Supply and Cost of "Treat and Release" Visits to Hospital EDs

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Motivations

- public concerns about ED capacity
  - (See IOM 2006 major review)
  - diversions are chronic, not peak load problem
  - crowding and quality deterioriation
  - disaster planning – what is the most cost-effective way to arrange for the future?
- Hospitals are paid mainly for services to insured persons
- Hospitals must accept critically ill persons or women in active labor, regardless of payment (EMTALA)

Objectives

- Analyze variation across hospitals in supply of ED visits
  - NOT assuming a totally accomodative supply
  - Allow for constraints on acceptable losses.
- Develop and employ new cost estimates for ED visits
- Implication: Discuss potential hospital reactions to new public policies in disaster planning

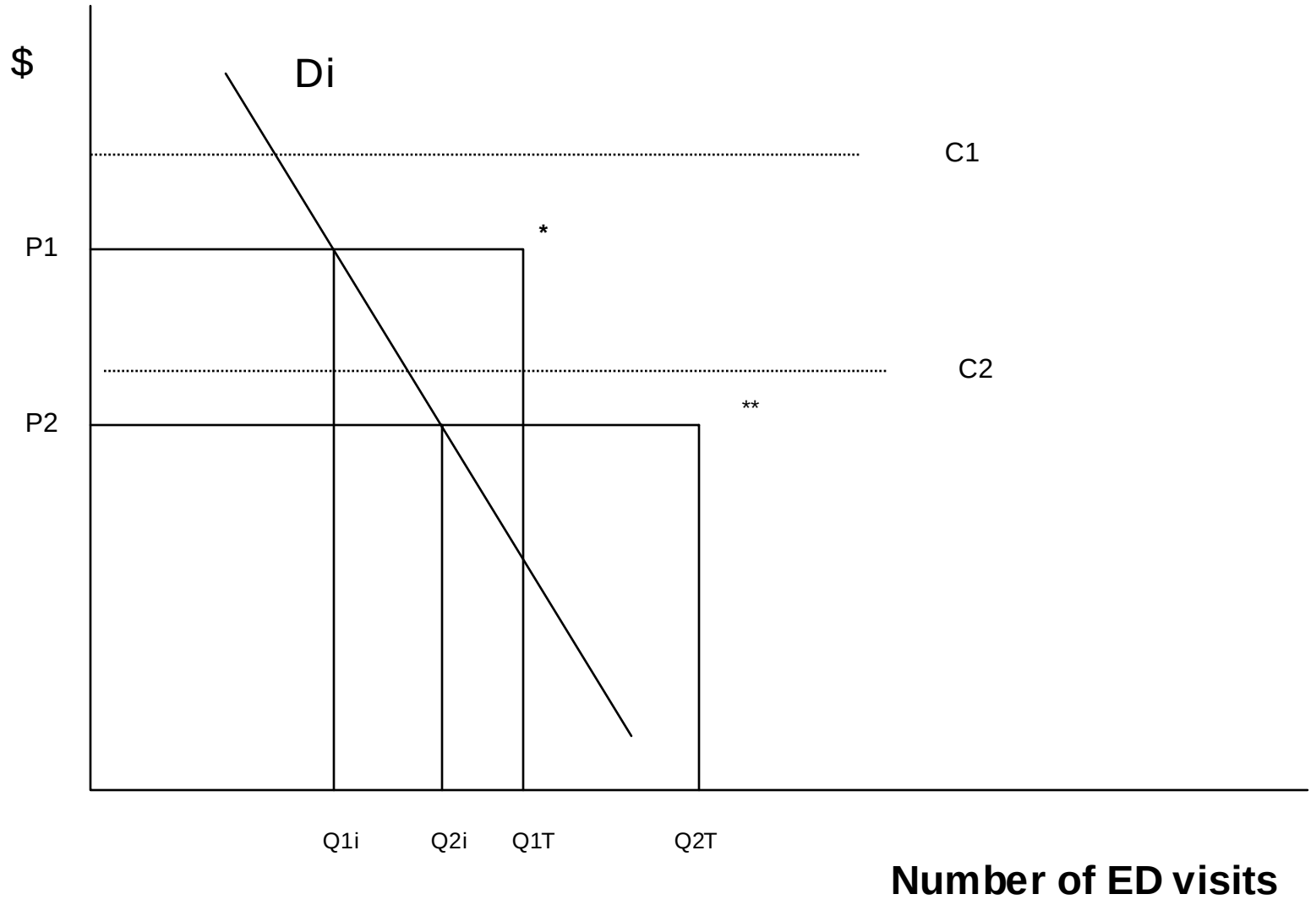
Conceptual Framework

- Planning model (differs from short-term management)
- Model: Constrained optimization
  - Maximize output, with constraint on acceptable total loss
  - Dranove (1988)
  - Non-urgent visits by uninsured would be accepted
  - Note: there are less generous models consistent with the EMTALA
- **some** demand for visits at a particular hospital may not be met (non-urgent cases)

Predicted Determinants of Observed Annual N of Visits

- Cost
  - lower cost → more non-urgent visits accepted (beware endogeneity of measured cost)
- Hospital ownership, size, teaching mission
  - Larger hospital may be better able to shift some resources to the ED when needed
  - Greater tolerance for loss at teaching and gov't owned hospitals.
  - Investor-owned: lower tolerance for losses in ED
- Demand
  - price and availability of alternatives
  - area demographics

Figure 1: Cost and Number of ED Visits Supplied (Plan)



Data Sources

- HCUP: 8 states supplying all visits with diagnoses and detailed ED charges in 2003. (11 million visits)
- 560 hospitals with clean reports to CMS with accounting by cost center
- MEPS data by region showing physician charges and revenue per visit in ED, by region
- AHA, ARF

We can't observe

- Price actually paid by the insured
  - not a problem for policy discussion (promise to compensate for extra cost, and losses associated with disasters)

- Insurance mix in the hospital's drawing area.
  - Imperfect proxies: Poverty rate, Unemployment rate, Education levels

Admissions from the ED

- For patients admitted from the ED (about 12% of total visits) we don't have the same information as for the T&R visits.
  - ED services buried in the inpatient record
- Hypothesis: If a hospital expects a lot of seriously ill patients requiring admission, costs for T&R visits are likely to be higher (extra equipment and skilled staff on hand).

Measurement steps

- **Cost** measurement:
  - described more thoroughly in a methods paper on the AHRQ website: http://www.hcup-us.ahrq.gov/reports/methods.jsp
  - departmental cost/charge ratios at each hospital; detailed charges at each hospital; consistency of billing for physician fees.
- **Casemix index** for the general costliness based on primary diagnosis; area wage index
- Control for **comorbid conditions**: calculate rates per hospital of 7 selected types of comorbidities
- for each hospital, determine from inpatient records the number of **persons admitted from the ED**

Findings: Cost Regression

- Dependent: Log of total cost per T&R visit

- Independent variables:
  - log of area wage index (++)
  - log of casemix index based on primary dx (++)
  - log of hospital bedsize
  - rates of several comorbidities (mixed)
  - gov't ownership
  - teaching hospital (++)
  - log of share of total ED visits admitted (++)

Findings: Observed Supply

- Dependent: log of N of T&R visits
- independent variables
  - log of cost [fitted value] (--)
  - log of hospital size [beds] (++)
  - gov't owned (-)
  - teaching
  - alternatives (--): hospitals with ED per 100,000; federal clinics per 100,000; general physicians per 10,000; other physician ratios (ARF)
  - Demographics and demand proxies (education, birth rate, poverty rate, unemployment in local population
    - (mixed and interesting effects)

Discussion

- Some loose ends
  - **Why** does hospital bedsize increase planned supply of ED visits?
    - resources that can be shared with ED?
    - fewer bottlenecks in surgery? (Litvak, 2001)
    - ED is a marketing tool to fill beds?

  A measure of payer mix in market area would be helpful
    - payer mix observed in a particular hospital is endogenous
    - proxies had confounding information (unemployment, education)

Policy Implications and Strategy

- A public agency seeking greater ED capacity has to compensate hospitals for extra losses in disaster situation
- Two approaches in disaster planning:
- **Direct approach: Expand ED capacity now**. More costly than necessary due to backlog of non-urgent visits that would fill the new capacity
- **Indirect approach**: invest in expandable standby clinic capacity (outside hospitals) for non-urgent care

Indirect Strategy (cont'd)

Anticipate how hospitals lose money in a disaster:

(a) higher average cost of patients seen in ED

AND

(b) adverse change in payer mix

- therefore – a public agency could promise to compensate for extra net losses
- if not, hospitals might **cut** capacity in anticipation of a disaster.
- Delicate balance: don't want to go back to the days of full ex post cost reimbursement → mixed system

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