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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_mpl1r_wp051_nsdp_v03

Request ID: cder_mpl1r_wp051_nsdp_v03

Request Description: This report contains estimates of magnetic resonance imaging (MRI) and magnetic resonance angiogram (MRA) use that occurred during a pregnancy resulting in a liveborn delivery, or within 90 days prior to the estimated start of pregnancy.

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis (CIDA) tool, version 4.0.0

Data Source: This query request was distributed to 16 Data Partners on June 13, 2017, and requested data spanned from January 1, 2006 to September 30, 2015. See Appendix A for a list of the dates of available data for each Data Partner.

Cohort Eligibility Criteria: Females in the following age groups were included in the cohort: 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+ years. Eligible females were required to be enrolled in plans with medical coverage for 384 days before their delivery date, with gaps in coverage of up to 45 days. A cohort of all eligible females was identified, defined individually for exposure to MRI and MRA, with and without gadolinium-based contrast agents (GBCAs). Please see Appendix B for codes defining these imaging procedures.

Pregnancy Episode Creation: A claims-based algorithm previously validated in the Medication Exposure in Pregnancy Risk Evaluation Program (MEPREP) was used to identify pregnancies ending in a live birth. This algorithm used pre-/post-term delivery codes that occurred within seven days of a delivery date in the inpatient care setting to determine a pregnancy duration. In absence of pre-/post-term codes, pregnancy duration was set to 273 days. Please see Appendix C for more details about this algorithm and for a list of delivery codes defined using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes and Current Procedural Terminology, Fourth Edition (CPT-4) procedure codes. Pregnancy episodes were excluded from the cohort if there was evidence of a delivery code in the 183 days prior to the delivery code of interest.

Exposure Identification During Pregnancy: MRI and MRA (with and without GBCAs) use was defined using CPT-4 and Healthcare Common Procedure Coding System (HCPCS) codes. See Appendix B for a list of procedure codes used to define exposure identification in this request.

Results: The total number and percentage of pregnancies with MRIs and MRAs were calculated. Furthermore, results were stratified by the number and percentage of pregnancies that used MRIs with and without contrast agent and MRAs with and without contrast agent. Results were stratified by 90 days prior to pregnancy start, by trimester, year of delivery, and maternal age at delivery. The baseline characteristics of the pregnancy cohort are provided by calendar year of delivery admission, age at delivery, and specific codes for pre- and post-term birth.

Limitations: Algorithms used to define pregnancy start and exposure use are imperfect; thus, it is possible that there may be misclassification.

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

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

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

Coverage Requirement - indicates medical and/or drug coverage type requirements for the cohort.

Any Use During Pregnancy - pregnancy episodes with product use during any trimester.

Any Use, First Trimester - pregnancy episodes with product use during the first trimester. The first trimester is 0-90 days following pregnancy start.

Any Use, Second Trimester - pregnancy episodes with product use during the second trimester. The second trimester is 91-180 days following

Any Use, Third Trimester - pregnancy episodes with product use during the third trimester. The third trimester is 180+ days following pregnancy start

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, 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

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.

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

Delivery washout period - number of days before a delivery during which an individual cannot have evidence of a prior delivery.

Drug Episodes During Pregnancy - number of medical product use episodes in any trimester.

Drug Episodes in the 90 Days Before Pregnancy - number of medical product use episodes in 90-days before pregnancy.

Drug Episodes, First Trimester - number of medical product use episodes in the first trimester.

Drug Episodes, Second Trimester - number of medical product use episodes in the second trimester.

Drug Episodes, Third Trimester - number of medical product use episodes in the third trimester.

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.

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

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

Exposure - defines the medical product(s) of interest. Medical product use is characterized 90 days prior to the start of pregnancy and during each

Exposure Washout - number of days before the start of medical product episode during which an individual cannot have evidence of a prior episode.

Minimum Pre-Delivery Enrollment - number of days of continuous enrollment in the requester-defined coverage type required before the delivery

Pre/PostTerm Evaluation Window - number of days around the delivery date where preterm/postterm codes to calculate the length of the pregnancy

Pregnancy Duration in Absence of Pre/Post-Term Codes - number of days for pregnancy episode length in the absence of preterm/post-term codes.

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. The Principal Diagnosis, along with the Care Setting values, forms the

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

Use in the 90 Days Before Pregnancy - pregnancy episodes with product use 90-days before pregnancy start.

Users - number of members with exposure during the query period. Member must have no evidence of exposure(s) of interest (defined by incidence criteria) in the prior washout period. A user may only be counted once in a query period.

*all terms may not be used in this report

**incident treatment episodes must be incident to both the exposure and the event

Table 1: Baseline Characteristics of the Pregnancy Cohort

Characteristic (for pregnant group)		N(%)
Total unique women with a pregnancy episode		3,175,234 (100.00%)
Total unique pregnancy episodes		3,726,555 (100.00%)
Calendar year of delivery admission	2006	79,360 (2.13%)
	2007	192,706 (5.17%)
	2008	206,523 (5.54%)
	2009	454,223 (12.19%)
	2010	464,180 (12.46%)
	2011	476,389 (12.78%)
	2012	481,060 (12.91%)
	2013	502,829 (13.49%)
	2014	494,923 (13.28%)
	2015	374,362 (10.05%)
Maternal age at delivery, years	10-14	2,042 (0.05%)
	15-19	154,873 (4.16%)
	20-24	444,449 (11.93%)
	25-29	976,423 (26.20%)
	30-34	1,284,572 (34.47%)
	35-39	684,089 (18.36%)
	40-44	156,596 (4.20%)
	45-49	15,362 (0.41%)
	50-54	4,520 (0.12%)
	55-59	1,919 (0.05%)
	60-64	674 (0.02%)
65+	1,036 (0.03%)	

Characteristic (for not-pregnant group)		N(%)
Total unique women with a non-pregnant episode		3,162,425 (100.00%)
Total unique non-pregnant episodes		3,726,555 (100.00%)
Calendar year of delivery admission	2006	79,360 (2.13%)
	2007	192,706 (5.17%)
	2008	206,523 (5.54%)
	2009	454,223 (12.19%)
	2010	464,180 (12.46%)
	2011	476,389 (12.78%)
	2012	481,060 (12.91%)
	2013	502,829 (13.49%)
	2014	494,923 (13.28%)
	2015	374,362 (10.05%)
Maternal age at delivery, years	10-14	2,042 (0.05%)
	15-19	154,873 (4.16%)
	20-24	444,449 (11.93%)
	25-29	976,423 (26.20%)
	30-34	1,284,572 (34.47%)
	35-39	684,089 (18.36%)
	40-44	156,596 (4.20%)
	45-49	15,362 (0.41%)
	50-54	4,520 (0.12%)
	55-59	1,919 (0.05%)
	60-64	674 (0.02%)
65+	1,036 (0.03%)	



Specific ICD-9-CM* codes for preterm birth		
	765.0	11 (0.00%)
	765.1	183 (0.00%)
	644.21	252,462 (6.77%)
	765.00	370 (0.01%)
	765.01	644 (0.02%)
	765.02	657 (0.02%)
	765.03	625 (0.02%)
	765.04	92 (0.00%)
	765.05	58 (0.00%)
	765.06	27 (0.00%)
	765.07	31 (0.00%)
	765.08	74 (0.00%)
	765.09	72 (0.00%)
	765.10	6,926 (0.19%)
	765.11	201 (0.01%)
	765.12	212 (0.01%)
	765.13	313 (0.01%)
	765.14	903 (0.02%)
	765.15	1,218 (0.03%)
	765.16	1,704 (0.05%)
	765.17	2,886 (0.08%)
	765.18	10,763 (0.29%)
	765.19	17,794 (0.48%)
	765.20	2,465 (0.07%)
	765.21	1,148 (0.03%)
	765.22	425 (0.01%)
	765.23	838 (0.02%)
	765.24	1,017 (0.03%)
	765.25	1,386 (0.04%)
	765.26	2,620 (0.07%)
	765.27	6,791 (0.18%)
	765.28	21,595 (0.58%)
	AnyPre	270,211 (7.25%)



Specific ICD-9-CM* codes for postterm birth		
	645.1	42 (0.00%)
	645.2	1 (0.00%)
	645.10	12,333 (0.33%)
	645.11	500,907 (13.44%)
	645.12	2 (0.00%)
	645.13	67,960 (1.82%)
	645.14	1 (0.00%)
	645.15	0 (0.00%)
	645.16	0 (0.00%)
	645.17	0 (0.00%)
	645.18	0 (0.00%)
	645.19	0 (0.00%)
	645.20	1,533 (0.04%)
	645.21	5,851 (0.16%)
	645.22	2 (0.00%)
	645.23	2,030 (0.05%)
	645.24	0 (0.00%)
	645.25	0 (0.00%)
	645.26	0 (0.00%)
	645.27	0 (0.00%)
	645.28	0 (0.00%)
	645.29	0 (0.00%)
	766.21	13,303 (0.36%)
	766.22	197 (0.01%)
	AnyPost	532,302 (14.28%)

*ICD-9-CM: International Classification of Disease, Ninth Edition,
Clinical Modification



Table 2: Use of Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiogram (MRA) During Pregnancies Resulting in a Live Birth Delivery, by Pregnancy-Related Time Periods

Exposure of Interest	Use in the 90 Days Before Pregnancy	Any Use During Pregnancy	Any Use, First Trimester	Any Use, Second Trimester	Any Use, Third Trimester	First Trimester Only
Available unique episodes	3,726,555 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)	3,725,976 (100.00%)	3,726,555 (100.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
MRA	2,283 (0.06%)	7,410 (0.20%)	1,389 (0.04%)	2,124 (0.06%)	3,998 (0.11%)	1,340 (0.04%)
MRA Extremity	17 (0.00%)	28 (0.00%)	9 (0.00%)	5 (0.00%)	14 (0.00%)	9 (0.00%)
MRA Extremity Contrast	17 (0.00%)	27 (0.00%)	8 (0.00%)	5 (0.00%)	14 (0.00%)	8 (0.00%)
MRA Extremity NonContrast	0 (0.00%)	2 (0.00%)	1 (0.00%)	0 (0.00%)	1 (0.00%)	1 (0.00%)
MRA Head	2,057 (0.06%)	7,046 (0.19%)	1,286 (0.03%)	2,039 (0.05%)	3,810 (0.10%)	1,243 (0.03%)
MRA Head Contrast	203 (0.01%)	247 (0.01%)	53 (0.00%)	39 (0.00%)	155 (0.00%)	53 (0.00%)
MRA Head NonContrast	1,905 (0.05%)	6,878 (0.18%)	1,250 (0.03%)	2,018 (0.05%)	3,694 (0.10%)	1,208 (0.03%)
MRA NonExtremity	706 (0.02%)	1,608 (0.04%)	370 (0.01%)	400 (0.01%)	854 (0.02%)	361 (0.01%)
MRA NonExtremity Contrast	491 (0.01%)	511 (0.01%)	171 (0.00%)	82 (0.00%)	262 (0.01%)	169 (0.00%)
MRA NonExtremity NonContrast	228 (0.01%)	1,151 (0.03%)	209 (0.01%)	333 (0.01%)	618 (0.02%)	204 (0.01%)
MRI	44,274 (1.19%)	51,554 (1.38%)	18,909 (0.51%)	14,606 (0.39%)	19,712 (0.53%)	18,045 (0.48%)
MRI Extremity	12,409 (0.33%)	6,764 (0.18%)	4,791 (0.13%)	1,123 (0.03%)	931 (0.02%)	4,735 (0.13%)
MRI Extremity Contrast	1,325 (0.04%)	584 (0.02%)	470 (0.01%)	45 (0.00%)	73 (0.00%)	468 (0.01%)
MRI Extremity NonContrast	11,219 (0.30%)	6,259 (0.17%)	4,368 (0.12%)	1,085 (0.03%)	873 (0.02%)	4,321 (0.12%)
MRI Head	15,834 (0.42%)	19,738 (0.53%)	6,564 (0.18%)	5,136 (0.14%)	8,509 (0.23%)	6,296 (0.17%)
MRI Head Contrast	10,515 (0.28%)	4,931 (0.13%)	3,313 (0.09%)	417 (0.01%)	1,280 (0.03%)	3,262 (0.09%)
MRI Head NonContrast	5,626 (0.15%)	15,277 (0.41%)	3,347 (0.09%)	4,781 (0.13%)	7,425 (0.20%)	3,229 (0.09%)
MRI NonExtremity	18,737 (0.50%)	27,581 (0.74%)	8,440 (0.23%)	8,805 (0.24%)	11,008 (0.30%)	8,192 (0.22%)
MRI NonExtremity Contrast	6,087 (0.16%)	3,214 (0.09%)	1,927 (0.05%)	387 (0.01%)	930 (0.02%)	1,906 (0.05%)
MRI NonExtremity NonContrast	12,978 (0.35%)	24,855 (0.67%)	6,658 (0.18%)	8,525 (0.23%)	10,252 (0.28%)	6,474 (0.17%)



Second Trimester Only	Third Trimester Only	Use in First, Second, and Third Trimester	Drug Episodes in the 90 Days Before Pregnancy	Drug Episodes During Pregnancy	Drug Episodes, First Trimester	Drug Episodes, Second Trimester
3,726,555 (100.00%)	3,725,976 (100.00%)	3,725,976 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0	0	0	0
0 (0.00%)	0 (0.00%)	0 (0.00%)	0	0	0	0
0 (0.00%)	0 (0.00%)	0 (0.00%)	0	0	0	0
2,050 (0.06%)	3,923 (0.11%)	4 (0.00%)	2,342	7,686	1,422	2,175
5 (0.00%)	14 (0.00%)	0 (0.00%)	17	30	11	5
5 (0.00%)	14 (0.00%)	0 (0.00%)	17	29	10	5
0 (0.00%)	1 (0.00%)	0 (0.00%)	0	2	1	0
1,971 (0.05%)	3,745 (0.10%)	2 (0.00%)	2,093	7,270	1,304	2,087
39 (0.00%)	155 (0.00%)	0 (0.00%)	203	248	53	40
1,955 (0.05%)	3,633 (0.10%)	2 (0.00%)	1,934	7,091	1,267	2,065
392 (0.01%)	840 (0.02%)	1 (0.00%)	713	1,645	376	404
80 (0.00%)	258 (0.01%)	0 (0.00%)	495	519	173	83
328 (0.01%)	611 (0.02%)	1 (0.00%)	231	1,170	211	335
13,395 (0.36%)	18,518 (0.50%)	77 (0.00%)	46,464	55,215	19,572	15,155
1,060 (0.03%)	889 (0.02%)	1 (0.00%)	12,706	6,980	4,872	1,148
42 (0.00%)	71 (0.00%)	1 (0.00%)	1,344	594	474	45
1,032 (0.03%)	839 (0.02%)	0 (0.00%)	11,433	6,428	4,427	1,106
4,835 (0.13%)	8,181 (0.22%)	45 (0.00%)	16,236	20,730	6,702	5,274
371 (0.01%)	1,226 (0.03%)	7 (0.00%)	10,712	5,093	3,347	434
4,582 (0.12%)	7,209 (0.19%)	19 (0.00%)	5,678	15,911	3,418	4,891
8,244 (0.22%)	10,486 (0.28%)	13 (0.00%)	19,400	29,148	8,687	9,088
366 (0.01%)	913 (0.02%)	1 (0.00%)	6,251	3,304	1,961	393
8,020 (0.22%)	9,790 (0.26%)	9 (0.00%)	13,321	26,179	6,818	8,787



Drug Episodes, Third Trimester	Drug Episodes, First Trimester Only	Drug Episodes, Second Trimester Only	Drug Episodes, Third Trimester Only	Drug Episodes in First, Second, and Third Trimester
3,725,976 (100.00%)	3,726,555 (100.00%)	3,726,555 (100.00%)	3,725,976 (100.00%)	3,725,976 (100.00%)
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
4,089	1,372	2,094	4,008	13
14	11	5	14	0
14	10	5	14	0
1	1	0	1	0
3,879	1,261	2,012	3,809	6
155	53	40	155	0
3,759	1,225	1,996	3,694	6
865	366	396	851	4
263	171	81	259	0
624	206	330	617	3
20,488	18,606	13,823	19,162	288
960	4,813	1,083	913	3
75	472	42	73	3
895	4,378	1,052	858	0
8,754	6,397	4,935	8,380	167
1,312	3,290	376	1,248	28
7,602	3,285	4,672	7,359	69
11,373	8,414	8,476	10,807	48
950	1,937	371	933	3
10,574	6,621	8,238	10,074	35



Table 3: Use of Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiogram (MRA) During Pregnancies Resulting in a Live Birth Delivery, by Calendar Year of Delivery

Exposure of Interest	2006	2007	2008	2009	2010	2011
Available unique episodes	79,360 (100.00%)	192,706 (100.00%)	206,523 (100.00%)	454,223 (100.00%)	464,180 (100.00%)	476,389 (100.00%)
	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
MRA	103 (0.13%)	293 (0.15%)	335 (0.16%)	834 (0.18%)	892 (0.19%)	979 (0.21%)
MRA Extremity	2 (0.00%)	1 (0.00%)	1 (0.00%)	3 (0.00%)	2 (0.00%)	5 (0.00%)
MRA Extremity Contrast	2 (0.00%)	1 (0.00%)	1 (0.00%)	3 (0.00%)	2 (0.00%)	5 (0.00%)
MRA Extremity NonContrast	1 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
MRA Head	93 (0.12%)	271 (0.14%)	319 (0.15%)	797 (0.18%)	850 (0.18%)	923 (0.19%)
MRA Head Contrast	1 (0.00%)	10 (0.01%)	13 (0.01%)	26 (0.01%)	30 (0.01%)	31 (0.01%)
MRA Head NonContrast	92 (0.12%)	264 (0.14%)	309 (0.15%)	777 (0.17%)	833 (0.18%)	899 (0.19%)
MRA NonExtremity	24 (0.03%)	59 (0.03%)	81 (0.04%)	167 (0.04%)	188 (0.04%)	251 (0.05%)
MRA NonExtremity Contrast	10 (0.01%)	32 (0.02%)	31 (0.02%)	54 (0.01%)	63 (0.01%)	66 (0.01%)
MRA NonExtremity NonContrast	15 (0.02%)	30 (0.02%)	51 (0.02%)	120 (0.03%)	128 (0.03%)	194 (0.04%)
MRI	590 (0.74%)	1,989 (1.03%)	2,288 (1.11%)	5,891 (1.30%)	6,111 (1.32%)	6,640 (1.39%)
MRI Extremity	84 (0.11%)	307 (0.16%)	302 (0.15%)	870 (0.19%)	802 (0.17%)	861 (0.18%)
MRI Extremity Contrast	4 (0.01%)	21 (0.01%)	25 (0.01%)	84 (0.02%)	68 (0.01%)	68 (0.01%)
MRI Extremity NonContrast	82 (0.10%)	289 (0.15%)	282 (0.14%)	799 (0.18%)	745 (0.16%)	800 (0.17%)
MRI Head	268 (0.34%)	857 (0.44%)	986 (0.48%)	2,381 (0.52%)	2,461 (0.53%)	2,641 (0.55%)
MRI Head Contrast	79 (0.10%)	273 (0.14%)	278 (0.13%)	660 (0.15%)	625 (0.13%)	637 (0.13%)
MRI Head NonContrast	193 (0.24%)	617 (0.32%)	734 (0.36%)	1,778 (0.39%)	1,890 (0.41%)	2,063 (0.43%)
MRI NonExtremity	267 (0.34%)	925 (0.48%)	1,109 (0.54%)	2,941 (0.65%)	3,132 (0.67%)	3,488 (0.73%)
MRI NonExtremity Contrast	28 (0.04%)	124 (0.06%)	181 (0.09%)	379 (0.08%)	383 (0.08%)	423 (0.09%)
MRI NonExtremity NonContrast	243 (0.31%)	827 (0.43%)	959 (0.46%)	2,608 (0.57%)	2,807 (0.60%)	3,129 (0.66%)



2012	2013	2014	2015
481,060 (100.00%)	502,829 (100.00%)	494,923 (100.00%)	374,362 (100.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
957 (0.20%)	1,083 (0.22%)	1,114 (0.23%)	820 (0.22%)
3 (0.00%)	4 (0.00%)	3 (0.00%)	4 (0.00%)
3 (0.00%)	4 (0.00%)	3 (0.00%)	3 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)
925 (0.19%)	1,037 (0.21%)	1,056 (0.21%)	775 (0.21%)
23 (0.00%)	42 (0.01%)	41 (0.01%)	30 (0.01%)
913 (0.19%)	1,008 (0.20%)	1,029 (0.21%)	754 (0.20%)
194 (0.04%)	231 (0.05%)	248 (0.05%)	165 (0.04%)
53 (0.01%)	68 (0.01%)	87 (0.02%)	47 (0.01%)
147 (0.03%)	170 (0.03%)	173 (0.03%)	123 (0.03%)
6,941 (1.44%)	7,467 (1.48%)	7,732 (1.56%)	5,905 (1.58%)
925 (0.19%)	946 (0.19%)	947 (0.19%)	720 (0.19%)
80 (0.02%)	89 (0.02%)	85 (0.02%)	60 (0.02%)
852 (0.18%)	869 (0.17%)	873 (0.18%)	668 (0.18%)
2,639 (0.55%)	2,731 (0.54%)	2,747 (0.56%)	2,027 (0.54%)
677 (0.14%)	652 (0.13%)	612 (0.12%)	438 (0.12%)
2,022 (0.42%)	2,143 (0.43%)	2,197 (0.44%)	1,640 (0.44%)
3,718 (0.77%)	4,156 (0.83%)	4,404 (0.89%)	3,441 (0.92%)
397 (0.08%)	434 (0.09%)	476 (0.10%)	389 (0.10%)
3,383 (0.70%)	3,789 (0.75%)	4,000 (0.81%)	3,110 (0.83%)



Table 4: Use of Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiogram (MRA) During Pregnancies Resulting in a Live Birth Delivery, by Maternal Age at Delivery

Exposure of Interest	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years
Available unique episodes	2,042 (100.00%)	154,873 (100.00%)	444,449 (100.00%)	976,423 (100.00%)	1,284,572 (100.00%)
	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Fetal_imaging	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
MRA	5 (0.24%)	224 (0.14%)	914 (0.21%)	1,882 (0.19%)	2,500 (0.19%)
MRA Extremity	0 (0.00%)	0 (0.00%)	5 (0.00%)	7 (0.00%)	10 (0.00%)
MRA Extremity Contrast	0 (0.00%)	0 (0.00%)	5 (0.00%)	7 (0.00%)	9 (0.00%)
MRA Extremity NonContrast	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (0.00%)
MRA Head	5 (0.24%)	211 (0.14%)	885 (0.20%)	1,793 (0.18%)	2,390 (0.19%)
MRA Head Contrast	0 (0.00%)	12 (0.01%)	32 (0.01%)	72 (0.01%)	66 (0.01%)
MRA Head NonContrast	5 (0.24%)	205 (0.13%)	862 (0.19%)	1,745 (0.18%)	2,351 (0.18%)
MRA NonExtremity	0 (0.00%)	44 (0.03%)	158 (0.04%)	387 (0.04%)	538 (0.04%)
MRA NonExtremity Contrast	0 (0.00%)	17 (0.01%)	42 (0.01%)	122 (0.01%)	151 (0.01%)
MRA NonExtremity NonContrast	0 (0.00%)	32 (0.02%)	118 (0.03%)	279 (0.03%)	408 (0.03%)
MRI	35 (1.71%)	1,893 (1.22%)	6,013 (1.35%)	11,982 (1.23%)	16,706 (1.30%)
MRI Extremity	10 (0.49%)	315 (0.20%)	663 (0.15%)	1,368 (0.14%)	2,042 (0.16%)
MRI Extremity Contrast	1 (0.05%)	19 (0.01%)	75 (0.02%)	107 (0.01%)	175 (0.01%)
MRI Extremity NonContrast	9 (0.44%)	297 (0.19%)	598 (0.13%)	1,276 (0.13%)	1,882 (0.15%)
MRI Head	18 (0.88%)	748 (0.48%)	2,478 (0.56%)	4,985 (0.51%)	6,474 (0.50%)
MRI Head Contrast	5 (0.24%)	182 (0.12%)	497 (0.11%)	1,112 (0.11%)	1,555 (0.12%)
MRI Head NonContrast	15 (0.73%)	585 (0.38%)	2,032 (0.46%)	3,972 (0.41%)	5,087 (0.40%)
MRI NonExtremity	9 (0.44%)	915 (0.59%)	3,131 (0.70%)	6,161 (0.63%)	8,934 (0.70%)
MRI NonExtremity Contrast	2 (0.10%)	61 (0.04%)	231 (0.05%)	598 (0.06%)	1,028 (0.08%)
MRI NonExtremity NonContrast	8 (0.39%)	868 (0.56%)	2,955 (0.66%)	5,672 (0.58%)	8,054 (0.63%)



35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65+ years
684,089 (100.00%)	156,596 (100.00%)	15,362 (100.00%)	4,520 (100.00%)	1,919 (100.00%)	674 (100.00%)	1,036 (100.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
1,355 (0.20%)	385 (0.25%)	66 (0.43%)	27 (0.60%)	15 (0.78%)	10 (1.48%)	27 (2.61%)
2 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.02%)	1 (0.05%)	0 (0.00%)	2 (0.19%)
2 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.02%)	1 (0.05%)	0 (0.00%)	2 (0.19%)
0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
1,272 (0.19%)	360 (0.23%)	62 (0.40%)	25 (0.55%)	14 (0.73%)	9 (1.34%)	20 (1.93%)
46 (0.01%)	10 (0.01%)	6 (0.04%)	1 (0.02%)	1 (0.05%)	0 (0.00%)	1 (0.10%)
1,238 (0.18%)	350 (0.22%)	56 (0.36%)	24 (0.53%)	14 (0.73%)	9 (1.34%)	19 (1.83%)
337 (0.05%)	80 (0.05%)	27 (0.18%)	10 (0.22%)	7 (0.36%)	4 (0.59%)	16 (1.54%)
108 (0.02%)	30 (0.02%)	15 (0.10%)	8 (0.18%)	7 (0.36%)	1 (0.15%)	10 (0.97%)
236 (0.03%)	53 (0.03%)	13 (0.08%)	2 (0.04%)	1 (0.05%)	3 (0.45%)	6 (0.58%)
10,215 (1.49%)	3,116 (1.99%)	680 (4.43%)	400 (8.85%)	205 (10.68%)	96 (14.24%)	213 (20.56%)
1,367 (0.20%)	522 (0.33%)	187 (1.22%)	157 (3.47%)	68 (3.54%)	25 (3.71%)	40 (3.86%)
124 (0.02%)	40 (0.03%)	18 (0.12%)	10 (0.22%)	6 (0.31%)	1 (0.15%)	8 (0.77%)
1,267 (0.19%)	487 (0.31%)	171 (1.11%)	148 (3.27%)	64 (3.34%)	24 (3.56%)	36 (3.47%)
3,501 (0.51%)	1,027 (0.66%)	199 (1.30%)	104 (2.30%)	65 (3.39%)	40 (5.93%)	99 (9.56%)
957 (0.14%)	347 (0.22%)	101 (0.66%)	70 (1.55%)	38 (1.98%)	21 (3.12%)	46 (4.44%)
2,630 (0.38%)	703 (0.45%)	105 (0.68%)	39 (0.86%)	28 (1.46%)	22 (3.26%)	59 (5.69%)
5,837 (0.85%)	1,759 (1.12%)	371 (2.42%)	196 (4.34%)	107 (5.58%)	54 (8.01%)	107 (10.33%)
718 (0.10%)	304 (0.19%)	108 (0.70%)	68 (1.50%)	39 (2.03%)	23 (3.41%)	34 (3.28%)
5,213 (0.76%)	1,491 (0.95%)	271 (1.76%)	134 (2.96%)	74 (3.86%)	35 (5.19%)	80 (7.72%)

Table 5: Eligible Pregnancy Episodes, by Specific Enrollment Criteria

Characteristic	N(%)
Total unique women with a pregnancy episode, No enrollment criteria	5,105,782 (100.00%)
Total unique pregnancy episodes, no enrollment criteria	6,096,071 (100.00%)
Medical and drug coverage for at least 330 days prior to the admit date for delivery	3,994,340 (65.52%)
Medical and drug coverage for at least 390 days prior to the admit date for delivery	3,698,747 (60.67%)
Medical and drug coverage for at least 420 days prior to the admit date for delivery	3,563,460 (58.46%)
Medical and drug coverage for at least 480 days prior to the admit date for delivery	3,303,942 (54.20%)



Appendix A: Available Data in the Sentinel Distributed Database (SDD) for Each Data Partner as of Request End Date (September 30, 2015)

DP ID	Start Date	End Date
DP001	1/1/2008	9/30/2015
DP002	1/1/2012	9/30/2015
DP003	1/1/2006	9/30/2015
DP004	1/1/2006	9/30/2015
DP005	1/1/2006	9/30/2015
DP006	1/1/2006	5/31/2015
DP007	1/1/2006	10/31/2014
DP008	6/1/2007	9/30/2015
DP009	1/1/2006	9/30/2015
DP010	1/1/2006	9/30/2015
DP011	1/1/2006	9/30/2015
DP012	1/1/2006	9/30/2015
DP013	1/1/2006	9/30/2015
DP014	1/1/2006	9/30/2015
DP015	1/1/2008	9/30/2015
DP016	1/1/2006	9/30/2015



Appendix B: List of Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes and Healthcare Common Procedure Coding System (HCPCS) Codes used to Define Exposure Identification in this Request

Code	Code Type	Location	Gadolinium	Angiography	Full Description	Short Description
75561	CPT-4	nonextremity	yes	no	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences;	cardiac mri for morph w/dye
75562	CPT-4	nonextremity	yes	no	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences; with flow/velocity quantification	card mri flow/vel w/dye
75564	CPT-4	nonextremity	yes	no	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences; with flow/velocity quantification and stress	ht mri w/flo/vel/strs & dye
75563	CPT-4	nonextremity	yes	no	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences; with stress imaging	card mri w/stress img & dye
75557	CPT-4	nonextremity	no	no	Cardiac magnetic resonance imaging for morphology and function without contrast material;	cardiac mri for morph
75558	CPT-4	nonextremity	no	no	Cardiac magnetic resonance imaging for morphology and function without contrast material; with flow/velocity quantification	cardiac mri flow/velocity
75560	CPT-4	nonextremity	no	no	Cardiac magnetic resonance imaging for morphology and function without contrast material; with flow/velocity quantification and stress	cardiac mri flow/vel/stress
75559	CPT-4	nonextremity	no	no	Cardiac magnetic resonance imaging for morphology and function without contrast material; with stress imaging	cardiac mri w/stress img
74182	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, abdomen; with contrast material(s)	mri abdomen w/dye



74181	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, abdomen; without contrast material(s)	mri abdomen w/o dye
74183	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, abdomen; without contrast material(s), followed by with contrast material(s) and further sequences	mri abdomen w/o & w/dye
73722	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, any joint of lower extremity; with contrast material(s)	mri joint of lwr extr w/dye
73721	CPT-4	extremity	no	no	Magnetic resonance (eg, proton) imaging, any joint of lower extremity; without contrast material	mri jnt of lwr extre w/o dye
73723	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, any joint of lower extremity; without contrast material(s), followed by contrast material(s) and further sequences	mri joint lwr extr w/o&w/dye
73222	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, any joint of upper extremity; with contrast material(s)	mri joint upr extrem w/dye
73221	CPT-4	extremity	no	no	Magnetic resonance (eg, proton) imaging, any joint of upper extremity; without contrast material(s)	mri joint upr extrem w/o dye
73223	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, any joint of upper extremity; without contrast material(s), followed by contrast material(s) and further sequences	mri joint upr extr w/o&w/dye
70558	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem and skull base), during open intracranial procedure (eg, to assess for residual tumor or residual vascular malformation); with contrast material(s)	mri brain w/dye
70557	CPT-4	head	no	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem and skull base), during open intracranial procedure (eg, to assess for residual tumor or residual vascular malformation); without contrast material	mri brain w/o dye
70559	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem and skull base), during open intracranial procedure (eg, to assess for residual tumor or residual vascular malformation); without contrast material(s), followed by contrast material(s) and further sequences	mri brain w/o & w/dye

70552	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem); with contrast material(s)	mri brain stem w/dye
70551	CPT-4	head	no	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem); without contrast material	mri brain stem w/o dye
70553	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, brain (including brain stem); without contrast material, followed by contrast material(s) and further sequences	mri brain stem w/o & w/dye
71551	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, chest (eg, for evaluation of hilar and mediastinal lymphadenopathy); with contrast material(s)	mri chest w/dye
71550	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, chest (eg, for evaluation of hilar and mediastinal lymphadenopathy); without contrast material(s)	mri chest w/o dye
71552	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, chest (eg, for evaluation of hilar and mediastinal lymphadenopathy); without contrast material(s), followed by contrast material(s) and further sequences	mri chest w/o & w/dye
74713	CPT-4	fetal	no	no	Magnetic resonance (eg, proton) imaging, fetal, including placental and maternal pelvic imaging when performed; each additional gestation (List separately in addition to code for primary procedure)	mri fetal ea addl gestation
74712	CPT-4	fetal	no	no	Magnetic resonance (eg, proton) imaging, fetal, including placental and maternal pelvic imaging when performed; single or first gestation	mri fetal sngl/1st gestation
73719	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, lower extremity other than joint; with contrast material(s)	mri lower extremity w/dye
73718	CPT-4	extremity	no	no	Magnetic resonance (eg, proton) imaging, lower extremity other than joint; without contrast material(s)	mri lower extremity w/o dye
73720	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, lower extremity other than joint; without contrast material(s), followed by contrast material(s) and further sequences	mri lwr extremity w/o&w/dye

70542	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, orbit, face, and/or neck; with contrast material(s)	mri orbit/face/neck w/dye
70540	CPT-4	head	no	no	Magnetic resonance (eg, proton) imaging, orbit, face, and/or neck; without contrast material(s)	mri orbit/face/neck w/o dye
70543	CPT-4	head	yes	no	Magnetic resonance (eg, proton) imaging, orbit, face, and/or neck; without contrast material(s), followed by contrast material(s) and further sequences	mri orbt/fac/nck w/o &w/dye
72196	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, pelvis; with contrast material(s)	mri pelvis w/dye
72195	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, pelvis; without contrast material(s)	mri pelvis w/o dye
72197	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, pelvis; without contrast material(s), followed by contrast material(s) and further sequences	mri pelvis w/o & w/dye
72142	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, cervical; with contrast material(s)	mri neck spine w/dye
72141	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, cervical; without contrast material	mri neck spine w/o dye
72149	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, lumbar; with contrast material(s)	mri lumbar spine w/dye
72148	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, lumbar; without contrast material	mri lumbar spine w/o dye
72147	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, thoracic; with contrast material(s)	mri chest spine w/dye
72146	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, thoracic; without contrast material	mri chest spine w/o dye
72156	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; cervical	mri neck spine w/o & w/dye
72158	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; lumbar	mri lumbar spine w/o & w/dye

72157	CPT-4	nonextremity	yes	no	Magnetic resonance (eg, proton) imaging, spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; thoracic	mri chest spine w/o & w/dye
70336	CPT-4	nonextremity	no	no	Magnetic resonance (eg, proton) imaging, temporomandibular joint(s)	magnetic image jaw joint
73219	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, upper extremity, other than joint; with contrast material(s)	mri upper extremity w/dye
73218	CPT-4	extremity	no	no	Magnetic resonance (eg, proton) imaging, upper extremity, other than joint; without contrast material(s)	mri upper extremity w/o dye
73220	CPT-4	extremity	yes	no	Magnetic resonance (eg, proton) imaging, upper extremity, other than joint; without contrast material(s), followed by contrast material(s) and further sequences	mri uppr extremity w/o&w/dye
C8909	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography with contrast, chest (excluding myocardium)	mra w/ contrast, chest
C8912	HCPCS	extremity	yes	yes	Magnetic resonance angiography with contrast, lower extremity	mra w/ contrast, lower extremity
C8918	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography with contrast, pelvis	mra w/ contrast, pelvis
C8931	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography with contrast, spinal canal and contents	mra w/contrst spinal canal contents
C8934	HCPCS	extremity	yes	yes	Magnetic resonance angiography with contrast, upper extremity	mra with contrast upper extremity
C8911	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, chest (excluding myocardium)	mra w/ & w/o contrast, chest
C8914	HCPCS	extremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, lower extremity	mra w/ & w/o contrast, lower ext
C8920	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, pelvis	mra no contrst flwed w/contrst pelv
C8933	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, spinal canal and contents	mra no contrst contrst sp canal cnt
C8917	HCPCS	extremity	yes	yes	Magnetic Resonance Angiography Without Contrast Followed By With Contrast, Upper Extremity	mra w/o fol w/cont upr ext



C8936	HCPCS	extremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, upper extremity	mra no contrst flw w/contrst up ext
C8910	HCPCS	nonextremity	no	yes	Magnetic resonance angiography without contrast, chest (excluding myocardium)	mra w/o contrast, chest
C8913	HCPCS	extremity	no	yes	Magnetic resonance angiography without contrast, lower extremity	mra w/o contrast, lower extremity
C8919	HCPCS	nonextremity	no	yes	Magnetic resonance angiography without contrast, pelvis	mra without contrast pelvis
C8932	HCPCS	nonextremity	no	yes	Magnetic resonance angiography without contrast, spinal canal and contents	mra w/o contrst sp canal contents
C8916	HCPCS	extremity	no	yes	Magnetic Resonance Angiography Without Contrast, Upper Extremity	mra w/o cont upr ext
C8935	HCPCS	extremity	no	yes	Magnetic resonance angiography without contrast, upper extremity	mra without contrst upper extremity
71555	CPT-4	nonextremity	yes	yes	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)	mri angio chest w or w/o dye
70545	CPT-4	head	yes	yes	Magnetic resonance angiography, head; with contrast material(s)	mr angiography head w/dye
70544	CPT-4	head	no	yes	Magnetic resonance angiography, head; without contrast material(s)	mr angiography head w/o dye
70546	CPT-4	head	yes	yes	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences	mr angiograph head w/o&w/dye
73725	CPT-4	extremity	yes	yes	Magnetic resonance angiography, lower extremity, with or without contrast material(s)	mr ang lwr ext w or w/o dye
70548	CPT-4	nonextremity	yes	yes	Magnetic resonance angiography, neck; with contrast material(s)	mr angiography neck w/dye
70547	CPT-4	nonextremity	no	yes	Magnetic resonance angiography, neck; without contrast material(s)	mr angiography neck w/o dye
70549	CPT-4	nonextremity	yes	yes	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences	mr angiograph neck w/o&w/dye

72198	CPT-4	nonextremity	yes	yes	Magnetic resonance angiography, pelvis, with or without contrast material(s)	mr angio pelvis w/o & w/dye
72159	CPT-4	nonextremity	yes	yes	Magnetic resonance angiography, spinal canal and contents, with or without contrast material(s)	mr angio spine w/o&w/dye
73225	CPT-4	extremity	yes	yes	Magnetic resonance angiography, upper extremity, with or without contrast material(s)	mr angio upr extr w/o&w/dye
70554	CPT-4	head	no	no	Magnetic resonance imaging, brain, functional MRI; including test selection and administration of repetitive body part movement and/or visual stimulation, not requiring physician or psychologist administration	fmri brain by tech
70555	CPT-4	head	no	no	Magnetic resonance imaging, brain, functional MRI; requiring physician or psychologist administration of entire neurofunctional testing	fmri brain by phys/psych
77059	CPT-4	nonextremity	yes	no	Magnetic resonance imaging, breast, without and/or with contrast material(s); bilateral	mri both breasts
77058	CPT-4	nonextremity	yes	no	Magnetic resonance imaging, breast, without and/or with contrast material(s); unilateral	mri one breast
76390	CPT-4	head	no	no	Magnetic resonance spectroscopy	mr spectroscopy
D0369	HCPCS	head	no	no	maxillofacial MRI capture and interpretation	maxillofacial mri cap & interpret
D0385	HCPCS	head	no	no	maxillofacial MRI image capture	maxillofacial mri image capture
75552	CPT-4	nonextremity	no	no	Cardiac magnetic resonance imaging for morphology; without contrast material	
75553	CPT-4	nonextremity	yes	no	Cardiac magnetic resonance imaging for morphology; with contrast material	
C8901	HCPCS	nonextremity	no	yes	Magnetic resonance angiography without contrast, abdomen	
C8900	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography with contrast, abdomen	
C8902	HCPCS	nonextremity	yes	yes	Magnetic resonance angiography without contrast followed by with contrast, abdomen	

Appendix C: List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes and Current Procedural Terminology, Fourth Edition (CPT-4) Procedure Codes used to Define Liveborn Deliveries in this Request

Preterm and Post-term Delivery Codes*							
Code Category	Code Type	Code	Description	Preterm Code	Post-term Code	Priority	Duration of Pregnancy (Days)
Diagnosis	ICD-9-CM	644.21	Early onset of delivery, delivered, with or without mention of antepartum condition	Yes	No	8	245
Diagnosis	ICD-9-CM	645.10	Post term pregnancy, unspecified as to episode of care or not applicable	No	Yes	2	287
Diagnosis	ICD-9-CM	645.1	Post term pregnancy	No	Yes	2	287
Diagnosis	ICD-9-CM	645.11	Post term pregnancy, delivered, with or without mention of antepartum condition	No	Yes	2	287
Diagnosis	ICD-9-CM	645.13	Post term pregnancy, antepartum condition or complication	No	Yes	2	287
Diagnosis	ICD-9-CM	645.20	Prolonged pregnancy, unspecified as to episode of care or not applicable	No	Yes	1	294
Diagnosis	ICD-9-CM	645.2	Prolonged pregnancy	No	Yes	1	294
Diagnosis	ICD-9-CM	645.21	Prolonged pregnancy, delivered, with or without mention of antepartum condition	No	Yes	1	294
Diagnosis	ICD-9-CM	645.23	Prolonged pregnancy, antepartum condition or complication	No	Yes	1	294
Diagnosis	ICD-9-CM	765.0	Extreme fetal immaturity	Yes	No	5	196
Diagnosis	ICD-9-CM	765.00	Extreme fetal immaturity, unspecified (weight)	Yes	No	5	196
Diagnosis	ICD-9-CM	765.01	Extreme fetal immaturity, less than 500 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.02	Extreme fetal immaturity, 500-749 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.03	Extreme fetal immaturity, 750-999 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.04	Extreme fetal immaturity, 1,000-1,249 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.05	Extreme fetal immaturity, 1,250-1,499 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.06	Extreme fetal immaturity, 1,500-1,749 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.07	Extreme fetal immaturity, 1,750-1,999 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.08	Extreme fetal immaturity, 2,000-2,499 grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.09	Extreme fetal immaturity, 2,500 or more grams	Yes	No	5	196
Diagnosis	ICD-9-CM	765.1	Other preterm infants	Yes	No	8	245
Diagnosis	ICD-9-CM	765.10	Other preterm infants, unspecified (weight)	Yes	No	8	245
Diagnosis	ICD-9-CM	765.11	Other preterm infants, less than 500 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.12	Other preterm infants, 500-749 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.13	Other preterm infants, 750-999 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.14	Other preterm infants, 1,000-1,249 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.15	Other preterm infants, 1,250-1,499 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.16	Other preterm infants, 1,500-1,749 grams	Yes	No	8	245

Diagnosis	ICD-9-CM	765.17	Other preterm infants, 1,750-1,999 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.18	Other preterm infants, 2,000-2,499 grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.19	Other preterm infants, 2,500 or more grams	Yes	No	8	245
Diagnosis	ICD-9-CM	765.20	Unspecified weeks of gestation	Yes	No	8	245
Diagnosis	ICD-9-CM	765.21	Less than 24 completed weeks of gestation	Yes	No	7	168
Diagnosis	ICD-9-CM	765.22	24 completed weeks of gestation	Yes	No	7	168
Diagnosis	ICD-9-CM	765.23	25-26 completed weeks of gestation	Yes	No	6	182
Diagnosis	ICD-9-CM	765.24	27-28 completed weeks of gestation	Yes	No	5	196
Diagnosis	ICD-9-CM	765.25	29-30 completed weeks of gestation	Yes	No	4	210
Diagnosis	ICD-9-CM	765.26	31-32 completed weeks of gestation	Yes	No	3	224
Diagnosis	ICD-9-CM	765.27	33-34 completed weeks of gestation	Yes	No	2	238
Diagnosis	ICD-9-CM	765.28	35-36 completed weeks of gestation	Yes	No	1	252
Diagnosis	ICD-9-CM	766.21	Post-term infant	No	Yes	2	287
Diagnosis	ICD-9-CM	766.22	Prolonged gestation of infant	No	Yes	1	294

*Each pre/postterm code is assigned an associated pregnancy duration and priority. If a preterm or postterm code is observed within a requester defined window before and after delivery, the duration associated with the code is used to calculate pregnancy duration. If multiple codes are observed, priority is used to determine appropriate duration. If no codes are observed, the requester defines the number of days used to define pregnancy duration.

Note that the default algorithm always assigns priority to observed preterm codes; that is, if both a preterm and postterm code is observed, pregnancy duration is calculated based on the duration assigned to the preterm code.

Full Term Delivery Codes			
Code Category	Code Type	Code	Description
Procedure	CPT4	59409	Vaginal delivery only (with or without episiotomy and/or forceps);
Procedure	CPT4	59410	Vaginal delivery only (with or without episiotomy and/or forceps); including postpartum care
Procedure	CPT4	59510	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care
Procedure	CPT4	59514	Cesarean delivery only;
Procedure	CPT4	59515	Cesarean delivery only; including postpartum care
Procedure	CPT4	59610	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery
Procedure	CPT4	59612	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps);
Procedure	CPT4	59614	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps); including postpartum care
Procedure	CPT4	59618	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery
Procedure	CPT4	59620	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery;
Procedure	CPT4	59622	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery; including postpartum care
Diagnosis	ICD-9-CM	641.01	Placenta previa without hemorrhage, with delivery
Diagnosis	ICD-9-CM	641.11	Hemorrhage from placenta previa, with delivery
Diagnosis	ICD-9-CM	641.21	Premature separation of placenta, with delivery
Diagnosis	ICD-9-CM	641.31	Antepartum hemorrhage associated with coagulation defects, with delivery
Diagnosis	ICD-9-CM	641.81	Other antepartum hemorrhage, with delivery
Diagnosis	ICD-9-CM	641.91	Unspecified antepartum hemorrhage, with delivery
Diagnosis	ICD-9-CM	642.01	Benign essential hypertension with delivery
Diagnosis	ICD-9-CM	642.02	Benign essential hypertension, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.11	Hypertension secondary to renal disease, with delivery

Diagnosis	ICD-9-CM	642.12	Hypertension secondary to renal disease, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.21	Other pre-existing hypertension, with delivery
Diagnosis	ICD-9-CM	642.22	Other pre-existing hypertension, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.31	Transient hypertension of pregnancy, with delivery
Diagnosis	ICD-9-CM	642.32	Transient hypertension of pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.41	Mild or unspecified pre-eclampsia, with delivery
Diagnosis	ICD-9-CM	642.42	Mild or unspecified pre-eclampsia, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.51	Severe pre-eclampsia, with delivery
Diagnosis	ICD-9-CM	642.52	Severe pre-eclampsia, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.61	Eclampsia, with delivery
Diagnosis	ICD-9-CM	642.62	Eclampsia, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.71	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery
Diagnosis	ICD-9-CM	642.72	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	642.91	Unspecified hypertension, with delivery
Diagnosis	ICD-9-CM	642.92	Unspecified hypertension, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	643.01	Mild hyperemesis gravidarum, delivered
Diagnosis	ICD-9-CM	643.11	Hyperemesis gravidarum with metabolic disturbance, delivered
Diagnosis	ICD-9-CM	643.21	Late vomiting of pregnancy, delivered
Diagnosis	ICD-9-CM	643.81	Other vomiting complicating pregnancy, delivered
Diagnosis	ICD-9-CM	643.91	Unspecified vomiting of pregnancy, delivered
Diagnosis	ICD-9-CM	644.21	Early onset of delivery, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	645.01	Prolonged pregnancy, with delivery
Diagnosis	ICD-9-CM	645.11	Post term pregnancy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	645.21	Prolonged pregnancy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	646.01	Papyraceous fetus, delivered, with or without mention of antepartum condition

Diagnosis	ICD-9-CM	646.11	Edema or excessive weight gain in pregnancy, with delivery, with or without mention of antepartum complication
Diagnosis	ICD-9-CM	646.12	Edema or excessive weight gain in pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.21	Unspecified renal disease in pregnancy, with delivery
Diagnosis	ICD-9-CM	646.22	Unspecified renal disease in pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.31	Pregnancy complication, recurrent pregnancy loss, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	646.41	Peripheral neuritis in pregnancy, with delivery
Diagnosis	ICD-9-CM	646.42	Peripheral neuritis in pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.51	Asymptomatic bacteriuria in pregnancy, with delivery
Diagnosis	ICD-9-CM	646.52	Asymptomatic bacteriuria in pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.61	Infections of genitourinary tract in pregnancy, with delivery
Diagnosis	ICD-9-CM	646.62	Infections of genitourinary tract in pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.71	Liver and biliary tract disorders in pregnancy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	646.81	Other specified complication of pregnancy, with delivery
Diagnosis	ICD-9-CM	646.82	Other specified complications of pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	646.91	Unspecified complication of pregnancy, with delivery
Diagnosis	ICD-9-CM	647.01	Maternal syphilis, complicating pregnancy, with delivery
Diagnosis	ICD-9-CM	647.02	Maternal syphilis, complicating pregnancy, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.11	Maternal gonorrhea with delivery
Diagnosis	ICD-9-CM	647.12	Maternal gonorrhea, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.21	Other maternal venereal diseases with delivery
Diagnosis	ICD-9-CM	647.22	Other maternal venereal diseases with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.31	Maternal tuberculosis with delivery
Diagnosis	ICD-9-CM	647.32	Maternal tuberculosis with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.41	Maternal malaria with delivery

Diagnosis	ICD-9-CM	647.42	Maternal malaria with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.51	Maternal rubella with delivery
Diagnosis	ICD-9-CM	647.52	Maternal rubella with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.61	Other maternal viral disease with delivery
Diagnosis	ICD-9-CM	647.62	Other maternal viral disease with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.81	Other specified maternal infectious and parasitic disease with delivery
Diagnosis	ICD-9-CM	647.82	Other specified maternal infectious and parasitic disease with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	647.91	Unspecified maternal infection or infestation with delivery
Diagnosis	ICD-9-CM	647.92	Unspecified maternal infection or infestation with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.01	Maternal diabetes mellitus with delivery
Diagnosis	ICD-9-CM	648.02	Maternal diabetes mellitus with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.11	Maternal thyroid dysfunction with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	648.12	Maternal thyroid dysfunction with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.21	Maternal anemia, with delivery
Diagnosis	ICD-9-CM	648.22	Maternal anemia with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.31	Maternal drug dependence, with delivery
Diagnosis	ICD-9-CM	648.32	Maternal drug dependence, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.41	Maternal mental disorders, with delivery
Diagnosis	ICD-9-CM	648.42	Maternal mental disorders, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.51	Maternal congenital cardiovascular disorders, with delivery
Diagnosis	ICD-9-CM	648.52	Maternal congenital cardiovascular disorders, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.61	Other maternal cardiovascular diseases, with delivery
Diagnosis	ICD-9-CM	648.62	Other maternal cardiovascular diseases, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.71	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery
Diagnosis	ICD-9-CM	648.72	Bone and joint disorders of maternal back, pelvis, and lower limbs, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.81	Abnormal maternal glucose tolerance, with delivery

Diagnosis	ICD-9-CM	648.82	Abnormal maternal glucose tolerance, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	648.91	Other current maternal conditions classifiable elsewhere, with delivery
Diagnosis	ICD-9-CM	648.92	Other current maternal conditions classifiable elsewhere, with delivery, with current postpartum complication
Diagnosis	ICD-9-CM	649.01	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.02	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.11	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.12	Obesity complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.21	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.22	Bariatric surgery status complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.31	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.32	Coagulation defects complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.41	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.42	Epilepsy complicating pregnancy, childbirth, or the puerperium, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.51	Spotting complicating pregnancy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.61	Uterine size date discrepancy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.62	Uterine size date discrepancy, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	649.71	Cervical shortening, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	649.81	Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section, delivered, with or without mention of antepartum condition

Diagnosis	ICD-9-CM	649.82	Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	650	Normal delivery
Diagnosis	ICD-9-CM	651.01	Twin pregnancy, delivered
Diagnosis	ICD-9-CM	651.11	Triplet pregnancy, delivered
Diagnosis	ICD-9-CM	651.21	Quadruplet pregnancy, delivered
Diagnosis	ICD-9-CM	651.31	Twin pregnancy with fetal loss and retention of one fetus, delivered
Diagnosis	ICD-9-CM	651.41	Triplet pregnancy with fetal loss and retention of one or more, delivered
Diagnosis	ICD-9-CM	651.51	Quadruplet pregnancy with fetal loss and retention of one or more, delivered
Diagnosis	ICD-9-CM	651.61	Other multiple pregnancy with fetal loss and retention of one or more fetus(es), delivered
Diagnosis	ICD-9-CM	651.71	Multiple gestation following (elective) fetal reduction, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	651.81	Other specified multiple gestation, delivered
Diagnosis	ICD-9-CM	651.91	Unspecified multiple gestation, delivered
Diagnosis	ICD-9-CM	652.01	Unstable lie of fetus, delivered
Diagnosis	ICD-9-CM	652.11	Breech or other malpresentation successfully converted to cephalic presentation, delivered
Diagnosis	ICD-9-CM	652.21	Breech presentation without mention of version, delivered
Diagnosis	ICD-9-CM	652.31	Transverse or oblique fetal presentation, delivered
Diagnosis	ICD-9-CM	652.41	Fetal face or brow presentation, delivered
Diagnosis	ICD-9-CM	652.51	High fetal head at term, delivered
Diagnosis	ICD-9-CM	652.61	Multiple gestation with malpresentation of one fetus or more, delivered
Diagnosis	ICD-9-CM	652.71	Prolapsed arm of fetus, delivered
Diagnosis	ICD-9-CM	652.81	Other specified malposition or malpresentation of fetus, delivered
Diagnosis	ICD-9-CM	652.91	Unspecified malposition or malpresentation of fetus, delivered
Diagnosis	ICD-9-CM	653.01	Major abnormality of bony pelvis, not further specified, delivered
Diagnosis	ICD-9-CM	653.11	Generally contracted pelvis in pregnancy, delivered
Diagnosis	ICD-9-CM	653.21	Inlet contraction of pelvis in pregnancy, delivered
Diagnosis	ICD-9-CM	653.31	Outlet contraction of pelvis in pregnancy, delivered
Diagnosis	ICD-9-CM	653.41	Fetopelvic disproportion, delivered
Diagnosis	ICD-9-CM	653.51	Unusually large fetus causing disproportion, delivered
Diagnosis	ICD-9-CM	653.61	Hydrocephalic fetus causing disproportion, delivered
Diagnosis	ICD-9-CM	653.71	Other fetal abnormality causing disproportion, delivered

Diagnosis	ICD-9-CM	653.81	Fetal disproportion of other origin, delivered
Diagnosis	ICD-9-CM	653.91	Unspecified fetal disproportion, delivered
Diagnosis	ICD-9-CM	654.01	Congenital abnormalities of pregnant uterus, delivered
Diagnosis	ICD-9-CM	654.02	Congenital abnormalities of pregnant uterus, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.11	Tumors of body of uterus, delivered
Diagnosis	ICD-9-CM	654.12	Tumors of body of uterus, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.21	Previous cesarean delivery, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	654.31	Retroverted and incarcerated gravid uterus, delivered
Diagnosis	ICD-9-CM	654.32	Retroverted and incarcerated gravid uterus, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.41	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered
Diagnosis	ICD-9-CM	654.42	Other abnormalities in shape or position of gravid uterus and of neighboring structures, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.51	Cervical incompetence, delivered
Diagnosis	ICD-9-CM	654.52	Cervical incompetence, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.61	Other congenital or acquired abnormality of cervix, with delivery
Diagnosis	ICD-9-CM	654.62	Other congenital or acquired abnormality of cervix, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.71	Congenital or acquired abnormality of vagina, with delivery
Diagnosis	ICD-9-CM	654.72	Congenital or acquired abnormality of vagina, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.81	Congenital or acquired abnormality of vulva, with delivery
Diagnosis	ICD-9-CM	654.82	Congenital or acquired abnormality of vulva, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	654.91	Other and unspecified abnormality of organs and soft tissues of pelvis, with delivery
Diagnosis	ICD-9-CM	654.92	Other and unspecified abnormality of organs and soft tissues of pelvis, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	655.01	Central nervous system malformation in fetus, with delivery
Diagnosis	ICD-9-CM	655.11	Chromosomal abnormality in fetus, affecting management of mother, with delivery

Diagnosis	ICD-9-CM	655.21	Hereditary disease in family possibly affecting fetus, affecting management of mother, with delivery
Diagnosis	ICD-9-CM	655.31	Suspected damage to fetus from viral disease in mother, affecting management of mother, with delivery
Diagnosis	ICD-9-CM	655.41	Suspected damage to fetus from other disease in mother, affecting management of mother, with delivery
Diagnosis	ICD-9-CM	655.51	Suspected damage to fetus from drugs, affecting management of mother, delivered
Diagnosis	ICD-9-CM	655.61	Suspected damage to fetus from radiation, affecting management of mother, delivered
Diagnosis	ICD-9-CM	655.71	Decreased fetal movements, affecting management of mother, delivered
Diagnosis	ICD-9-CM	655.81	Other known or suspected fetal abnormality, not elsewhere classified, affecting management of mother, delivery
Diagnosis	ICD-9-CM	655.91	Unspecified fetal abnormality affecting management of mother, delivery
Diagnosis	ICD-9-CM	656.01	Fetal-maternal hemorrhage, with delivery
Diagnosis	ICD-9-CM	656.11	Rhesus isoimmunization affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.21	Isoimmunization from other and unspecified blood-group incompatibility, affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.31	Fetal distress affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.41	Intrauterine death affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.51	Poor fetal growth, affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.61	Excessive fetal growth affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.71	Other placental conditions affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.81	Other specified fetal and placental problems affecting management of mother, delivered
Diagnosis	ICD-9-CM	656.91	Unspecified fetal and placental problem affecting management of mother, delivered
Diagnosis	ICD-9-CM	657.01	Polyhydramnios, with delivery
Diagnosis	ICD-9-CM	658.01	Oligohydramnios, delivered
Diagnosis	ICD-9-CM	658.11	Premature rupture of membranes in pregnancy, delivered
Diagnosis	ICD-9-CM	658.21	Delayed delivery after spontaneous or unspecified rupture of membranes, delivered
Diagnosis	ICD-9-CM	658.31	Delayed delivery after artificial rupture of membranes, delivered
Diagnosis	ICD-9-CM	658.41	Infection of amniotic cavity, delivered
Diagnosis	ICD-9-CM	658.81	Other problem associated with amniotic cavity and membranes, delivered

Diagnosis	ICD-9-CM	658.91	Unspecified problem associated with amniotic cavity and membranes, delivered
Diagnosis	ICD-9-CM	659.01	Failed mechanical induction of labor, delivered
Diagnosis	ICD-9-CM	659.11	Failed medical or unspecified induction of labor, delivered
Diagnosis	ICD-9-CM	659.21	Unspecified maternal pyrexia during labor, delivered
Diagnosis	ICD-9-CM	659.31	Generalized infection during labor, delivered
Diagnosis	ICD-9-CM	659.41	Grand multiparity, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	659.51	Elderly primigravida, delivered
Diagnosis	ICD-9-CM	659.61	Elderly multigravida, delivered, with mention of antepartum condition
Diagnosis	ICD-9-CM	659.71	Abnormality in fetal heart rate or rhythm, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	659.81	Other specified indication for care or intervention related to labor and delivery, delivered
Diagnosis	ICD-9-CM	659.91	Unspecified indication for care or intervention related to labor and delivery, delivered
Diagnosis	ICD-9-CM	660.01	Obstruction caused by malposition of fetus at onset of labor, delivered
Diagnosis	ICD-9-CM	660.11	Obstruction by bony pelvis during labor and delivery, delivered
Diagnosis	ICD-9-CM	660.21	Obstruction by abnormal pelvic soft tissues during labor and delivery, delivered
Diagnosis	ICD-9-CM	660.31	Deep transverse arrest and persistent occipitoposterior position during labor and deliver, delivered
Diagnosis	ICD-9-CM	660.41	Shoulder (girdle) dystocia during labor and deliver, delivered
Diagnosis	ICD-9-CM	660.51	Locked twins, delivered
Diagnosis	ICD-9-CM	660.61	Unspecified failed trial of labor, delivered
Diagnosis	ICD-9-CM	660.71	Unspecified failed forceps or vacuum extractor, delivered
Diagnosis	ICD-9-CM	660.81	Other causes of obstructed labor, delivered
Diagnosis	ICD-9-CM	660.91	Unspecified obstructed labor, with delivery
Diagnosis	ICD-9-CM	661.01	Primary uterine inertia, with delivery
Diagnosis	ICD-9-CM	661.11	Secondary uterine inertia, with delivery
Diagnosis	ICD-9-CM	661.21	Other and unspecified uterine inertia, with delivery
Diagnosis	ICD-9-CM	661.31	Precipitate labor, with delivery
Diagnosis	ICD-9-CM	661.41	Hypertonic, incoordinate, or prolonged uterine contractions, with delivery
Diagnosis	ICD-9-CM	661.91	Unspecified abnormality of labor, with delivery
Diagnosis	ICD-9-CM	662.01	Prolonged first stage of labor, delivered
Diagnosis	ICD-9-CM	662.11	Unspecified prolonged labor, delivered
Diagnosis	ICD-9-CM	662.21	Prolonged second stage of labor, delivered
Diagnosis	ICD-9-CM	662.31	Delayed delivery of second twin, triplet, etc., delivered

Diagnosis	ICD-9-CM	663.01	Prolapse of cord, complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.11	Cord around neck, with compression, complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.21	Other and unspecified cord entanglement, with compression, complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.31	Other and unspecified cord entanglement, without mention of compression, complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.41	Short cord complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.51	Vasa previa complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.61	Vascular lesions of cord complicating labor and delivery, delivered
Diagnosis	ICD-9-CM	663.81	Other umbilical cord complications during labor and delivery, delivered
Diagnosis	ICD-9-CM	663.91	Unspecified umbilical cord complication during labor and delivery, delivered
Diagnosis	ICD-9-CM	664.01	First-degree perineal laceration, with delivery
Diagnosis	ICD-9-CM	664.11	Second-degree perineal laceration, with delivery
Diagnosis	ICD-9-CM	664.21	Third-degree perineal laceration, with delivery
Diagnosis	ICD-9-CM	664.31	Fourth-degree perineal laceration, with delivery
Diagnosis	ICD-9-CM	664.41	Unspecified perineal laceration, with delivery
Diagnosis	ICD-9-CM	664.51	Vulvar and perineal hematoma, with delivery
Diagnosis	ICD-9-CM	664.61	Anal sphincter tear complicating delivery, not associated with third-degree perineal laceration, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	664.81	Other specified trauma to perineum and vulva, with delivery
Diagnosis	ICD-9-CM	664.91	Unspecified trauma to perineum and vulva, with delivery
Diagnosis	ICD-9-CM	665.01	Rupture of uterus before onset of labor, with delivery
Diagnosis	ICD-9-CM	665.11	Rupture of uterus during labor, with delivery
Diagnosis	ICD-9-CM	665.22	Inversion of uterus, delivered with postpartum complication
Diagnosis	ICD-9-CM	665.31	Laceration of cervix, with delivery
Diagnosis	ICD-9-CM	665.41	High vaginal laceration, with delivery
Diagnosis	ICD-9-CM	665.51	Other injury to pelvic organs, with delivery
Diagnosis	ICD-9-CM	665.61	Damage to pelvic joints and ligaments, with delivery
Diagnosis	ICD-9-CM	665.71	Pelvic hematoma, with delivery
Diagnosis	ICD-9-CM	665.72	Pelvic hematoma, delivered with postpartum complication
Diagnosis	ICD-9-CM	665.81	Other specified obstetrical trauma, with delivery
Diagnosis	ICD-9-CM	665.82	Other specified obstetrical trauma, delivered, with postpartum
Diagnosis	ICD-9-CM	665.91	Unspecified obstetrical trauma, with delivery
Diagnosis	ICD-9-CM	665.92	Unspecified obstetrical trauma, delivered, with postpartum complication
Diagnosis	ICD-9-CM	666.02	Third-stage postpartum hemorrhage, with delivery

Diagnosis	ICD-9-CM	666.12	Other immediate postpartum hemorrhage, with delivery
Diagnosis	ICD-9-CM	666.22	Delayed and secondary postpartum hemorrhage, with delivery
Diagnosis	ICD-9-CM	666.32	Postpartum coagulation defects, with delivery
Diagnosis	ICD-9-CM	667.02	Retained placenta without hemorrhage, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	667.12	Retained portions of placenta or membranes, without hemorrhage, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	668.01	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered
Diagnosis	ICD-9-CM	668.02	Pulmonary complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	668.11	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered
Diagnosis	ICD-9-CM	668.12	Cardiac complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	668.21	Central nervous system complications of the administration of anesthesia or other sedation in labor and delivery, delivered
Diagnosis	ICD-9-CM	668.22	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	668.81	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered
Diagnosis	ICD-9-CM	668.82	Other complications of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	668.91	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered
Diagnosis	ICD-9-CM	668.92	Unspecified complication of the administration of anesthesia or other sedation in labor and delivery, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	669.01	Maternal distress, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	669.02	Maternal distress, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	669.11	Shock during or following labor and delivery, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	669.12	Shock during or following labor and delivery, with delivery, with mention of postpartum complication

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

Diagnosis	ICD-9-CM	671.11	Varicose veins of vulva and perineum, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	671.12	Varicose veins of vulva and perineum, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	671.21	Superficial thrombophlebitis with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	671.22	Superficial thrombophlebitis with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	671.31	Deep phlebothrombosis, antepartum, with delivery
Diagnosis	ICD-9-CM	671.42	Deep phlebothrombosis, postpartum, with delivery
Diagnosis	ICD-9-CM	671.51	Other phlebitis and thrombosis with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	671.52	Other phlebitis and thrombosis with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	671.81	Other venous complication, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	671.82	Other venous complication, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	671.91	Unspecified venous complication, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	671.92	Unspecified venous complication, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	672.02	Puerperal pyrexia of unknown origin, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	673.01	Obstetrical air embolism, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	673.02	Obstetrical air embolism, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	673.11	Amniotic fluid embolism, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	673.12	Amniotic fluid embolism, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	673.21	Obstetrical blood-clot embolism, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	673.22	Obstetrical blood-clot embolism, with mention of postpartum complication

Diagnosis	ICD-9-CM	673.31	Obstetrical pyemic and septic embolism, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	673.32	Obstetrical pyemic and septic embolism, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	673.81	Other obstetrical pulmonary embolism, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	673.82	Other obstetrical pulmonary embolism, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.01	Cerebrovascular disorder, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	674.02	Cerebrovascular disorder, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.12	Disruption of cesarean wound, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.22	Disruption of perineal wound, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.32	Other complication of obstetrical surgical wounds, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.42	Placental polyp, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.51	Peripartum cardiomyopathy, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	674.52	Peripartum cardiomyopathy, delivered, with mention of postpartum condition
Diagnosis	ICD-9-CM	674.82	Other complication of puerperium, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	674.92	Unspecified complications of puerperium, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	675.01	Infection of nipple associated with childbirth, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	675.02	Infection of nipple associated with childbirth, delivered with mention of postpartum complication
Diagnosis	ICD-9-CM	675.11	Abscess of breast associated with childbirth, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	675.12	Abscess of breast associated with childbirth, delivered, with mention of postpartum complication

Diagnosis	ICD-9-CM	675.21	Nonpurulent mastitis, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	675.22	Nonpurulent mastitis, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	675.81	Other specified infection of the breast and nipple associated with childbirth, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	675.82	Other specified infection of the breast and nipple associated with childbirth, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	675.91	Unspecified infection of the breast and nipple, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	675.92	Unspecified infection of the breast and nipple, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.01	Retracted nipple, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.02	Retracted nipple, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.11	Cracked nipple, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.12	Cracked nipple, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.21	Engorgement of breasts, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.22	Engorgement of breasts, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.31	Other and unspecified disorder of breast associated with childbirth, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.32	Other and unspecified disorder of breast associated with childbirth, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.41	Failure of lactation, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.42	Failure of lactation, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.51	Suppressed lactation, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.52	Suppressed lactation, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.61	Galactorrhea, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.62	Galactorrhea, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	676.81	Other disorder of lactation, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.82	Other disorder of lactation, with delivery, with mention of postpartum complication

Diagnosis	ICD-9-CM	676.91	Unspecified disorder of lactation, with delivery, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	676.92	Unspecified disorder of lactation, with delivery, with mention of postpartum complication
Diagnosis	ICD-9-CM	678.01	Fetal hematologic conditions, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	678.11	Fetal conjoined twins, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	679.01	Maternal complications from in utero procedure, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	679.02	Maternal complications from in utero procedure, delivered, with mention of postpartum complication
Diagnosis	ICD-9-CM	679.11	Fetal complications from in utero procedure, delivered, with or without mention of antepartum condition
Diagnosis	ICD-9-CM	679.12	Fetal complications from in utero procedure, delivered, with mention of postpartum complication
Procedure	ICD-9-CM	72	Forceps, vacuum, and breech 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	722.1	Mid forceps operation with episiotomy
Procedure	ICD-9-CM	722.9	Other mid forceps operation
Procedure	ICD-9-CM	723	High forceps operation
Procedure	ICD-9-CM	723.1	High forceps operation with episiotomy
Procedure	ICD-9-CM	723.9	Other high forceps operation
Procedure	ICD-9-CM	724	Forceps rotation of fetal head
Procedure	ICD-9-CM	725	Breech extraction
Procedure	ICD-9-CM	725.1	Partial breech extraction with forceps to aftercoming head
Procedure	ICD-9-CM	725.2	Other partial breech extraction
Procedure	ICD-9-CM	725.3	Total breech extraction with forceps to aftercoming head
Procedure	ICD-9-CM	725.4	Other total breech extraction
Procedure	ICD-9-CM	726	Forceps application to aftercoming head
Procedure	ICD-9-CM	727	Vacuum extraction
Procedure	ICD-9-CM	727.1	Vacuum extraction with episiotomy
Procedure	ICD-9-CM	727.9	Other vacuum extraction

Procedure	ICD-9-CM	728	Other specified instrumental delivery
Procedure	ICD-9-CM	729	Unspecified instrumental delivery
Procedure	ICD-9-CM	73	Artificial rupture of membranes
Procedure	ICD-9-CM	730	Other procedures inducing or assisting delivery
Procedure	ICD-9-CM	730.1	Induction of labor by artificial rupture of membranes
Procedure	ICD-9-CM	730.9	Other 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	732.1	Internal and combined version without extraction
Procedure	ICD-9-CM	732.2	Internal and combined version with 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	735.1	Manual rotation of fetal head
Procedure	ICD-9-CM	735.9	Other 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	739.1	External version to assist delivery
Procedure	ICD-9-CM	739.2	Replacement of prolapsed umbilical cord
Procedure	ICD-9-CM	739.3	Incision of cervix to assist delivery
Procedure	ICD-9-CM	739.4	Pubiotomy to assist delivery
Procedure	ICD-9-CM	739.9	Other operations to assist 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	749.9	Other cesarean section of unspecified type
Diagnosis	ICD-9-CM	763.0	Fetus or newborn affected by breech delivery and extraction
Diagnosis	ICD-9-CM	763.2	Fetus or newborn affected by forceps delivery
Diagnosis	ICD-9-CM	763.3	Fetus or newborn affected by delivery by vacuum extractor
Diagnosis	ICD-9-CM	763.4	Fetus or newborn affected by cesarean delivery
Diagnosis	ICD-9-CM	763.6	Fetus or newborn affected by precipitate delivery
Diagnosis	ICD-9-CM	768.0	Fetal death from asphyxia or anoxia before onset of labor or at unspecified time

Diagnosis	ICD-9-CM	768.1	Fetal death from asphyxia or anoxia during labor
Diagnosis	ICD-9-CM	V27	Outcome of delivery
Diagnosis	ICD-9-CM	V27.0	Outcome of delivery, single liveborn
Diagnosis	ICD-9-CM	V27.1	Outcome of delivery, single stillborn
Diagnosis	ICD-9-CM	V27.2	Outcome of delivery, twins, both liveborn
Diagnosis	ICD-9-CM	V27.3	Outcome of delivery, twins, one liveborn and one stillborn
Diagnosis	ICD-9-CM	V27.4	Outcome of delivery, twins, both stillborn
Diagnosis	ICD-9-CM	V27.5	Outcome of delivery, other multiple birth, all liveborn
Diagnosis	ICD-9-CM	V27.6	Outcome of delivery, other multiple birth, some liveborn
Diagnosis	ICD-9-CM	V27.7	Outcome of delivery, other multiple birth, all stillborn
Diagnosis	ICD-9-CM	V27.9	Outcome of delivery, unspecified
Diagnosis	ICD-9-CM	V30	Single liveborn
Diagnosis	ICD-9-CM	V30.0	Single liveborn, born in hospital
Diagnosis	ICD-9-CM	V30.00	Single liveborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V30.01	Single liveborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V30.1	Single liveborn, born before admission to hospital
Diagnosis	ICD-9-CM	V30.2	Single liveborn, born outside hospital and not hospitalized
Diagnosis	ICD-9-CM	V31	Twin birth, mate liveborn
Diagnosis	ICD-9-CM	V31.0	Twin, mate liveborn, born in hospital
Diagnosis	ICD-9-CM	V31.00	Twin, mate liveborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V31.01	Twin, mate liveborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V31.1	Twin birth, mate liveborn, born before admission to hospital
Diagnosis	ICD-9-CM	V31.2	Twin birth, mate liveborn, born outside hospital and not hospitalized
Diagnosis	ICD-9-CM	V32	Twin birth, mate stillborn
Diagnosis	ICD-9-CM	V32.0	Twin, mate stillborn, born in hospital
Diagnosis	ICD-9-CM	V32.00	Twin, mate stillborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V32.01	Twin, mate stillborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V32.1	Twin birth, mate stillborn, born before admission to hospital
Diagnosis	ICD-9-CM	V32.2	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	V33.0	Twin, unspecified, born in hospital
Diagnosis	ICD-9-CM	V33.00	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery

Diagnosis	ICD-9-CM	V33.01	Twin, unspecified whether mate stillborn or liveborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V33.1	Twin birth, unspecified whether mate liveborn or stillborn, born before admission to hospital
Diagnosis	ICD-9-CM	V33.2	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	V34.0	Other multiple, mates all liveborn, born in hospital
Diagnosis	ICD-9-CM	V34.00	Other multiple, mates all liveborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V34.01	Other multiple, mates all liveborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V34.1	Other multiple birth (three or more), mates all liveborn, born before admission to hospital
Diagnosis	ICD-9-CM	V34.2	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	V35.0	Other multiple, mates all stillborn, born in hospital
Diagnosis	ICD-9-CM	V35.00	Other multiple, mates all stillborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V35.01	Other multiple, mates all stillborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V35.1	Other multiple birth (three or more), mates all stillborn, born before admission to hospital
Diagnosis	ICD-9-CM	V35.2	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	V36.0	Other multiple, mates liveborn and stillborn, born in hospital
Diagnosis	ICD-9-CM	V36.00	Other multiple, mates liveborn and stillborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V36.01	Other multiple, mates liveborn and stillborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V36.1	Other multiple birth (three or more), mates liveborn and stillborn, born before admission to hospital

Diagnosis	ICD-9-CM	V36.2	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	V37.0	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital
Diagnosis	ICD-9-CM	V37.00	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V37.01	Other multiple, unspecified whether mates stillborn or liveborn, born in hospital, delivered by cesarean delivery
Diagnosis	ICD-9-CM	V37.1	Other multiple birth (three or more), unspecified whether mates liveborn or stillborn, born before admission to hospital
Diagnosis	ICD-9-CM	V37.2	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	V39.0	Other liveborn, unspecified whether single, twin, or multiple, born in hospital
Diagnosis	ICD-9-CM	V39.00	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered without mention of cesarean delivery
Diagnosis	ICD-9-CM	V39.01	Liveborn infant, unspecified whether single, twin, or multiple, born in hospital, delivered by cesarean
Diagnosis	ICD-9-CM	V39.1	Liveborn, unspecified whether single, twin or multiple, born before admission to hospital
Diagnosis	ICD-9-CM	V39.2	Liveborn, unspecified whether single, twin or multiple, born outside hospital and not hospitalized

Appendix D: Specifications Defining Parameters used for Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiogram (MRA) Use Trends During Pregnancy Request

Sentinel's Pregnancy Tool was used to investigate and characterize the use of gadolinium-based contrast agents (GBCAs) in pregnancy. Exposure to Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiogram (MRA) (with and without GBCAs) was determined by the Current Procedural Terminology, Fourth Edition (CPT-4) procedure codes or Healthcare Common Procedure Coding System (HCPCS) codes. Unique number of episodes were evaluated by calendar year and by trimester, stratified by MRIs and MRAs (with and without GBCAs) and by location (head, non-extremity and extremity). Women with a liveborn delivery between January 1, 2006 and September 30, 2015 were identified using Sentinel's Pregnancy Tool.

Query Period 1/1/2006- 9/30/2015
Coverage Requirement Medical
Enrollment Requirement Prior to Delivery Date 384 Days (294 + 90)
Enrollment Gap 45 days
Stratifications 90 days prior to pregnancy, by trimester, by year and cumulatively
Age Groups (calculated at age at delivery date) 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+ years

Scenario	Pregnancy Episode Creation					Exposure			
	Delivery Definition	Delivery Washout Period (days)	Pregnancy Duration Definition (Pre/PostTerm Codes)	Pregnancy Duration in Absence of Pre/PostTerm Codes (days)	Pre/PostTerm Evaluation Window (days)	Incident exposure	Care Setting/Diagnosis Position	Incident w/ respect to:	Washout (days)
1	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Extremity MRI w/ GBCAs	Any	N/A	0
2	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Extremity MRI w/o GBCAs	Any	N/A	0
3	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Extremity MRA w/ GBCAs	Any	N/A	0
4	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Extremity MRA w/o GBCAs	Any	N/A	0
5	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Non Extremity MRI w/ GBCAs	Any	N/A	0
6	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Non Extremity MRI w/o GBCAs	Any	N/A	0
7	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Non Extremity MRA w/ GBCAs	Any	N/A	0
8	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Non Extremity MRA w/o GBCAs	Any	N/A	0
9	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Head MRI w/ GBCAs	Any	N/A	0
10	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Head MRI w/o GBCAs	Any	N/A	0
11	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Head MRA w/ GBCAs	Any	N/A	0
12	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Head MRA w/o GBCAs	Any	N/A	0
13	Use Algorithm Codes*	183	Use Algorithm Codes*	273	7	Fetal Imaging	Any	N/A	0

*Use codes from a previously-validated algorithm from Sentinel's Medication Exposure in Pregnancy Risk Evaluation Program (default). This algorithm uses pre-/post-term delivery codes present around the delivery date to determine a pregnancy duration. Requesters must set a default pregnancy duration value should no pre-/post-term codes be observed around the delivery date (e.g., 273 [39 weeks]).