



# ADVERSE OUTCOME INDEX (AOI) REPORT

**Table 1: Count of Adverse Events by Indicator**

<b>NPIC ID: SAMPLE HOSPITAL</b>	<b>Q1 2018</b>	<b>Q2 2018</b>	<b>Q3 2018</b>	<b>Q4 2018</b>	<b>Q1 2019</b>	<b>Q2 2019</b>	<b>Q3 2019</b>	<b>Q4 2019</b>	<b>Q1 2020</b>	<b>Q2 2020</b>	<b>Q3 2020</b>	<b>Q4 2020</b>	<b>Q1 2021</b>	<b>Q2 2021</b>	<b>Q3 2021</b>	<b>Q4 2021</b>	<b>Avg. For Period</b>
Total Deliveries	623	667	704	593	619	650	640	596	642	571	672	570	512	589	1046	763	654
Total Inborns	623	682	701	612	653	649	641	615	663	600	675	588	523	606	1071	799	669
In-hospital Maternal Death	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
In-hospital Neonatal Death, ≥ 2500 grams and ≥ 37 weeks gestation	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Uterine Rupture During Labor	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	1	0
Maternal Intensive Care	1	3	1	1	0	0	3	3	1	0	0	2	0	2	3	1	1
Birth Trauma	2	1	2	1	1	0	0	2	0	0	1	2	1	3	2	2	1
Unanticipated Operative Procedure	4	1	4	5	2	6	3	4	4	1	3	3	1	2	7	5	3
Admission to NICU, Neonate ≥ 2500 grams and ≥ 37 Weeks Gestation, for > 1 day	10	19	16	11	17	30	20	19	21	24	29	17	23	24	7	11	19
APGAR 5 < 7, Inborn Neonate, ≥ 2500 grams and ≥ 37 Weeks Gestation	4	1	3	5	2	3	3	4	2	2	2	2	4	6	9	3	3
Maternal Blood Transfusion	1	4	4	3	1	3	1	2	2	3	6	3	0	5	1	1	3
4th Degree Perineal Laceration	1	4	2	3	0	1	1	2	0	1	1	1	2	2	1	5	2
<b>Total Adverse Events</b>	<b>23</b>	<b>33</b>	<b>33</b>	<b>30</b>	<b>23</b>	<b>43</b>	<b>31</b>	<b>36</b>	<b>30</b>	<b>31</b>	<b>42</b>	<b>32</b>	<b>31</b>	<b>46</b>	<b>31</b>	<b>29</b>	<b>33</b>
<b>Total Patients with one or more Adverse Events</b>	<b>21</b>	<b>32</b>	<b>31</b>	<b>27</b>	<b>21</b>	<b>40</b>	<b>29</b>	<b>31</b>	<b>29</b>	<b>29</b>	<b>40</b>	<b>29</b>	<b>28</b>	<b>42</b>	<b>27</b>	<b>26</b>	<b>30</b>



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**Table 2: Indices by Quarter**

NPIC ID: SAMPLE HOSPITAL	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Avg. for Period	NPIC Rate*	Target Benchmark
Adverse Outcome Index (AOI)	0.034	0.048	0.044	0.046	0.034	0.062	0.045	0.052	0.045	0.051	0.060	0.051	0.055	0.071	0.026	0.034	0.047	0.048	0.028
Weighted Adverse Outcome Score (WAOS)	1.32	1.63	1.66	2.80	1.30	2.20	1.74	2.16	1.64	1.74	2.04	3.39	1.98	3.38	1.14	1.30	1.96	1.70	0.90
Severity Index (SI)	39.05	33.91	37.74	61.48	38.33	35.75	38.45	41.61	36.21	34.31	34.25	66.55	36.25	47.38	44.07	38.08	41.46	35.05	33.16

**\*NPIC Comparative Rate Range:**

AOI: 0.021 - 0.080

WAOS: 0.71 - 2.96

SI: 26.40 - 43.73

Adverse Outcome Index (AOI) -- Number of patients with an adverse event divided by total number of deliveries

Weighted Adverse Outcome Score (WAOS) -- Total weights of all adverse events divided by total number of deliveries

Severity Index (SI) -- Total weights of all adverse events divided by number of patients with an adverse event

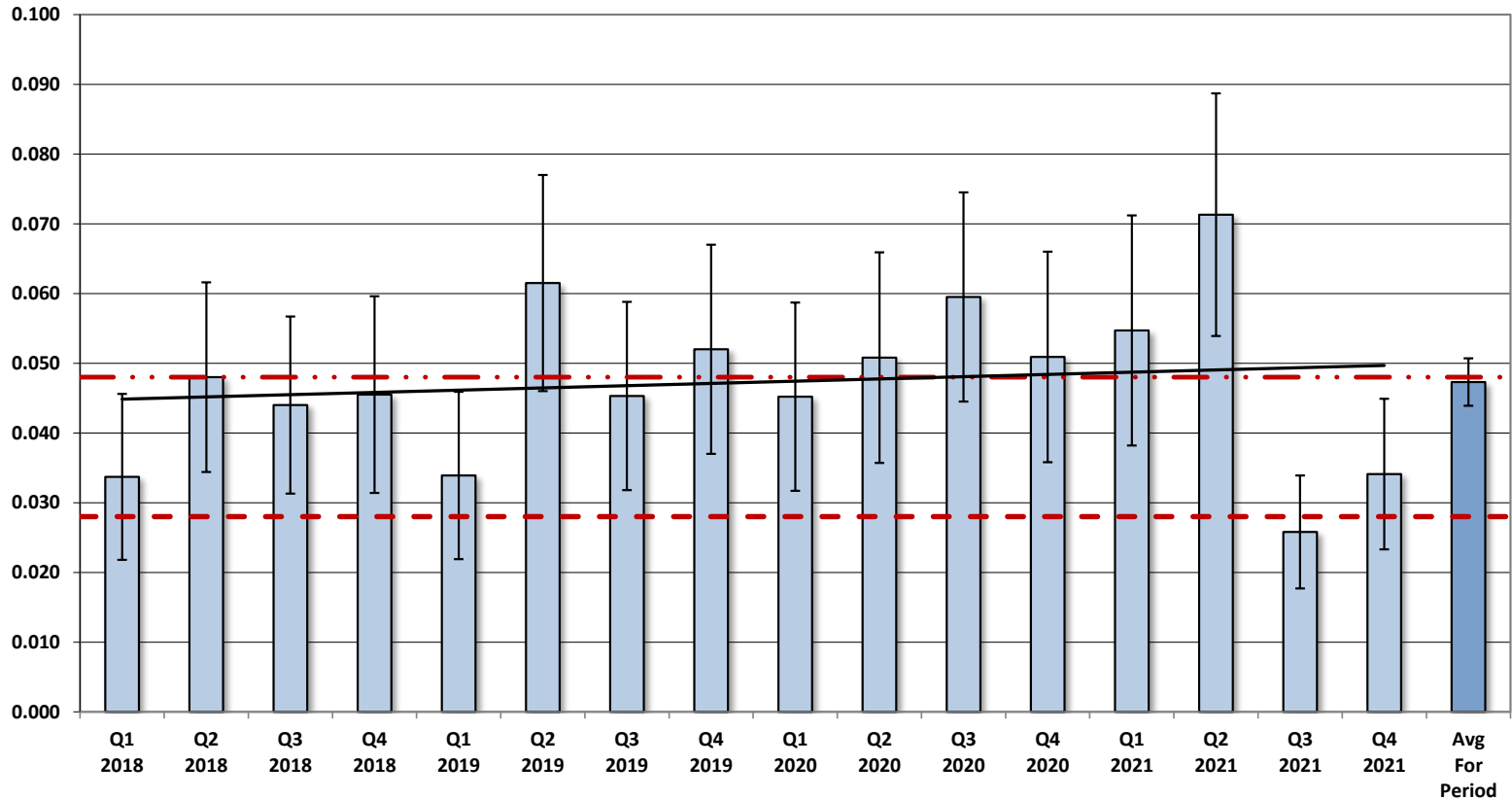


# ADVERSE OUTCOME INDEX (AOI) REPORT

## The Adverse Outcome Index (AOI):

(Number of Patients with an adverse event divided by the total number of deliveries)

NPIC ID: SAMPLE HOSPITAL



Quarterly Average
  Average for Period

*Error Bars represent Margin of Error (90% Confidence Interval).*

NPIC Comparison Rate (.048)

Target Benchmark (.028)

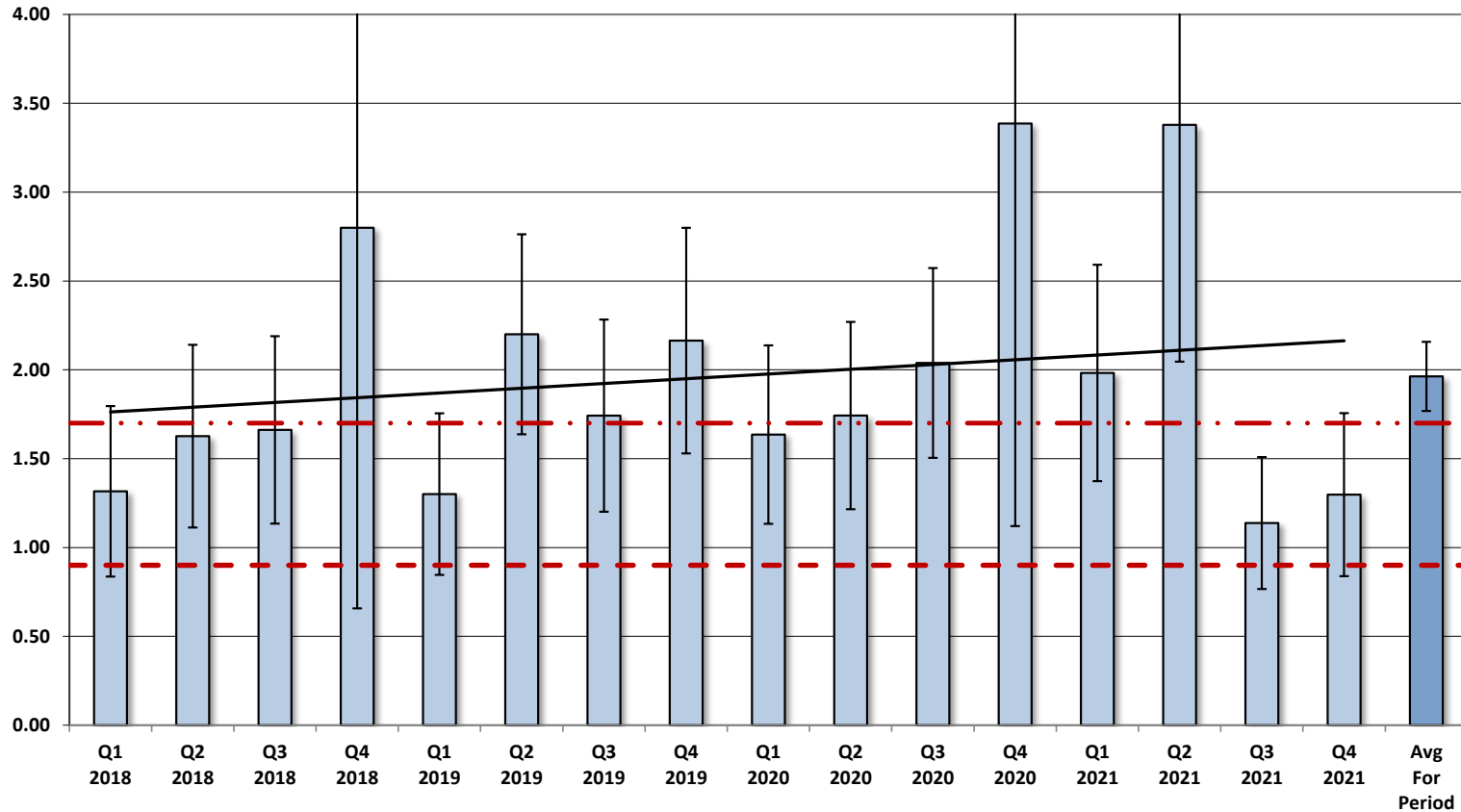
Hospital Trend: No Significant Change



# ADVERSE OUTCOME INDEX (AOI) REPORT

**The Weighted Adverse Outcome Score (WAOS):**  
*(Total weights of all adverse events divided by the total number of deliveries)*

**NPIC ID: SAMPLE HOSPITAL**



Quarterly Average
  Average for Period

*Error Bars represent Margin of Error (90% Confidence Interval).*

NPIC Comparison Rate (1.70)

Target Benchmark (0.90)

Hospital Trend: No Significant Change

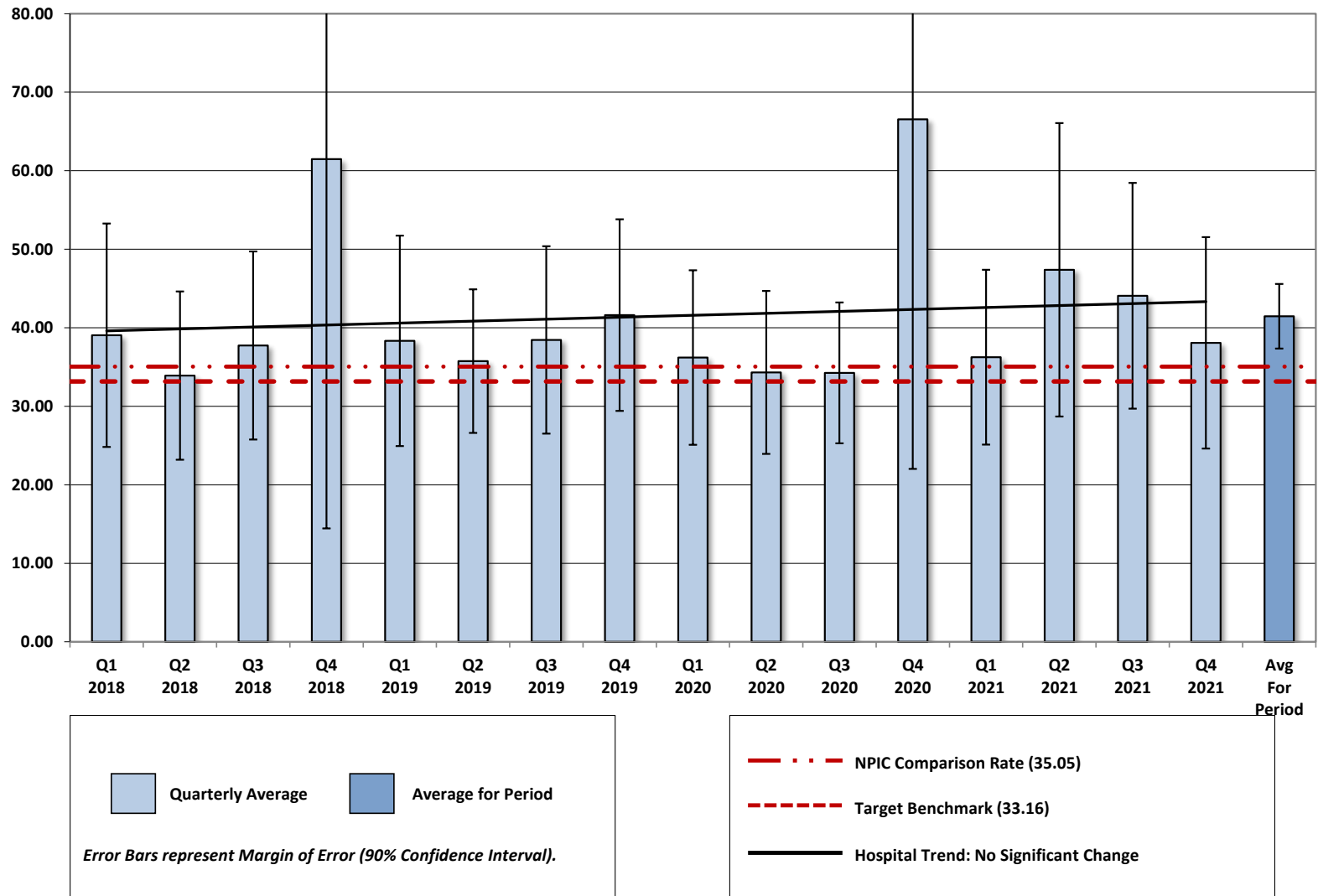


# ADVERSE OUTCOME INDEX (AOI) REPORT

## The Severity Index (SI)

(Total weights of all adverse events divided by the total number of patients with an adverse event)

NPIC ID: SAMPLE HOSPITAL



## Adverse Outcome Index (AOI) Algorithm (V4.0.1)

### Definitions and ICD-10 Code Tables

The ICD-10 code tables used to determine each indicator count for the Adverse Outcome Index: [AOI Code Tables \(effective 10/01/2021\)](#)

#### Event Populations

**Deliveries:** Cases assigned to any of the following MS DRGs: 768, 796-798, 805-807, 783-788, or  $\geq 981$  with an ICD-10-PCS delivery code, and also assigned to any of the following APR-DRGs: 539-542, 560 (*Code Table M.1.1*)

**Inborns:** All neonates born in your hospital (*Code Table B.1.1*)

#### Event Definitions

##### In-hospital Maternal Death {Case Weight: 750}

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Deliveries and discharge disposition = died

**Exclusions:** None

##### In-hospital Neonatal Death $\geq 2500$ grams and $\geq 37$ weeks Gestation<sup>2</sup> {Case Weight: 400}

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**Inclusions:** Inborns with birthweight<sup>1</sup>  $\geq 2500$  grams and  $\geq 37$  weeks gestation<sup>2</sup> with discharge disposition of died **within 28 days of birth**

**Exclusions:** Cases with congenital anomalies and other disorders (*Code Table B.2.1*)

##### Uterine Rupture During Labor {Case Weight: 100}

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**Inclusions:** Deliveries with diagnosis code O71.1 (rupture of uterus during labor) in the **primary, first** or **second diagnosis** code position only

**Exclusions:** None



### Maternal Intensive Care {Case Weight: 65}

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**Inclusions:** Deliveries with [AIM<sup>3</sup> Severe Maternal Morbidity \(SMM\) diagnosis and/or procedure codes](#) (Code Table M.3.1) **OR** Deliveries with the NPIC Blood Transfusion Indicator = 1 on submitted file; **AND**

- with an ICU day or charge **OR**
- discharged to another hospital (UB04 disp=02)

**Exclusions:** Cases with placental disorders (Code Table M.3.1) or any AIM SMM diagnosis code(s) with Present on Admission (POA)<sup>4</sup> indicator = Y

### Birth Trauma {Case Weight: 60}

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**Inclusions:** Inborns with birthweight<sup>1</sup> ≥ 2500 grams and ≥ 37 weeks gestation<sup>2</sup> with TJC PC-06<sup>5</sup> severe birth trauma diagnosis codes (Code Table B.3.1)

**Exclusions:** Cases with osteogenesis imperfecta (Code Table B.3.1)

### Unanticipated Operative Procedure {Case Weight: 40}

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**Inclusions:** Deliveries with unanticipated operative procedure codes (Code Table M.4.1) in the **first** or **second procedure** field

**Exclusions:** Cases with placental disorders or cervical cancers; Also excludes hysterectomy cases with an ICU day or charge or discharged to another hospital (UB04 disp=02) (Code Table M.4.1)

### Admission to NICU of Neonate Birthweight<sup>1</sup> ≥ 2500 grams and ≥ 37 weeks Gestational Age<sup>2</sup> (GA) for > 1 day {Case Weight: 35}

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**Inclusions:** Inborns with birthweight<sup>1</sup> ≥ 2500 grams and ≥ 37 weeks gestation<sup>2</sup>; **AND**

- NICU admission within one day of birth for greater than one day; **OR**
- transferred to another hospital (UB04 disp=02 or =05) within one day of birth

**Exclusions:** Cases with congenital anomalies and other disorders (Code Table B.2.1) or neonatal drug/alcohol exposure (Code Table B.5.1)

### APGAR 5 < 7 {Case Weight: 25}

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**Inclusions:** Inborns with birthweight<sup>1</sup> ≥ 2500 grams and ≥ 37 weeks completed gestation<sup>2</sup>; APGAR 5 < 7

**Exclusions:** Cases with congenital anomalies and other disorders (Code Table B.2.1) or neonatal drug/alcohol exposure (Code Table B.5.1)



### Maternal Blood Transfusion {Case Weight: 20}

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**Inclusions:** Deliveries with [AIM Severe Maternal Morbidity \(SMM\) blood transfusion procedure codes](#) (Code Table M.5.1); OR

- additional select code for transfusion of non-blood products (Code Table M.5.1); OR
- NPIC Blood Transfusion Indicator = 1 on submitted file

**Exclusions:** Delivery cases that are included in the “Maternal Intensive Care” event (see definition above).

### 4th Degree Perineal Laceration {Case Weight: 5}

**Inclusions:** Deliveries with fourth degree perineal laceration diagnosis code (Code Table M.6.1)

**Exclusions:** Cases with shoulder dystocia (Code Table M.6.1)

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<sup>1</sup> Birthweight is determined by numeric value or ICD-10-CM coding

<sup>2</sup> Gestational Age is determined by numeric value or ICD-10-CM coding. Cases missing gestational age information default to  $\geq 37$  weeks if birthweight is  $\geq 2000$  grams.

<sup>3</sup> Alliance for Innovation on Maternal Health (AIM)

<sup>4</sup> Present on Admission (POA) indicator Y = diagnosis was present at time of inpatient admission

<sup>5</sup> [The Joint Commission PC-06 measure](#): Unexpected Complications in Term Newborns



**APPENDIX:**  
**Adverse Outcome Index (AOI) CY 2020 Comparison Group (n = 26)**

AOI OVERALL			
	NPIC Rate	Range	Target Benchmark
AOI	0.048	0.021 - 0.080	0.028
WAOS	1.70	0.71 - 2.96	0.90
SI	35.05	26.40 - 43.73	33.16

Academic Breakdown							
Academic (n = 16)				Non-Academic (n = 10)			
	NPIC Rate	Range	Target Benchmark		NPIC Rate	Range	Target Benchmark
AOI	0.056	0.027 - 0.080	0.045	AOI	0.036	0.021 - 0.064	0.027
WAOS	1.98	0.71 - 2.96	1.25	WAOS	1.25	0.74 - 2.24	0.86
SI	35.00	26.40 - 43.73	28.05	SI	35.12	31.66 - 39.76	33.15

Hospital Characteristics					
	Count	Percent		Count	Percent
<b>OB Level</b>			<b>Neonatal Level</b>		
Regional	14	53.8%	Level IV	9	34.6%
Level III	5	19.2%	Level III	12	46.2%
Level II	5	19.2%	Level II	5	19.2%
Level I	2	7.7%	Level I	0	0.0%
<b>Birth Volume</b>			<b>Region</b>		
< 2001	6	23.1%	East North Central	4	15.4%
2001-3000	6	23.1%	East South Central	2	7.7%
3001-4000	6	23.1%	Mid Atlantic	4	15.4%
4001-5000	2	7.7%	New England	5	19.2%
5001-6000	1	3.8%	Pacific	1	3.8%
6001-7000	0	0.0%	South Atlantic	7	26.9%
>7000	5	19.2%	West North Central	3	11.5%
<b>Average Birth Volume</b>	<b>4,053</b>				