Rising Volumes in Emergency

A Problem, or a Net Benefit?

Les Vertesi MD, FRCPC, MHsc
CAEP Annual (June 2013)
What We Do Know

Percent Changes in Visit Volumes & Admissions
All VCHA Hospitals

Five Years’ Experience (Average) at Vancouver Coastal ED’s
It’s Worse at Some Facilities

Lions Gate Hospital: Change in Visit Volumes & No. of Admissions

Oct 2007 to Mar 2013
It Doesn’t Matter Where You Look

Percentage Change in Visits & Admissions
All Fraser Health Hospitals

Four Years’ Combined Experience
What Does CIHI Tell Us?

(7 Main Problems encountered in the ED)

From CIHI Report on Hospital & ED (2009/10)
## Top Five Reasons for Emergency Department Visits by the Homeless and Others, 2005-2006 (based on Table 4 in the report)

<table>
<thead>
<tr>
<th></th>
<th>Homeless</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Mental and behavioural disorders</td>
<td>35</td>
<td></td>
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<tr>
<td>Symptoms, signs and abnormal clinical findings</td>
<td>16</td>
<td></td>
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<tr>
<td>Injury, poisoning and consequences of external causes</td>
<td>14</td>
<td></td>
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<tr>
<td>Contact with health services</td>
<td>14</td>
<td></td>
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<td>Diseases of musculoskeletal system and connective tissue</td>
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<table>
<thead>
<tr>
<th></th>
<th>Others</th>
<th>Percentage</th>
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<td>Injury, poisoning and consequences of external causes</td>
<td>25</td>
<td></td>
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<tr>
<td>Symptoms, signs and abnormal clinical findings</td>
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<td></td>
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<tr>
<td>Diseases of respiratory system</td>
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<td>Diseases of musculoskeletal system and connective tissue</td>
<td>6</td>
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### NACRS Interactive Reports

(more detail from CIHI)

**Page by:**

Metrics: Number of ED Visits  
Registration Fiscal Year: 2010-2011  
Visit Disposition: Total

<table>
<thead>
<tr>
<th>Main Problem</th>
<th>Triage Level</th>
<th>1-Resuscitation</th>
<th>2-Emergent</th>
<th>3-Urgent</th>
<th>4-Less urgent</th>
<th>5-Non-urgent</th>
<th>9-Unknown</th>
<th>Total</th>
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<tbody>
<tr>
<td>Acute Myocardial Infarction</td>
<td></td>
<td>2,024</td>
<td>13,121</td>
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<td>526</td>
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<td>161</td>
<td>21,064</td>
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<td>Asthma</td>
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<td>73,585</td>
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<td>Pneumonia</td>
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<td>1,110</td>
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<td>1,124</td>
<td>106,385</td>
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<tr>
<td>Influenzal Pneumonia</td>
<td></td>
<td>--</td>
<td>75</td>
<td>203</td>
<td>136</td>
<td>10</td>
<td>8</td>
<td>432</td>
</tr>
<tr>
<td>Trauma</td>
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<tr>
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<td></td>
<td>1,772</td>
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<tr>
<td>Motor Vehicle Collisions</td>
<td></td>
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<td>27,581</td>
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</table>

Report Name: Emergency Department (ED) Visits: Volumes and Median Length of Stay by Triage Level, Visit Disposition, and Main Problem  
Report ID: HP17

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(a) Due to privacy and confidentiality concerns, and to minimize the risk of residual disclosure, volumes of fewer than 5 visits have been suppressed in the cells and removed from total visit counts.  
(b) Emergency department (ED) visits for 2003–2004 to 2010–2011 are included, based on the data element Registration Date. These statistics reflect the number of visits, which does not necessarily equal the number of individuals.  
(c) The number of facilities submitting ED visit data to NACRS varied between 2003–2004 and 2010–2011. As of 2010–2011, Alberta mandated submission of all ambulatory care data to NACRS. Due to this variation,
And a ‘Take-Away’ From CIHI

from Report on ED Wait Times (2005)

More than half (57%) of ED visits in 2003-2004 were for less urgent conditions (for example, chronic back pain or minor allergic reactions) or non-urgent conditions (for example, sore throat, menses, or isolated diarrhea) based on the Canadian Triage and Acuity Scale (CTAS).

Nearly one in five Canadian adults (18%) responding to an international survey on ED use in 2004 said they could have received their emergency department care from a regular physician in a non-ED setting. This compares to between 6 and 16% of adults who visited EDs in Australia, New Zealand, the UK and the U.S.
A Widespread Belief

• ACCEPTED: That ED’s play an important role in managing acute illness & injury

• But ...

• Much of ED activity is either not necessary or could be replaced by better primary care
  – Increased use of ED’s represents a “failure” of the system to provide alternatives
  – Better public education about “proper use” of the ED is needed (e.g. nurse line)
  – Increasing ED access only encourages abuse e.g. by ‘frequent fliers’
Are We Looking in the Right Places?
Completing the CIHI Numbers

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<td>737,085</td>
<td>179,357</td>
<td>8,171,876</td>
<td>75%</td>
</tr>
<tr>
<td>Total of Above</td>
<td>63,180</td>
<td>1,322,834</td>
<td>3,993,868</td>
<td>4,379,480</td>
<td>873,363</td>
<td>211,261</td>
<td>10,843,986</td>
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</table>

There is a lot of information missing or not being used in existing CIHI Reports & Analyses.
The Growing Role of Emergency Departments in Hospital Admissions

Jeremiah D. Schuur, M.D., M.H.S., and Arjun K. Venkatesh, M.D., M.B.A.

Growing use of U.S. emergency departments (EDs), cited as a key contributor to rising health care costs, has become a leading target of health care reform. ED visit rates increased by more than a third between 1997 and 2007, and EDs are increasingly the safety net for underserved patients, particularly adult Medicaid beneficiaries. Although much attention has been paid to increasing ED use, the ED’s changing role in our health care system has been less thoroughly examined. EDs serve as a hub for prehospital emergency medical systems, an acute diagnostic and treatment center, a primary safety net, and a 24/7 portal for rapid inpatient admission. Approximately a quarter of all acute care outpatient visits in the United States occur in EDs, a proportion that has been growing since 2001. We examined the proportion of hospital admissions that come through the ED, hypothesizing that use of the ED as the admission portal had increased across conditions.

We analyzed data from the Nationwide Inpatient Sample (NIS), the largest all-payer database of U.S. inpatient care, from 1993 to 2006 (the most recent year for which the ED admission data are available on HCUPnet, an interactive Web-based tool that uses data from the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality). The NIS contains data from approximately 8 million hospital stays each year and is weighted to produce national estimates. We used HCUPnet to query the NIS regarding trends in the 20 clinical conditions for which patients were most frequently admitted to the hospital in 2006. Clinical Classifications Software was used to group the conditions into clinically meaningful categories. We excluded two conditions for which patients are rarely admitted through the ED (osteoarthritis and back problems), one psychiatric condition that was not consistently coded in claims data...
Hospital Admissions arising from the ED (US data)


Proportion of all inpatient stays involving admission from the ED increased from 33.5 to 43.8%
A large national survey and observational studies have found that it is difficult for patients to arrange a sick visit with a primary care provider in a timely fashion, because schedules are often full, after-hours service is unavailable, and many acute problems are not well suited to office practices lacking basic laboratory and imaging capabilities.

... the trend toward increasing percentages of ED admissions is unlikely to be reversed. New models of acute care delivery aiming to improve the use of scarce intensive, hospital-based services should take into account this change in patient and provider expectations.
## How About in Canada?

Data from one large BC Health Authority (F2011/12 DAD)

<table>
<thead>
<tr>
<th>Mode of Entry</th>
<th>Count</th>
<th>Pct</th>
<th>ALOS</th>
<th>Tot Days</th>
<th>Pct of Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Admissions</td>
<td>72,662</td>
<td>76%</td>
<td>9.3</td>
<td>678,978</td>
<td>74%</td>
</tr>
<tr>
<td>Direct Admits</td>
<td>23,397</td>
<td>24%</td>
<td>10.4</td>
<td>243,112</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Total Admissions</strong></td>
<td><strong>96,059</strong></td>
<td><strong>100%</strong></td>
<td><strong>10.4</strong></td>
<td><strong>922,090</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Maternity & Neonates excluded
ED includes unscheduled clinic & procedure admissions

| All Direct Admits              | 23,397 | 100% | 10.4 | 243,112  | 100%         |
| Acute InterHospital Transfers  | 7,217  | 31%  | 21.6 | 155,621  | 64%          |
| “Discretionary" Directs        | 16,180 | 69%  | 5.4  | 87,491   | 36%          |

| ED Admits + Acute IH Transfers | 79,879 | 83%  | 10.4 | 834,599  | 91%          |
| “Discretionary" Directs        | 16,180 | 17%  | 5.4  | 87,491   | 9%           |
| **All Admissions**             | **96,059** | **100%** | **9.6** | **922,090** | **100%** |
What CIHI Alone Cannot Tell Us
OECD Country Comparisons

4.3.2 Occupancy rate of acute care hospital beds, 1995 and 2007 (or nearest year available)

Canada: 50%

Source: OECD Health Data 2009.
StatLink: http://dx.doi.org/10.1787/718421246808
Supply of Acute Care Beds per 1,000 population
OECD data 2012 Report
Hospital Discharges (Admissions)
per 100,000 pop (OECD 2012 Report)
Can We Do More on ‘Avoidable Admissions’?
Asthma Admissions as ACSC indicator (from OECD)
The REAL Reason for Worry

Figure 18: Total Health Expenditure per Capita, Selected Use of Funds, Canada, 1975 to 2012

Source
National Health Expenditure Database, Canadian Institute for Health Information.
The **REAL** Value of the ED

- **To further** control the number of hospital ADMISSIONS
  
  – Because that is where the **biggest costs** are

<table>
<thead>
<tr>
<th>CTAS</th>
<th>Adm=N</th>
<th>Adm=Y</th>
<th>Total Visits</th>
<th>% Admitted</th>
<th>% of Visits</th>
<th>% of all Admits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>114</td>
<td>497</td>
<td>611</td>
<td>81%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>4,382</td>
<td>3,477</td>
<td>7,859</td>
<td>44%</td>
<td>12%</td>
<td>33%</td>
</tr>
<tr>
<td>3</td>
<td>27,204</td>
<td>5,925</td>
<td>33,129</td>
<td>18%</td>
<td>52%</td>
<td>55%</td>
</tr>
<tr>
<td>4</td>
<td>19,489</td>
<td>712</td>
<td>20,201</td>
<td>4%</td>
<td>32%</td>
<td>7%</td>
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<tr>
<td>5</td>
<td>2,236</td>
<td>77</td>
<td>2,313</td>
<td>3%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>All Visits</td>
<td>53,425</td>
<td>10,688</td>
<td>64,113</td>
<td>17%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
What Have We Tried So Far?
(Other ways to control ED volume)

- Public Education
- Media Advisories
- Nurse Lines
- Additional clinics

But these alternatives cost money too

- And Don’t Forget:
  - Consistent 3% to 5% admission rate for CTAS45
  - Marginal Cost of CTAS4&5 cases is Low
  - Rerouting slows & complicates care & adds to cost
So What **Are** the Right Questions?

- What would be the result of restricting ED access for patients with CTAS scores of 4 or 5?
  - Remember that all patients do not cost the same
  - Consider the *financial* consequences of delayed recognition of the need for admission

- What is the story with the CTAS-3’s?
  - Small changes capable of creating a large effect

- Are “Alternatives to the ED” likely to be better at limiting admissions and total in-hospital days?
What Do the Patients Tell Us?

CJEM May 2008: CTAS 4&5 Patients

Percent of CTAS45 Cases that:

• had a family physician (89%)
• had already seen a doctor about the same problem but was worse or not resolved (39%)
• referred to ED by another health professional (30%)
• needed a service not available outside an ED (33%)
• thought they had a condition that was urgent (43%)
What About Those CTAS-3 Cases?

• **Example:**
  - 32 year old female with 2 days of abdominal pain & vomiting. R/O appendicitis:
    - Re-hydrated with IV fluids
    - CT scan ruled out Appxy
    - Ectopic pregnancy considered and R/O
    - Dx as diverticulitis
    - Pain and vomiting managed with IV meds
    - Started on appropriate IV antibiotics
    - Discharged home much improved after 12 hrs in Emergency
    - No consultations or other visits required
Another CTAS-3 Example

• 44 year old male presenting with cough x 2 weeks & low grade fever
  – CXR showed pleural effusion
  – D-dimer elevated
  – CT confirmed multiple small pulmonary emboli
  – Pain controlled
  – Started on anti-coagulants & discharged home
  – To be followed by FMD (no consultations needed)
What’s the Point?

• Neither of these cases register easily in our data systems for either appropriate care or significant cost savings
• Neither could have been managed in an office setting (or would have required multiple visits and/or consultations)
• Any other routing would have added costs or possibly created an unnecessary admission

To our data systems they look the same as any “discharged CTAS-3’s”
Some Stats on CTAS-3’s

- Account for **half** of all in-hospital admissions
- What about the other half of CTAS-3’s that go home?

- Of the Discharged CTAS-3 Cases:
  - 32% presented with undiagnosed abdominal pain
  - 24% presented with undiagnosed chest pain
  - 64% other symptoms intolerant of significant delay
  - Prolonged Vomiting and/or Diarrhea
  - Injuries requiring imaging and/or IV treatment
  - Weakness, dizziness or falling, without a diagnosis
  - Pre-Septic problems (UTI, ST infections, cough & fever) that have failed oral antibiotic treatment
So Do We Want to Know & Track these Services?

• What if the ED already provides the best of all worlds?
  – Medically effective
  – Convenient for Patients
  – *Lower Cost* than the other alternatives

Failing to Recognize & Support an Existing Value Can be COSTLY
Can NACRS Help Us Measure Value?

• Imagine if we created & tracked **TWO new services** for CTAS/345 patients that go home from the ED:

  – **DXER:** *(Diagnosis Made in the ED)*
    • Where condition required diagnostics *not available outside the ED* to make or Rule Out a diagnosis of significant illness

  – **TRXER:** *(Prolonged Treatment in ED)*
    • Where condition requires treatment/diagnostics that require *prolonged care* or observation
A Problem or an Opportunity?

• Dr. Drew Digney
  – Emergency Physician
  – Head, Nanaimo Regional Hospital ED

• Martha Burd
  – Director, Modeling and Analysis, Performance Measurement, Analysis, and Reporting Branch (BC Ministry of Health)
  – MoH liaison to CIHI