Comparison of Methods Examining Hospital Use Variation Among Elderly Heart Failure Patients

M.K. Ong[1], J.J. Escarce[1], A. Ang[1], W. Xiong[1], A.D. Auerbach[2], A. Chun[3], B. Davidson[3], T.G. Ganiats[4], S. Greenfield[5], M. Gropper[2], S. Malik[5], P.S. Romano[6], C.M. Mangione[1]

[1]University of California, Los Angeles; [2]University of California, San Francisco; [3]Cedars-Sinai Medical Center; [4]University of California, San Diego; [5]University of California, Irvine; [6]University of California, Davis

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Study Goal

Understand underlying causes of hospital resource use variation observed by the Dartmouth studies among the six medical centers

Research Questions

- Does variation persist in a single condition?
- Does variation persist at the hospitalization level?
- Does principal diagnosis matter?
- Does risk-adjustment methodology matter?
- Does including living individuals change results?

Full Study Sample

<u>All Medicare hospitalizations</u>

- At the six medical centers
- With a principal diagnosis of HF
- Occurred during 2001-2005
- For individuals age 65+
- Either expired or survived

- N = 7,301 (5,011 individuals)

Restricted Sample

<u>Exclusion of high utilizers</u>

- Patients with transfer from outside hospital
- Patients with history of / eval for transplant
- Patients with a surgical DRG
  - except for pacer/AICD placement or valve replacement

- N = 6,809 (4,696 individuals)

Outcomes

<u>Resource use</u>

- Length of stay
- Total hospital costs

- Data source: administrative data

<u>Health outcomes</u>

- Inpatient mortality
- 30-day mortality
- 180-day mortality

- Data source: administrative data and National Death Index

Risk Adjustment Approaches

Model 1 (Dartmouth)
- Age, gender, ethnicity
- Comorbidities
  - 12 chronic illnesses

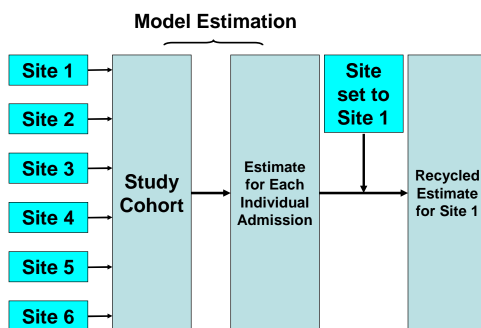
Model 2 (Expanded)
- Age, gender, ethnicity
- Comorbidities
  - 26 comorbidities used by AHRQ HCUP
- Additional covariates
  - Medicaid dual eligibility, surgical DRG, year, (transfers & transplants)

Risk Adjustment Approaches: Statistical Models

Model 1 (Dartmouth)
- Length of Stay
  - Overdispersed Poisson
- Costs
  - Ordinary Least Squares

Model 2 (Expanded)
- Length of Stay
  - Zero-truncated Poisson
- Costs
  - Zero-truncated negative binomial

Results: "Recycled" Estimates



Limitations

- Cannot identify causal relationship between resource use and mortality
  - Increased resource use may provide important benefits
- Principal diagnosis hospitalizations not equal to 6 month or 2 year utilization patterns
  - Provides unit of analysis that medical centers can act on
  - Avoids hospitalizations not due to chronic illness
- Risk-adjustment may miss severity of illness
  - Pilot work underway with clinical measures

Conclusions

- Resource use variation is reduced but persist
  - when using an expanded risk-adjustment model
  - when studying both expired and non-expired patients
  - substantial variation due to high utilizer hospitalizations
- Potential association between greater resource use and lower mortality
  - focusing only on expired individuals cannot identify such associations
  - Optimal resource use allocation should account for health outcomes

Comments on Understanding Regional Variation in Health Care

- Appropriateness of aggregation
- Medicare not equal to all care
- The role of personal income
- How to count physicians

Comments on Understanding Regional Variation in Health Care: Aggregation

- Aggregate studies
  - Identify potential problems
  - Uses the viewpoint of policymakers
- Disaggregate studies
  - Needed to understand aggregate studies
  - Better positioned to identify solutions
- Both types of studies are needed

Comments on Understanding Regional Variation in Health Care: Medicare

- Medicare reimbursements not equal to true cost of care
  - Site cost data closer to true cost of care
- The federal government cares about Medicare reimbursements
- Studies are needed for Medicare and non-Medicare populations

Comments on Understanding Regional Variation in Health Care: Income

- Income and class matter
  - Our studies use Medicaid dual eligibility as a proxy measure
  - Individual-level clinical or administrative data often lack direct information
- Risk-adjustment models should account for income/class factors

Comments on Understanding Regional Variation in Health Care: Physicians

- Our work cannot comment on this at this time
- Counts of generalists and specialists may miss interaction between the groups
  - (Lack of) Coordination costs are not insignificant

Workforce implications

- There likely is benefit from more spending
  - Corollary: likely benefit from more physicians
- Is the spending worth the benefit?
  - This is the key question
  - Would the public agree that spending and more physicians are worth the benefit if they had to directly pay for it?