WEMSIS Data Quality and Completeness Report

2022 Q1 - 2023 Q1

The purpose of this report is to inform data users of the Washington Emergency Medical Services Information System (WEMSIS) data quality and to monitor data quality improvement over time. The information presented should be used to engage data providers and software vendors in discussions to address the system's data quality needs as identified in the report. This document is a statewide data completeness report for WEMSIS data elements that the Department of Health utilizes for the state EMS key performance indicators and projects to link WEMSIS data with other available data sources. The incidents used for this report do not include those where the EMS call was canceled (as indicated by *eDisposition.12- Incident/Patient Disposition or eDisposition.27 - Unit Disposition*). Note that data used to inform this report are received quarterly and may not reflect the most up-to-date records.

NEMSIS Usage Key	
Mandatory (M)	Must have real value present (No Not Applicable or Not Recorded values)
Required (R)	Must have real value, Not Applicable, or Not Recorded
Recommended (Rec)	May contain Not Applicable, Not Recorded, Not Reporting, or blanks
Optional (O)	May contain blanks but no Not values

Summary
We maintain near complete compliance with NEMSIS mandatory elements across the state and about 89% percent of records are submitted within a week of the incident response. In 2022, we observed a 6% increase in the completeness of the *Type of Scene Delay* , which is important in accounting for patient and crew safety delays, and a near doubling in reporting of *Last Known Well Time* , which is used in a Stroke KPI.

Challenges and priorities to address
We are currently unable to report on KPIs 7.3 and 7.4 as *eOutcome.02- Hospital Disposition* remains largely incomplete across the state. While we have seen improvements in data completeness and quality from the last year, there is still room for improvement in many of the fields that are needed for the EMS key performance indicators. We encourage data providers to continue to use the discrete data fields as this allows us to better evaluate EMS care and management of patients encountered in the field. High rates of incompleteness in various elements may be the result of the use of "Not Recorded" in place of "Not Applicable". For the purpose of this report, "Not Recorded" values are considered missing. If a particular field is not applicable to the specific incident (patient does not require medication, procedure, did not have cardiac arrest, etc.), we advise entering "Not Applicable" rather than "Not Recorded" or leaving the field blank.

Next steps for data providers
Assessment of data quality is an ongoing process, and will continue as data files are updated. Continued work and collaboration with data providers to address data completeness and quality issues has the potential to improve data quality over time. We encourage our data providers to use this report to create discussions within their agencies and with their ePCR vendor to more accurately diagnose data mapping and entry issues that may affect data completeness and quality.

If you would like a region or county specific report or more information on how to access agency level data, please contact the DOH WEMSIS team at wemsis@doh.wa.gov so that we can arrange a data consultation and set up a report for your data needs.

Element Name (NEMSIS Usage)	Percent of complete records				
	2022 Q1 (n=280,016)	2022 Q2 (n=293,176)	2022 Q3 (n=308,020)	2022 Q4 (n=313,811)	2023 Q1 (n=298,755)
Data elements used for linking WEMSIS to other data sources					
Patient First Name (Rec)	99.50	99.44	99.46	99.50	99.49
Patient Last Name (Rec)	99.48	99.43	99.44	99.49	99.47
Patient DOB or SSN (Rec)	98.37	98.11	98.09	98.12	98.28
Data elements used for key performance indicators					
Airway Device Placement Confirmed Method (Rec)	0.79	0.80	0.79	0.85	0.83
Cardiac Arrest During EMS Event (R)	96.86	97.20	97.03	97.31	96.43
Cardiac Arrest Etiology (R)	81.59	82.00	81.54	82.83	82.30
Cardiac Arrest Witnessed By (R)	81.58	81.99	81.53	82.82	82.30
Cardiac Arrest, CPR Care Provided Prior to EMS Arrival (R)	83.08	83.13	82.84	83.83	83.14
Cardiac Arrest, Resuscitation Attempted by EMS (R)	98.66	98.61	98.52	98.61	98.80
Cardiac Arrest, Who Provided CPR Prior to EMS Arrival (O)	0.67	0.75	0.70	0.74	0.72
Destination Team Pre-Arrival Activation (R)	98.73	98.67	98.59	98.69	98.87
Destination/Transferred To, Name (Rec)	91.66	91.77	91.71	92.32	92.67
Dispatch Notified Date/Time (O)	50.70	51.07	50.14	50.11	50.56
First EMS Unit on Scene (R)	76.81	76.27	76.03	75.00	72.99
Hospital Capability (R)	76.24	76.64	76.78	77.36	78.19
Hospital Disposition (R)	0.03	0.09	0.07	0.07	0.08
Incident/Patient Disposition (M)	100.00	100.00	100.00	100.00	99.99
Last Known Well Date/Time (O)	2.42	3.00	3.18	3.23	3.68
Level of Care of this Unit (M)	100.00	99.99	99.73	99.73	98.67
Medical/Surgical History (Rec)	84.00	83.90	83.32	83.95	84.80
Medication Allergies (Rec)	31.54	31.79	31.66	31.41	32.71
Medication Given (Rec)	18.35	18.31	18.43	18.95	19.22
Mental Status Assessment (O)	81.58	81.27	80.80	81.19	81.33
Patient Age Units (R)	92.05	91.59	91.36	91.77	91.84
Patient Age* (R)	98.66	98.48	98.45	98.51	98.57
Patient Arrived at Destination Date/Time (R)	60.55	60.55	59.57	60.05	61.67
Procedure Number of Attempts (R)	33.65	34.17	35.53	34.66	35.12
Procedure Performed (R)	34.70	35.19	36.49	35.59	36.19
Procedure Performed Date/Time (R)	33.08	33.77	35.27	34.39	35.11
Procedure Performed Prior to EMS Care (R)	34.02	34.55	35.80	34.99	35.61
Procedure Successful (R)	33.59	33.74	34.53	34.59	35.04
Provider's Primary Impression (R)	96.13	95.09	95.01	95.97	96.17
Provider's Secondary Impression (R)	38.52	38.21	37.71	37.93	36.19
PSAP Call Date/Time (R)	66.71	67.35	66.91	67.43	66.39
Symptom, Primary (R)	99.36	99.39	99.46	99.59	99.81
Symptoms, Other Associated (R)	16.70	16.70	16.79	17.25	17.53
Trauma Center Criteria (R)	64.44	64.36	63.33	63.87	63.61
Type of Scene Delay (R)	49.30	50.54	54.87	54.11	55.32
Type of Service Requested (M)	100.00	100.00	100.00	100.00	100.00
Unit Arrived on Scene Date/Time (R)	99.83	99.85	99.84	99.86	99.88
Unit Left Scene Date/Time (R)	66.32	66.18	65.74	66.10	67.42
Vital Sign, Blood Glucose Level (R)	35.38	36.41	37.10	36.10	36.97
Vital Sign, Cardiac Rhythm/ECG (R)	28.65	28.43	28.15	27.44	27.13
Vital Sign, ECG Type (R)	29.11	28.92	27.91	28.25	27.50
Vital Sign, Obtained Prior to EMS Care (R)	93.64	93.62	93.52	93.66	93.84
Vital Sign, Stroke Scale Score (R)	82.32	82.88	82.53	83.73	83.20
Vital Sign, Stroke Scale Type (R)	82.33	82.92	82.46	83.75	83.30
Vital Sign, Stroke Scale Value- LAMS (Custom)	1.56	1.65	1.61	1.68	1.76
Vital Sign, Taken Date/Time (R)	92.91	92.87	92.78	92.85	93.07

* Patient Age calculated using Patient Age and Age Units OR Patient Date of Birth and Incident Date fields

KPI Completeness

In order to utilize the state key performance indicators (KPIs), we must assess completeness of records looking at the combination of data elements that make up the KPIs. Pages 4 and 5 display which elements make up each KPI. Below is a table of the completeness of the combination of elements that goes into each KPI. Completeness is excluded for KPIs that measure completeness.

KPI	Percent of records with sufficient data				
	2022 Q1 (n=280,016)	2022 Q2 (n=293,176)	2022 Q3 (n=308,020)	2022 Q4 (n=313,811)	2023 Q1 (n=298,755)
1.1	47.23	47.38	46.25	46.88	47.00
1.2	62.57	62.49	61.44	62.22	62.00
2.1	96.14	95.10	95.02	95.97	96.17
2.2	42.40	42.27	42.22	42.64	43.87
3.1	43.44	43.63	43.58	43.72	45.01
4.1	92.36	91.61	91.60	92.46	92.85
4.2	42.40	42.27	42.22	42.64	43.87
5.1	90.29	89.09	88.78	90.00	90.13
5.2	90.29	89.09	88.78	90.00	90.13
5.3	90.29	89.09	88.78	90.00	90.13
5.4	64.59	64.01	63.50	64.44	65.77
5.5	96.81	95.94	95.80	96.72	96.97
5.6	91.27	90.98	90.84	91.90	92.22
5.7	90.29	89.09	88.78	90.00	90.13
6.1	86.74	86.53	86.15	87.18	87.58
6.2	92.36	91.61	91.60	92.46	92.85
6.3	65.33	64.78	64.24	65.16	66.40
6.4	1.59	2.01	2.10	2.12	2.45
6.5	89.47	89.00	88.85	89.98	90.42
6.6	79.97	80.40	79.99	81.26	80.97
7.1	81.59	82.00	81.54	82.82	82.30
7.2	0.15	0.16	0.12	0.14	0.14
7.3	0.00	0.04	0.03	0.04	0.03
7.4	0.03	0.09	0.07	0.07	0.08
8.1	33.11	33.26	34.03	34.16	34.60
8.2	33.59	33.73	34.52	34.59	35.03
8.3	33.59	33.73	34.52	34.59	35.03
8.4	33.59	33.73	34.52	34.59	35.03
8.5	33.59	33.73	34.52	34.59	35.03
8.6	34.70	35.19	36.49	35.59	36.19
9.1	76.62	76.09	75.86	74.85	72.83
9.2	51.71	51.44	51.17	50.33	49.94
9.3	60.53	60.52	59.55	60.02	61.63
9.4	100.00	100.00	100.00	100.00	99.99
9.5	---	---	---	---	---

Record Timeliness

As different WEMSIS data needs emerge, it is important to assess the timeliness of WEMSIS records. The table below provides a breakdown of the percent of records submitted in each of the indicated timeframes. These timeframes are calculated from the time dispatch is notified to the date and time that the incident record is submitted to WEMSIS.

Percent of records submitted within timeframe					
Time from dispatch notification to submission	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1
Within 24 hours	67.4	70.0	63.5	63.6	69.0
Within 48 hours	74.1	76.5	76.4	70.6	76.2
Within 7 days	84.3	86.5	90.2	83.4	87.5
Within 14 days	88.0	90.0	94.7	88.2	92.2
Within 31 days	92.7	95.4	98.1	94.7	97.2
More than 31 days	7.3	4.6	1.9	5.3	2.8

A "Not Recorded" value indicates that the element was left blank during data entry. If records are imported into WEMSIS, the software populates blanks with a "Not Recorded" value, only in the elements that are designated as "Required". If records are directly entered into WEMSIS without import, blank values are maintained. For data cleaning purposes, all "Not Recorded" values are changed to blank values and treated as missing.

Benchmark reports are available using the Report Writer platform at https://www.wemsis.org. Please note that when pulling reports from this platform, data used to inform Report Writer outputs are not cleaned or validated using the same procedures that are used for the data that inform this data quality report. As a result, there may be discrepancies in data completeness reported.

Questions?

For questions regarding data elements and their definitions, please refer to the NEMSIS V3 data dictionary at

https://nemsis.org/media/nemsis_v3/release-3.4.0/DataDictionary/PDFHTML/DEMEMS/index.html

Any questions or concerns regarding this document or WEMSIS data may be directed to the Department of Health WEMSIS program at WEMSIS@doh.wa.gov.