

## SURGERY SCHEDULE SMOOTHING INITIATIVE BOSTON MEDICAL CENTER

Publication Year: 2004

**Summary:** A redesign of the elective surgery schedule to open slots for operating rooms when the emergency department was busier

**Hospital:** Boston Medical Center

**Location:** One Boston Medical Center Place  
Boston, MA 02118

**Category:**

- E: Exit From ED

**Key Words:**

- Inpatient Hospital Bed Availability
- Patient Volume
- Queuing
- Scheduling

**Hospital Metrics:**

*(Taken from FY2005 AHA Annual Survey)*

- Annual ED Volume: 124,447
- Hospital Beds: 624
- Ownership: Not-for-profit
- Trauma Level: 1
- Teaching Status: Yes

**Tools Provided:**

- Surgery Smoothing Presentation  
This tool is an 11-slide presentation explaining the initial results after the first month of elective surgery smoothing at Boston Medical Center, and is used to explain the outcomes after implementing a schedule for performing surgery at Boston Medical Center.

**Clinical Areas Affected:**

- Anesthesiology
- Emergency Department
- Inpatient Units
- Surgery

**Staff Involved:**

- Administrators
- Physicians

## **Innovation**

The theory of “smoothing variability” suggests that a hospital needs to control, or smooth, the variables affecting bed availability.

When there are no empty beds in a hospital, ED patients who have been admitted remain in the ED. And when no ED beds remain, ambulance diversion begins. Rather than accepting that such ambulance diversions are unavoidable, Boston Medical Center examined the causes of the ED’s overcrowding and found that it was in the operating room. By working with surgeons, the hospital redesigned the elective surgery schedule to open slots for operating rooms when the emergency department would be busier.

ED Vice Chair Dr. Niels Rathlev reports that Boston Medical Center’s elective vascular surgery schedule was becoming very concentrated on Tuesday, Wednesday and Thursday. This was creating a bottleneck on those days while Monday and Friday were fairly open.

## **Results**

As a result of the limit on daily surgeries, schedules are now much more equally distributed from Monday through Friday. Because of the smoothing initiative, the amount of time ED patients wait for an inpatient bed has decreased from about 3 hours to about 2 hours and 10 minutes. This has been an important and very beneficial initiative (See [Surgery Smoothing Presentation](#)).

## **Innovation Implementation**

The Chief of Surgery and Chief of Anesthesiology led the process of implementing a surgery schedule smoothing initiative. A rapid cycle test was conducted that revealed its potential benefit. Meetings were held with the vascular surgeons to discuss the concept. It was somewhat of a challenge to have surgeons change their clinic schedules in light of the new operating schedule, but they were promised that if they would agree to a maximum of two elective vascular surgeries per day, they could schedule more surgeries over the course of the week (e.g. 10 rather than 7 or 8).

Due to the success of this initiative for vascular surgery, it has been expanded to the catheterization lab and other elective surgical services.

## **Advice and Lessons Learned**

It was important to have data on utilization available so that the bottleneck could be identified and improvements could be made.

## **Tools to Download**

### **Surgery Smoothing Presentation**

This tool is an 11-slide presentation explaining the initial results after the first month of elective surgery smoothing at Boston Medical Center, and is used to explain the outcomes after implementing a schedule for performing surgery at Boston Medical Center.

# Initial Results after the First Month of Elective Surgery Smoothing at BMC

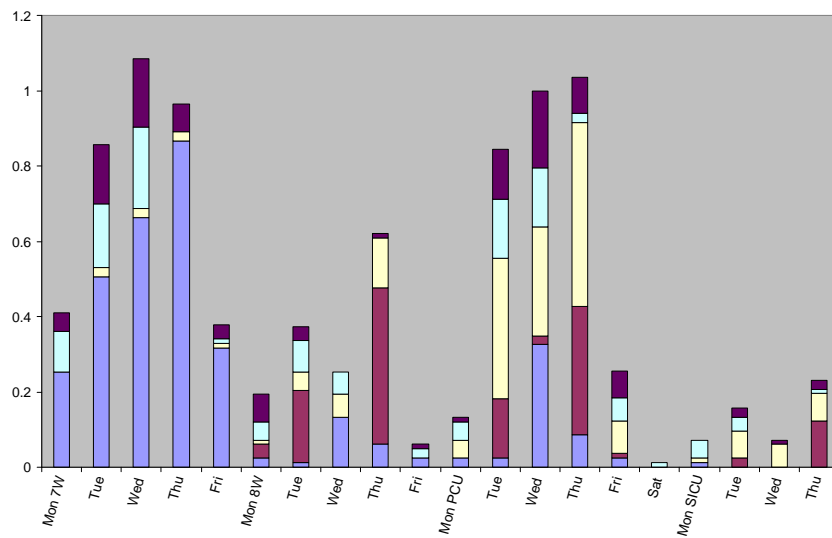
January 5, 2004

The **Inpatient function** of the hospital is a set of **interdependent systems** that has as its **primary goal** to be able to serve well as many patients as possible. The management team must continuously study and root out the **constraints** in these systems to reach the **primary goal**. The key interdependent systems include: the discharge system, the patient departure and bed cleaning system, the bed assignment and patient arrival system, the Emergency Department, and the elective admission process (surgery).

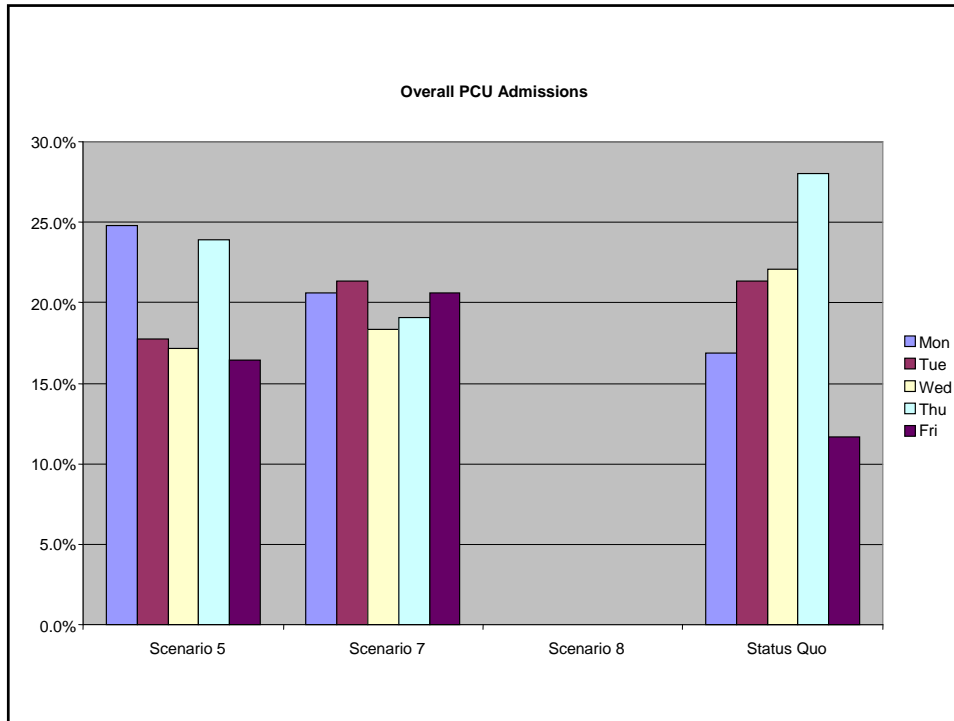
## Elective Surgery Smoothing (Demo Grant)

- Smoothing individual services: Vascular and CT surgery done; other services in progress
- Separating urgent from scheduled: in progress

Bed Need by Day of Week for Vascular Surgery (18 months of data)

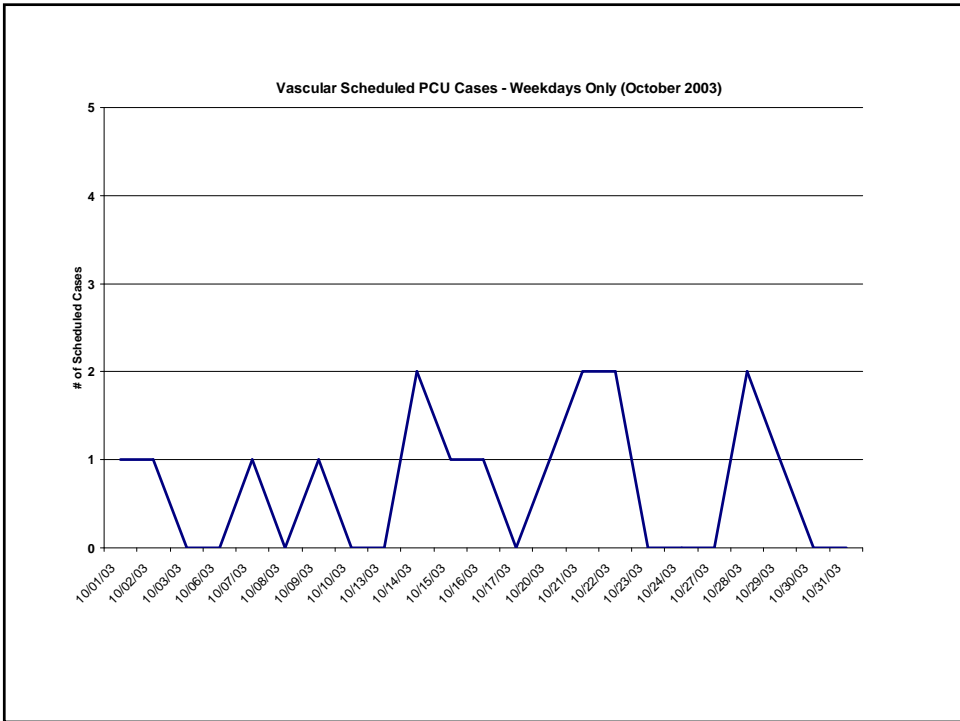
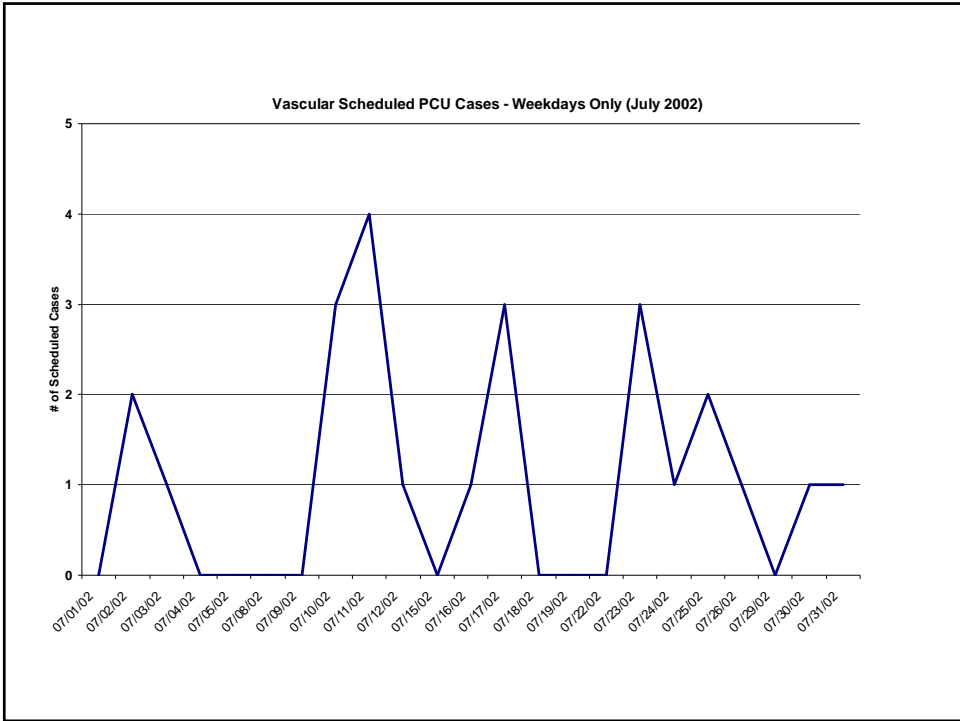


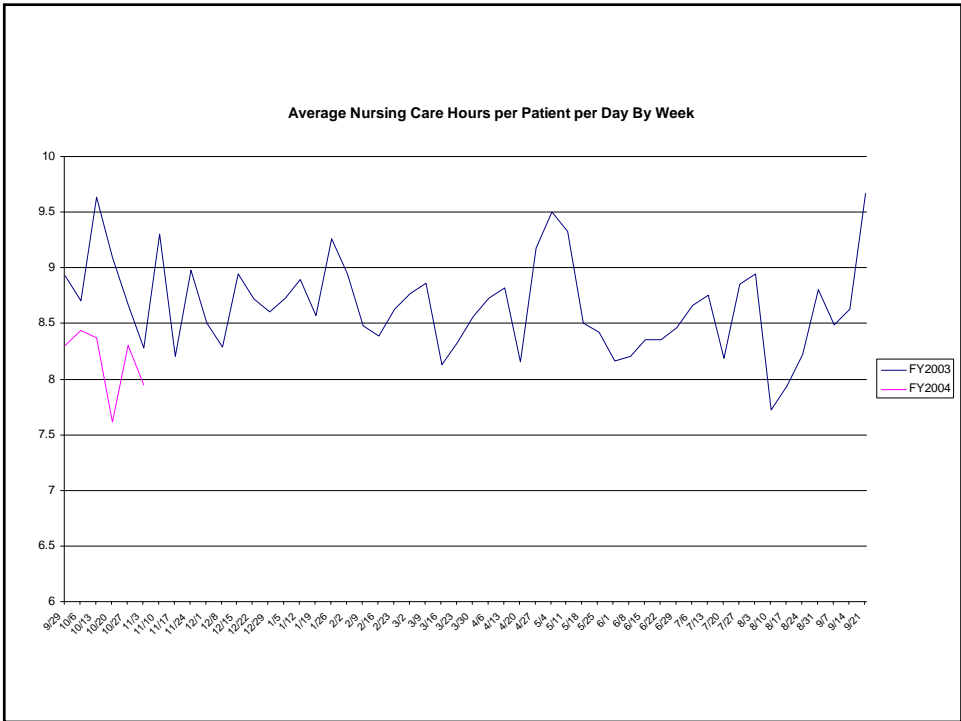
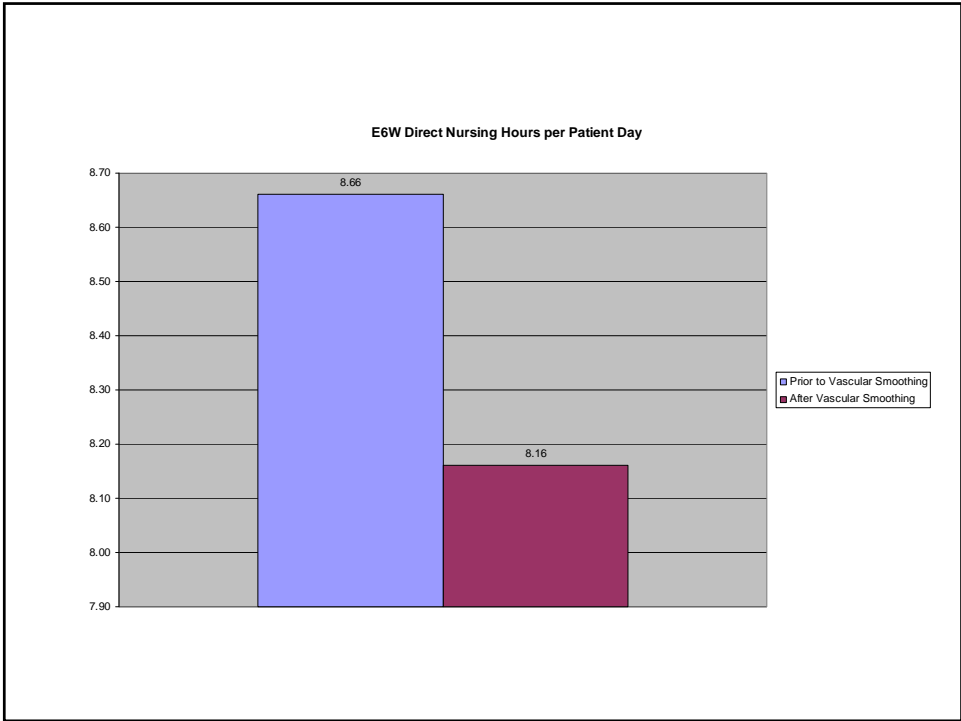
Colors represent different surgeons

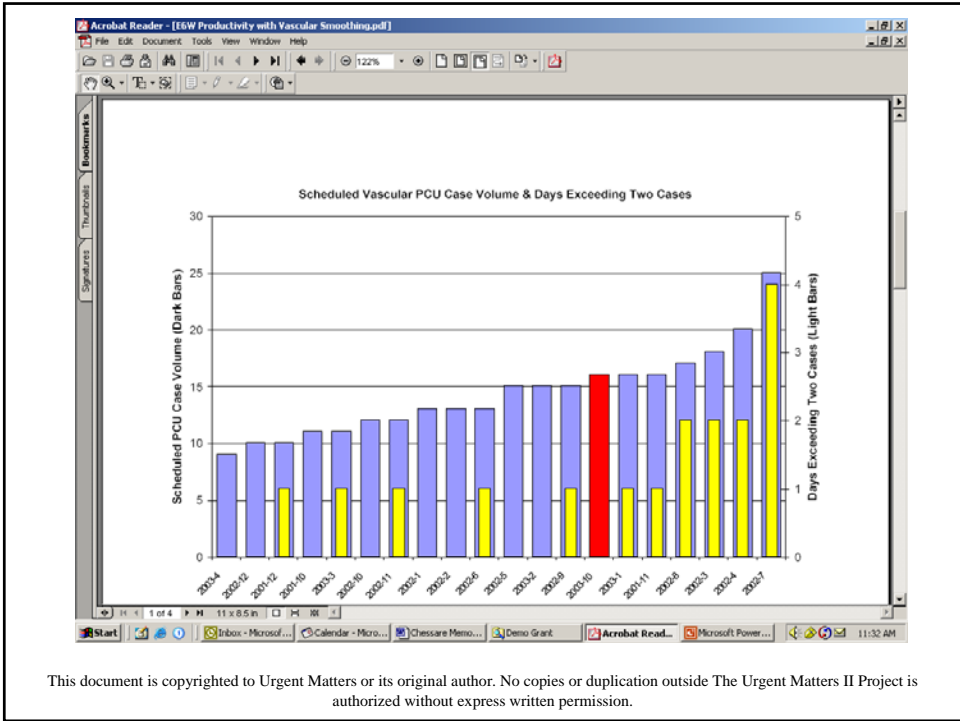


## Vascular Changes

- You can't smooth if you have no OR Time: we had to guarantee Vascular surgeons time for cases on Monday and Friday
- We set a cap on PCU beds at 2 per day
- Physicians now have to specify bed need at time of scheduling







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