Identification of Avoidable Visits to the Emergency Department: Comparison of Two Common Methodologies

Derek DeLia, Ph.D.
Associate Research Professor
Center for State Health Policy

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*** TAKE-AWAY MESSAGE ***

• There is great interest in classifying use of hospital emergency care (non-emergency, preventable, etc.)

• Two commonly used methods give divergent classifications

• Combined method may be needed to assess:
  – Adequacy of primary care
  – Stress on overcrowded emergency departments

• Combination may involve:
  – Hierarchy
  – Bayesian approach
Classification of ED visits

• Why?
  – ED is window on rest of health system
  – ED’s are overcrowded
  – Diversion of visits may be beneficial

• How? Two methods
  – Triage-based (CDC-NHAMCS)
  – Diagnosis-based (NYU Algorithm)
  – Both used extensively in research papers, reports, policy statements, etc.
Comparison of methods

• Triage classification
  – Degree of urgency
  – Part of medical record
  – Before definitive diagnosis and treatment

• Diagnosis classification
  – Relationship to primary care
  – Expert panel
  – Probability of being preventable, non-emergent, etc.
  – After definitive diagnosis and treatment
Research questions

1. Do the two methods provide similar or disparate information?

2. Can they be used more effectively?
Research methods

• National Hospital Ambulatory Medical Care Survey (NHAMCS), 2006

• Triage categories recorded by NHAMCS
• Diagnosis categories through application of NYU Algorithm

• Examine consistency

• Specific emphasis
  – Non-emergent diagnosis
  – Care not needed within 12 hours
Triage-based classification of ED visits

- Immediate: 4.4%
- 1hr – 2hrs: 26.0%
- 15-60 min: 39.4%
- 2hrs – 24hrs: 14.7%
- No triage: 1.9%
- Unknown: 13.6%
Diagnosis-based classification of ED visits

- Non-emergent 22.5%
- Emergent, Primary Care Treatable 21.5%
- Emergent, ED Care Needed, Preventable/Avoidable 5.7%
- Emergent, ED Care Needed, Not Preventable/Avoidable 9.4%
- Injury 5.4%
- Mental Health Related 2.3%
- Alcohol Related 1.0%
- Drug Related (excluding alcohol) .01%
- Not in a Special Category, & Not Classified 11.1%
Diagnosis classification within triage category

Triage Classification

Immediate 15-60 min >1 hr - 2 hrs >2 hrs - 24 hrs

- Non-Emergent
- Emergent, Primary Care Treatable
- Emergent, ED Care Needed, Preventable/Avoidable
- Emergent, ED Care Needed, Not Preventable/Avoidable
- Injury
- Mental Health Related
- Alcohol Related
- Drug Related (excluding alcohol)
- Not in a Special Category, and Not Classified
Triage classification within diagnosis category

Triage Classification
- Immediate
- 15-60 min
- >1 hr - 2 hrs
- >2 hrs - 24 hrs
- No triage
- Unknown

Diagnosis Classification

Non-Emergent
- Emergent, Primary Care Treatable
- Emergent, ED Care Needed, Preventable/Avoidable
- Emergent, ED Care Needed, Not Preventable/Avoidable
Classification differences

- Disagreement over urgency of visits
- Differences in information & purpose

- Triage classification (Ex ante)
  - Limited information
  - Rapid assessment ==> immediate use
  - Grey areas ==> screen & confirm
  - Initially assume the worst

- Diagnosis classification (Ex post)
  - Full information (hindsight)
  - System performance ==> look for avoidable use
Combining methodologies

- Areas of agreement ==> strong evidence of urgency

- Signaling stress on ED
  - Triage more reliable
  - Real time resource use

- Performance of primary care system may require Bayesian approach
  - Triage ==> prior probability
  - Diagnosis ==> posterior probability
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