Benchmarking and Metrics: Fostering Safe, High-Quality, Evidence-Based Care

Dr. Russell D. MacDonald, MD MPH FRCPC
Medical Director and Chair, Quality Care Committee
Ornge Transport Medicine

Associate Professor and Co-Director
Emergency Medicine Fellowship Programs
Faculty of Medicine, University of Toronto
Toronto, ON, Canada
Thank You

- conference organizers
- you...the audience
Outline

- introduction to performance, metrics, and benchmarking
- identify utility in patient safety
- recognize existing gaps in medical transport
- present current initiatives to fill gaps
Recall Why We Do This
Quality Health Care

• Institute of Medicine 2001 report:
  • introduced concept of “quality” to health care
    – safe
    – timely
    – effective
    – equitable
    – efficient
    – patient-centered
Quality Health Care

• Institute of Medicine 2001 report:

• “to assess quality, you need to objective measures”
Quality Health Care

• Institute of Medicine 2001 report:

• identified a “…lack of performance measures in health care”
Quality Health Care

- Institute of Medicine 2001 report:
  - did not specifically address prehospital care or air medical transport

  - however:
    - “patients should expect measures of quality” regardless of service provider or venue
Quality Word Salad

performance
metrics
LEAN
benchmarking
best practice
Performance

becoming the best you can be by practice and proper technique
Performance

SOUTHWEST AIRLINES
Just Plane Smart

TOYOTA
Quality Revolution

30 minute guarantee
If your pizza does not arrive within 30 minutes, present this coupon to the driver to receive $3.00 off your pizza.
Fast, Free Delivery™
Performance

JOHNSON!...GET IN HERE, IT'S TIME FOR YOUR PERFORMANCE REVIEW!
Benchmarking and Metrics

- measure and compare with other, potentially higher-performing systems

- goal: identify processes or strategies leading to improvement

- ultimately: achieve best possible performance
Benchmarking and Metrics

- identify processes and key indicators
- measure performance objectively
  - must align with organization’s strategic goals
- requires a measurement baseline
- gives organization tangible measures of quality
Benchmarking and Metrics

1. Data collection
2. Data entry and report production
3. Evaluation report preparation
4. Discussion of findings with company/organisation
5. Improvement action plan
Benchmarking and Metrics
Benchmarking and Metrics

• developing “good” metrics
  1. importance
  2. scientific acceptability
  3. usability
  4. feasibility
Benchmarking and Metrics

- developing “good” metrics
- key steps:
  1. establish critical processes
  2. identify specific quantifiable outputs
  3. establish targets against which to be scored
Benchmarking and Metrics

• our industry is at the crossroads of aviation and medicine, where benchmarking and metrics is:
  – well-established in aviation
  – not well developed on the patient care side
What are We Doing?

- roadblocks to developing measures of performance:
  - lack of perceived need
  - lack of resources
  - legislative
  - litigious
  - laziness
What are We Doing?

• Air Medical Physicians’ Association
  – identified lack of established key metrics
  – consensus group derived metrics to assess performance
  – markers of evidence-based best practice
  – includes definition and way data is reported
What are We Doing?

- consensus conference – July 2013
- top 20 selected for benchmarking
- standard definitions
- easy-to-use reporting tool
- central repository to house data
What are We Doing?

• ventilator use in patients with advanced airway
  – evidence: hypo/hypercarbia and hypoxia lead to worsened patient outcomes
  – reported monthly as “percent of patient transports with an advanced airway supported by mechanical ventilator”
    • numerator: number of transported patients with advanced airway supported by ventilator
    • denominator: number of transported patients with advanced airway supported and not supported by ventilator
What are We Doing?

https://ampa.org/qm/metrics
What are We Doing?

• Ornge Transport Medicine
  – 2006: Board asks “how are we doing?”
  • answered subjective “okay?”
What are We Doing?

• Ornge Transport Medicine
  – 2006: Board asks “how are we doing?”
    • answered subjective “okay?”
  – initiated evidence-based metrics for common presenting clinical conditions
    • retrospective chart audit
  – regular, objective reporting to stakeholders
    • working group for ongoing improvement
What are We Doing?

- acute coronary syndrome
- multisystem trauma
- altered level of consciousness (GCS <8)
- high-risk obstetrics
- tracheal intubation
- mechanical ventilation
- in-facility time
What are We Doing?

- track rates of intubation success
- identify trends and guide interventions
What are We Doing?

- impact of education intervention on success
What are We Doing?

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- impact of education intervention on success

impact of intervention on success
1st attempt: 25.9% absolute increase (p=0.02)
overall: 5.0% absolute increase (p=ns)
What are We Doing?

- impact of education intervention on success

Duration of impact:
~6 months
What are We Doing?

- findings -> medical advisory committee
- actions based on findings
  - skills inventory for each provider, to identify those with fewer intubations
  - airway management skills retention intervention delivered annually
  - further tracking of success, by provider and overall, to determine impact of interventions
What are We Doing?

• taking it a step further: international consensus group to derive “package” of care based on evidence and best practice
What are We Doing?

- “top 10” by consensus
- comprehensive literature review
- expert panels: evidence-based best practice
- measurement tools
- data capture and reporting systems
  - “live” in-house testing summer 2015
  - roll-out to partners fall 2015
  - start “comparing” ourselves early 2016
What are We Doing?

• “top 10” by consensus
  – acute coronary syndrome
  – acute stroke
  – acute asthma
  – advanced airway management
  – circulatory shock
  – post-cardiac arrest care
  – sepsis
  – spinal cord injury
  – severe traumatic brain injury
  – multisystem trauma
### What are We Doing?

**Medical Performance Indicators – Acute Coronary Syndrome**

<table>
<thead>
<tr>
<th>Patient Identification Number:</th>
<th>Performance Indicator</th>
<th>Yes</th>
<th>No</th>
<th>Needs to be answered</th>
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</table>

**Gastrointestinal symptoms present**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Gastrointestinal symptoms present

**Is there nausea?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Nausea

**Is there vomiting?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Vomiting

**Is there abdominal pain?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Abdominal pain

**Is there diarrhea?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Diarrhea

**Is there constipation?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Constipation

**Is there hematochezia?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hematochezia

**Is there melena?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Melena

**Is there hematemesis?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hematemesis

**Is there hemoptysis?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hemoptysis

**Is there hematuria?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hematuria

**Is there hematemesis and hemoptysis?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hematemesis and hemoptysis

**Is there hematochezia and melena?**

- Yes
- No
- Needs to be answered

**If yes, please specify**

- Hematochezia and melena

**Is there hematuria and hematemesis and hemoptysis?**

- Yes
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What are We Doing?

<table>
<thead>
<tr>
<th>Trip Date:</th>
<th>Patient ID:</th>
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Vehicle Registration: (If CCTU, enter vehicle No.)

<table>
<thead>
<tr>
<th>Sending Facility:</th>
<th>Base:</th>
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<table>
<thead>
<tr>
<th>Level of Care</th>
<th>PCP</th>
<th>ACP</th>
<th>CCP</th>
<th>Other:</th>
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**Demographics**

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**Call Type 1**

- On Scene
- Modified On Scene
- Interfacility

<table>
<thead>
<tr>
<th>Time on Scene:</th>
<th>mins</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Time to definitive care:</th>
<th>mins</th>
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</table>

**Call Type 2**

- Trauma
- Non-Trauma

**Patient Age (if < 18, enter 0):** years

**Patient Sex:** Male, Female

**Paramedic 1 No.:**
- PCP
- ACP
- CCP

**Paramedic 2 No.:**
- PCP
- ACP
- CCP

**Paramedic 3 No.:**
- PCP
- ACP
- CCP

**TMP:**

<table>
<thead>
<tr>
<th>TMP contact indicated?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP contacted?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**QA Tool submitted?**

- Yes
- No

**Adherence to MDSOS**

- Yes
- No
What are We Doing?

Development of Quality Metrics and Benchmarking Tools in Interfacility Patient Transport

Russell D. MacDonald MD MPH FRCP(C)1,2, Bo Zheng3, Suleiman Furmoli3, David FE Stuhlmiller4, Francis X. Guyette5, Shannon Silorski5, Brian Burns7, Michael A Jusamback8, Alasdair Corfield9,10

1Ornge Transport Medicine, Mississauga, Canada 2Division of Emergency Medicine, Department of Medicine, University of Toronto, Toronto, Canada 3Faculty of Medicine, University of Toronto, Toronto, Canada 4Air Methods LifeNet of New York 5University of Pittsburgh Medical School, Pittsburgh, USA 6STARS, Calgary, Canada 7Greater Sydney HEMS Service, Sydney, Australia 8RPIC Air Medical - California, Redding, USA 9Emergency Medicine Retrieval Service, Glasgow, Scotland 10University of Glasgow, Scotland

rmacdonald@ornge.ca
What are We Doing?

- single-item performance measures
- binary or categorical
- easily derived from existing data pools
- well-suited to simple, single-care items

- measures multiple items within a “package” of care
- binary, categorical, or continuous
- requires dedicated audit by skilled reviewer
- well-suited to complex care delivery
What are We Doing?

• goals:
  – establish data collection systems
  – report key indicators
  – identify variations
  – share best practices
  – compare like-versus-like
  – improve patient safety with evidence-based care
  – knowledge generation and translation
Recall Why We Do This
Concluding Remarks
Summary

- introduction to performance, metrics, and benchmarking
- identify utility in ensuring patient safety
- recognize existing gaps in medical transport
- present current initiatives to fill gaps
Thank You

rmacdonald@orne.ca