-9-CM
V300	Single liveborn, born in hospital	Diagnosis	ICD-9-CM
V3000	Single liveborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3001	Single liveborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V301	Single liveborn, born before admission to hospital	Diagnosis	ICD-9-CM
V302	Single liveborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V31	Twin birth, mate liveborn	Diagnosis	ICD-9-CM
V310	Twin, mate liveborn, born in hospital	Diagnosis	ICD-9-CM
V3100	Twin, mate liveborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3101	Twin, mate liveborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V311	Twin birth, mate liveborn, born before admission to hospital	Diagnosis	ICD-9-CM
V312	Twin birth, mate liveborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V32	Twin birth, mate stillborn	Diagnosis	ICD-9-CM
V320	Twin, mate stillborn, born in hospital	Diagnosis	ICD-9-CM
V3200	Twin, mate stillborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3201	Twin, mate stillborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V321	Twin birth, mate stillborn, born before admission to hospital	Diagnosis	ICD-9-CM
V322	Twin birth, mate stillborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V33	Twin birth, unspecified whether mate liveborn or stillborn	Diagnosis	ICD-9-CM
V330	Twin, unspecified, born in hospital	Diagnosis	ICD-9-CM
V3300	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3301	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V331	Twin birth, unspecified whether mate liveborn or stillborn, born before admission to hospital	Diagnosis	ICD-9-CM
V332	Twin birth, unspecified whether mate liveborn or stillborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V34	Other multiple birth (three or more), mates all liveborn	Diagnosis	ICD-9-CM
V340	Other multiple, mates all liveborn, born in hospital	Diagnosis	ICD-9-CM
V3400	Other multiple, mates all liveborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3401	Other multiple, mates all liveborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V341	Other multiple birth (three or more), mates all liveborn, born before admission to hospital	Diagnosis	ICD-9-CM
V342	Other multiple birth (three or more), mates all liveborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V35	Other multiple birth (three or more), mates all stillborn	Diagnosis	ICD-9-CM
V350	Other multiple, mates all stillborn, born in hospital	Diagnosis	ICD-9-CM

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

Code	Description	Code Category	Code Type
V3500	Other multiple, mates all stillborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3501	Other multiple, mates all stillborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V351	Other multiple birth (three or more), mates all stillborn, born before admission to hospital	Diagnosis	ICD-9-CM
V352	Other multiple birth (three or more), mates all stillborn, born outside of hospital and not hospitalized	Diagnosis	ICD-9-CM
V36	Other multiple birth (three or more), mates liveborn and stillborn	Diagnosis	ICD-9-CM
V360	Other multiple, mates liveborn and stillborn, born in hospital	Diagnosis	ICD-9-CM
V3600	Other multiple, mates liveborn and stillborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3601	Other multiple, mates liveborn and stillborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V361	Other multiple birth (three or more), mates liveborn and stillborn, born before admission to hospital	Diagnosis	ICD-9-CM
V362	Other multiple birth (three or more), mates liveborn and stillborn, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM
V37	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn	Diagnosis	ICD-9-CM
V370	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital	Diagnosis	ICD-9-CM
V3700	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3701	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered by cesarean delivery	Diagnosis	ICD-9-CM
V371	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born before admission to hospital	Diagnosis	ICD-9-CM
V372	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born outside of hospital	Diagnosis	ICD-9-CM
V39	Liveborn, unspecified whether single, twin, or multiple	Diagnosis	ICD-9-CM
V390	Other liveborn, unspecified whether single, twin, or multiple, born in hospital	Diagnosis	ICD-9-CM
V3900	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered without mention of cesarean delivery	Diagnosis	ICD-9-CM
V3901	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered by cesarean	Diagnosis	ICD-9-CM
V391	Liveborn, unspecified whether single, twin or multiple, born before admission to hospital	Diagnosis	ICD-9-CM
V392	Liveborn, unspecified whether single, twin or multiple, born outside hospital and not hospitalized	Diagnosis	ICD-9-CM

Appendix D. Generic and Brand Names of Medical Products Used to Define Multiple Scelrosis in this Request

Generic Name	Brand Name
Multiple Sclerosis Drugs	
alemtuzumab	Campath
alemtuzumab	Lemtrada
cladribine	Leustatin
cladribine	Mavenclad (10 tablet pack)
cladribine	Mavenclad (4 tablet pack)
cladribine	Mavenclad (5 tablet pack)
cladribine	Mavenclad (6 tablet pack)
cladribine	Mavenclad (7 tablet pack)
cladribine	Mavenclad (8 tablet pack)
cladribine	Mavenclad (9 tablet pack)
cladribine	cladribine
dalfampridine	Ampyra
dalfampridine	dalfampridine
dalfampridine	dalfampridine (bulk)
dimethyl fumarate	Tecfidera
dimethyl fumarate	dimethyl fumarate (bulk)
diroximel fumarate	Vumerity
fingolimod HCl	Gilenya
glatiramer acetate	Copaxone
glatiramer acetate	Glatopa
glatiramer acetate	glatiramer
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
mitoxantrone HCl	Novantrone
mitoxantrone HCl	mitoxantrone
natalizumab	Tysabri
ocrelizumab	Ocrevus
peginterferon beta-1a	Plegridy
siponimod	Mayzent
siponimod	Mayzent Starter Pack
teriflunomide	Aubagio

Appendix E. List of Healthcare Common Procedure Coding System (HCPCS) Codes Used to Define Multiple Sclerosis Drugs in this Request

Code	Description	Code Category	Code Type
	Multiple Sclerosis Drugs		
C9110	Injection, alemtuzumab, per 10 mg/ ml	Procedure	HCPCS
C9126	Injection natalizumab per 5 mg	Procedure	HCPCS
C9419	Injection, cladribine, per 1 mg, brand name	Procedure	HCPCS
C9494	Injection, ocrelizumab, 1 mg	Procedure	HCPCS
J0202	Injection, alemtuzumab, 1 mg	Procedure	HCPCS
J1595	Injection, glatiramer acetate, 20 mg	Procedure	HCPCS
J1825	Injection, interferon beta-1a, 33 mcg	Procedure	HCPCS
J1826	Injection, interferon beta-1a, 30 mcg	Procedure	HCPCS
J1830	Injection interferon beta-1b, 0.25 mg (code may be used for Medicare when drug administered under the direct supervision of a physician, not for use when drug is self-administered)	Procedure	HCPCS
J2323	Injection, natalizumab, 1 mg	Procedure	HCPCS
J2350	Injection, ocrelizumab, 1 mg	Procedure	HCPCS
J9010	Injection, alemtuzumab, 10 mg	Procedure	HCPCS
J9065	Injection, cladribine, per 1 mg	Procedure	HCPCS
J9293	Injection, mitoxantrone HCl, per 5 mg	Procedure	HCPCS
Q2010	Injection, glatiramer acetate, per dose	Procedure	HCPCS
Q3025	Injection, interferon beta-1a, 11 mcg for intramuscular use	Procedure	HCPCS
Q3026	Injection, interferon beta-1a, 11 mcg for subcutaneous use	Procedure	HCPCS
Q3027	Injection, interferon beta-1a, 1 mcg for intramuscular use	Procedure	HCPCS
Q3028	Injection, interferon beta-1a, 1 mcg for subcutaneous use	Procedure	HCPCS
Q4079	Injection, natalizumab, 1 mg	Procedure	HCPCS
Q9979	Injection, Alemtuzumab, 1 mg	Procedure	HCPCS
S0087	Injection, alemtuzumab, 30 mg	Procedure	HCPCS

Appendix F. 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 Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
	Anxiety		
293.84	Anxiety disorder in conditions classified elsewhere	Diagnosis	ICD-9-CM
300.00	Anxiety state, unspecified	Diagnosis	ICD-9-CM
300.01	Panic disorder without agoraphobia	Diagnosis	ICD-9-CM
300.02	Generalized anxiety disorder	Diagnosis	ICD-9-CM
300.09	Other anxiety states	Diagnosis	ICD-9-CM
F06.4	Anxiety disorder due to known physiological condition	Diagnosis	ICD-10-CM
F41.0	Panic disorder [episodic paroxysmal anxiety]	Diagnosis	ICD-10-CM
F41.1	Generalized anxiety disorder	Diagnosis	ICD-10-CM
F41.8	Other specified anxiety disorders	Diagnosis	ICD-10-CM
F41.9	Anxiety disorder, unspecified	Diagnosis	ICD-10-CM
	Arthritis		
714.0	Rheumatoid arthritis	Diagnosis	ICD-9-CM
714.2	Other rheumatoid arthritis with visceral or systemic involvement	Diagnosis	ICD-9-CM
715.00	Generalized osteoarthrosis, unspecified site	Diagnosis	ICD-9-CM
715.04	Generalized osteoarthrosis, involving hand	Diagnosis	ICD-9-CM
715.09	Generalized osteoarthrosis, involving multiple sites	Diagnosis	ICD-9-CM
715.10	Primary localized osteoarthrosis, unspecified site	Diagnosis	ICD-9-CM
715.11	Primary localized osteoarthrosis, shoulder region	Diagnosis	ICD-9-CM
715.12	Primary localized osteoarthrosis, upper arm	Diagnosis	ICD-9-CM
715.13	Primary localized osteoarthrosis, forearm	Diagnosis	ICD-9-CM
715.14	Primary localized osteoarthrosis, hand	Diagnosis	ICD-9-CM
715.15	Primary localized osteoarthrosis, pelvic region and thigh	Diagnosis	ICD-9-CM
715.16	Primary localized osteoarthrosis, lower leg	Diagnosis	ICD-9-CM
715.17	Primary localized osteoarthrosis, ankle and foot	Diagnosis	ICD-9-CM
715.18	Primary localized osteoarthrosis, other specified sites	Diagnosis	ICD-9-CM
715.20	Secondary localized osteoarthrosis, unspecified site	Diagnosis	ICD-9-CM
715.21	Secondary localized osteoarthrosis, shoulder region	Diagnosis	ICD-9-CM
715.22	Secondary localized osteoarthrosis, upper arm	Diagnosis	ICD-9-CM
715.23	Secondary localized osteoarthrosis, forearm	Diagnosis	ICD-9-CM
715.24	Secondary localized osteoarthrosis, involving hand	Diagnosis	ICD-9-CM
715.25	Secondary localized osteoarthrosis, pelvic region and thigh	Diagnosis	ICD-9-CM
715.26	Secondary localized osteoarthrosis, lower leg	Diagnosis	ICD-9-CM
715.27	Secondary localized osteoarthrosis, ankle and foot	Diagnosis	ICD-9-CM
715.28	Secondary localized osteoarthrosis, other specified site	Diagnosis	ICD-9-CM
715.30	Localized osteoarthrosis not specified whether primary or secondary, unspecified site	Diagnosis	ICD-9-CM
715.31	Localized osteoarthrosis not specified whether primary or secondary, shoulder region	Diagnosis	ICD-9-CM
715.32	Localized osteoarthrosis not specified whether primary or secondary, upper arm	Diagnosis	ICD-9-CM
715.33	Localized osteoarthrosis not specified whether primary or secondary, forearm	Diagnosis	ICD-9-CM
715.34	Localized osteoarthrosis not specified whether primary or secondary, hand	Diagnosis	ICD-9-CM

Appendix F. 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 Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
715.35	Localized osteoarthrosis not specified whether primary or secondary, pelvic region and thigh	Diagnosis	ICD-9-CM
715.36	Localized osteoarthrosis not specified whether primary or secondary, lower leg	Diagnosis	ICD-9-CM
715.37	Localized osteoarthrosis not specified whether primary or secondary, ankle and foot	Diagnosis	ICD-9-CM
715.38	Localized osteoarthrosis not specified whether primary or secondary, other specified sites	Diagnosis	ICD-9-CM
715.80	Osteoarthrosis involving more than one site, but not specified as generalized, unspecified site	Diagnosis	ICD-9-CM
715.89	Osteoarthrosis involving multiple sites, but not specified as generalized	Diagnosis	ICD-9-CM
715.90	Osteoarthrosis, unspecified whether generalized or localized, unspecified site	Diagnosis	ICD-9-CM
715.91	Osteoarthrosis, unspecified whether generalized or localized, shoulder region	Diagnosis	ICD-9-CM
715.92	Osteoarthrosis, unspecified whether generalized or localized, upper arm	Diagnosis	ICD-9-CM
715.93	Osteoarthrosis, unspecified whether generalized or localized, forearm	Diagnosis	ICD-9-CM
715.94	Osteoarthrosis, unspecified whether generalized or localized, hand	Diagnosis	ICD-9-CM
715.95	Osteoarthrosis, unspecified whether generalized or localized, pelvic region and thigh	Diagnosis	ICD-9-CM
715.96	Osteoarthrosis, unspecified whether generalized or localized, lower leg	Diagnosis	ICD-9-CM
715.97	Osteoarthrosis, unspecified whether generalized or localized, ankle and foot	Diagnosis	ICD-9-CM
715.98	Osteoarthrosis, unspecified whether generalized or localized, other specified sites	Diagnosis	ICD-9-CM
M05.30	Rheumatoid heart disease with rheumatoid arthritis of unspecified site	Diagnosis	ICD-10-CM
M05.60	Rheumatoid arthritis of unspecified site with involvement of other organs and systems	Diagnosis	ICD-10-CM
M06.1	Adult-onset Still's disease	Diagnosis	ICD-10-CM
M06.9	Rheumatoid arthritis, unspecified	Diagnosis	ICD-10-CM
M15.0	Primary generalized (osteo)arthritis	Diagnosis	ICD-10-CM
M15.1	Heberden's nodes (with arthropathy)	Diagnosis	ICD-10-CM
M15.2	Bouchard's nodes (with arthropathy)	Diagnosis	ICD-10-CM
M15.3	Secondary multiple arthritis	Diagnosis	ICD-10-CM
M15.8	Other polyosteoarthritis	Diagnosis	ICD-10-CM
M15.9	Polyosteoarthritis, unspecified	Diagnosis	ICD-10-CM
M16.10	Unilateral primary osteoarthritis, unspecified hip	Diagnosis	ICD-10-CM
M16.7	Other unilateral secondary osteoarthritis of hip	Diagnosis	ICD-10-CM
M16.9	Osteoarthritis of hip, unspecified	Diagnosis	ICD-10-CM
M17.10	Unilateral primary osteoarthritis, unspecified knee	Diagnosis	ICD-10-CM
M17.5	Other unilateral secondary osteoarthritis of knee	Diagnosis	ICD-10-CM
M17.9	Osteoarthritis of knee, unspecified	Diagnosis	ICD-10-CM
M18.9	Osteoarthritis of first carpometacarpal joint, unspecified	Diagnosis	ICD-10-CM
M19.019	Primary osteoarthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M19.029	Primary osteoarthritis, unspecified elbow	Diagnosis	ICD-10-CM
M19.039	Primary osteoarthritis, unspecified wrist	Diagnosis	ICD-10-CM
M19.049	Primary osteoarthritis, unspecified hand	Diagnosis	ICD-10-CM
M19.079	Primary osteoarthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M19.219	Secondary osteoarthritis, unspecified shoulder	Diagnosis	ICD-10-CM
M19.229	Secondary osteoarthritis, unspecified elbow	Diagnosis	ICD-10-CM

Code	Description	Code Type	Code Category
M19.239	Secondary osteoarthritis, unspecified wrist	Diagnosis	ICD-10-CM
M19.249	Secondary osteoarthritis, unspecified hand	Diagnosis	ICD-10-CM
M19.279	Secondary osteoarthritis, unspecified ankle and foot	Diagnosis	ICD-10-CM
M19.90	Unspecified osteoarthritis, unspecified site	Diagnosis	ICD-10-CM
M19.91	Primary osteoarthritis, unspecified site	Diagnosis	ICD-10-CM
M19.93	Secondary osteoarthritis, unspecified site	Diagnosis	ICD-10-CM
	Chronic Lung Disease		
491.0	Simple chronic bronchitis	Diagnosis	ICD-9-CM
491.1	Mucopurulent chronic bronchitis	Diagnosis	ICD-9-CM
491.20	Obstructive chronic bronchitis, without exacerbation	Diagnosis	ICD-9-CM
491.21	Obstructive chronic bronchitis, with (acute) exacerbation	Diagnosis	ICD-9-CM
491.22	Obstructive chronic bronchitis with acute bronchitis	Diagnosis	ICD-9-CM
491.8	Other chronic bronchitis	Diagnosis	ICD-9-CM
491.9	Unspecified chronic bronchitis	Diagnosis	ICD-9-CM
492.0	Emphysematous bleb	Diagnosis	ICD-9-CM
492.8	Other emphysema	Diagnosis	ICD-9-CM
493.00	Extrinsic asthma, unspecified	Diagnosis	ICD-9-CM
493.01	Extrinsic asthma with status asthmaticus	Diagnosis	ICD-9-CM
493.02	Extrinsic asthma, with (acute) exacerbation	Diagnosis	ICD-9-CM
493.10	Intrinsic asthma, unspecified	Diagnosis	ICD-9-CM
493.11	Intrinsic asthma with status asthmaticus	Diagnosis	ICD-9-CM
493.12	Intrinsic asthma, with (acute) exacerbation	Diagnosis	ICD-9-CM
493.20	Chronic obstructive asthma, unspecified	Diagnosis	ICD-9-CM
493.21	Chronic obstructive asthma with status asthmaticus	Diagnosis	ICD-9-CM
493.22	Chronic obstructive asthma, with (acute) exacerbation	Diagnosis	ICD-9-CM
493.81	Exercise induced bronchospasm	Diagnosis	ICD-9-CM
493.82	Cough variant asthma	Diagnosis	ICD-9-CM
493.90	Asthma, unspecified, unspecified status	Diagnosis	ICD-9-CM
493.91	Asthma, unspecified with status asthmaticus	Diagnosis	ICD-9-CM
493.92	Asthma, unspecified, with (acute) exacerbation	Diagnosis	ICD-9-CM
494.0	Bronchiectasis without acute exacerbation	Diagnosis	ICD-9-CM
494.1	Bronchiectasis with acute exacerbation	Diagnosis	ICD-9-CM
495.0	Farmers' lung	Diagnosis	ICD-9-CM
495.1	Bagassosis	Diagnosis	ICD-9-CM
495.2	Bird-fanciers' lung	Diagnosis	ICD-9-CM
495.3	Suberosis	Diagnosis	ICD-9-CM
495.4	Malt workers' lung	Diagnosis	ICD-9-CM
495.5	Mushroom workers' lung	Diagnosis	ICD-9-CM
495.6	Maple bark-strippers' lung	Diagnosis	ICD-9-CM
495.7	Ventilation pneumonitis	Diagnosis	ICD-9-CM
495.8	Other specified allergic alveolitis and pneumonitis	Diagnosis	ICD-9-CM
495.9	Unspecified allergic alveolitis and pneumonitis	Diagnosis	ICD-9-CM
496	Chronic airway obstruction, not elsewhere classified	Diagnosis	ICD-9-CM

Appendix F. 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 Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
J41.0	Simple chronic bronchitis	Diagnosis	ICD-10-CM
J41.1	Mucopurulent chronic bronchitis	Diagnosis	ICD-10-CM
J41.8	Mixed simple and mucopurulent chronic bronchitis	Diagnosis	ICD-10-CM
J42	Unspecified chronic bronchitis	Diagnosis	ICD-10-CM
J43.9	Emphysema, unspecified	Diagnosis	ICD-10-CM
J44.0	Chronic obstructive pulmonary disease with (acute) lower respiratory infection	Diagnosis	ICD-10-CM
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation	Diagnosis	ICD-10-CM
J44.9	Chronic obstructive pulmonary disease, unspecified	Diagnosis	ICD-10-CM
J45.20	Mild intermittent asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.21	Mild intermittent asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.22	Mild intermittent asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.901	Unspecified asthma with (acute) exacerbation	Diagnosis	ICD-10-CM
J45.902	Unspecified asthma with status asthmaticus	Diagnosis	ICD-10-CM
J45.909	Unspecified asthma, uncomplicated	Diagnosis	ICD-10-CM
J45.990	Exercise induced bronchospasm	Diagnosis	ICD-10-CM
J45.991	Cough variant asthma	Diagnosis	ICD-10-CM
J45.998	Other asthma	Diagnosis	ICD-10-CM
J47.1	Bronchiectasis with (acute) exacerbation	Diagnosis	ICD-10-CM
J47.9	Bronchiectasis, uncomplicated	Diagnosis	ICD-10-CM
J67.0	Farmer's lung	Diagnosis	ICD-10-CM
J67.1	Bagassosis	Diagnosis	ICD-10-CM
J67.2	Bird fancier's lung	Diagnosis	ICD-10-CM
J67.3	Suberosis	Diagnosis	ICD-10-CM
J67.4	Maltworker's lung	Diagnosis	ICD-10-CM
J67.5	Mushroom-worker's lung	Diagnosis	ICD-10-CM
J67.6	Maple-bark-stripper's lung	Diagnosis	ICD-10-CM
J67.7	Air conditioner and humidifier lung	Diagnosis	ICD-10-CM
J67.8	Hypersensitivity pneumonitis due to other organic dusts	Diagnosis	ICD-10-CM
J67.9	Hypersensitivity pneumonitis due to unspecified organic dust	Diagnosis	ICD-10-CM
Depression			
296.20	Major depressive disorder, single episode, unspecified	Diagnosis	ICD-9-CM
296.21	Major depressive disorder, single episode, mild	Diagnosis	ICD-9-CM
296.22	Major depressive disorder, single episode, moderate	Diagnosis	ICD-9-CM
296.23	Major depressive disorder, single episode, severe, without mention of psychotic behavior	Diagnosis	ICD-9-CM
296.24	Major depressive disorder, single episode, severe, specified as with psychotic behavior	Diagnosis	ICD-9-CM
296.25	Major depressive disorder, single episode, in partial or unspecified remission	Diagnosis	ICD-9-CM
296.26	Major depressive disorder, single episode in full remission	Diagnosis	ICD-9-CM
296.30	Major depressive disorder, recurrent episode, unspecified	Diagnosis	ICD-9-CM
296.31	Major depressive disorder, recurrent episode, mild	Diagnosis	ICD-9-CM
296.32	Major depressive disorder, recurrent episode, moderate	Diagnosis	ICD-9-CM

Code	Description	Code Type	Code Category
296.33	Major depressive disorder, recurrent episode, severe, without mention of psychotic behavior	Diagnosis	ICD-9-CM
296.34	Major depressive disorder, recurrent episode, severe, specified as with psychotic behavior	Diagnosis	ICD-9-CM
296.35	Major depressive disorder, recurrent episode, in partial or unspecified remission	Diagnosis	ICD-9-CM
296.36	Major depressive disorder, recurrent episode, in full remission	Diagnosis	ICD-9-CM
296.82	Atypical depressive disorder	Diagnosis	ICD-9-CM
311	Depressive disorder, not elsewhere classified	Diagnosis	ICD-9-CM
F32.0	Major depressive disorder, single episode, mild	Diagnosis	ICD-10-CM
F32.1	Major depressive disorder, single episode, moderate	Diagnosis	ICD-10-CM
F32.2	Major depressive disorder, single episode, severe without psychotic features	Diagnosis	ICD-10-CM
F32.3	Major depressive disorder, single episode, severe with psychotic features	Diagnosis	ICD-10-CM
F32.4	Major depressive disorder, single episode, in partial remission	Diagnosis	ICD-10-CM
F32.5	Major depressive disorder, single episode, in full remission	Diagnosis	ICD-10-CM
F32.8	Other depressive episodes	Diagnosis	ICD-10-CM
F32.89	Other specified depressive episodes	Diagnosis	ICD-10-CM
F32.9	Major depressive disorder, single episode, unspecified	Diagnosis	ICD-10-CM
F33.0	Major depressive disorder, recurrent, mild	Diagnosis	ICD-10-CM
F33.1	Major depressive disorder, recurrent, moderate	Diagnosis	ICD-10-CM
F33.2	Major depressive disorder, recurrent severe without psychotic features	Diagnosis	ICD-10-CM
F33.3	Major depressive disorder, recurrent, severe with psychotic symptoms	Diagnosis	ICD-10-CM
F33.41	Major depressive disorder, recurrent, in partial remission	Diagnosis	ICD-10-CM
F33.42	Major depressive disorder, recurrent, in full remission	Diagnosis	ICD-10-CM
F33.9	Major depressive disorder, recurrent, unspecified	Diagnosis	ICD-10-CM
Diabetes			
250.00	Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.01	Diabetes mellitus without mention of complication, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.02	Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.03	Diabetes mellitus without mention of complication, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.10	Diabetes with ketoacidosis, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.11	Diabetes with ketoacidosis, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.12	Diabetes with ketoacidosis, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.13	Diabetes with ketoacidosis, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.20	Diabetes with hyperosmolarity, type II or unspecified type, not stated as	Diagnosis	ICD-9-CM
250.21	Diabetes with hyperosmolarity, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.22	Diabetes with hyperosmolarity, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.23	Diabetes with hyperosmolarity, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.30	Diabetes with other coma, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.31	Diabetes with other coma, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM

Code	Description	Code Type	Code Category
250.32	Diabetes with other coma, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.33	Diabetes with other coma, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.40	Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.41	Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.42	Diabetes with renal manifestations, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.43	Diabetes with renal manifestations, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.50	Diabetes with ophthalmic manifestations, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.51	Diabetes with ophthalmic manifestations, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.52	Diabetes with ophthalmic manifestations, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.53	Diabetes with ophthalmic manifestations, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.60	Diabetes with neurological manifestations, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.61	Diabetes with neurological manifestations, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.62	Diabetes with neurological manifestations, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.63	Diabetes with neurological manifestations, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.70	Diabetes with peripheral circulatory disorders, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.71	Diabetes with peripheral circulatory disorders, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.72	Diabetes with peripheral circulatory disorders, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.73	Diabetes with peripheral circulatory disorders, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.80	Diabetes with other specified manifestations, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.81	Diabetes with other specified manifestations, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.82	Diabetes with other specified manifestations, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.83	Diabetes with other specified manifestations, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
250.90	Diabetes with unspecified complication, type II or unspecified type, not stated as uncontrolled	Diagnosis	ICD-9-CM
250.91	Diabetes with unspecified complication, type I [juvenile type], not stated as uncontrolled	Diagnosis	ICD-9-CM
250.92	Diabetes with unspecified complication, type II or unspecified type, uncontrolled	Diagnosis	ICD-9-CM
250.93	Diabetes with unspecified complication, type I [juvenile type], uncontrolled	Diagnosis	ICD-9-CM
E10.10	Type 1 diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E10.11	Type 1 diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E10.21	Type 1 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM

Appendix F. 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 Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E10.311	Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E10.319	Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E10.36	Type 1 diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E10.37X1	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, right eye	Diagnosis	ICD-10-CM
E10.37X2	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, left eye	Diagnosis	ICD-10-CM
E10.37X3	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral	Diagnosis	ICD-10-CM
E10.37X9	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	Diagnosis	ICD-10-CM
E10.39	Type 1 diabetes mellitus with other diabetic ophthalmic complication	Diagnosis	ICD-10-CM
E10.40	Type 1 diabetes mellitus with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E10.618	Type 1 diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM
E10.620	Type 1 diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E10.621	Type 1 diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E10.622	Type 1 diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E10.628	Type 1 diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E10.630	Type 1 diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E10.638	Type 1 diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E10.641	Type 1 diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E10.649	Type 1 diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E10.65	Type 1 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E10.69	Type 1 diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E10.8	Type 1 diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E10.9	Type 1 diabetes mellitus without complications	Diagnosis	ICD-10-CM
E11.00	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	Diagnosis	ICD-10-CM
E11.01	Type 2 diabetes mellitus with hyperosmolarity with coma	Diagnosis	ICD-10-CM
E11.10	Type 2 diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
E11.11	Type 2 diabetes mellitus with ketoacidosis with coma	Diagnosis	ICD-10-CM
E11.21	Type 2 diabetes mellitus with diabetic nephropathy	Diagnosis	ICD-10-CM
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	Diagnosis	ICD-10-CM
E11.311	Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema	Diagnosis	ICD-10-CM
E11.319	Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema	Diagnosis	ICD-10-CM
E11.36	Type 2 diabetes mellitus with diabetic cataract	Diagnosis	ICD-10-CM
E11.39	Type 2 diabetes mellitus with other diabetic ophthalmic complication	Diagnosis	ICD-10-CM
E11.40	Type 2 diabetes mellitus with diabetic neuropathy, unspecified	Diagnosis	ICD-10-CM
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene	Diagnosis	ICD-10-CM
E11.618	Type 2 diabetes mellitus with other diabetic arthropathy	Diagnosis	ICD-10-CM

Code	Description	Code Type	Code Category
E11.620	Type 2 diabetes mellitus with diabetic dermatitis	Diagnosis	ICD-10-CM
E11.621	Type 2 diabetes mellitus with foot ulcer	Diagnosis	ICD-10-CM
E11.622	Type 2 diabetes mellitus with other skin ulcer	Diagnosis	ICD-10-CM
E11.628	Type 2 diabetes mellitus with other skin complications	Diagnosis	ICD-10-CM
E11.630	Type 2 diabetes mellitus with periodontal disease	Diagnosis	ICD-10-CM
E11.638	Type 2 diabetes mellitus with other oral complications	Diagnosis	ICD-10-CM
E11.641	Type 2 diabetes mellitus with hypoglycemia with coma	Diagnosis	ICD-10-CM
E11.649	Type 2 diabetes mellitus with hypoglycemia without coma	Diagnosis	ICD-10-CM
E11.65	Type 2 diabetes mellitus with hyperglycemia	Diagnosis	ICD-10-CM
E11.69	Type 2 diabetes mellitus with other specified complication	Diagnosis	ICD-10-CM
E11.8	Type 2 diabetes mellitus with unspecified complications	Diagnosis	ICD-10-CM
E11.9	Type 2 diabetes mellitus without complications	Diagnosis	ICD-10-CM
E13.10	Other specified diabetes mellitus with ketoacidosis without coma	Diagnosis	ICD-10-CM
Alcohol Abuse			
291.1	Alcohol-induced persisting amnestic disorder	Diagnosis	ICD-9-CM
291.2	Alcohol-induced persisting dementia	Diagnosis	ICD-9-CM
291.5	Alcohol-induced psychotic disorder with delusions	Diagnosis	ICD-9-CM
291.81	Alcohol withdrawal	Diagnosis	ICD-9-CM
291.82	Alcohol induced sleep disorders	Diagnosis	ICD-9-CM
291.89	Other specified alcohol-induced mental disorders	Diagnosis	ICD-9-CM
291.9	Unspecified alcohol-induced mental disorders	Diagnosis	ICD-9-CM
303.90	Other and unspecified alcohol dependence, unspecified	Diagnosis	ICD-9-CM
303.91	Other and unspecified alcohol dependence, continuous	Diagnosis	ICD-9-CM
303.92	Other and unspecified alcohol dependence, episodic	Diagnosis	ICD-9-CM
303.93	Other and unspecified alcohol dependence, in remission	Diagnosis	ICD-9-CM
305.00	Nondependent alcohol abuse, unspecified	Diagnosis	ICD-9-CM
305.01	Nondependent alcohol abuse, continuous	Diagnosis	ICD-9-CM
305.02	Nondependent alcohol abuse, episodic	Diagnosis	ICD-9-CM
305.03	Nondependent alcohol abuse, in remission	Diagnosis	ICD-9-CM
F10.10	Alcohol abuse, uncomplicated	Diagnosis	ICD-10-CM
F10.11	Alcohol abuse, in remission	Diagnosis	ICD-10-CM
F10.159	Alcohol abuse with alcohol-induced psychotic disorder, unspecified	Diagnosis	ICD-10-CM
F10.180	Alcohol abuse with alcohol-induced anxiety disorder	Diagnosis	ICD-10-CM
F10.181	Alcohol abuse with alcohol-induced sexual dysfunction	Diagnosis	ICD-10-CM
F10.182	Alcohol abuse with alcohol-induced sleep disorder	Diagnosis	ICD-10-CM
F10.188	Alcohol abuse with other alcohol-induced disorder	Diagnosis	ICD-10-CM
F10.20	Alcohol dependence, uncomplicated	Diagnosis	ICD-10-CM
F10.21	Alcohol dependence, in remission	Diagnosis	ICD-10-CM
F10.239	Alcohol dependence with withdrawal, unspecified	Diagnosis	ICD-10-CM
F10.259	Alcohol dependence with alcohol-induced psychotic disorder, unspecified	Diagnosis	ICD-10-CM
F10.27	Alcohol dependence with alcohol-induced persisting dementia	Diagnosis	ICD-10-CM
F10.280	Alcohol dependence with alcohol-induced anxiety disorder	Diagnosis	ICD-10-CM
F10.281	Alcohol dependence with alcohol-induced sexual dysfunction	Diagnosis	ICD-10-CM

Code	Description	Code Type	Code Category
F10.282	Alcohol dependence with alcohol-induced sleep disorder	Diagnosis	ICD-10-CM
F10.288	Alcohol dependence with other alcohol-induced disorder	Diagnosis	ICD-10-CM
F10.950	Alcohol use, unspecified with alcohol-induced psychotic disorder with delusions	Diagnosis	ICD-10-CM
F10.959	Alcohol use, unspecified with alcohol-induced psychotic disorder, unspecified	Diagnosis	ICD-10-CM
F10.96	Alcohol use, unspecified with alcohol-induced persisting amnestic disorder	Diagnosis	ICD-10-CM
F10.980	Alcohol use, unspecified with alcohol-induced anxiety disorder	Diagnosis	ICD-10-CM
F10.982	Alcohol use, unspecified with alcohol-induced sleep disorder	Diagnosis	ICD-10-CM
F10.99	Alcohol use, unspecified with unspecified alcohol-induced disorder	Diagnosis	ICD-10-CM
V11.3	Personal history of alcoholism	Diagnosis	ICD-9-CM
Z65.8	Other specified problems related to psychosocial circumstances	Diagnosis	ICD-10-CM
Gastrointestinal Disorders			
530.11	Reflux esophagitis	Diagnosis	ICD-9-CM
530.81	Esophageal reflux	Diagnosis	ICD-9-CM
564.00	Unspecified constipation	Diagnosis	ICD-9-CM
564.01	Slow transit constipation	Diagnosis	ICD-9-CM
564.02	Outlet dysfunction constipation	Diagnosis	ICD-9-CM
564.09	Other constipation	Diagnosis	ICD-9-CM
564.1	Irritable bowel syndrome	Diagnosis	ICD-9-CM
787.2	Dysphagia	Diagnosis	ICD-9-CM
787.91	Diarrhea	Diagnosis	ICD-9-CM
K21.0	Gastro-esophageal reflux disease with esophagitis	Diagnosis	ICD-10-CM
K21.9	Gastro-esophageal reflux disease without esophagitis	Diagnosis	ICD-10-CM
K52.0	Gastroenteritis and colitis due to radiation	Diagnosis	ICD-10-CM
K52.1	Toxic gastroenteritis and colitis	Diagnosis	ICD-10-CM
K52.2	Allergic and dietetic gastroenteritis and colitis	Diagnosis	ICD-10-CM
K52.21	Food protein-induced enterocolitis syndrome	Diagnosis	ICD-10-CM
K52.22	Food protein-induced enteropathy	Diagnosis	ICD-10-CM
K52.29	Other allergic and dietetic gastroenteritis and colitis	Diagnosis	ICD-10-CM
K52.3	Indeterminate colitis	Diagnosis	ICD-10-CM
K52.8	Other specified noninfective gastroenteritis and colitis	Diagnosis	ICD-10-CM
K52.81	Eosinophilic gastritis or gastroenteritis	Diagnosis	ICD-10-CM
K52.82	Eosinophilic colitis	Diagnosis	ICD-10-CM
K52.83	Microscopic colitis	Diagnosis	ICD-10-CM
K52.831	Collagenous colitis	Diagnosis	ICD-10-CM
K52.832	Lymphocytic colitis	Diagnosis	ICD-10-CM
K52.838	Other microscopic colitis	Diagnosis	ICD-10-CM
K52.839	Microscopic colitis, unspecified	Diagnosis	ICD-10-CM
K52.89	Other specified noninfective gastroenteritis and colitis	Diagnosis	ICD-10-CM
K52.9	Noninfective gastroenteritis and colitis, unspecified	Diagnosis	ICD-10-CM
K58.1	Irritable bowel syndrome with constipation	Diagnosis	ICD-10-CM
K58.2	Mixed irritable bowel syndrome	Diagnosis	ICD-10-CM
K58.8	Other irritable bowel syndrome	Diagnosis	ICD-10-CM
K58.9	Irritable bowel syndrome without diarrhea	Diagnosis	ICD-10-CM

Code	Description	Code Type	Code Category
K59.00	Constipation, unspecified	Diagnosis	ICD-10-CM
K59.01	Slow transit constipation	Diagnosis	ICD-10-CM
K59.02	Outlet dysfunction constipation	Diagnosis	ICD-10-CM
K59.03	Drug induced constipation	Diagnosis	ICD-10-CM
K59.04	Chronic idiopathic constipation	Diagnosis	ICD-10-CM
K59.09	Other constipation	Diagnosis	ICD-10-CM
R13.0	Aphagia	Diagnosis	ICD-10-CM
R13.1	Dysphagia	Diagnosis	ICD-10-CM
R13.10	Dysphagia, unspecified	Diagnosis	ICD-10-CM
R13.11	Dysphagia, oral phase	Diagnosis	ICD-10-CM
R13.12	Dysphagia, oropharyngeal phase	Diagnosis	ICD-10-CM
R13.13	Dysphagia, pharyngeal phase	Diagnosis	ICD-10-CM
R13.14	Dysphagia, pharyngoesophageal phase	Diagnosis	ICD-10-CM
R13.19	Other dysphagia	Diagnosis	ICD-10-CM
R19.7	Diarrhea, unspecified	Diagnosis	ICD-10-CM
Hyperlipidemia			
272.0	Pure hypercholesterolemia	Diagnosis	ICD-9-CM
272.1	Pure hyperglyceridemia	Diagnosis	ICD-9-CM
272.2	Mixed hyperlipidemia	Diagnosis	ICD-9-CM
272.3	Hyperchylomicronemia	Diagnosis	ICD-9-CM
272.4	Other and unspecified hyperlipidemia	Diagnosis	ICD-9-CM
272.5	Lipoprotein deficiencies	Diagnosis	ICD-9-CM
272.6	Lipodystrophy	Diagnosis	ICD-9-CM
272.7	Lipidoses	Diagnosis	ICD-9-CM
272.8	Other disorders of lipoid metabolism	Diagnosis	ICD-9-CM
272.9	Unspecified disorder of lipoid metabolism	Diagnosis	ICD-9-CM
E75.21	Fabry (-Anderson) disease	Diagnosis	ICD-10-CM
E75.22	Gaucher disease	Diagnosis	ICD-10-CM
E75.249	Niemann-Pick disease, unspecified	Diagnosis	ICD-10-CM
E77.0	Defects in post-translational modification of lysosomal enzymes	Diagnosis	ICD-10-CM
E77.1	Defects in glycoprotein degradation	Diagnosis	ICD-10-CM
E78.0	Pure hypercholesterolemia	Diagnosis	ICD-10-CM
E78.00	Pure hypercholesterolemia, unspecified	Diagnosis	ICD-10-CM
E78.01	Familial hypercholesterolemia	Diagnosis	ICD-10-CM
E78.1	Pure hyperglyceridemia	Diagnosis	ICD-10-CM
E78.2	Mixed hyperlipidemia	Diagnosis	ICD-10-CM
E78.3	Hyperchylomicronemia	Diagnosis	ICD-10-CM
E78.4	Other hyperlipidemia	Diagnosis	ICD-10-CM
E78.5	Hyperlipidemia, unspecified	Diagnosis	ICD-10-CM
E78.6	Lipoprotein deficiency	Diagnosis	ICD-10-CM
E78.81	Lipoid dermatoarthritis	Diagnosis	ICD-10-CM
E78.89	Other lipoprotein metabolism disorders	Diagnosis	ICD-10-CM
E78.9	Disorder of lipoprotein metabolism, unspecified	Diagnosis	ICD-10-CM

Appendix F. 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 Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E88.1	Lipodystrophy, not elsewhere classified	Diagnosis	ICD-10-CM
E88.89	Other specified metabolic disorders	Diagnosis	ICD-10-CM

Appendix G. Specifications Defining Parameters in this Request

In this report we describe exposure to multiple sclerosis (MS) drugs before, during and after pregnancies resulting in a live-born delivery among women in the Sentinel Distributed Database (SDD). We also describe MS drug use among matched women during episodes without evidence of a live-birth delivery.

Query period (*bound by the delivery date* **):**	01/01/2001 - 12/30/2020
Coverage requirement:	Medical & Drug Coverage
Enrollment requirement post delivery date:	183 Days
Minimum enrollment requirement prior to delivery date:	484 Days (301 day delivery length + 183 day pre-pregnancy exposure assessment
Enrollment gap:	45 Days
Pre-pregnancy period (*relative to pregnancy start date* **):**	183 to 91 days prior; and 90 days prior to 1 day prior
Age groups (*calculated at delivery date* **):**	15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49 years
Sex:	Female only
Output Stratifications:	Age group; Calendar year; Pregnancy time period
Output by gestational week:	Yes
Envelope macro:	On - encounters during inpatient stay as inpatient
Freeze data:	No
Include non-pregnant cohort:	Yes

Pregnancy Episode Creation

Scenario	Group	Delivery Definition	Pregnancy Cohort Definition	Delivery Caresetting	Delivery Washout Period	Pregnancy Duration Definition (Pre/PostTerm Codes)	Pre/Post-Term Code Evaluation Window Relative to Delivery Date	Pregnancy Duration in Absence of Pre/Post-Term Codes (ITT Days)
1	All_Pregnancies	Use Pregnancy Algorithm Codes*	Cohort includes all valid pregnancy episodes during the query period	Inpatient hospital stay, any diagnosis position	301 days	Use Pregnancy Algorithm Codes*	7 days (recommended by MEPREP algorithm)	273 days (recommended by MEPREP algorithm)

Appendix H. Specifications Defining Exposure in this Request

In this report we describe exposure to multiple sclerosis (MS) drugs before, during and after pregnancies resulting in a live-born delivery among women in the Sentinel Distributed Database (SDD). We also describe MS drug use among matched women during episodes without evidence of a live-birth delivery.

Medical Product of Interest (MOI)

Incident Exposure Washout Period: 0 days
Evaluation Number: All valid medical product exposure episodes
Evaluation Type: Dispensings and days supply
Episode Gap: 0
Episode Extension: 0
Cohort Definition: All valid MOI exposure episodes during pregnancy episode
MOI Exposure on Delivery Date: Do not exclude MOIs with Adate equivalent to pregnancy delivery date
Runs: All exposures for r01 (pregstart); for r02 (delivery) only include MOI1

MOI Number	Exposure	Care Setting	Incidence Criteria
1	Dalfampridine	Any	N/A
2	Dimethyl_fumarate	Any	N/A
3	Fingolimod	Any	N/A
4	Glatiramer_Acetate	Any	N/A
5	Interferon_beta_1a	Any	N/A
6	Interferon_ beta_1b	Any	N/A
7	Peginterferon_beta_1a	Any	N/A
8	Teriflunomide	Any	N/A
9	Alemtuzumab	Any	N/A
10	Natalizumab	Any	N/A
11	Ocrelizumab	Any	N/A
12	Cladribine	Any	N/A
13	Siponimod	Any	N/A
14	Diroximel_fumarate	Any	N/A
15	Mitoxantrone	Any	N/A
16	Any MS Drug	Any	N/A

ICD-9, ICD-10, HCPCS, and CPT codes are provided by Optum360.
NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."

Appendix I. Specifications Defining Baseline Characteristics in this Request

The Center for Drug Evaluation (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) Pregnancy tool, version 10.2.0, to assess exposure to multiple sclerosis drugs during pregnancy in the Sentinel Distributed Database (SDD).

Evaluation Type: Dispensings and days supply

		Baseline Characteristics							
Run Number	Covariate Number	Covariate	Care Setting	Anchor On	First Evaluation Period Start	First Evaluation Period End	Second Evaluation Period Start	Second Evaluation Period End	Number of Instances the Covariate Should be Found in Evaluation Period
1 (pregstart)	1,2	Dalfampridine	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	3,4	Dimethyl_fumarate	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	5,6	Fingolimod	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	7,8	Glatiramer_Acetate	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	9,10	Interferon_beta_1a	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	11,12	Interferon_ beta_1b	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	13,14	Peginterferon_beta_1a	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	15,16	Teriflunomide	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	17,18	Alemtuzumab	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	19,20	Natalizumab	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	21,22	Ocrelizumab	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1

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Appendix I. Specifications Defining Baseline Characteristics in this Request

The Center for Drug Evaluation (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) Pregnancy tool, version 10.2.0, to assess exposure to multiple sclerosis drugs during pregnancy in the Sentinel Distributed Database (SDD).

Evaluation Type: Dispensings and days supply

		Baseline Characteristics							
Run Number	Covariate Number	Covariate	Care Setting	Anchor On	First Evaluation Period Start	First Evaluation Period End	Second Evaluation Period Start	Second Evaluation Period End	Number of Instances the Covariate Should be Found in Evaluation Period
1 (pregstart)	23,24	Cladribine	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	25,26	Siponimod	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	27,28	Diroximel_fumarate	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	29,30	Mitoxantrone	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	31,32	Any_MS_drug	Any care setting	Pregnancy Start (default)	-90	-1	-183	-91	1
1 (pregstart)	33	Anxiety	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	34	Arthritis	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	35	Chronic Lung Disease	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	36	Depression	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	37	Diabetes	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	38	Alcohol Abuse (Elixhauser)	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1

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Appendix I. Specifications Defining Baseline Characteristics in this Request

The Center for Drug Evaluation (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) Pregnancy tool, version 10.2.0, to assess exposure to multiple sclerosis drugs during pregnancy in the Sentinel Distributed Database (SDD).

Evaluation Type: Dispensings and days supply

		Baseline Characteristics							
Run Number	**Covariate Number**	**Covariate**	**Care Setting**	**Anchor On**	**First Evaluation Period Start**	**First Evaluation Period End**	**Second Evaluation Period Start**	**Second Evaluation Period End**	**Number of Instances the Covariate Should be Found in Evaluation Period**
1 (pregstart)	39	GI Disorders	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	40	Hyperlipidemia	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	41	Hypertension	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
1 (pregstart)	42	Thyroid Disease	Any care setting	Pregnancy Start (default)	-183	0	N/A	N/A	1
2 (delivery)	1,2	Dalfampridine	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	3,4	Dimethyl_fumarate	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	5,6	Fingolimod	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	7,8	Glatiramer_Acetate	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	9,10	Interferon_beta_1a	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	11,12	Interferon_ beta_1b	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	13,14	Peginterferon_beta_1a	Any care setting	Delivery (via MIL file)	1	90	91	183	1

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Appendix I. Specifications Defining Baseline Characteristics in this Request

The Center for Drug Evaluation (CDER) has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) Pregnancy tool, version 10.2.0, to assess exposure to multiple sclerosis drugs during pregnancy in the Sentinel Distributed Database (SDD).

Evaluation Type: Dispensings and days supply

		Baseline Characteristics							
Run Number	**Covariate Number**	**Covariate**	**Care Setting**	**Anchor On**	**First Evaluation Period Start**	**First Evaluation Period End**	**Second Evaluation Period Start**	**Second Evaluation Period End**	**Number of Instances the Covariate Should be Found in Evaluation Period**
2 (delivery)	15,16	Teriflunomide	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	17,18	Alemtuzumab	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	19,20	Natalizumab	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	21,22	Ocrelizumab	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	23,24	Cladribine	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	25,26	Siponimod	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	27,28	Diroximel_fumarate	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	29,30	Mitoxantrone	Any care setting	Delivery (via MIL file)	1	90	91	183	1
2 (delivery)	31,32	Any_MS_drug	Any care setting	Delivery (via MIL file)	1	90	91	183	1

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Utilization

Medical Utilization Evaluation Period Start	Medical Utilization Evaluation Period End	Medical Visit Care Settings	Drug Utilization Evaluation Period Start	Drug Utilization Evaluation Period End
-183	0	*Any care setting	-183	0

MS drugs utilization - Type 4 design diagram