



PATIENT SAFETY COMPONENT

DIFFERENCES BETWEEN TOTAL VAE AND IVAC+ EVENTS FOR ANALYSIS

NHSN METHODS AND ANALYTICS TEAM

MAY 2021

LEARNING OBJECTIVES

We will define and demonstrate the differences between **Total Ventilator Associated Events (Total VAE)** and **Infection-related Ventilator- Associated Complication (IVAC+)** events. By the end of this lesson, you will be able to:

- Distinguish **Total VAE** from **IVAC+** events
- Navigate the NHSN application to run and analyze reports for **Total VAE** and **IVAC+** events
- Interpret **Total VAE** from **IVAC+** events Line Lists and SIR reports

IDENTIFICATION OF TOTAL VAE AND IVAC+ EVENTS

- The VAE algorithm is progressive in terms of criteria to be met, where in **Ventilator-Associated Condition (VAC)** criteria must be met before an event can meet **Infection-related Ventilator-Associated complication (IVAC)** and **IVAC** criteria must be met before identifying a **Possible Ventilator-Associated Pneumonia (PVAP)** event.
- **“Total VAE”** includes events identified as **VAC, IVAC and PVAP**
- **“IVAC Plus”** includes events identified as **IVAC and PVAP**

MEASURES FOR TOTAL VAE AND IVAC+ EVENTS

- **Total VAE Rates or SIR** (representing all events that met at least the VAC definition) would be suitable for,
 - Benchmarking, inter-facility comparisons, pay-for-performance, public reporting.
- **IVAC+ Rates or SIR** (representing all events that met at least the IVAC definition) would be suitable for,
 - Intra-facility comparisons, internal use.

LINE LISTING – ALL VAE, AN ANALYSIS REPORT IN THE NHSN APPLICATION

- NHSN Home
- Alerts
- Dashboard ▶
- Reporting Plan ▶
- Patient ▶
- Event ▶
- Procedure ▶
- Summary Data ▶
- COVID-19
- Import/Export
- Surveys ▶
- Analysis ▶
- Users ▶
- Facility ▶
- Group ▶
- Tools ▶
- Logout



Analysis Reports

Expand All

Collapse All

Search

Device-Associated (DA) Module

Central Line-Associated BSI

Mucosal Barrier Injury CLABSI

Ventilator-Associated PNEU

Ventilator-Associated Events

Line Listing - All VAE

Run Report

Modify Report

Export Data Set

... - VAE Data for ICU-Other/SCA/ONC

Run Chart (Ventilator Days) - VAE Data for ICU-Other/SCA/ONC

SIR SIR (Ventilator Days) - Acute Care Hospitals VAE Data

SUR SUR - (Ventilator Days) - Acute Care Hospitals Ventilator Device Use

SIR SIR (Ventilator Days) - Critical Access Hospitals VAE Data

SUR SUR (Ventilator Days) - Critical Access Hospitals Ventilator Device Use

SIR SIR (Ventilator Days) - Long Term Acute Care VAE Data

SUR SUR - (Ventilator Days) - Long Term Acute Care Ventilator Device Use

Rate Table (EMV) - VAE Data for ICU-Other/SCA/ONC

Run Chart (EMV) - VAE Data for ICU-Other/SCA/ONC



LINE LIST OF TOTAL VAE EVENTS

National Healthcare Safety Network

Line Listing for All Ventilator-Associated Events

As of: January 29, 2021 at 9:13 PM

Date Range: VA_EVENTS evntDateYQ After and Including 2018Q1

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location
10018	1098777	02/13/2012	M	04/29/2019	89453	05/06/2019	VAE	IVAC	5G
10018	123	01/01/1980	F	02/01/2018	68385	02/05/2018	VAE	PVAP	5G
10018	1234	10/01/1992	F	02/01/2018	68383	02/04/2018	VAE	PVAP	5G
10018	1CG	02/01/1960	F	02/01/2018	68947	02/05/2018	VAE	PVAP	5G
10018	101	05/14/1991	M	10/01/2020	99089	10/04/2020	VAE	PVAP	ICU
10018	2	01/01/1987	F	01/12/2020	99067	10/11/2020	VAE	PVAP	ICU
10018	654321	10/01/1992	M	07/15/2018	77743	07/20/2018	VAE	VAC	ICU-A
10018	1006_563	06/09/1969	M	09/20/2019	88672	09/26/2019	VAE	VAC	MCC

Total VAE Infection Count: 8

LINE LIST OF IVAC+ EVENTS

National Healthcare Safety Network Line Listing for All Ventilator-Associated Events

As of: January 29, 2021 at 9:13 PM

Date Range: VA_EVENTS evntDateYQ After and Including 2018Q1

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location
10018	1098777	02/13/2012	M	04/29/2019	89453	05/06/2019	VAE	IVAC	5G
10018	123	01/01/1980	F	02/01/2018	68385	02/05/2018	VAE	PVAP	5G
10018	1234	10/01/1992	F	02/01/2018	68383	02/04/2018	VAE	PVAP	5G
10018	1CG	02/01/1960	F	02/01/2018	68947	02/05/2018	VAE	PVAP	5G
10018	101	05/14/1991	M	10/01/2020	99089	10/04/2020	VAE	PVAP	ICU
10018	2	01/01/1987	F	01/12/2020	99067	10/11/2020	VAE	PVAP	ICU
10018	654321	10/01/1992	M	07/15/2018	77743	07/20/2018	VAE	VAC	ICU-A
10018	1006_563	06/09/1969	M	09/20/2019	88672	09/26/2019	VAE	VAC	MCC

IVAC+ Infection Count: 6

ANALYSIS REPORTS FOR VAE IN THE NHSN APPLICATION

- NHSN Home
- Alerts
- Dashboard ▶
- Reporting Plan ▶
- Patient ▶
- Event ▶
- Procedure ▶
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- COVID-19
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Analysis Reports

Expand All

Collapse All

Search

Device-Associated (DA) Module

Central Line-Associated BSI

Mucosal Barrier Injury CLABSI

Ventilator-Associated PNEU

Ventilator-Associated Events

Line Listing - All VAE

Frequency Table - All VAE

Bar Chart - All VAE

Pie Chart - All VAE

Rate Table (Ventilator Days) - VAE Data for ICU-Other/SCA/ONC

Run Chart (Ventilator Days) - VAE Data for ICU-Other/SCA/ONC

SIR SIR (Ventilator Days) - Acute Care Hospitals VAE Data

Run Report

Modify Report

Export Data Set

Acute Care Hospitals Ventilator Device Use

Acute Care Hospitals VAE Data

Critical Access Hospitals Ventilator Device Use

Long Term Acute Care VAE Data

SIR SIR (Ventilator Days) - Long Term Acute Care Ventilator Device Use

Rate Table (EMV) - VAE Data for ICU-Other/SCA/ONC

Run Chart (EMV) - VAE Data for ICU-Other/SCA/ONC

TOTAL VAE AND IVAC+ SIR TABLES IN ANALYSIS REPORTS FOR ACUTE CARE HOSPITALS

There are **4 types of SIR tables** each for **Total VAE** and **IVAC+** **events separated by MedType** in NHSN analysis reports.

1. By OrgID
2. By OrgID/LocationType
3. By OrgID/CDC Location Code
4. By OrgID/Location

TOTAL VAE AND IVAC+ SIR TABLES IN ANALYSIS REPORTS FOR ACUTE CARE HOSPITALS

MedType describes the Medical School Affiliation Status of an NHSN Teaching Facility. **MedTypes** can be one of the following,

- 1. Major:** Facility that trains medical students, nursing students and/or post-graduate students
- 2. Graduate:** Facility that trains only post-graduate medical residents/fellows
- 3. Undergraduate:** Facility that trains current (undergraduate) medical students and/or nursing students

TOTAL VAE SIR AND IVAC+ SIR TABLES BY ORGID FOR MEDTYPE = G

National Healthcare Safety Network

SIR for Ventilator-Associated Event Data for Acute Care Hospitals (2015 Baseline) - By OrgID

As of: February 2, 2021 at 3:21 PM

Date Range: All BS2_VAE_RATE\$ICU_SCA

vaeCategory=Total VAE orgid=10018 medType=G

orgid	ccn	summaryYH	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pct	vaeCategory
10018	12345	2017H1	2	2.920	363	0.685	0.6529	0.115, 2.263	45	Total VAE
10018	12345	2017H2	3	0.039	5	.	.		.	Total VAE
10018	66666	2019H1	1	0.179	46	.	.		.	Total VAE
10018	66666	2019H2	1	0.525	117	.	.		.	Total VAE
10018	66666	2020H1	0	0.071	25	.	.		.	Total VAE
10018	66666	2020H2	0	0.021	7	.	.		.	Total VAE

National Healthcare Safety Network

SIR for Ventilator-Associated Event Data for Acute Care Hospitals (2015 Baseline) - By OrgID

As of: February 2, 2021 at 3:21 PM

Date Range: All BS2_VAE_RATE\$ICU_SCA

vaeCategory=IVAC Plus orgid=10018 medType=G

orgid	ccn	summaryYH	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pct	vaeCategory
10018	12345	2017H1	0	1.211	363	0.000	0.2978	, 2.473	20	IVAC Plus
10018	12345	2017H2	3	0.014	5	.	.		.	IVAC Plus
10018	66666	2019H1	1	0.077	46	.	.		.	IVAC Plus
10018	66666	2019H2	0	0.197	117	.	.		.	IVAC Plus
10018	66666	2020H1	0	0.042	25	.	.		.	IVAC Plus
10018	66666	2020H2	0	0.012	7	.	.		.	IVAC Plus

SUMMARY

1. To distinguish between **Total VAE** and **IVAC+** events
2. To navigate NHSN to analyze reports (examples: line lists, SIR tables) for **Total VAE** and **IVAC+** events
3. To interpret the analysis reports of **Total VAE** and **IVAC+** events

ADDITIONAL RESOURCES

- **SIR Guide**

- <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>

- **Ventilator-Associated Event (VAE) and Pediatric VAE Analysis – March 2021 Training links,**

- YouTube link [2021 NHSN Training: Ventilator-Associated Event \(VAE\) and Pediatric VAE Analysis – YouTube](#)

- Slide set link [Ventilator-Associated Event \(VAE\) and PedVAE Analysis \(cdc.gov\)](#)

**FOR ANY QUESTIONS OR CONCERNS,
PLEASE CONTACT THE NHSN HELPDESK AT NHSN@CDC.GOV**



For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.