Resilience
Two Projects

Employee Absenteeism Due to Pan Flu

- Continuity of Operations
- Published Absenteeism rates: 10%-40%
  - 10%: HHS, *Pandemic Influenza Plan*
  - 40%: OSHA: *Preparing Workplace….Pandemic*
  - 40%: HSC: *National Strategy for Pandemic Influenza…*
- Different Methods, different models, different assumptions
- Overall rates not of value for planning
  - need daily rates and trend

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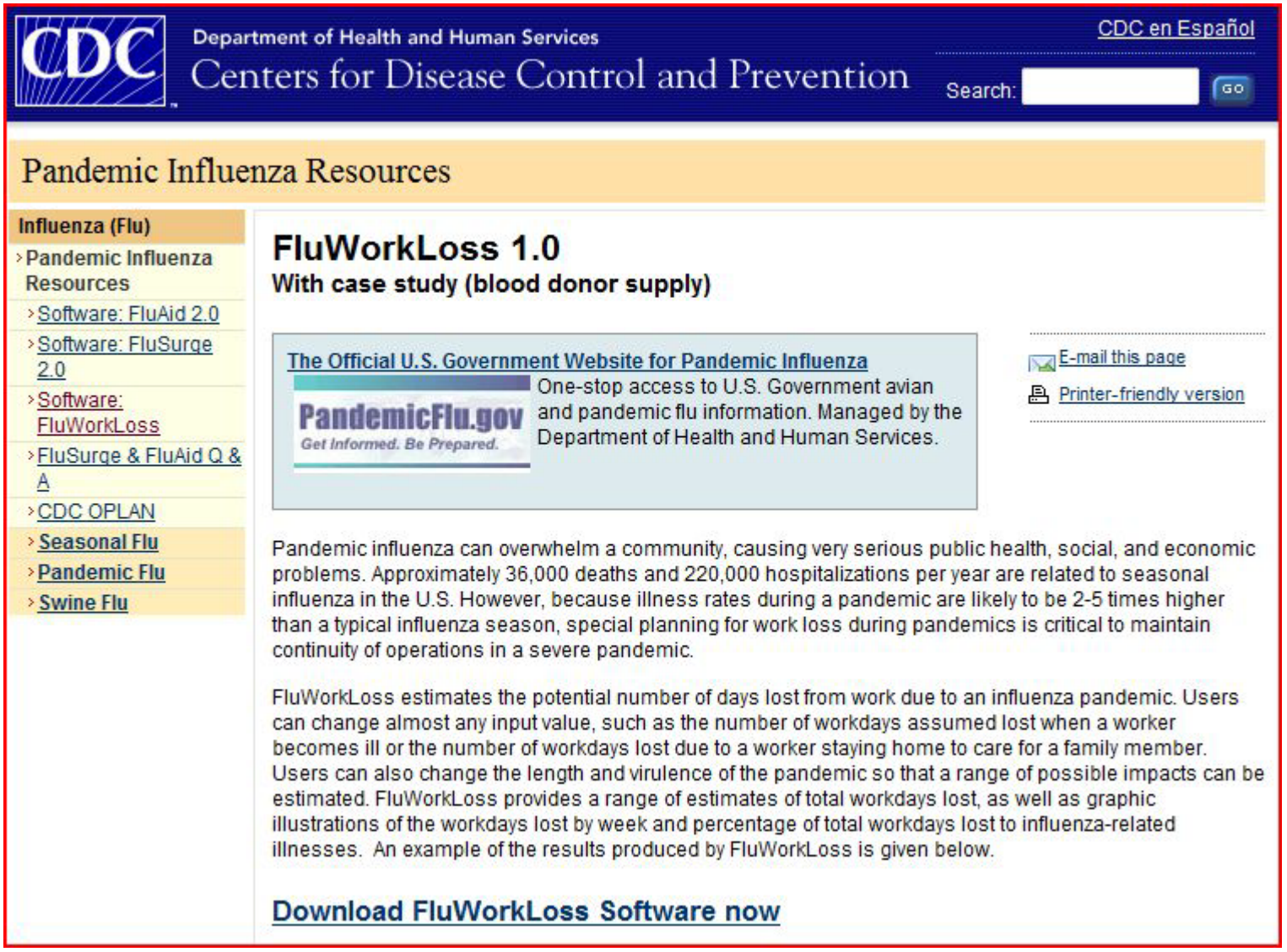
CDC "FluWorkLoss 1.0



www.cdc.gov/flu/tools/fluworkloss/index.htm

Input (Hopkins) Data

Number of Employees	
0-19 y.o.	510
20-64 y.o.	33,586
65+ y.o.	930
Total	35,026

Employment Rate	100%
Cohabit Rate	100
Work Days/Wk	5

Days Lost Caring for Family Members Due to	
Death	10
Hospitalization	7
Outpatient Visits	3
Self Care	1

Days Lost Due to Own Illness	
Death	40
Hospitalization	7
Outpatient Visits	3
Self Care	1

Work Loss Results

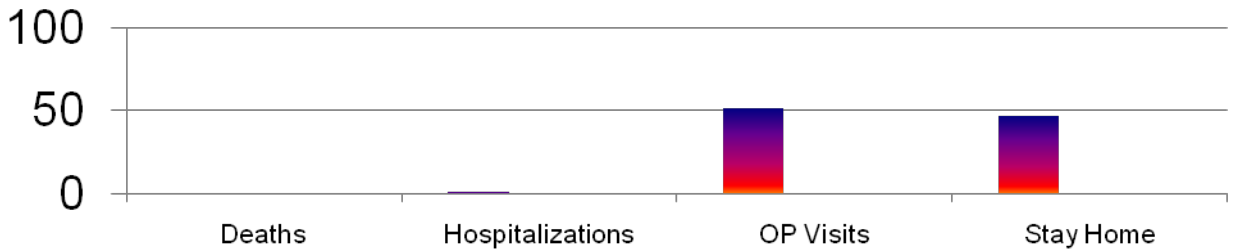
8-wk duration; 35% Hit Rate

Work Days Lost	47,270
Deaths	29 (0.2%)
Hospitalizations	154 (1.3%)
OP Visits	6,321 (51.6%
Stay Home	5,755 (47.0%)

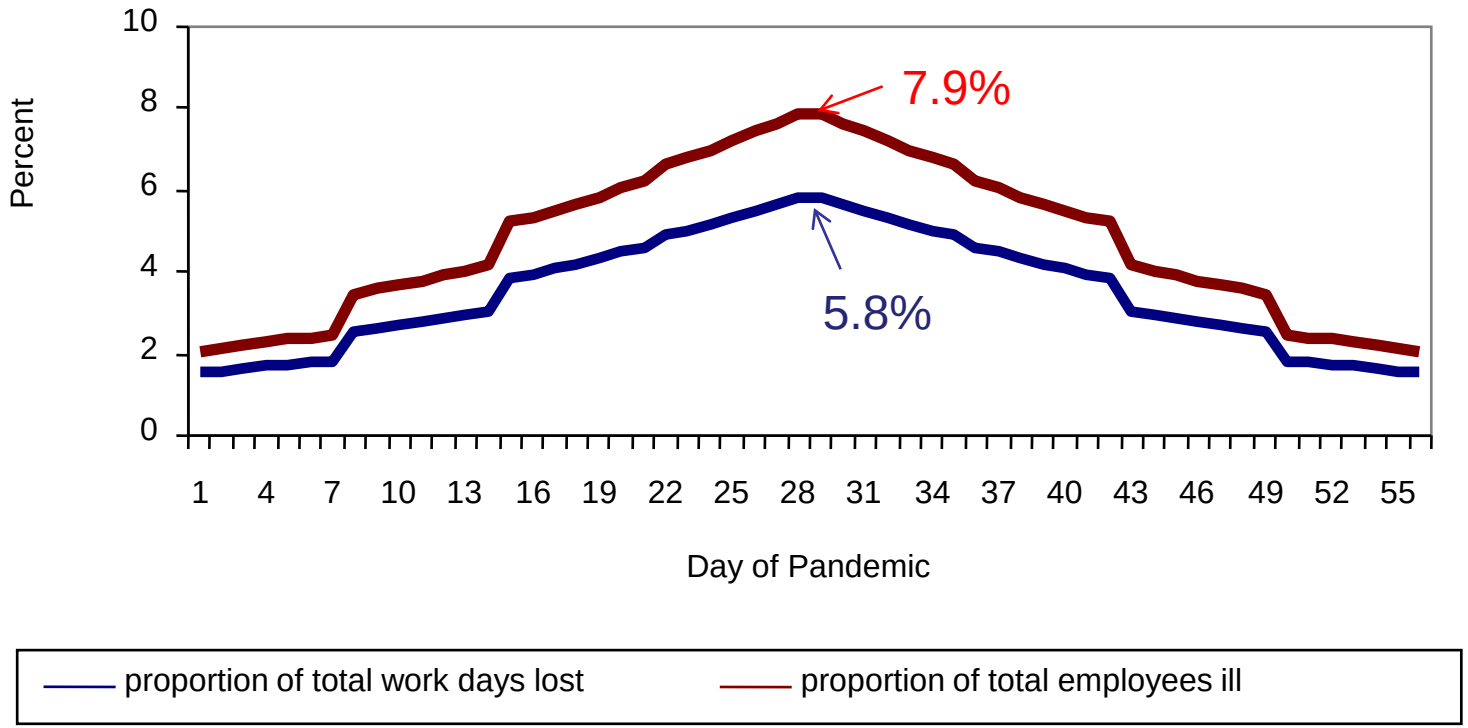
(%) = % of all employee illnesses

Work Loss Results

Work Days Lost	47,270	CDC Predictions (1958/68)
Deaths	29 (0.2%)	(0.2%)
Hospitalizations	154 (1.3%)	(1.0%)
OP Visits	6,321 (51.6%	(50%)
Stay Home	5,755 (47.0%)	

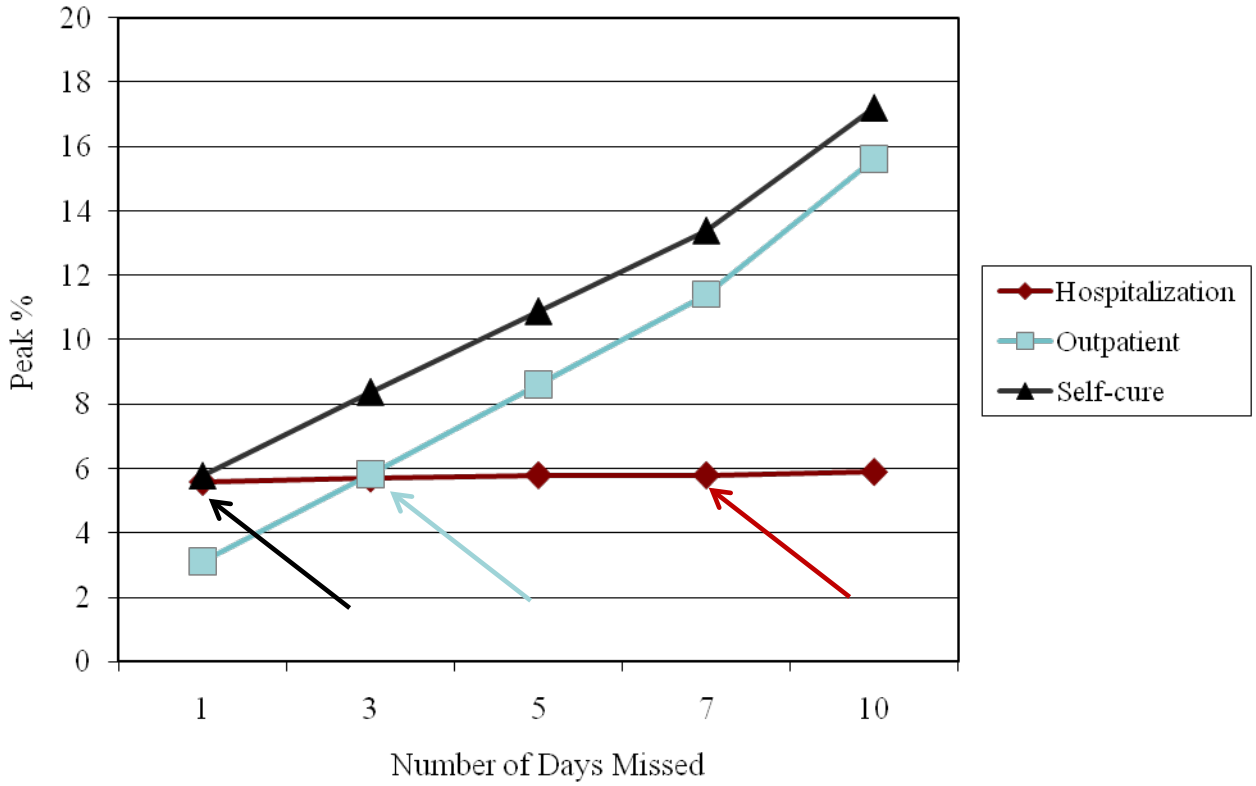


Distribution of work-days lost and proportion of work-force ill



three discrete illness-related events.

Sensitivity Analysis



Limitations

- Program is not sensitive for our situation
  - Cohabitation (200% increases loss to 9.6% WD)
  - Kids (ages, attack rates)
- Doesn't distinguish between individual illness and home illness
- Does distinguish FT, from PT

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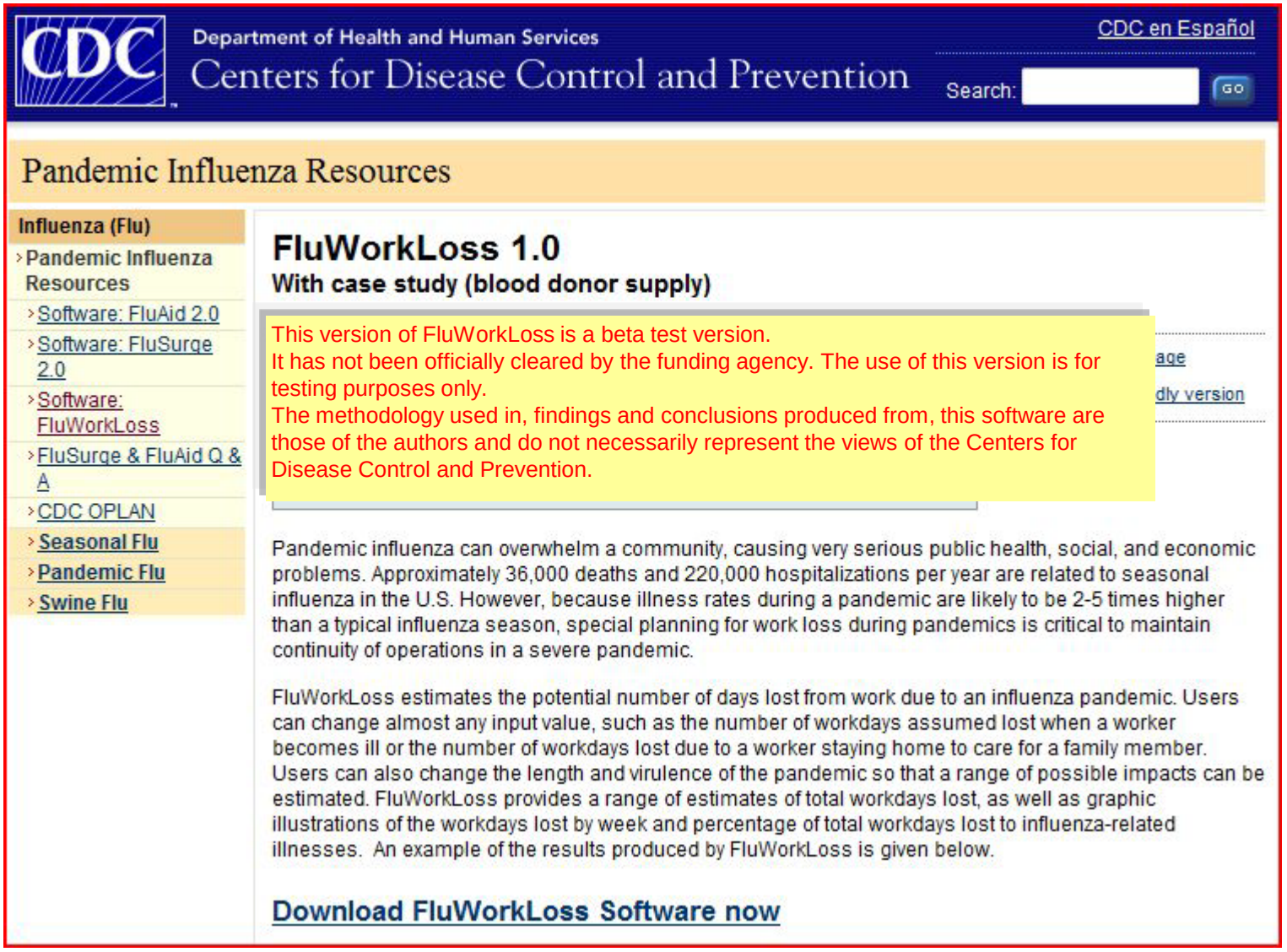


www.cdc.gov/flu/tools/fluworkloss/index.htm

Creation of Surge Capacity by Early Discharge of Hospitalized Patients at Low Risk for Untoward Events

Creation of Surge Capacity by Early Discharge of Hospitalized Patients at Low Risk for Untoward Events

- TJC: Stand Alone Plans—96 hrs
- Medical Surge Capacity—Assumed Low
- Solutions Offered
  - Increase Staff
  - Open Beds
  - Open Cafeterias
  - Tx to other facilities

Surge Capacity

Reverse Triage

Risk of consequential medical event	Basis	Mean upper limit of tolerance for consequential medical events (IQR)
1 (minimim)	Minimum to no anticipated medical events during next 72 h	3·8% (2–5)
2 (low)	Calculated risk of non-fatal medical event. Transfer to low acuity facility appropriate. Consider early discharge when effects of disaster exceed risks of remaining in hospital—eg, risk of biothreat transmission, effects of resource constraints	11·7% (8–15)
3 (moderate)	Consequential medical event quite likely without critical intervention Discharge to home not advisable Transfer to facility of moderate capabilities appropriate	33·1% (25–50)
4 (high)	Patient care cannot be interrupted without virtually assured morbidity or mortality. Highly skilled care required Transfer to major acute-care facility only	61% (45–80)
5 (very high)	Patient cannot be moved or readily transferred Generally unstable for transport Consider ICU-capable transport only	92·3% (95–100)

ICU=intensive-care unit.

Table 1: Consensus disposition classification and tolerance for rate of consequential medical events

Kelen et al., Lancet 368:1984-90, 2006

Surge Capacity

Purpose

- Estimate potential of surge capacity in U.S. Hospitals

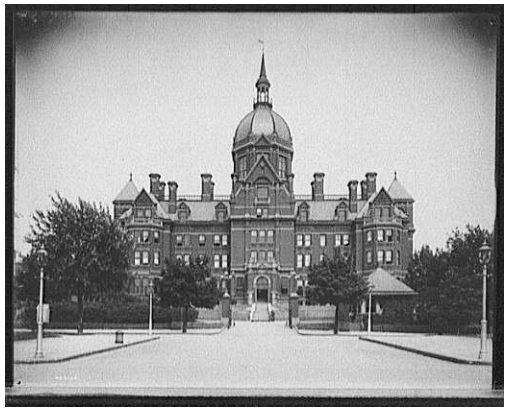
Definition of Surge Capacity

The maximum potential augmentation of resources available to care for the influx of an unexpectedly large number of patients.

Kelen GD, McCarthy ML. The Science of Surge. Acad Emerg Med 13(11):1089-94

Surge Capacity

Methods



Major Teaching Hosp
Beds=1017

Teaching Affiliate
Beds=355

Community Hospital
Beds=260

Surge Capacity

Methods

- Simulated Disaster on 50 Services
  - Randomized over 19 wks
  - 3-12 X sampling
- Pts followed for 4 days for occurrence of a **“Critical Intervention”**
- If no CI—OK to d/c into community

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Surge Capacity

	Major Interventions
10	CPR or Defibrillation
10	Intubation/Airway Management
9	Major Surgery
9	Caesarian Section
8	IV medication/pressors/fluids#
8	Oxygen Requirement
8	Burn Care
8	Cerebral Bolt Placement/Monitoring
7	Dialysis
7	Thoracostomy Tube Placement/Requirement
7	Non-Invasive PPV
7	Thrombolytic Administration
	Moderate Interventions
6	Blood or Blood Product Administration
6	Other Invasive Procedure
6	Psychiatric Monitoring
6	Cardiac Catheterization
5	Thoracentesis
5	Wound Care
5	Central Line Placement/Requirement
5	Minor Surgery: Incision and Drainage
5	Parenteral Nutrition Requirement
5	Paracentesis
5	Vaginal Delivery
	Less Critical Interventions
4	Arterial Line Requirement
4	Lumbar Puncture
3	Cardiac EKG Monitoring
3	Parenteral Pain Medication Requirement
3	Support for ADLs

Critical Interventions

Kelen et al., Lancet 368:1984-90, 2006

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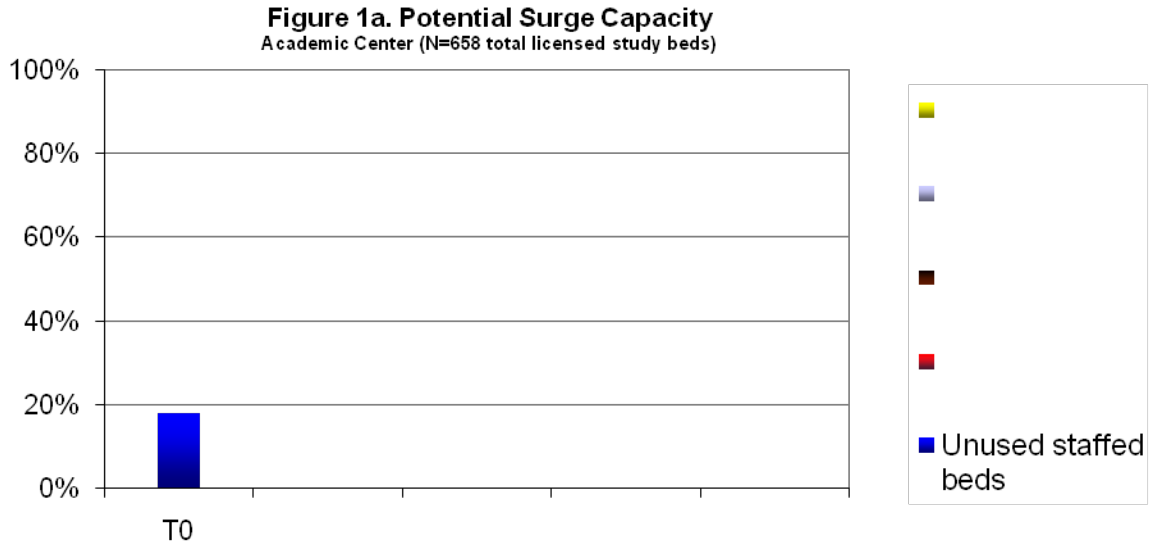

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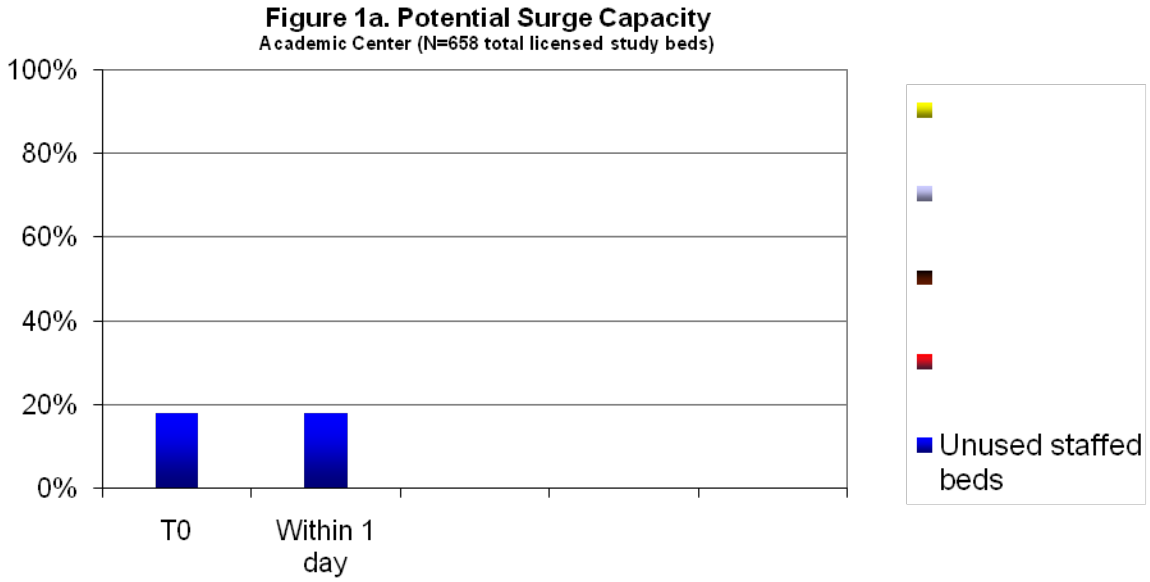

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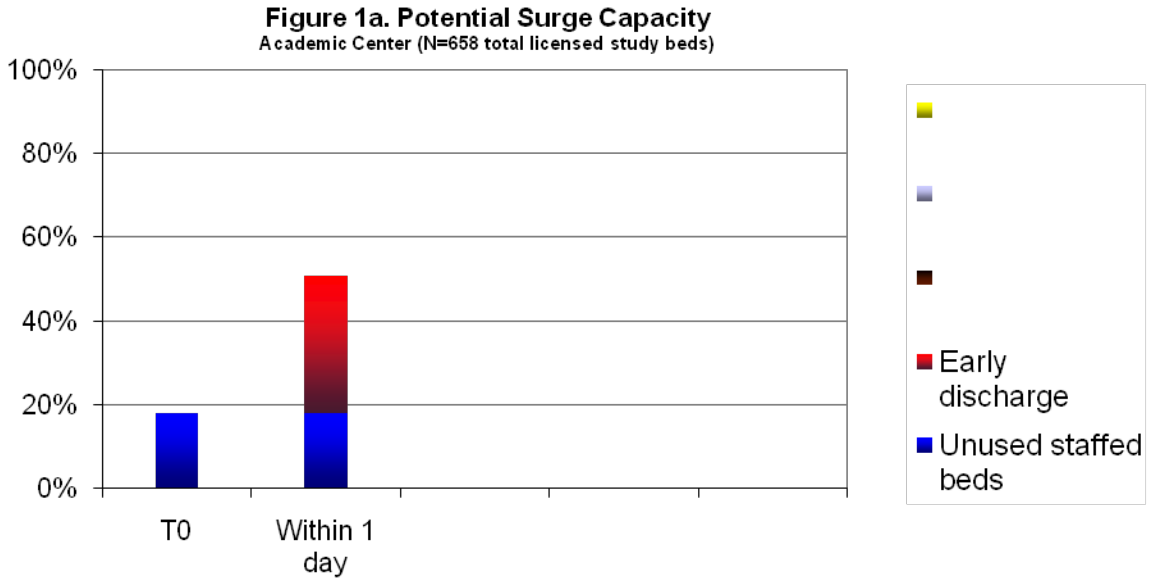

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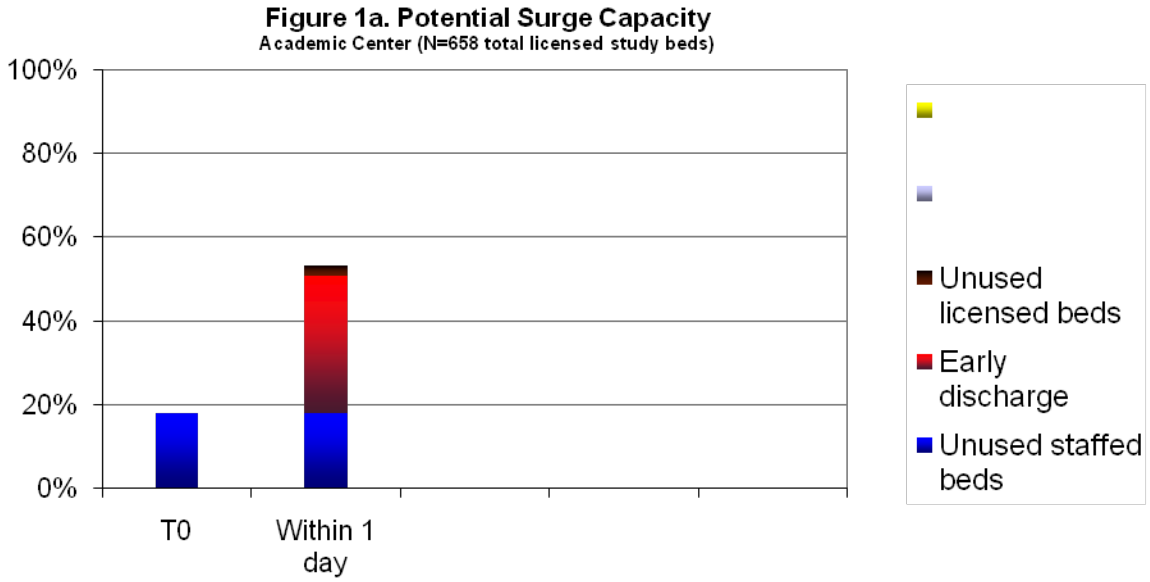

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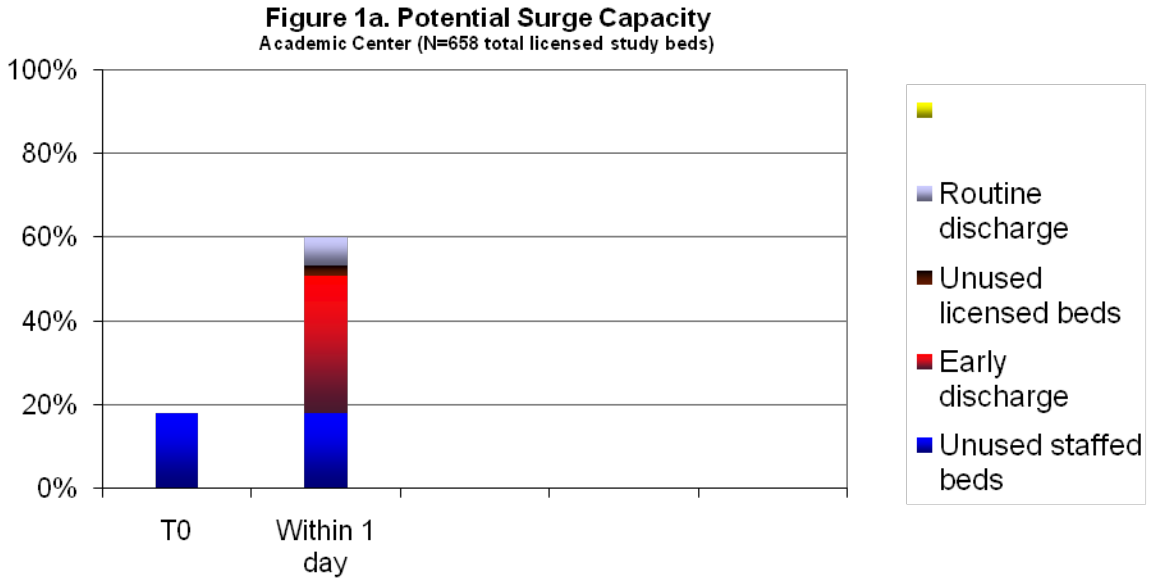

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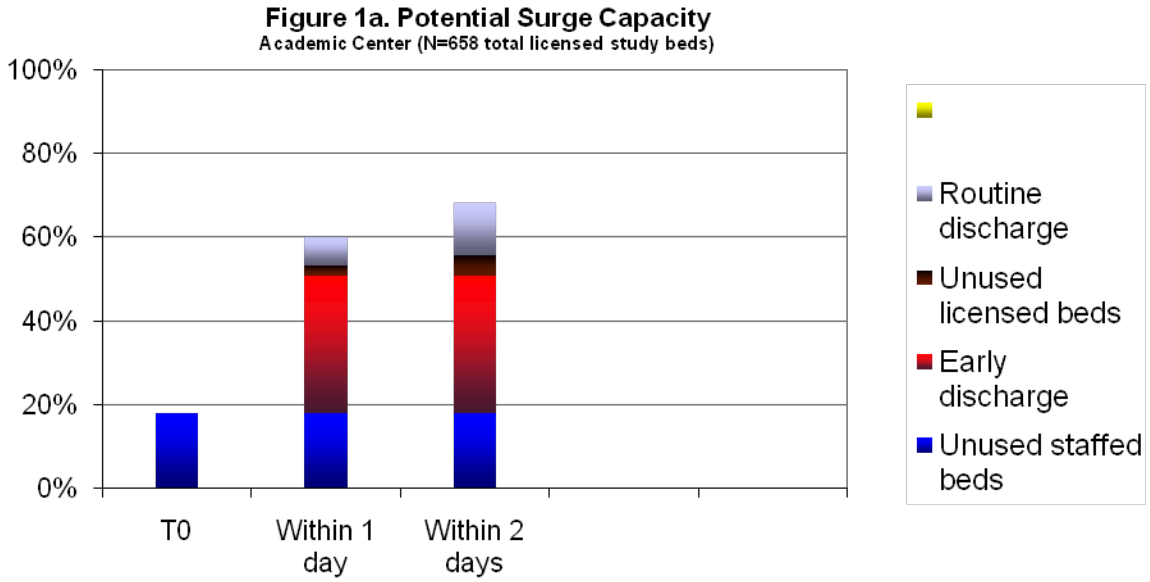

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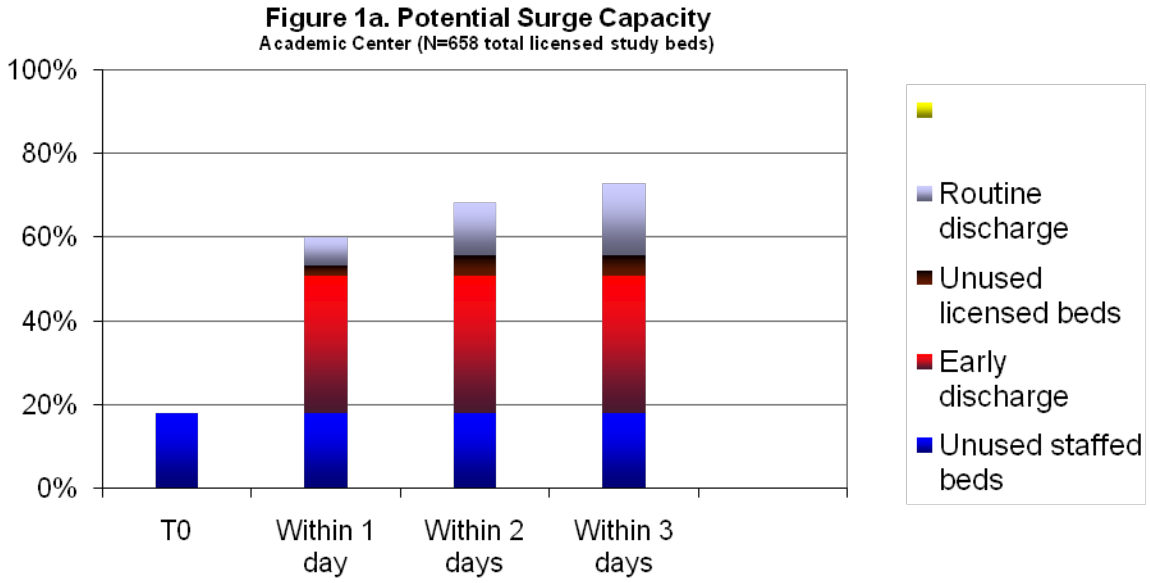

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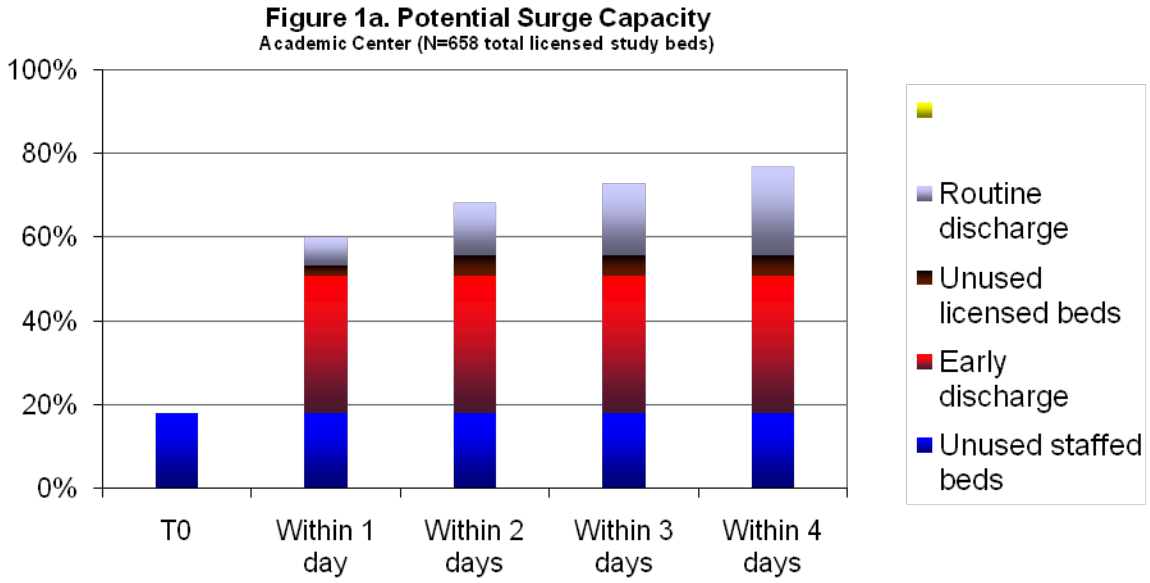

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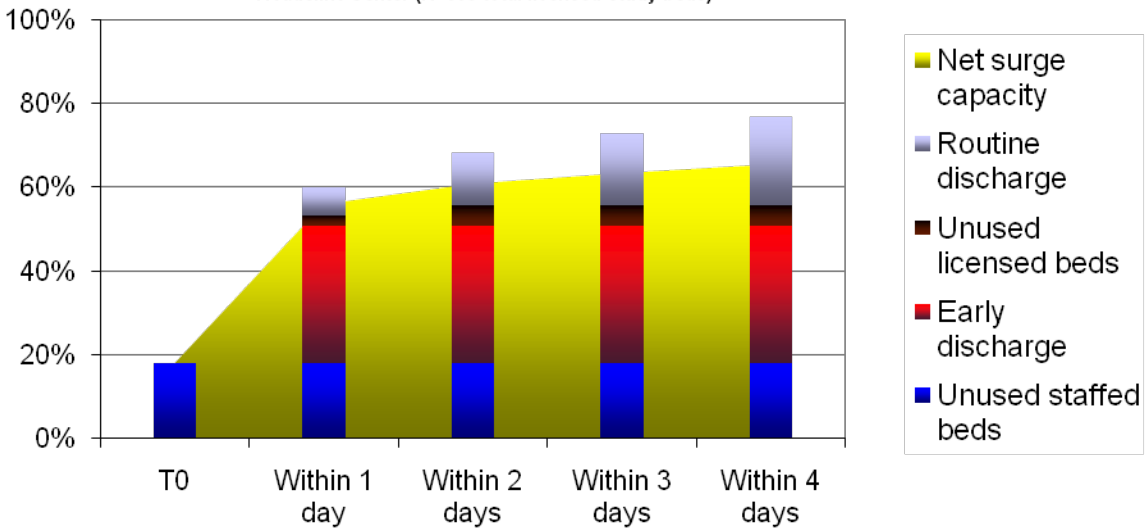
Surge Capacity

Figure 1a. Potential Surge Capacity
Academic Center (N=658 total licensed study beds)



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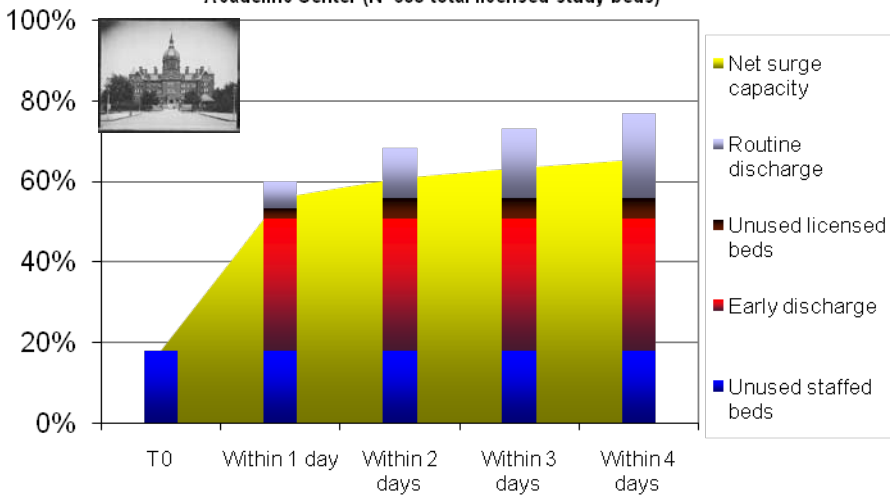


Figure 1b. Potential Surge Capacity
Teaching Medical Center (N=242 total licensed study beds)

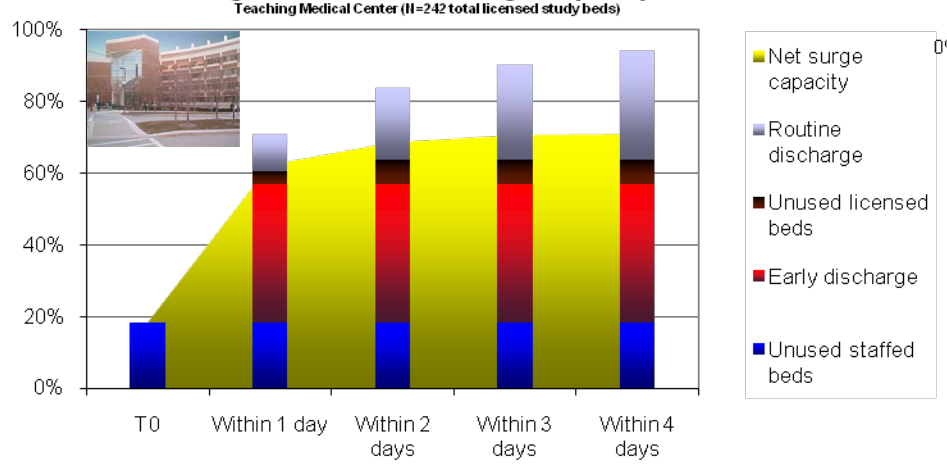
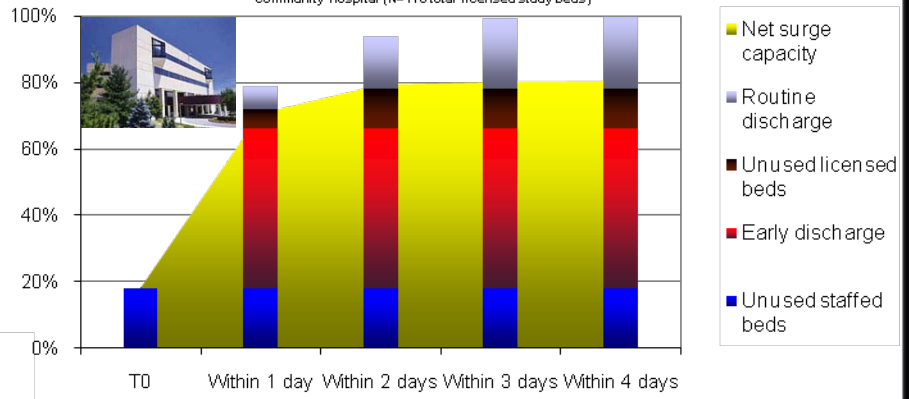


Figure 1c. Potential Surge Capacity
Community Hospital (N=170 total licensed study beds)



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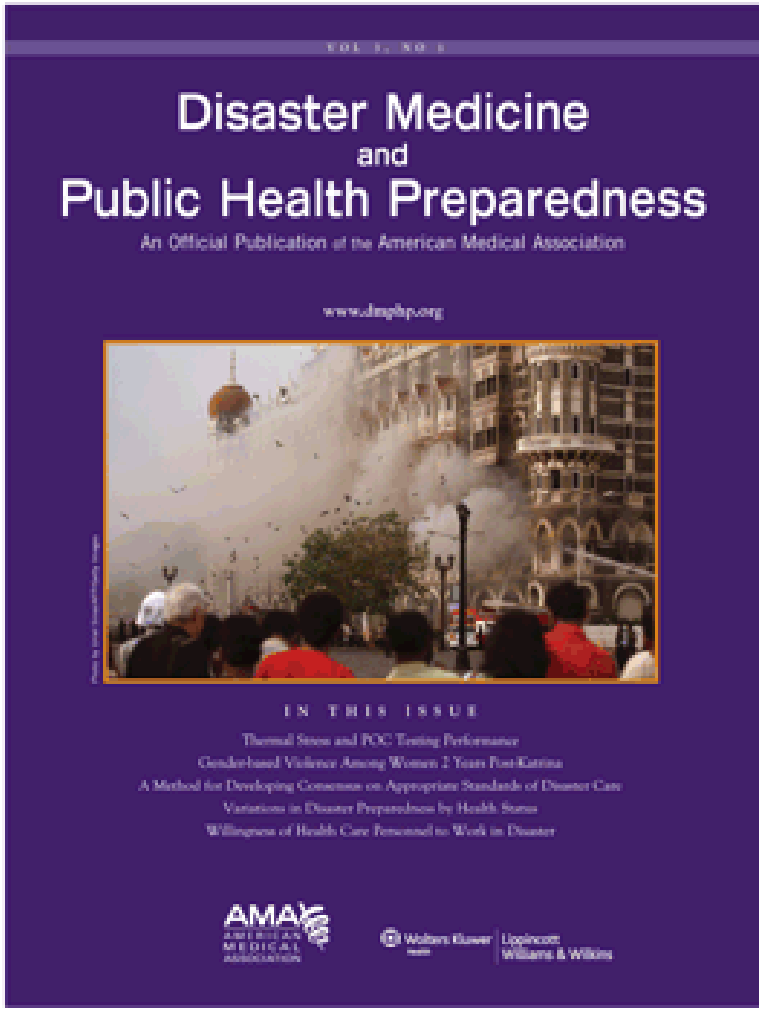

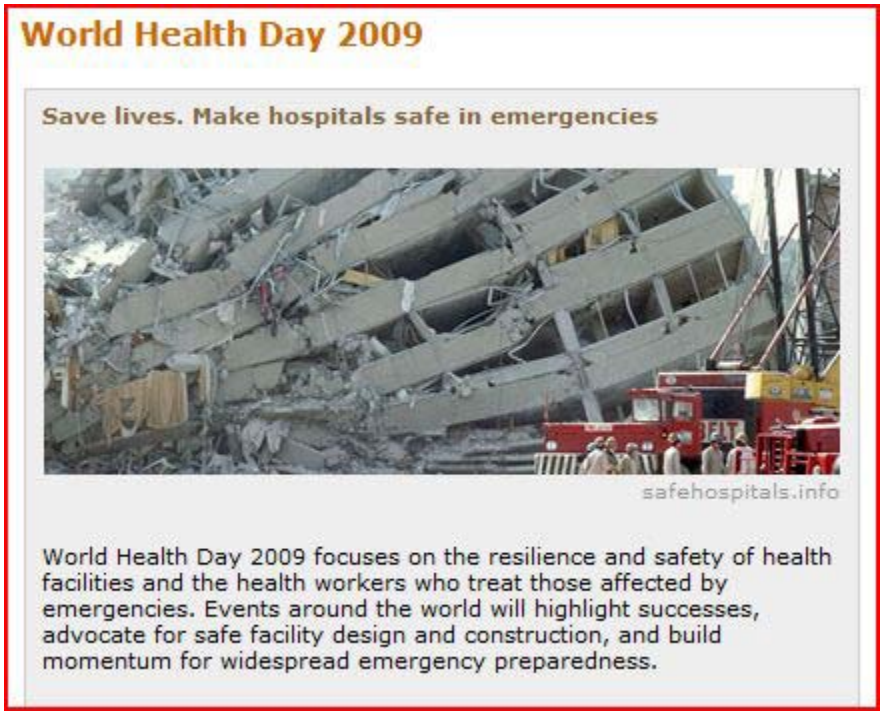

April 7th, 2009