Web & ACTION
Reducing Avoidable Emergency Department Visits

Roger Resar, MD
Robert A. Lowe, MD, MPH
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The presenters have nothing to disclose

Session 3: Measuring ED Utilization and Avoidable Visits

OBJECTIVES:
• Review of participant tests and results
• Overview of measurement practices used for ED utilization
• Strategies for measuring to assess impact on avoidable visits
Measurement

- Contrast “non-urgent” model with “avoidable” model of ED utilization
- Illustrate what we can learn from ED data
- Methodological challenges
  - Counting ED visits
  - Measuring “avoidable” ED visits
  - Studying frequent users

“The ER Problem”

Individual-level model

- Costly
- “Inappropriate,” “non-urgent” ED use
  - Causes overcrowding
  - Disrupts continuity of care
- Frequent users are abusers
- ED abuse is easy to eliminate
Is the ED costly?

As a proportion of US health care expenditures

– 1.9% of national expenditures
– ED costs by the poor = 0.47% of US health care costs

Tyrance, Amer J Public Health, 1996

Savings from reducing ED use

• Optimistic scenario: co-payments for ED would only reduce total spending by 2%
  – i.e., 25% reduction X 7% of total spending
• These savings might be offset
  – If patients use primary care setting instead
  – If patients delay care and are admitted for more expensive treatment
  – If they require more administrative overhead

Handel, Ann Emerg Med. 2007
Does ED mis-use cause ED overcrowding?

- Input
- Throughput
- Output


Does ED use disrupt continuity of care?

Community Tracking Survey
- ≥ 4 ED visits in a year
- 8% of users
- 28% of adult ED visits
- 84% insured
- 81% usual source of care
- Risk factors:
  - Poor physical health (OR 2.54 [2.08, 3.10])
  - Poor mental health (OR 1.70 [1.42, 2.02])
  - ≥ 5 out-patient visits/year (OR 3.02 [1.94, 4.71])
  - Income below poverty threshold (OR 2.36 [1.70, 3.28])

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Are frequent ED users abusers?

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Is it easy and safe to reduce ED use?

- Triage
- Copayments

Can we reduce ED use through triage?

- Can’t predict which ED visits will require aggressive treatment
  - Telephone triage
  - Managed care gatekeeping
  - In-person triage
- Adverse outcomes when we try
Will the NYU Algorithm help us reduce ED use?

NYU Algorithm

- Emergent
  - ED care needed
  - Not preventable/avoidable
  - Preventable/avoidable
  - Primary care treatable
  - Non-Emergent
    - Mental health related
    - Alcohol related
    - Substance abuse related
    - Injury
    - Unclassified
Will the NYU Algorithm help us reduce ED use?

- “The algorithm is not intended as a triage tool or a mechanism to determine whether ED use is appropriate for required reimbursement by a managed care plan.”
- “Since few diagnostic categories are clear-cut in all cases, the algorithm assigns cases based on a percentage basis, reflecting this potential uncertainty and variation.”

### EDA probabilities

<table>
<thead>
<tr>
<th></th>
<th>Strep septicemia</th>
<th>Staph septicemia, unspecified</th>
<th>Staph aureus septicemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-emergent</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Emergent, primary care treatable</td>
<td>23%</td>
<td>100%</td>
<td>-</td>
</tr>
<tr>
<td>ED needed, preventable</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ED needed, not preventable</td>
<td>77%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unclassified</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
</tbody>
</table>
Will the NYU Algorithm help us reduce ED use?

• “Nor was it intended to assess appropriateness of ED utilization.”
• “Assessment of urgency by patients can be problematic, and labeling ED use for primary care treatable conditions as inappropriate may misallocate responsibility to the patients themselves.”

Billings, Commonwealth Fund Issue Brief, 2000

Can we reduce ED use through copayments?

2000: Kaiser implemented copayments for some patients
  – $20-$35 copayment
    • 12% decrease in ED use
  – $50-$100 copayment
    • 23% decrease in ED use
  – No increase in ICU admissions or deaths

Hsu, Med Care, 2006
ED copayments in the Oregon Health Plan

- Added $50 co-pay for ED visits for expansion population, not for categorically eligible
- Compared to categorically eligible
  - ED use fell 7.9%
  - Cost per ED visit rose 7.9%
  - No net change in cost per enrollee
- Inpatient use rose 27%
- No net cost savings from copayments

Wallace, HSR, 2008

So why are we here?

New model of avoidable ED visits
Paradigm shift

• Non-urgent/inappropriate ⟷ Avoidable

• Individual-level focus ⟷ Systems focus

Avoidable ED visits: Systems-level factors
When do patients come to the ED?

- Weekday: 70%
- Weekend: 30%
- Day: 27%
- After Hours: 73%

- 8:30am-4pm: 40%
- 4pm-9pm: 30%
- 9pm-12MN: 14%
- 12MN-8:30am: 16%

27% of visits are weekdays, 8:30 am – 4:30 pm, when a primary care office is likely open.

Primary care practices & Medicaid patients’ ED use

Medicaid enrollees whose PCPs had ≥ 12 evening hours a week, compared to those whose PCPs had no evening hours:

20% less ED use

Lowe, Med Care, 2005
# Diagnostic groups based on policy questions

## Frequency of diagnoses among ED visits (%)

<table>
<thead>
<tr>
<th></th>
<th>Drug</th>
<th>Alcohol</th>
<th>Other Psychiatric</th>
<th>Dental†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninsured</td>
<td>3.1</td>
<td>4.6</td>
<td>6.9</td>
<td>5.1</td>
</tr>
<tr>
<td>OHP</td>
<td>2.0</td>
<td>2.6</td>
<td>8.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Medicare</td>
<td>0.9</td>
<td>2.1</td>
<td>11.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.8</td>
<td>1.8</td>
<td>6.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td>1.5</td>
<td>2.6</td>
<td>7.6</td>
<td>2.0</td>
</tr>
</tbody>
</table>

* 2004 data, 25 EDs
† Principal diagnosis

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* Image of a map showing geographical data related to uninsured and insured dental visits.*
“But in my community…”

- “ER abusers”
  - Uneducated
  - Don’t pay (OHP)
  - Drug and alcohol users
- Individual-level perspective

ED use by OHP enrollees varies >10-fold in different Oregon Communities
Community characteristics matter

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Estimate of difference (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care capacity</td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td>0 – 1</td>
<td>reference</td>
<td></td>
</tr>
<tr>
<td>1 – 2</td>
<td>-0.12 (-0.20, -0.044)</td>
<td>0.002</td>
</tr>
<tr>
<td>&gt; 2.0</td>
<td>-0.10 (-0.20, -0.026)</td>
<td>0.044</td>
</tr>
</tbody>
</table>

- Lowe, Medical Care, 2009

Frequent ED users: Portland tri-county area

≥6 visits/6 months, January-June 2004
Frequent ED users: Individual characteristics

- Male: 53%
- Female: 62%

Frequent users (38% of All ED visits):

- Male: 38%
- Female: 47%

Frequent ED users: Age group

- 0-1: 14%
- 2-9: 17%
- 10-17: 5%
- 18-39: 6%
- 40-64: 8%
- >= 65: 5%

Frequent users (38% of All ED visits):

- 0-1: 38%
- 2-9: 38%
- 10-17: 38%
- 18-39: 38%
- 40-64: 38%
- >= 65: 38%
Frequent ED Users:
Source of Payment for Visit

<table>
<thead>
<tr>
<th>All ED visits</th>
<th>Commercial</th>
<th>Medicare</th>
<th>Uninsured</th>
<th>OHP</th>
<th>Medicaid-other states</th>
<th>Auto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent users</td>
<td>1%</td>
<td>3%</td>
<td>13%</td>
<td>18%</td>
<td>46%</td>
<td>1%</td>
</tr>
<tr>
<td>Frequent users</td>
<td>25%</td>
<td>1%</td>
<td>3%</td>
<td>1%</td>
<td>34%</td>
<td>19%</td>
</tr>
<tr>
<td>Frequent users</td>
<td>18%</td>
<td>1%</td>
<td>11%</td>
<td>13%</td>
<td>21%</td>
<td>18%</td>
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<td>34%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Diagnoses in frequent users (≥6 visits/6 months)

<table>
<thead>
<tr>
<th>ccsLevel1</th>
<th>Number of ED Visits</th>
<th>Commonest Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury and poisoning</td>
<td>620</td>
<td>Superficial injury</td>
</tr>
<tr>
<td>Diseases of the digestive system</td>
<td>237</td>
<td>Teeth &amp; jaw</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>237</td>
<td>Alcohol &amp; substance-related</td>
</tr>
<tr>
<td>Diseases of the musculoskeletal system</td>
<td>200</td>
<td>“Other”</td>
</tr>
<tr>
<td>Symptoms; signs; and ill-defined</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Diseases of the respiratory system</td>
<td>150</td>
<td>Infections</td>
</tr>
</tbody>
</table>
Visit of intimate partner violence diagnosis

- Choo, WRRF, 2008

Heavy Utilizers: OHP Data

- 202 (0.02%) patients with ≥ 75 ED visits
  - Mean number of ED visits 109 (median 96, range 75 - 475)
- Median number of primary care providers = 2
  - 5% of enrollees had 4 providers
  - 11% had 3 providers

-Damon Kuehl
18 year old woman, epidural hematoma, C-spine fracture &…


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**Impact of primary enforcement seatbelt law in Ohio**

If Ohio joined the other 31 states that have this law
- Seatbelt use 82% → 92%
- $91 million Medicaid savings over next 10 years

Conner, J Safety Research, 2010
(Nationwide Children’s Hospital, Ohio State University, Columbus, OH)
Duck hunting
Counting ED visits

- Beware the UB-04!
- Research Data Assistance Center
- Google: RESDAC emergency

“Non-urgent ED visits”

Emergency Department Algorithm ("NYU algorithm")
ED visits by uninsured rose from 6,441/month in 2002 to 8,754/month in 2004

[Figure 9. Algorithm for Classifying Emergency Department Utilization, New York University-United Health Fund of New York]

[Diagram showing ED classification categories: Not preventable/avoidable, Preventable/avoidable, ED Care Needed, Primary Care Treatable, Non-Emergent, Injuries, Mental Health, Alcohol, Substance Abuse]

[Note: The emergency department algorithm developed by the New York University Center for Health and Public Service Research and the United Hospital Fund of New York classified ED visits into four basic categories:]

ED visits by uninsured rose from 6,441/month in 2002 to 8,754/month in 2004
What does all this mean?

- It is not a failure of the interventions if the Emergency Department Algorithm fails to detect a change; it may just be a failure of the measurement.

- Teams may not want to base all of their patient stream selections on acuity measures.
County, hospitals team up to reduce seniors' ER visits
acreamer@sacbee.com
Published Monday, Jan. 11, 2010

Although Kaiser Permanente figures were not available, the program saved $1.1 million in hospital costs and emergency services at Sutter Medical Center, said Sutter spokesman Gary Zavoral.

At Kaiser's Sacramento and Roseville facilities, the program reduced 67 participants' emergency room visits by more than half – from 295 to 145 – over an 18-month period, said county program planner Judy Ludwick.

Because of that success, the program is expanding this year to Kaiser's south Sacramento facility.
A tale of two cities

Mean ED Visits/Person

- Owen and Lowe, Managed Care Programs, Nova Science, 2008

Hypothetical Intervention:
Randomized, controlled trial

Intervention among patients with 4 or more ED visits, Jan-June 2007
Hypothetical Intervention: Comparison group

Summary

- Think “avoidable,” not “inappropriate” or “non-urgent”
- Challenges
  - Counting number of ED visits
  - Classifying ED visits as non-emergency
  - Studying impact of an intervention on frequent ED users
- Resources
  - Close communication between team leadership, local IT staff, and IHI faculty
- Project should drive what you measure, not vice-versa
Thank You!

Contact Matt Morse
(mmorse@ihi.org) with questions.