

Project Submission:  
2009 Delaware Valley Patient Safety Award

**HOSPITAL OF THE  
UNIVERSITY OF PENNSYLVANIA**

*“Improved Patient Outcomes and Satisfaction  
Associated with Restructuring the  
Trauma/Emergency Survey Service”*

# ***Improved Patient Outcomes and Satisfaction Associated with Restructuring the Trauma/Emergency Surgery Service***

## **The Health Care Improvement Foundation 2009 Delaware Valley Patient Safety Award**

### ***Abstract:***

The Division of Traumatology and Surgical Critical Care provides care for injured patients, patients with emergent non-traumatic surgical conditions (e.g., abdominal emergencies, severe soft tissue infections), and patients admitted to the Surgical Intensive Care Unit. Patients with traumatic injuries or surgical emergencies are rapidly evaluated and treated by a team that includes a Trauma/Emergency Surgery attending surgeon who takes call in the hospital 24 hours a day, 365 days a year.

In FY08, the Trauma/Emergency Surgery Service (Trauma/ESS) treated almost 4000 acutely injured and ill patients (excluding Surgical Critical Care). It was difficult to spend adequate time with individual patients, to follow patients' clinical courses, to communicate important information among providers. Restructure of the service improved inpatient care by dividing one large inpatient service into three smaller, more manageable services.

Patient outcomes, quality improvement, and patient satisfaction show sustained improvement for nearly every metric studied. Patient census on each service remains manageable by consensus of attending physicians, fellows, and residents.

### ***Title:***

**Improved Patient Outcomes and Satisfaction Associated with  
Restructuring the Trauma/Emergency Surgery Service**

### ***Goals:***

Until the current fiscal year, Trauma/Emergency Surgery Service (Trauma/ESS) existed as a single inpatient clinical service. With Trauma/ESS growing in size and acuity, the existing structure of providing care was unsatisfactory. The clinical workload for attendings, residents, and nurse practitioners was overwhelming. The primary goal of restructuring the service was to improve inpatient care by dividing one large inpatient service into three smaller, more manageable services.

### ***Baseline Data/Interventions/Results:***

Previous to Fiscal Year 2009 (July 2008 – June 2009), two Trauma/ESS attending surgeons shared daytime rounding and operative duties for one week at a time on a single Trauma/Emergency Surgery Service. Separate attending surgeons treated and admitted new patients to the service in 24-hour shifts. This structure had evolved over time and was satisfactory when the service was less active. However, the inpatient census of Trauma/ESS was typically greater than 40 patients, and the existing structure was unsatisfactory for a

large, busy inpatient service: It was difficult to spend adequate time with individual patients, to follow patients' clinical courses, to communicate important information among providers, and to perform these duties within the confines of Accreditation Council for Graduate Medical Education (ACGME) duty hour regulations for residents and fellows. Also, patient list management—performed by manually entering data into a secure Microsoft Access database—was becoming time-consuming and error-prone, further compromising care.

During Fiscal Year 2008 (July 2007-June 2008), the Divisional leadership formulated a restructuring of Trauma/ESS, which was implemented on July 1, 2008. The single, large Trauma/Emergency Surgery Service was divided into three smaller services: two Trauma Services and one Emergency Surgery Service. Each service was to be led by an attending surgeon and have a dedicated team of residents with some cross-coverage. Each service provided daytime inpatient care and performed elective and emergent operations. The two Trauma Services alternated trauma coverage every 24 hours. The Emergency Surgery Service continued to cover surgical emergencies every day. At night, a different attending continued to treat new patients, admitting them to the appropriate service. The new structure required one additional attending surgeon per week (52 weeks of clinical coverage per year) and two additional residents per month. The attending coverage of Surgical Critical Care was not changed.

Concurrent with the development of restructuring Trauma/ESS, enhancements to the patient order entry system, Sunrise Clinical Manager (SCM), allowed management of patient lists. SCM-based patient list management would improve accuracy by automatically populating basic fields, such as name, date of birth, medical record number, date of admission, attending physician of record, and covering provider. These fields would no longer be subject to errors, typographic and otherwise. Trauma/ESS migrated from the Access database to SCM on July 1, 2008.

Patient outcomes were studied using the Trauma Registry and Clinical Effectiveness and Quality Improvement (CEQI) databases. Patient outcomes, quality improvement, and patient satisfaction showed sustained improvement for nearly every metric studied:

1. Hospital-acquired infections decreased in FY09 versus FY08.

	FY08	FY09	absolute change	relative change
<b>CLABSI (per 1000 patient days)</b>	1.04	0.08	-0.96	<b>-92.1%</b>
<b>UTI (per 100 discharges)</b>	4.92	2.30	-2.62	<b>-53.3%</b>
<b>SSI (per 100 discharges)</b>	7.37	5.20	-2.17	<b>-29.4%</b>

CLABSI: Central line-associated blood stream infection; UTI: urinary tract infection; SSI: Surgical site infection.

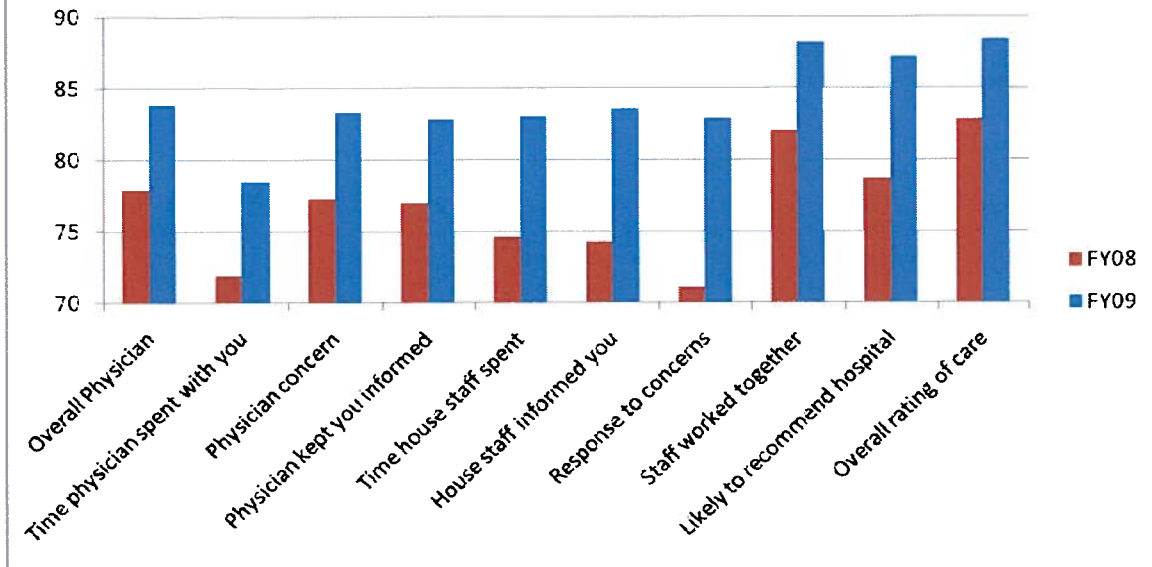
2. Mortality rates for injured patients (i.e., excluding Emergency Surgery Service) decreased in FY09 versus FY08, despite higher volume, higher injury severity and higher mean age.

	FY08	FY09
<b>Trauma admissions</b>	1162	1241
<b>Mean Injury Severity Score</b>	10.2	10.6
<b>Mean age</b>	41.8	42.5
<b>Trauma length of stay (days)</b>	5.3	4.7
<b>Trauma mortality</b>	13.3%	12.0%

3. Trauma/ESS patient satisfaction improved in FY09 versus FY08 (and exceeded FY09 targets) in all categories related to care provided by physicians.

## Patient Satisfaction (Press Ganey)

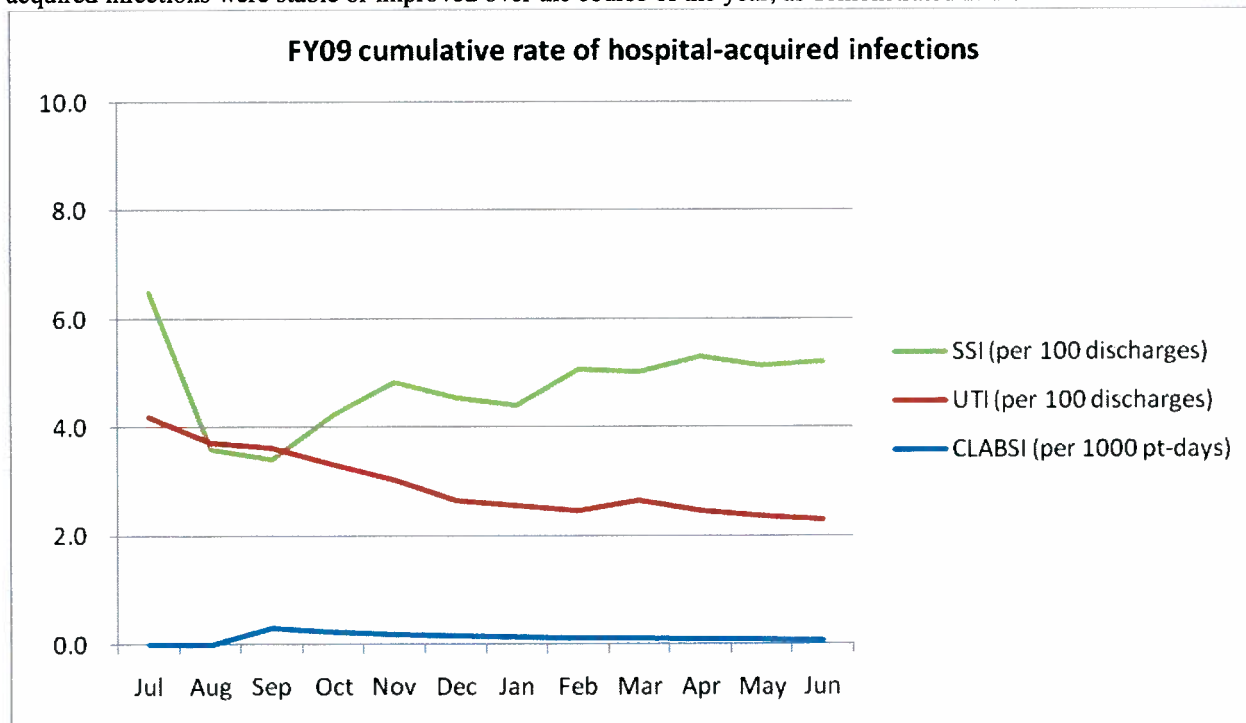
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4. Length of stay, total inpatient days, and readmission rates all decreased in FY09 versus FY08, which increased patient value and new patient access to Trauma/ESS care.

	FY08	FY09	absolute change	relative change
<b>Trauma/ESS length of stay (days)</b>	8.52	6.88	-1.64	<b>-19.2%</b>
<b>Trauma/ESS 30-day readmission for SSI</b>	0.57%	0.37%	-0.20%	<b>-35.5%</b>
<b>Trauma total inpatient days</b>	6159	5833	-326	<b>-5.3%</b>

Patient census on each service remains manageable by consensus of attendings, fellows, and residents. Cumulative rates of hospital-acquired infections were stable or improved over the course of the year, as demonstrated in the table below.



Patient satisfaction improvements have been sustained for 4 consecutive quarters. The quarterly differences in Press Ganey scores are summarized below.

	FY09 Q1		FY09 Q2		FY09 Q3		FY09 Q4	
	vs FY08	vs goal	vs FY08	vs goal	vs FY08	vs goal	vs FY08	vs goal
<b>Overall Physician</b>	+6.2	+4.0	+9.9	+7.7	+4.8	+2.6	+3.6	+1.4
<b>Time physician spent with you</b>	+8.5	+5.7	+9.1	+6.3	+4.5	+1.7	+5.0	+2.2
<b>Physician concern</b>	+7.2	+4.9	+9.8	+7.5	+5.6	+3.3	+2.3	+0.03
<b>Physician kept you informed</b>	+7.0	+4.7	+11.0	+8.6	+3.7	+1.4	+2.7	+0.4
<b>Time house staff spent</b>	+7.5	+5.0	+14.0	+11.8	+6.5	+4.0	+6.7	+4.2
<b>House staff informed you</b>	+7.9	+5.3	+13.0	+10.7	+9.4	+6.	+7.9	+5.3
<b>Response to concerns</b>	+12.5	+9.6	+9.5	+6.6	+13.8	+10.9	+11.1	+8.2
<b>Staff worked together</b>	+7.7	+5.9	+6.3	+4.5	+7.3	+5.5	+3.9	+2.1
<b>Likely to recommend hospital</b>	+9.5	+7.4	+9.6	+7.5	+7.4	+5.3	+7.6	+5.5
<b>Overall rating of care</b>	+4.0	+2.3	+8.0	+6.3	+6.1	+4.4	+5.0	+3.3

***How this initiative may be replicated throughout the region:***

There were three objectives keys to making this project successful:

1. The Division's commitment to objective self-evaluation and *continuous* performance improvement.
2. Broad institutional support for changing the Trauma/ESS structure, including support from The Admissions Center, Department of Surgery, Department of Orthopaedic Surgery, Department of Neurosurgery, Department of Emergency Medicine, Department of Physical Medicine and Rehabilitation, and Nurse Managers of units caring for Trauma/ESS patients.
3. Enhancements to Patient Order Entry System (Sunrise Clinical Manager) to facilitate patient list management.

Other hospitals/health systems could replicate this success by clear and open communication with their "front-line" staff. An honest evaluation of divisional structures, functions, responsibilities and patient flows are needed. "*Putting the patient first*" should be the main focus of any re-evaluation and improvement.