Developing National EMS Performance Measures and Using Them to Improve Care
Today

- Using Measurement to Improve
- National EMS Quality Alliance
- Developing and Testing the NEMSQA Measures
- Questions
Today’s Speakers

- **Michael Redlener, MD, FAEMS**
  - Vice President of the Board, National EMS Quality Alliance
  - Medical Director for EMS Quality, Mount Sinai Hospital System

- **Jeff Jarvis, MD, MS, EMT-P, FAEMS**
  - Member, NEMSQA Steering Committee
  - Medical Director for Williamson County EMS and Marble Falls Area EMS

- **Brooke Burton, NRP, FACPE**
  - Member, NEMSQA Board
  - Division Chief of Quality, Falck – Alameda

- **Max Sevareid, MPH**
  - EMS Specialist, NHTSA Office of EMS
GO HOME STRETCHER, YOU'RE DRUNK

911: YOU CAN'T MAKE THIS STUFF UP
EMS COMPASS

- Measure set originally developed by the National Association of State EMS Officials and funded by the National Highway Traffic Safety Administration (NHTSA)
- Fourteen (14) candidate measures released in 2016
- Six clinical measure categories included in measure set, including: pediatrics, stroke, trauma and safety
- Measure specifications, NEMSIS pseudocode, and ePCR vendor readiness released with project deliverables
- Candidate measures implemented by EMS agencies and NEMSIS for testing and QI purposes
NEMSQA & EMS Compass 2.0

► In 2017, NHTSA awarded the American College of Emergency Physicians (ACEP) a contract to continue the EMS Performance Measures initiative
  ▶ Contract requirements included forming a sustainable organization focused on EMS Quality Measurement and reviewing and revising the EMS Compass candidate measures
  ▶ In 2018, the National EMS Quality Alliance (NEMSQA) was formed as an entity under the NHTSA contract
  ▶ NEMSQA released re-specified EMS Compass measure set and became a stand-alone 501(c)(6) corporation in September 2019
Vision

Improving patient outcomes through the collaborative development of quality measures for EMS and health systems of care.

Mission

NEMSQA will develop and endorse evidence-based quality measures for EMS and healthcare partners that improve the experience and outcomes of patients and care providers.
NEMSQA Steering Committee
- Academy of International Mobile Healthcare Integration
- Air and Surface Transport Nurses Association
- Air Medical Physician Association
- American Academy of Emergency Medicine
- American Academy of Pediatrics
- American College of Cardiology
- American College of Surgeons Committee on Trauma
- American Heart Association
- American Society for Testing and Materials (ASTM F-30 EMS)
- Association of Critical Care Transport
- Commission on Accreditation of Ambulance Services
- Commission on Accreditation of Medical Transport Systems
- Commission on Accreditation for Pre-Hospital Continuing Education
- Commission on Accreditation of Ambulance Services
- Committee on Accreditation of Educational Programs for the EMS Professions
- Emergency Nurses Association
- EMS for Children Innovation & Improvement Center
- International Trauma Life Support
- National Association for Search and Rescue
- National Association of EMS Educators
- National Collegiate EMS Foundation
- National EMS Pilots Association
- National Registry of EMTs
- The Paramedic Foundation
NEMSQA Approach to Measure Development

- Identification and prioritization of new measure topics
- Adoption of existing quality measures
- Research
- Testing and Learning
- Specification

- Measure Development Lifecycle
- Committee and Board Approval
  - Measure Deployment
  - QI and Big Data Testing
  - Endorsement and Licensing

EMS COMPASS: Improving Systems of Care Through Meaningful Measures
# NEMSQA’s 11 Measures

<table>
<thead>
<tr>
<th>Measure ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia-01</td>
<td>Treatment Administered for Hypoglycemia</td>
</tr>
<tr>
<td>Pediatrics-01</td>
<td>Pediatric Respiratory Assessment</td>
</tr>
<tr>
<td>Pediatrics-02</td>
<td>Administration of Beta Agonist for Pediatric Asthma</td>
</tr>
<tr>
<td>Pediatrics-03</td>
<td>Documentation of Estimated Weight in Kilograms</td>
</tr>
<tr>
<td>Seizure-02</td>
<td>Patients with Status Epilepticus Receiving Intervention</td>
</tr>
<tr>
<td>Stroke-01</td>
<td>Suspected Stroke Receiving Prehospital Stroke Assessment</td>
</tr>
<tr>
<td>Trauma-01</td>
<td>Injured Patients Assessed for Pain</td>
</tr>
<tr>
<td>Trauma-03</td>
<td>Effectiveness of Pain Management for Injured Patients</td>
</tr>
<tr>
<td>Trauma-04</td>
<td>Trauma Patients Transported to a Trauma Center</td>
</tr>
<tr>
<td>Safety-01</td>
<td>Use of Lights and Sirens During Response to Scene</td>
</tr>
<tr>
<td>Safety-02</td>
<td>Use of Lights and Sirens During Transport</td>
</tr>
<tr>
<td>Measure</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>Seizure-01</td>
<td>Retired from measure set during clinical evidence review. Evidence no longer supports measure.</td>
</tr>
<tr>
<td>Seizure-02</td>
<td>Patients receiving EMS intervention (e.g., benzodiazepine) aimed at terminating their status seizure.</td>
</tr>
<tr>
<td>Stroke-01</td>
<td>Number of suspected stroke patients who had a stroke assessment performed (CPSS, LAMS, etc.).</td>
</tr>
<tr>
<td>Stroke-08</td>
<td>Retired from measure set due to data feasibility issues.</td>
</tr>
<tr>
<td>Trauma-01</td>
<td>Patients with pain scale value present.</td>
</tr>
</tbody>
</table>
## Why are there Updated Measures?

<table>
<thead>
<tr>
<th>Measure ID</th>
<th>Previous Numerator</th>
<th>Updated Numerator</th>
<th>Previous Denominator</th>
<th>Updated Denominator</th>
<th>Previous Denominator Exclusions</th>
<th>Updated Denominator Exclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia-01</td>
<td>Patients receiving treatment intended to correct hypoglycemia (food, administration of oral glucose, dextrose, or glucagon)</td>
<td>EMS responses originating from a 911 request for patients receiving treatment to correct their hypoglycemia during the EMS response.</td>
<td>Patients identified as being hypoglycemic with a blood sugar of &lt;60mg/dl originating from a 911 request</td>
<td>All EMS responses originating from a 911 request for patients with hypoglycemia and a GCS of &lt;15 or an AVPU of &lt;A or patients with a primary or secondary impression of altered mental status and a blood glucose level of &lt;60.</td>
<td>None</td>
<td>Patients less than 24 hours of age</td>
</tr>
</tbody>
</table>

| Pediatrics-01    | Pediatric patients with EMS responses originating from patients <15 years AND     | EMS responses                                                                   | Patients <15 years AND                                                              | All EMS responses                                                                   | None                           | None                           |
nemsqa.org/completed-quality-measures/

- **Measure Specification Table**: A quick-reference table that includes broad-view measure specifications (i.e., numerator and denominator criteria) for each measure.
- **Measure Worksheets**: Detailed reference sheets for each measure, which include specifications, clinical guidelines, and rationale.
- **Measure Worksheets with NEMSIS Pseudocode**: Measure worksheets with guidance for mapping measures/data to the National Emergency Medical Services Information System (NEMSIS) registry.
- **Clinical Quality Measure Flows**: Graphical flowcharts demonstrating measure logic and the data collection process for each measure.
- **Project Summary with Measure Narratives**: An overview of the EMS Compass 2.0 project and narratives for each measure, which include systems implications.
- **Frequently Asked Questions**: Answers to commonly asked questions surrounding EMS Compass 2.0 measures, and quality.
- **Change Log**: A reference table that documents changes made in the EMS Compass 2.0 measures during the re-specification project. This table can be helpful for entities who were using the original EMS Compass 2.0 measures.

To download all EMS Compass 2.0 measure information resources at once, [click here](nemsqa.org/completed-quality-measures/).
### eVitals.29 Stroke Scale Score is not null or eVitals.30 Stroke Scale Type is not null

| **eSituation.11 Provider's Primary Impression** matches | /*(160)(161)(163)(G45)(G46)/
| "Nontraumatic subarachnoid hemorrhage..."|
| "Nontraumatic intracerebral hemorrhage..."|
| "Cerebral infarction..."|
| "Transient cerebral ischemic attacks..." or "Vascular syndromes of brain in cerebrovascular diseases..." |

or

| **eSituation.12 Provider's Secondary Impressions** matches | /*(160)(161)(163)(G45)(G46)/
| "Nontraumatic subarachnoid hemorrhage..."|
| "Nontraumatic intracerebral hemorrhage..."|
| "Cerebral infarction..."|
| "Transient cerebral ischemic attacks..." or "Vascular syndromes of brain in cerebrovascular diseases..." |

) and **eResponse.05 Type of Service Requested** is 2205901 ("911 Response (Scene")

or

| **eVitals.23 Total Glasgow Coma Score** is less than or equal to 9 |
| **eVitals.26 Level of responsiveness (AVPU)** is 3326007 ("Unresponsive")
Rollout and Familiarization

- Re-specified EMS Compass Measure Set available at nemsqa.org

- Measures being implemented by multiple NEMSQA partners

- Annual maintenance (re-specifications) - Next review Fall 2020

- Ensure most evidence-based, feasible, valid, and reliable measures are in use
Relationship to Evidence-Based Guidelines and Published Rationale

- NEMSQA measure development process includes literature and guideline reviews
- Applicable rationale and guidelines graded to ensure measures have adequate direction of evidence
- Evidence-based guidelines used to create measure specifications, when available
- Prehospital evidence-based guidelines will be used in future measure development projects, where EBG topics and measure priorities intersect
Benchmarking
# Pediatrics-03: Documentation of Estimated Weight in Kilograms

**Measure Score Interpretation:** For this measure, a higher score indicates better quality.

<table>
<thead>
<tr>
<th>Measure Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of EMS responses originating from a 911 request for patients less than 18 years of age who received a weight-based medication and had a documented weight in kilograms or length-based weight estimate documented during the EMS response.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure Components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator Statement</strong></td>
</tr>
<tr>
<td><strong>Denominator Statement</strong></td>
</tr>
<tr>
<td><strong>Denominator Exclusions</strong></td>
</tr>
<tr>
<td><strong>Denominator Exceptions</strong></td>
</tr>
</tbody>
</table>
Pediatrics 0-3

Weight value in kilograms or length-based weight documented

911 response +

Age <18 +

Received weight-based medication
Measure Pediatrics 0-3

<table>
<thead>
<tr>
<th>Measure Performance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies</td>
<td>917</td>
</tr>
<tr>
<td>Patients</td>
<td>36,343</td>
</tr>
<tr>
<td>Min</td>
<td>0%</td>
</tr>
<tr>
<td>Q10</td>
<td>0%</td>
</tr>
<tr>
<td>Q25</td>
<td>39%</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>86%</strong></td>
</tr>
<tr>
<td>Q75</td>
<td>100%</td>
</tr>
<tr>
<td>Q90</td>
<td>100%</td>
</tr>
<tr>
<td>Max</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>69%</td>
</tr>
</tbody>
</table>

Legend
- Under Performing Agency
- Standard Performance
- High Performing Agency
Stroke 0-1

Stroke screen documented

911 response +

Impression = Stroke or TIA
Measure Stroke 0-1

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Agnecies</td>
</tr>
<tr>
<td>Patients</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>Q10</td>
</tr>
<tr>
<td>Q25</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Q75</td>
</tr>
<tr>
<td>Q90</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>Mean</td>
</tr>
</tbody>
</table>

Legend
Under Performing Agency
Standard Performance
High Performing Agency
Safety 0-1

No lights & sirens used

911 response to scene
# Measure Safety 0-1

<table>
<thead>
<tr>
<th>Measure Performance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies</td>
<td>1,241</td>
</tr>
<tr>
<td>Patients</td>
<td>6,771,593</td>
</tr>
<tr>
<td>Min</td>
<td>0%</td>
</tr>
<tr>
<td>Q10</td>
<td>0.6%</td>
</tr>
<tr>
<td>Q25</td>
<td>2%</td>
</tr>
<tr>
<td>Median</td>
<td>5%</td>
</tr>
<tr>
<td>Q75</td>
<td>17%</td>
</tr>
<tr>
<td>Q90</td>
<td>34%</td>
</tr>
<tr>
<td>Max</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>13%</td>
</tr>
</tbody>
</table>

**Legend**
- Under Performing Agency
- Standard Performance
- High Performing Agency
IHI Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

Developed by Associates in Process Improvement
Use Data to Evaluate Areas of Improvement

Stroke Exam Performed

Goal
Validation
Feedback
UCL
CL
Memo
Training
LCL

0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

1.0000
0.9
0.8958
0.7775

Additional Training for Quality Improvement

- **NAEMSP**
  - Quality Improvement Preconference
  - Year-long Quality Improvement Course
  - naemsp.org/career-development/ems-quality-and-safety-course/

- **Institute for Healthcare Improvement**
  - Open School
  - Harvard EdX
  - ihi.org/education/IHIOpenSchool/Pages/default.aspx
Future NEMSQA Activities

- **Measure Development**
  - NEMSQA will develop future measures to improve care and outcomes in the EMS Community.
  - Periodic surveys will be distributed to collect measure concepts (i.e.: Call for Measure Concepts).
  - Grants and contracts will be sought that will allow NEMSQA to develop meaningful measures for the EMS Community.

- **Partnerships and Improvements**
  - Recommendations to NEMSIS
  - Collaboration with technical vendors (i.e., Data Vendors, e-CPR vendors)
  - Future benchmarking capabilities
Interested in NEMSQA?

- **Non-Member Participation**
  - Measures and technical resources available for download at www.nemsqa.org
  - Follow NEMSQA on social media
    - Facebook.com/nemsqa
    - @NEMSQA_EMS
  - Call for Measure Concept and Public Comment Surveys distributed to the general public and posted to the NEMSQA website

- **Join NEMSQA**
  - Alliance membership opportunities start at $2,500 for organizations with a primary focus or interest in quality EMS patient care
  - New opportunities for corporations to become involved in NEMSQA
  - Becoming a member or corporate sponsor provides opportunities to become involved in NEMSQA activities
Questions?
Please submit questions through the webinar platform

- Learn more about NEMSQA:
  - nemsqa.org
  - nemsqa.org/completed-quality-measures/

- For more on EMS Data:
  - ems.gov/emsdata.html

- Speakers’ contact info
  - Dr. Michael Redlener: michael.redlener@mountsinai.org  @mredlener
  - Dr. Jeff Jarvis: jjarvis@wilco.org  @drjeffjarvis
  - Brooke Burton: brooke.burton@falck.com
  - Max Sevareid: max.sevareid@dot.gov