Increasing Throughput in Health Services Organizations

by

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Decision & Information Technologies
Man Dies After Surgeon Operates on Wrong Side of Head

- Rhode Island Hospital in Providence
- 86-year-old man dies three weeks after surgery
- This was 3rd wrong-side surgery error in the hospital’s neurosurgery unit in 6 years

The hospital's public reaction

- In the surgical team’s haste to treat the patient, it didn’t follow proper procedures

Hospitals need help!
Areas of Research Interest

- Cardiac surgery line throughput
  - Carter Price (Ph.D. student), Ed Wasil
  - ICU vs. IMC beds
  - We used simulation
  - Increased throughput by 17%
  - Increased profit by $2.67 million/year

- A simplified view

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Cardiac Surgery → ICU → IMC → Home, local hospital or other location
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Areas of Research -- continued

- **Hospital bed management**
  - The ultimate goal
  - Impacts the utilization of operating rooms, surgical scheduling, admissions, referrals, the emergency department, diversions, etc.
  - Gemstone Project, 13 students, 3-year effort
  - E.g., the OR, random demand, and non-random demand

- **Reducing PACU backlog and boarding**
  - Carter Price (Ph.D. student), Ed Wasil
  - Part of hospital bed management
  - Short-term goal
  - E.g., discharge by noon rather than 4 pm
Reducing PACU Backlog and Boarding

- Patients flow from the PACU to intensive care beds
- Surgeries are scheduled with surgeons in mind, without taking patient flow into account
- Boarding occurs when a patient is forced to remain in the PACU overnight
- Backlog and boarding increase the likelihood that surgeries will be put on hold, since patients have to remain in the OR
- On 7/17/07, 13 patients spent the night in the PACU due to a lack of intensive care beds
Current Status of the PACU Project

- An IP was formulated to balance the in-flow of scheduled surgeries with the out-flow of patients being discharged

- Based on 6 months of recent data, the IP reduced the number of boarders by 26%

- We are in the process of refining the model and expect to implement it within a year