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**AIM Guide to Implementing Components
of the Joint Commission Perinatal Care
Cesarean Birth Measure (PC-02)**

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Note: This guide is intended to supplement [The Joint Commission \(TJC\) documentation](#) by providing an example with specific data preparation methods in the context of AIM. It should not be used for reporting to the Joint Commission.

Introduction

Jurisdictional birth data (vital records) are not always accessible by AIM states, jurisdictions, and other AIM enrollees. While it is preferable to calculate a true Nulliparous, Term, Singleton, Vertex (NTSV) Cesarean Birth rate using linked discharges and birth data, this guide provides a reasonable alternative when no other options are available.

This may be used with datasets containing ICD-10 diagnostic and procedure codes. Examples of appropriate data sources are electronic health records, hospital inpatient discharge records, and all-payer claims data.

Parity¹ is defined as the number of pregnancies reaching 20 weeks and 0 days of gestation or beyond, regardless of the number of fetuses or outcomes. Unfortunately, this information is not currently available within the International Classification of Diseases version 10 (ICD-10). This means that selecting records for nulliparous (first birth) people is not possible using datasets relying on ICD-10 coding. The birth certificate typically provides this information. For this reason, this guide demonstrates a “TSV” Cesarean Birth rate rather than a true NTSV Cesarean Birth rate.

This guide was developed using the [Specifications Manual for Joint Commission National Quality Measures](#) version 2022A1. The specifications manual describes in detail a standardized method for calculating the NTSV Cesarean Birth rate (PC-02).

Please note that you should use the manual version that corresponds with the time period of the data you are using. There can be occasional coding changes that are accounted for in the updates over time.

There is no single “right” approach or tool to implement these methods. This guide uses widely known methods. This is not the most efficient method. Analysts with experience in tools such as SAS, SPSS, R, SQL and other programs/languages may find more efficient ways to calculate this measure and may want to consider alternative approaches. However, this guide aims to be tool agnostic and has the advantage of providing a method that will be accessible to a wide range of analysts. Further, the provision of AIM flagging tables described in the example provide standardization in a way that can assure consistency in the calculation of the measure.

The example presented in the following pages uses the following nomenclature:

Field definitions:

- Key: Unique Record ID
- DX: ICD-10 Diagnostic Code
- PR: ICD-10 Procedure Code
- Gest37plus: Field indicating gestation of 37 completed weeks or more

These fields correspond to Tables in Appendix A of the Specifications Manual:

- T1106PR: Table 11.06 Cesarean Birth (PR)
- T1101PR: Table 11.01.1 Delivery (PR)
- T1108DX: Table 11.08 Outcome of Delivery (DX)
- T1109DX: Table 11.09 Multiple Gestations and Other Presentations (DX)

¹ [ACOG reVITALize Obstetrics Data Definition](#)

Example

Step 1

Limit your data to:

- Sex = Female
- Age ≥ 8 and < 65
- Length of stay ≤ 120
- If calculating this measure in the context of the [Cardiac Conditions in Obstetrical Care \(CCOC\)](#) patient safety bundle, be sure to limit your data to patients identified by the AIM CCOC codes at this point.

Step 2

Determine if your discharge records are “wide” or “long”. It is more common to have inpatient discharge data in the wide format. If so, you’ll need to convert it to the long format (and then back to wide). This is explained further below.

Note that the diagnostic (DX) and procedure (PR) codes are limited to three per unique ID in this example for brevity. The current version of the Specifications Manual indicates that the primary and all secondary codes should be used for this measure.

Wide Format

Key	DX1	DX2	DX3	PR1	PR2	PR3
20220000001	O24410	O09293	J45909	10E0XZZ	4A1HX4Z	null
20220000002	O480	Z370	Z3A40	10E0XZZ	10E0XZZ	null
20220000003	O133	Z6843	Z3A40	10E0XZZ	0KQM0ZZ	null
20220000004	O7589	Z6843	Z3A40	3E033VJ	10E0XZZ	10907ZC

Long Format

Key	DX	PR
20220000001	O24410	10E0XZZ
20220000001	O09293	4A1HX4Z
20220000001	J45909	null
20220000002	O480	10E0XZZ
20220000002	Z370	10E0XZZ
20220000002	Z3A40	null
20220000003	O133	10E0XZZ
20220000003	Z6843	0KQM0ZZ
20220000003	Z3A40	null
20220000004	O7589	3E033VJ
20220000004	Z6843	10E0XZZ
20220000004	Z3A40	10907ZC

These data are identical but structured differently.

Many standardized discharge datasets (e.g. HCUP NIS) are provided in a wide format.

Re-structuring your data from wide to long format is usually a function provided by whatever software tool you are using for your data. It is sometimes referred to as “pivoting” the data. Try searching for the name of your software tool (e.g. Excel) and “convert wide to long”. Guides to doing this are common online for a variety of tools.

Step 3

Download the [AIM flagging table](#) for this measure. Open the Excel file and familiarize yourself with it. The two worksheets you’ll be joining to your data are labeled DX and PR. You’ll see a list of diagnostic and procedure codes with additional columns to their right containing zeroes and ones. A zero indicates the code is not need for that variable (e.g. for T1108DX) and a one indicates the code will be flagged for that variable. Note that the JC specifications do not provide for determining gestational age because they would normally have access to the electronic health record containing that information. The codes for gestational ages ≥ 37 weeks have been added to the flagging tables by AIM.

AIM provides flagging tables that can be *joined* to your long format data to facilitate calculation of the measure.

AIM Diagnostic Code Flags

DX	T1108DX	T1109DX	Gest37plus
Z370	1	0	0
O30001	0	1	0
O30002	0	1	0
O30003	0	1	0
O30011	0	1	0
O300012	0	1	0

{truncated}

AIM Procedure Code Flags

PR	T1106Proc	T11011Proc
10D00Z0	1	0
10D00Z1	1	0
10D00Z2	1	0
10D00Z0	0	1
10D00Z1	0	1
10D00Z2	0	1

{truncated}

The variable names beginning with “T” reference specific Joint Commission tables as noted earlier.

Step 4

Join your data to the AIM Flagging tables (1 for diagnostic codes and 1 for procedure codes).

Example: Join your data to AIM Flagging Table

Your Long Data (Left)

Key	DX	PR
2022000001	O24410	10E0XZZ
2022000001	O09293	4A1HX4Z
2022000001	J45909	null
2022000002	O480	10E0XZZ
2022000002	Z370	10E0XZZ
2022000002	Z3A40	null
2022000003	O133	10E0XZZ
2022000003	Z6843	0KQM0ZZ
2022000003	Z3A40	null
2022000004	O7589	3E033VJ
2022000004	Z6843	10E0XZZ
2022000004	Z3A40	109072C

AIM Diagnostic Code Flags (Right)

{truncated}

DX	T1108DX	T1109DX	Gest37Plus
Z370	1	0	0
O30001	0	1	0
O30002	0	1	0
O30003	0	1	0
O30011	0	1	0
O30012	0	1	0

In this example, you join on the field DX. A Left Join would keep all records in your data and add numeric flags (T1108DX, T1109DX, and Gest37plus) to your dataset. These flags will be aggregated and used later to calculate the measure. Do the same thing for the PR (procedure) column in your data (join on the PR field).

Here's how your data will look now

(not limited to truncated code list)

Key	DX	T1108DX	OT1109DX	Gest37plus
2022000001	O24410	0	0	0
2022000001	O09293	0	0	0
2022000001	J45909	0	0	0
2022000002	O480	0	0	0
2022000002	Z370	1	0	0
2022000002	Z3A40	0	0	1
2022000003	O133	0	0	0
2022000003	Z6843	0	0	0
2022000003	Z3A40	0	0	1
2022000004	O7589	0	0	0
2022000004	Z6843	0	0	0
2022000004	Z3A40	0	0	1

Note that in this example, no Diagnostic codes flagged for the first discharge (Key = 2022000001).

The 2nd discharge flagged for T1108DX and Gest37plus.

The 3rd discharge flagged for Gest37plus.

The 4th discharge flagged for Gest37plus.

BUT, this is difficult to see in this format...

Only Z370 is included in the truncated DX flagging table on the previous slide, but the other flagged codes are in the full table.

Step 5

After completing joins for both your diagnostic and procedure codes, transform your data back to wide format to make analysis easier.

Aggregating your data on the Key and retaining the **maximum** value in each flag field will result in one record per discharge with flags for each group of diagnostic and procedure codes that may be joined back into your full dataset if other variables are needed.

Key	T1108DX	T1109DX	Gest37plus
2022000001	0	0	0
2022000002	1	0	1
2022000003	0	0	1
2022000004	0	0	1

This is easier to read because it contains only one row per delivery discharge.

Step 6

Calculate the "TSV" measure. Comparing this measure within a single facility for quality improvement purposes is likely reasonable.

The logic for calculating the measure

Begin by limiting your dataset to:

- Sex=Female
- Age>=8 and <65
- Length of Stay <=120 days

Next:

- If T1109=1, then **exclude** (multiple gestations and other presentations)
- If T11011=1, then **include** (deliveries)
- If T1108=1, then **include** (outcome of deliveries)
- If Gest37plus=1, then **include** (>=37 weeks gestation) **You now have your denominator.**
- If T1106=1, then **include** in **numerator** (Cesarean)

Example of how to apply the flagging logic (using a Tableau calculation):

Denominator	Numerator	"TSV"
IF [Gest37plus]=1 AND [T11011Proc]=1 AND [T1109Dx]=0 AND [T1108Dx]=1 THEN 1 ELSE 0 END	IF [Gest37plus]=1 AND [T11011Proc]=1 AND [T1109Dx]=0 AND [T1108Dx]=1 AND [T1106Proc]=1 THEN 1 ELSE 0 END	SUM ([Numerator])/ SUM ([Denominator]) //be sure to set the measure default properties to percentage

Questions, comments, suggestions for improvements? Contact us at aimdatasupport@acog.org.