Optimizing Patient Flow in Preparation for the Flu Season

S E N R



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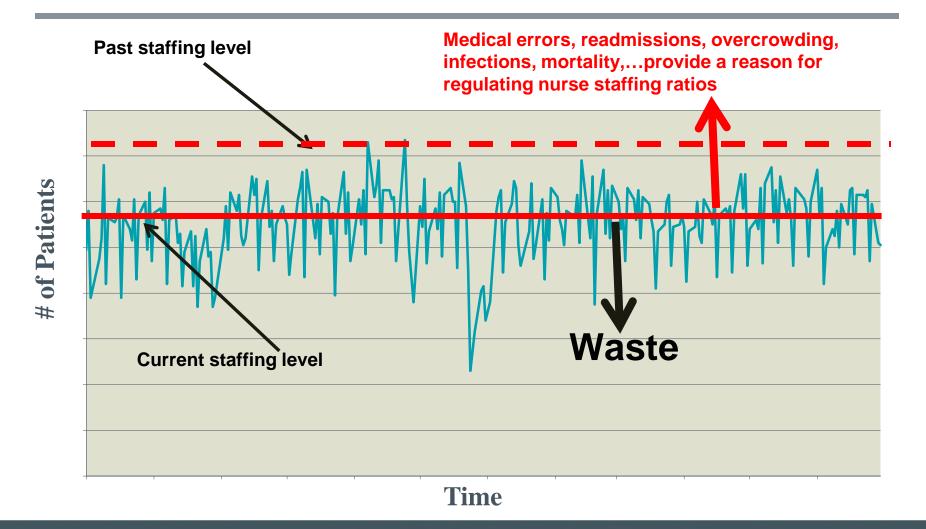
What to do and what not to do

About IHO

- IHO is a 501(c)3 non-profit organization focused on helping hospitals and healthcare systems to implement proven, scientific operations management methods <u>www.ihoptimize.org</u>
- IHO provides training, data analytics, software tools, and implementation support
 - Individual implementation support
 - Group (collaborative) training and implementation

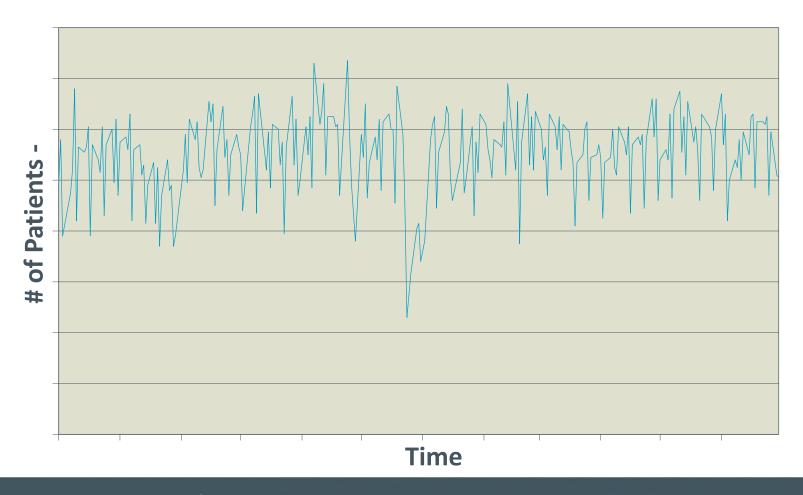


How did we staff, and how do we staff





What Makes Hospital Census Variable?





What Makes Hospital Census Variable?

- ▶ If ED cases are 50% of admissions and...
- Elective-scheduled OR cases are 35% of admissions

then...

Which would you expect to be the largest source of census variability?



The Answer Is...

The ED and elective-scheduled OR have approximately equal effects on census variability.

Why?

Because of another (hidden) type of variability...



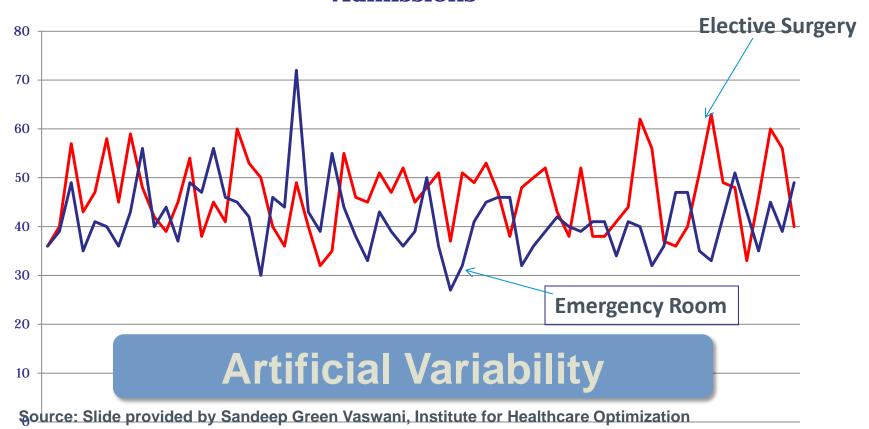
Artificial Variability

- Non-random
- Non-predictable (driven by unknown individual priorities)
- Should not be managed, must be identified and eliminated



A key root cause of hospital bottlenecks and inefficiency

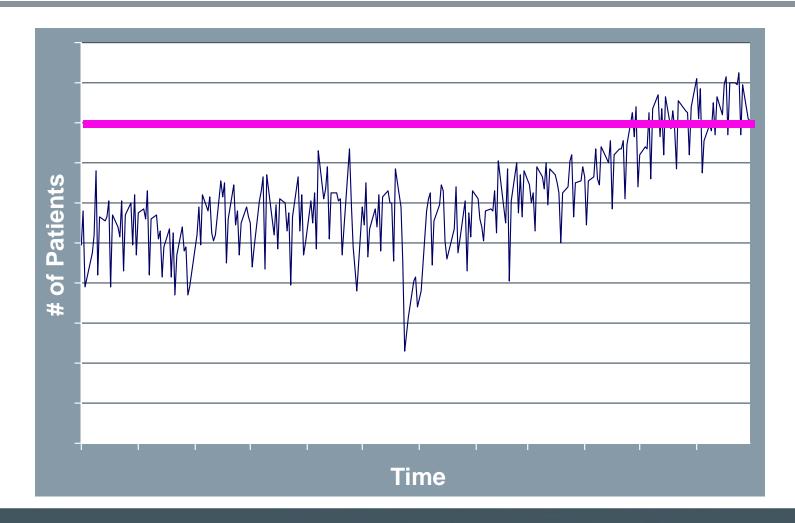
Daily Weekday Emergency and Elective Surgical Admissions





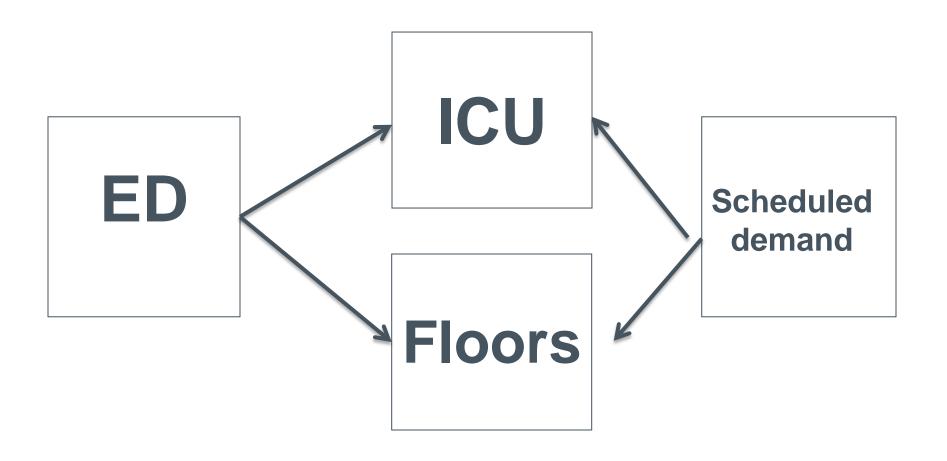
Why managing variability today is more important than before?

Does the healthcare system need more capacity?





Variability and access to care





Alternative to Managing Variability!?



Created by S. Bushell & E. Ermer 070505



- Quality and Safety Corner at www.ihoptimize.org
- The Institute for Healthcare Optimization's approach to managing variability in healthcare delivery addresses some of the most intractable quality and safety issues such as readmissions, mortality, infections, ED boarding and others. <u>Learn more</u> »



Case Study: Boston Medical Center

- Surgical throughput up 10%
- Bumped surgeries down 99.5%
- ED waiting time down 33%
- 2.8 hour wait in one of state's busiest EDs vs. 4 to 5+ hours for most of the academic hospitals in Boston
- Phase II: Reduced nurse stress; 1/2 hour reduction (6%) in nurse hours per patient day in one unit (\$ 130.000 annual saving)

Source: John Chessare, MD, then Chief Medical Officer at Boston Medical Center



Case Study: Mayo Clinic (FL)



CHANGES IN OPERATIONAL PERFORMANCE OF OPERATING ROOMS				
	Pre- Re-Design	Post-Re-Design	% Change	
Surgical Cases (count)	11,874	12,367	4%	
Surgical Minutes	1,757,008	1,844,479	5%	
Prime Time OR Utilization	61%	64%	5%	
Number of Overtime FTE's (average)	7.4	5.4	-27%	
Staff Turnover Rate	20.3%	11.5%	-43%	
Daily Elective Room Changes (Average/Mon)	80	25	-69%	
Daily Elective Room Changes (%)	8%	2%	-70%	
Cost/Case (added 15 OR Staff FTEs)	\$1,062	\$1,070	0%	
Cost/Minute of Surgery (added 15 OR Staff FTEs)	\$7.18	\$7.26	1%	
Staff Turnover Cost (millions)	\$2.47	\$1.40	-43%	
Overtime Cost Savings	\$111,48			
Total OR Net Revenue (fee increase adjusted)	\$93,929,569	\$98,686,693	5%	
Net Operating Income	\$15,877,986	\$21,957,708	38%	
Operating margin	17%	22%	28%	

Source: C. Daniel Smith, et al. Re-Engineering the Operating Room Using Variability Management to Improve Healthcare Value. Journal of the American College of Surgeons, Volume 216, Issue 4, Pages 559-568, April 2013





Johns Hopkins Hospital

- Waiting time decreased by 39%
- Compliance increased by 16.7% despite no dedicated Cardiac or Pediatric level rooms
 - Level I compliance increased from 24% to 81%
- Throughput increased
 - 5 cases per day in the GOR/Weinberg
 - 4 cases per day in JHOC
- Prime Time Utilization provides additional room for substantially more throughput
 - Additional 7 cases per NHW at 85% PT utilization
- No increase in afterhours case minutes
- 6.6% decrease in the proportion of overtime minutes
- Case length decrease reflects increased team performance
 - Provides 1 "free" additional room per day

Source: Dr. Jackie Martin, Medical Director of Perioperative Services for the Johns Hopkins Hospital; Professor, Anesthesiology and Critical Care Medicine



Phase I Estimated ROI

	Relative to Assessment (Mar-Jun 2010)	Relative to Pre- Implementation (Sep-Nov 2011)
Previous Cases/ NHW	87	89
Current Cases/ NHW	92	92
Incremental Cases/ NHW	5	3
Incremental Margin/ Year*	\$6,350,000	\$3,810,000

^{*}Assumes \$5,000 margin per case x 254 Non-Holiday Weekdays per Year

Source: Dr. Jackie Martin, Medical Director of Perioperative Services for the Johns Hopkins Hospital; Professor, Anesthesiology and Critical Care Medicine



Case Study: Palmetto Health Richland



- Waiting time for urgent / emergent surgical cases decreased 38% while overall surgical volume grew about 3%
- Annual margin growth opportunity of \$8M per year, \$2.5M of which has been realized
- Results achieved in less than 1 year

Source: Ellis Knight, MD, MBA, then Chief Medical Officer at Palmetto Health Richland, now Sr. VP for Ambulatory Services for the Palmetto Health System





Case Study: Cincinnati Children's

- Phase I. Weekend waiting time (for urgent / emergent surgeries) down 34% despite 37% volume increase, Weekday waiting time down 28% despite 24% volume increase (results for the first three months after implementation)
- Initially an equivalent of 1 OR capacity freed up
- OR overtime down by 57% (approx. \$559K saved annually)
- Substantially improved provider satisfaction
- Phase II. Surgery volume has sustained 7% growth per year for at least two years
- ► Phases II III. Inpatient occupancy increased from 76% to 91% resulting in \$137 million/year plus 100 new beds avoided capital cost (over \$100 million)

Source: Frederic Ryckman, MD, Cincinnati Children's Hospital Medical Center



Case Study: Cincinnati Children's Survey

- "We have not had anywhere near the patient complaints or physician complaints. Physician and Family satisfaction has skyrocketed..." - Orthopedic Surgeon, Division Director
- "The family satisfaction with their experience is better than it used to be." – ENT Surgeon, Attending
- "As a general observation, nursing staff 'on call' are not staying as late due to add-ons remaining at change of shift." - OR Nurse
- "...We get our case done early, and patients don't have to wait NPO until the evenings to have their surgery. This has made call much less stressful for my surgeons and myself..." Orthopedic Surgeon, Division Director





Case Study: The Ottawa Hospital

- Improved access for patients needing emergency surgery within 24 hours from 60% to 90%
- Reduced mortality rate for patients requiring urgent surgery from 3.9% to 3%, resulting in 40 lives saved
- Achieved efficiency gain equivalent to \$9million by decreasing length of stay and better use of beds
- Reduced surgery cancellations due to bed shortages from more than 600 per year to zero
- Reduced Neurosurgery inpatient census from 46 to 33, resulting in a savings of 13 beds

Source: Jack Kitts, President and CEO: Re-engineering surgical patient flow saves lives, Canadian Healthcare Technology, December 19, 2013



IHO State-wide collaborative to improve patient safety and quality of care while reducing its cost

Partnership for Patients - New Jersey



News

On January 30, **NJHA** in collaboration with The **Institute for Healthcare Optimization**_kicked off Partnership for Patients-NJ, part of a national initiative from the U.S. Department of Health and Human Services to improve the quality, safety and affordability of healthcare, **Learn more**»

Patient Flow/Throughput

The New Jersey Hospital Association has provided IHO Variability MethodologyTM to NJ hospitals to help them improve patient safety and flow/throughput. Some of these resources and the list of the NJ Patient Flow Collaborative Members have been publicly disseminated, Learn more»



U.S. Senator **Robert Menendez** (Senate Finance
Committee) at the Partnership
for Patients New Jersey kick-off
on January 30, 2012



IHO State-wide collaborative to improve patient safety and quality of care while reducing its cost

- 11,800 to 17,300 additional patients that could be treated without adding inpatient beds or operating rooms
- Roughly 20,000 additional patients that could be accommodated in hospital emergency departments
- 21 percent to 85 percent decrease in wait times for emergency department patients to be admitted to a hospital bed
- Reductions in the length of hospital stays ranging from 3 percent to 47 percent for certain groups of patients

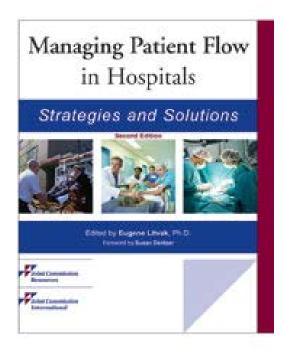
More on http://www.ihoptimize.org/who-we-work-with-iho-impact-multi.htm



More Success stories are here:

https://www.ihoptimize.org/who-we-work-with/clientsuccess-stories/

Resources



Managing Patient Flow in Hospitals: Strategies and Solutions, Second Edition

2009. 166 pages. ISBN: 978-1-59940-372-4

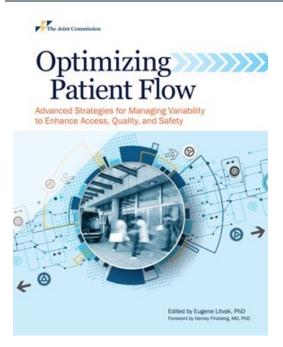
http://www.jointcommissioninternational.org/Books-and-E-books/Managing-Patient-Flow-in-Hospitals-Strategies-and-Solutions-Second-Edition/1497

Patient Safety and Quality of Care:

http://www.ihoptimize.org/what-we-do-methodology-quality-and-safety.htm http://www.ihoptimize.org/knowledge-center-publications.htm



Resources



Optimizing Patient Flow: Advanced Strategies for Managing Variability to Enhance Access, Quality and Safety

https://www.jcrinc.com/optimizing-patient-flow-advanced-strategies-for-managing-variability-to-enhance-access-quality-and-safety/

Sample pages, **Prologue**:

https://www.jcrinc.com/assets/1/14/EBMPF18_sample_pages.pdf



IHO Variability Methodology® has been endorsed by

- American Nursing Association Board: IHO Variability Methodology has been endorsed by the ANA Board as one of the key measures to improve patient safety
- American Hospital Association's Hospitals in Pursuit of Excellence: The Institute for Healthcare Optimization's approach is recognized by the American Hospital Association as a key principle for achieving IOM's Six Aims for Improvement: care that is safe, timely, effective, efficient, equitable, and patient-centered.
- **Joint Commission Resources:** The Institute for Healthcare Optimization's approach to managing variability in healthcare delivery is the central theme of Joint Commission Resources' second edition of the book: *Managing Patient Flow in Hospitals: Strategies and Solutions.*
- Government Accountability Office: The Government Accountability Office recognizes variability in elective admissions as one of the key drivers of ED overcrowding.
- American College of Emergency Physicians: ACEP has recommended Variability Methodology as a key measure to reduce ED overcrowding
- The Leapfrog Group made reducing artificial variability in patient flow one of their Leaps for all US hospitals
- and others: https://www.ihoptimize.org/why-iho/our-approach/endorsements/



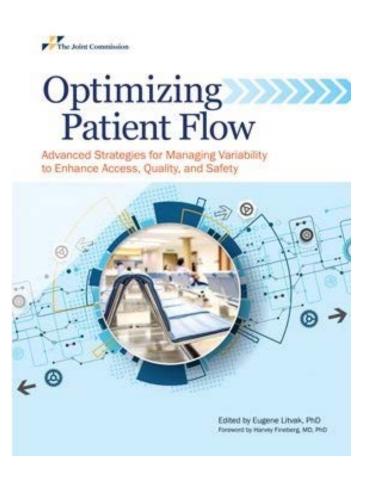




Four Key Interventions

- Early discharge
- Weekend discharge
- Full Capacity Protocol
- Smoothing variability in flow

According to ACEP "There are 100's of process improvements for flow, but only a handful actually work to FIX problems associated with an apparent lack of sufficient inpatient beds





Smoothing Variability in Medical Flow

- Addresses Artificial Variability in admission, discharge and transfer criteria and processes
 - Objective, patient-centric criteria
 - Elimination of legacy preferences
 - Rigorous application of agreed upon criteria



Smoothing Variability in Medical Flow

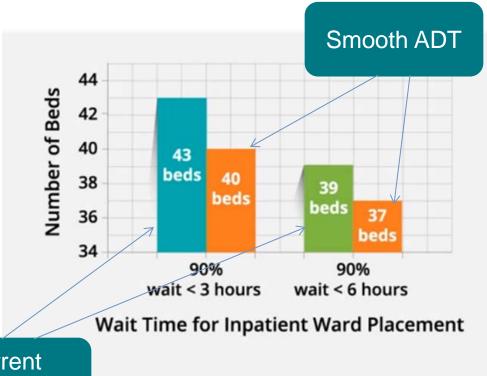
- Right-sizes inpatient units to enable low waiting and reduced length of stay
 - Use of advanced techniques such as Queuing Analysis and Discrete Event Simulation modeling





Smoothing Variability in Medical Flow

Removing artificial variability in ADT criteria allows hospitals to precisely determine the number of each type of bed needed to achieve objective access goals



Current patterns



Self Diagnosis (Examples)

- Increased admissions when certain physicians are in the ED or rounding on the unit
- Perception of unnecessary or inappropriate admissions to higher levels of care
- Longer delays in ED for some units v. others for similar patient types
- Discharge / transfer delays for various non-patient reasons
- Excessive inter-unit transfers
- Different length of stay between providers / teams despite same or similar patient acuity
- Different length of stay depending on day of admission



Case Study

- Newark Beth Israel Medical Center, NJ
 - Objective: Determine how many more telemetry beds needed to reduce ED boarding time
 - > Results:
 - Decreased average ED waiting time from 15 hours to 3 hours
 - Decreased ALOS of telemetry patients by 1 day leading to fewer hospital-acquired infections
 - ➤ Eliminated 26 telemetry beds, resulting in a savings of over \$10 million per year

https://www.rwjbh.org/blog/2014/may/newark-beth-israel-medical-center-sets-new-natio/



Results From Smoothing Variability

- 21-85% decrease in ED boarding time
- 3-47% decrease in hospital length of stay
- 40% decrease in mortality rate for ICU patients at one hospital
- Increase in proportion of patients transferred to the floors during day time
- Ability to decrease staffed beds or increase patient throughput as appropriate
 - over \$10 Million saved annually in one telemetry unit
 - closed 30 beds while ED boarding dropped to almost zero
- Decrease nursing workload
- Patient satisfaction increased from 56% to 73%.

More case studies: https://www.ihoptimize.org/who-we-work-with/client-success-stories/







Full Capacity Protocol

Questions

Please chat in your question

For further help, contact: Meng Kang, VP, IHO hkang@ihoptimize.org



Panelists

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President & CEO, IHO

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Senior VP, IHO

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Professor and Vice Chair, Department of Emergency Stony Brook University



Australia Just Had a Bad Flu Season. That May Be a Warning for the U.S.

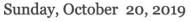
In 2017, a terrible flu season in Australia presaged an American outbreak in which 79,000 died. Experts advise getting the shot soon.



A human cell infected with the H3N2 flu virus, responsible for Australia's and the U.S.'s worst recent flu outbreaks. The same strain may dominate this year, too. Steve Gschmeissner/Science Source









Australia experiences worst flu season on record

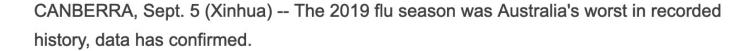
Source: Xinhua | 2019-09-05 13:24:44 | Editor: Shi Yinglun





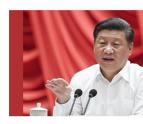






According to statistics released recently, there have been 257,359 laboratory confirmed cases of influenza so far in 2019, beating the previous record of 251,163 set in 2017.

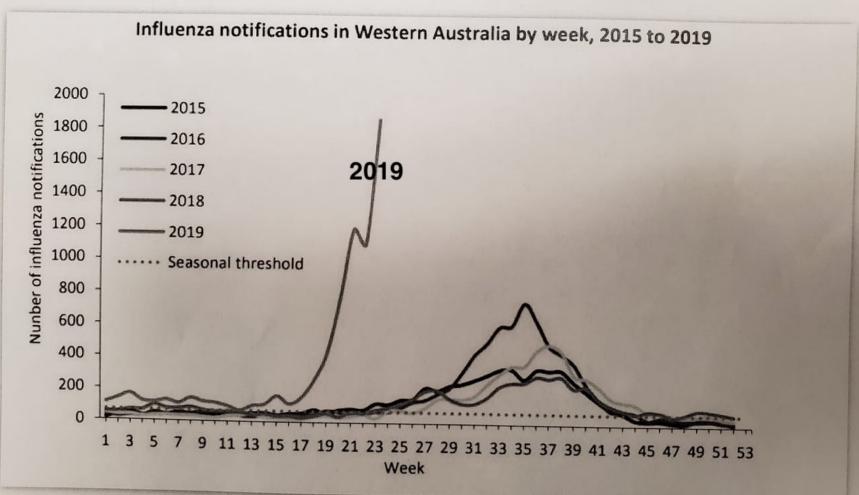
TOP STOR







on and
Australian
it has



Influenza notifications reported to the WA Health Department have spiked early and much higher than previous years. Graph: WA Health Department

1 of 2

We can only guess at the course of the season. Prediction and





Focus?

• Arrival to HCP 25 min

• CT 267 min

Order to CT154 min

– CT to read113 min

Door to DC
 305 minutes

Door to leave, IP 975 minutes



Focus?

Arrival to HCP 25 min

• Order to CT 154 min

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Door to leave, IP 975 minutes





1.1 per cent

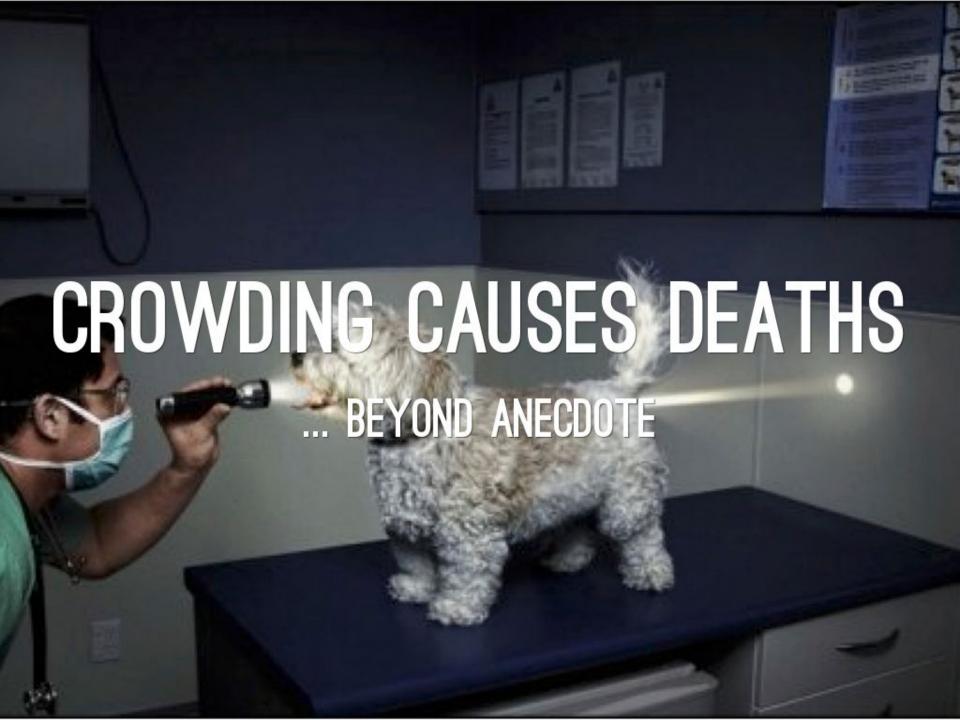




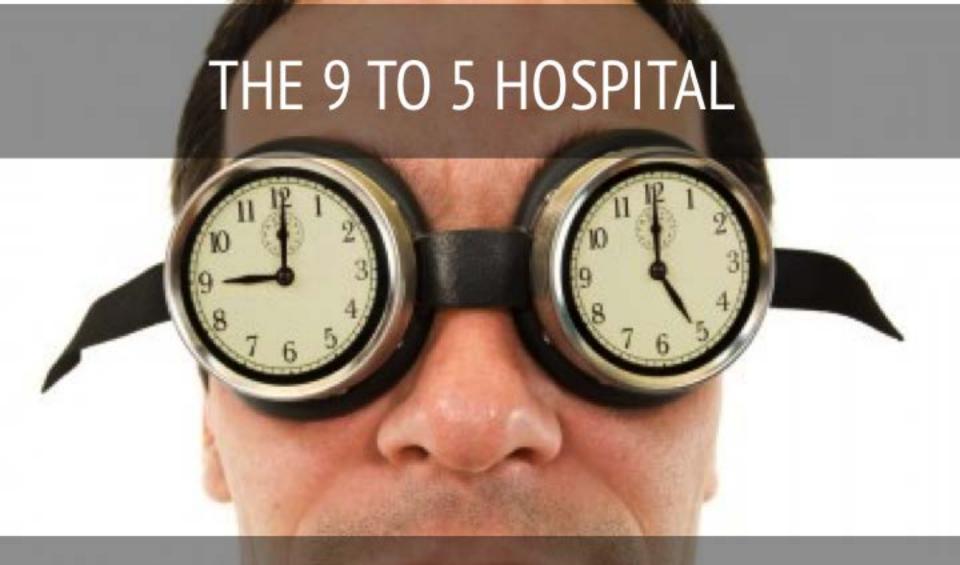








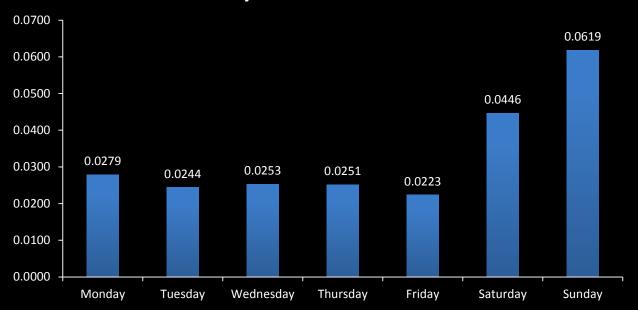




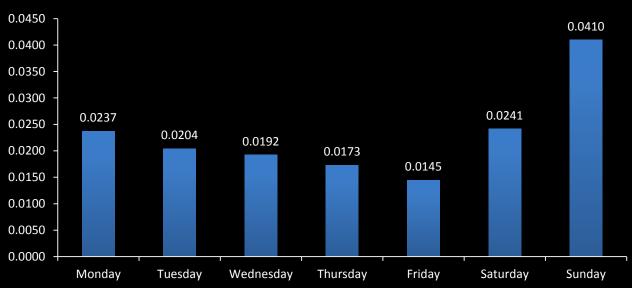
THE 5 (THREE) DAY A WEEK HOSPITAL



Mortality Rate - From ED Admits



Mortality Rate - From Other Admit Source







TOO MUCH

WRONG THING

stories by Claire Hopple



MPROVE CAPACITY

PLANFALURE

NTERVENTION

MPLEMENTATION

PROCESS

VS.

RESULTS

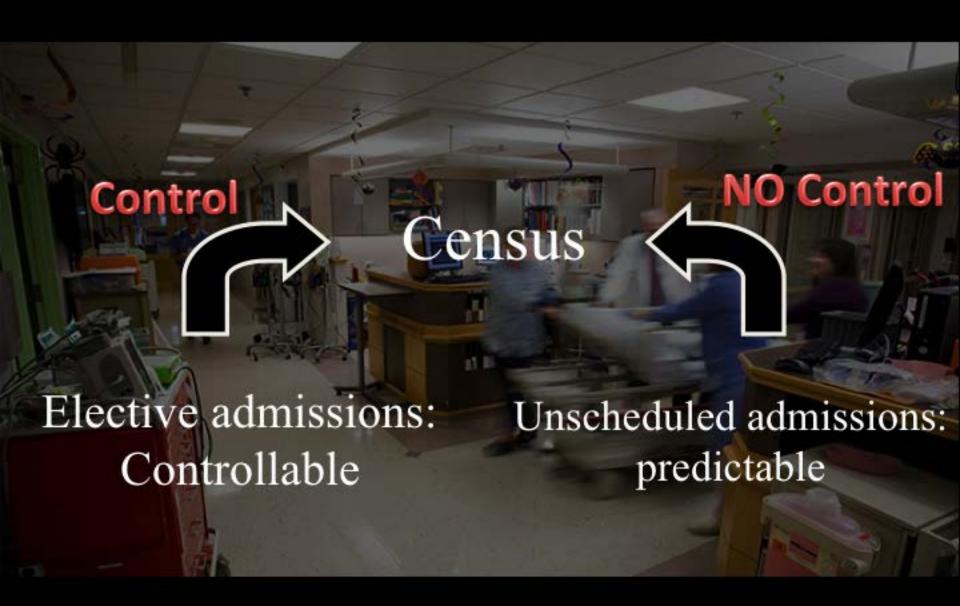




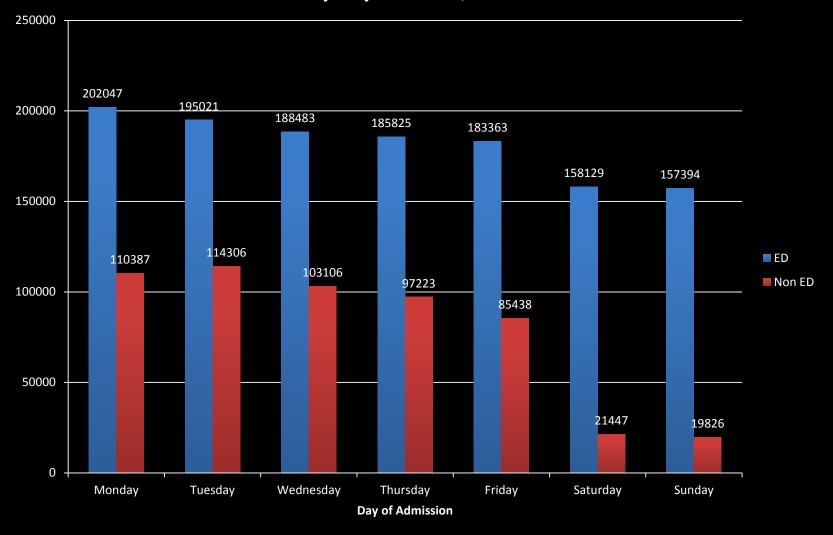


THE WEEK

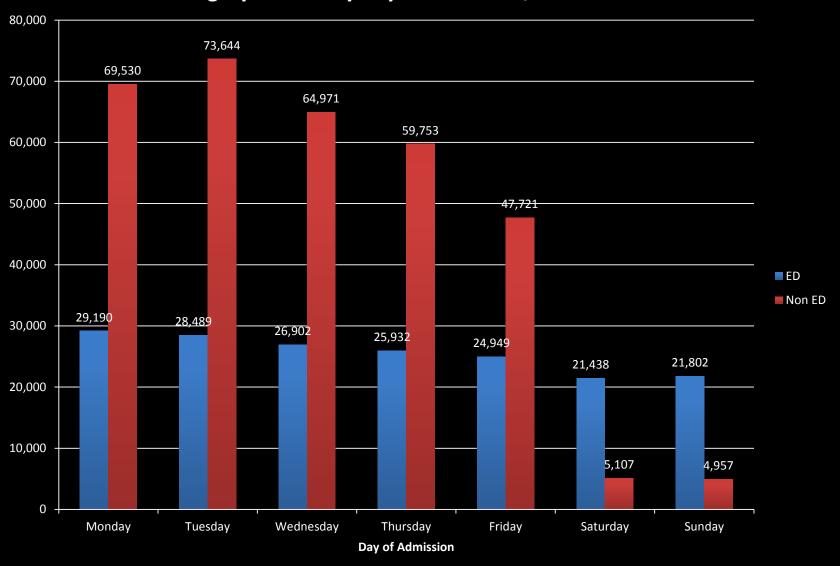
MATTERS



Admits by day of Week, ED vs non ED



Surgery Admits by day of the Week, ED vs non ED



Bumped Cases Before and After Separating "Flows"

Before

April 03 – April 04

349 emergent cases (M – F)
 7:00 AM to 3:30 PM

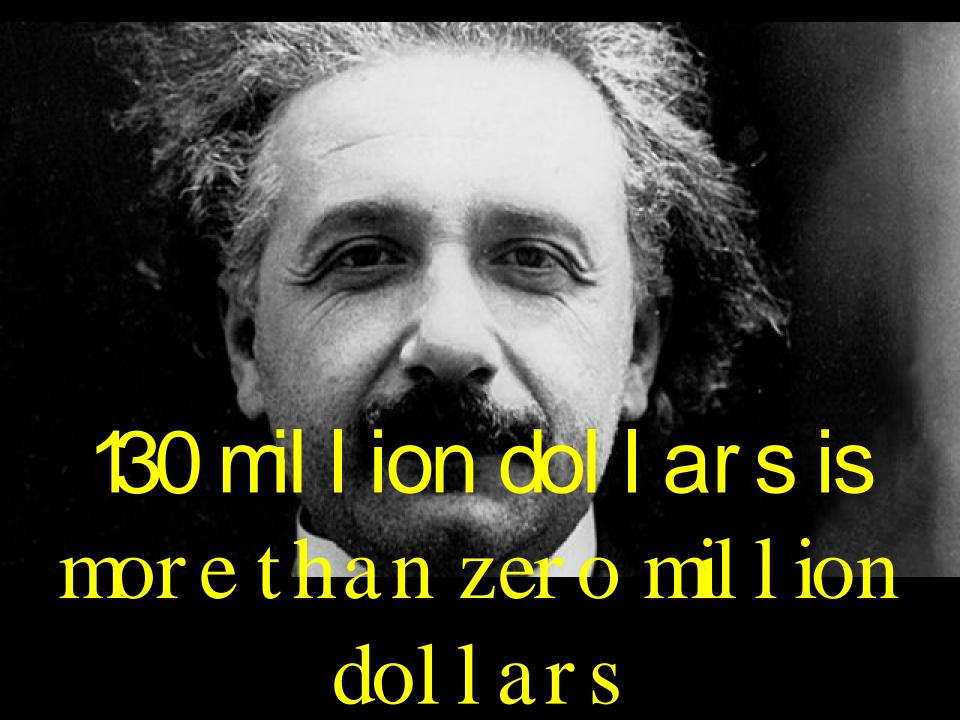
771 elective patients were delayed or cancelled

<u>After</u>

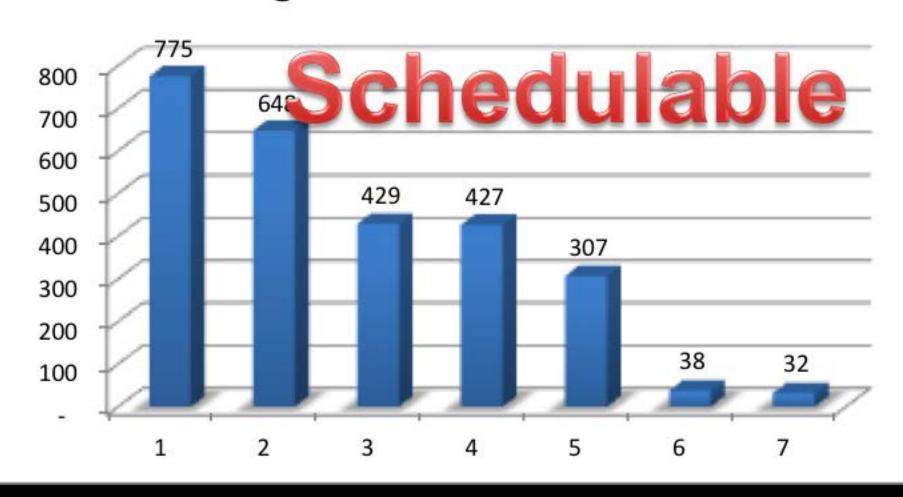
April 04 – April 05

- 354 emergent cases (M F)
 7:00 AM to 3:30 PM
- 7 elective patients were delayed or cancelled



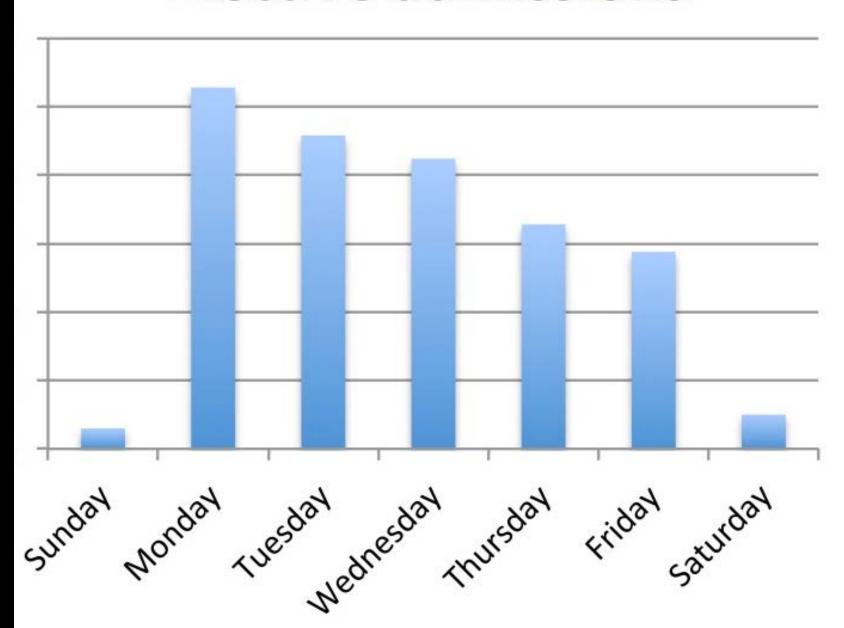


Surgical NonED admission

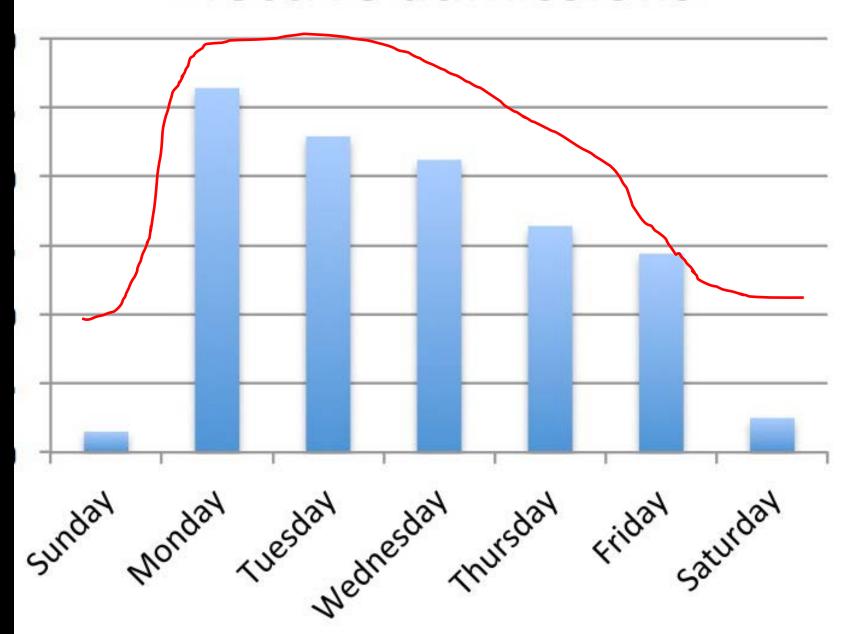


The 2 day a week hospital???

Elective admissions



Elective admissions





assumes LOSundranged

EACH DAY MATTERS!

DISCHARGE TIME



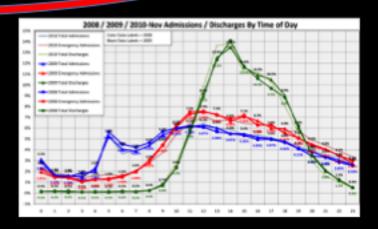
THE RELATIONSHIP BETWEEN INPATIENT DISCHARGE TIMING AND EMERGENCY DEPARTMENT BOARDING

Emilie S. Powell, мр, мва,*† Rahul K. Khare, мр,*† Arjun K. Venkatesh, мр, мва,‡ Ben D. Van Roo, рнр,§ James G. Adams, мр,* and Gilles Reinhardt, рнр

*Department of Emergency Medicine, †Institute for Healthcare Studies and Division of General Internal Medicine, Northwestern University, Feinberg School of Medicine, Chicago, Illinois, ‡Harvard Affiliated Emergency Medicine Residency, Brigham and Women's Hospital–Massachusetts General Hospital, Boston, Massachusetts, §The RAND Corporation, Santa Monica, California, and ||Department of Management, DePaul University, Chicago, Illinois

Reprint Address: Emilie S. Powell, MD, MBA, Department of Emergency Medicine, Northwestern University, 259 E Erie St, Suite 100, Chicago, IL 60611

96% absolute reduction in boarding hours





"Why don't we just have a meeting"

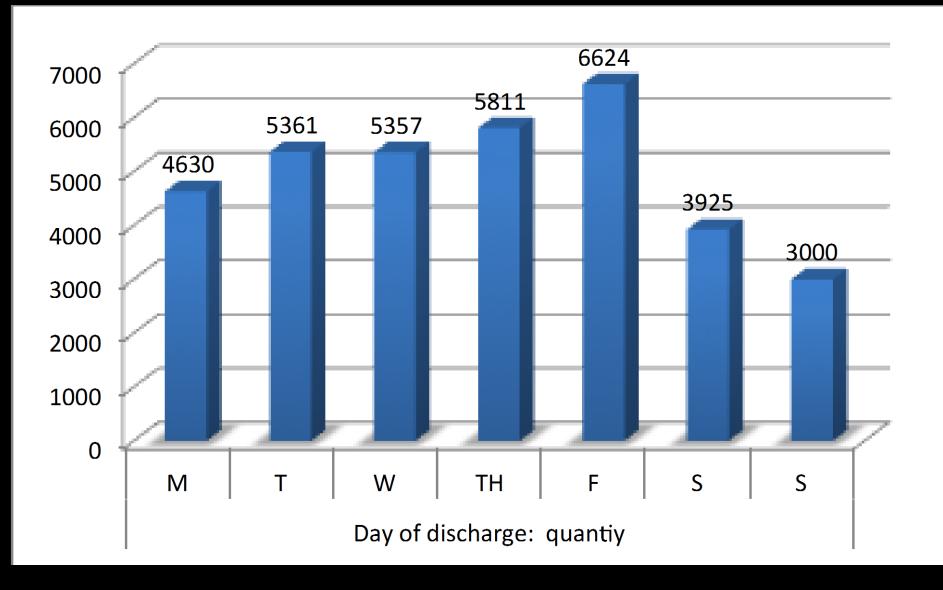


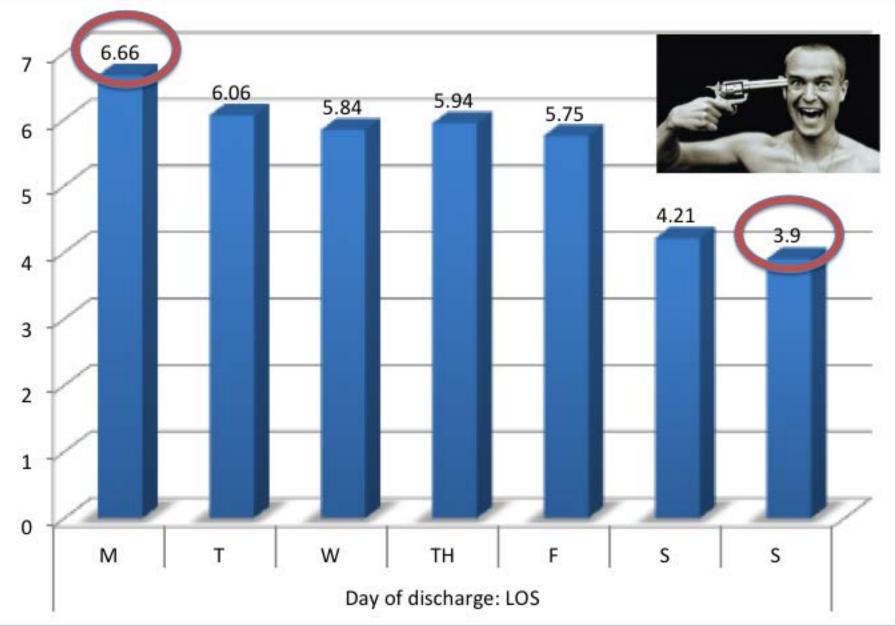
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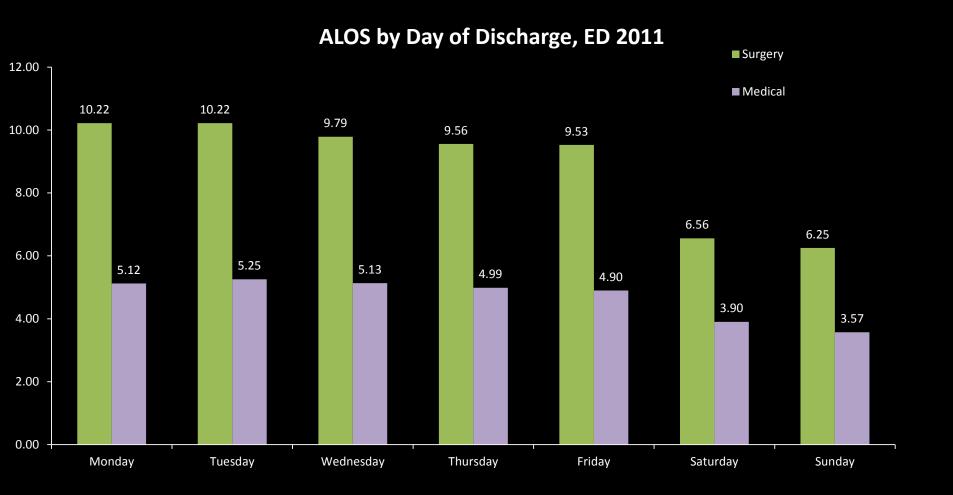
Jabra[®]

THE WEEKENE

MATTERS

















FAILURE

Sometimes you can see it coming around the bend

ACTION PLAN?

- 20 patients with no place
- 10 units with no space
- 9 of 10 units with proper expertise



FOR THE PATIENT, NOT THE ED







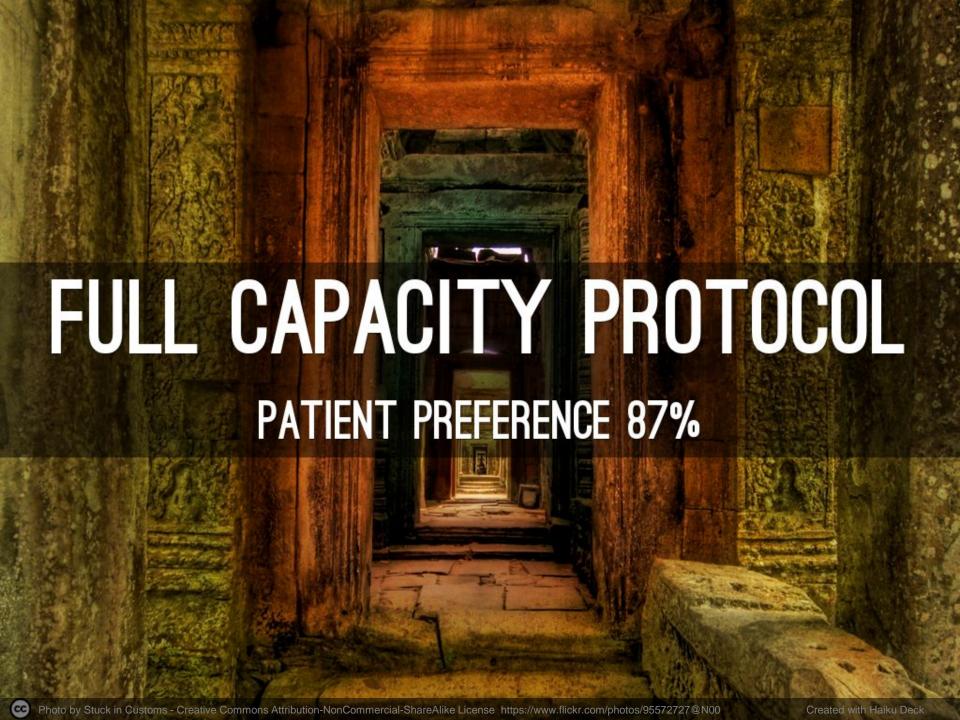






SAFETY FIRST

- lower mortality rates for FCP patients
- LOS 0.8 days shorter
- each unit increases from 30 to 32



BOTTOM UNE.

CURRENTLY APPEARING

LEO SAYER

RICHARD BELZER

DIC COMING

3 - 4 TERRY CESSMAN

6 FLO & TOOM

ENGLAND A 1

JOHN BRU

AVOID THE TINY



Focus?

Arrival to HCP 25 min

• Order to CT 154 min

• CT to read 113 min

Door to DC
 305 minutes

Door to leave, IP 975 minutes





SMOODOOTH ACROSS THE DAY, WEEK, AND WEEKEND AND HAVE A FULL CAPACITY PLAN

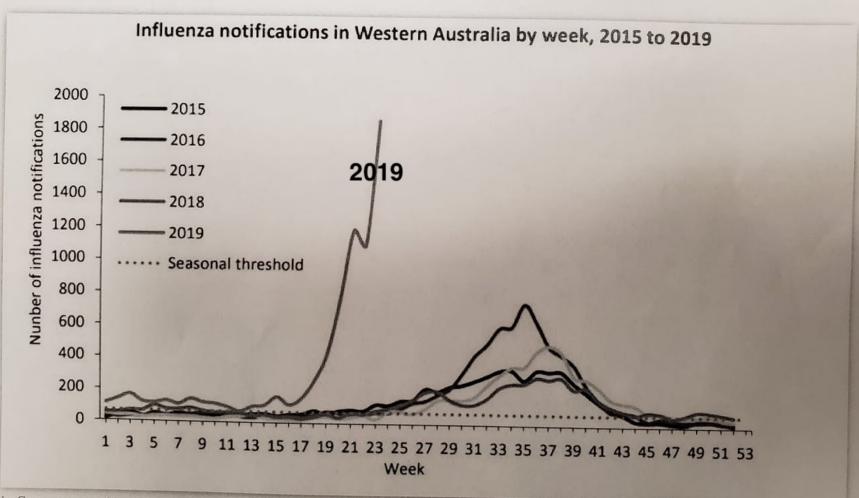
SAFE CAPACITY EASIER COST



NTERVENTION

MPLEMENTATION

on and
Australian
it has



Influenza notifications reported to the WA Health Department have spiked early and much higher than previous years. Graph: WA Health Department

1 of 2

We can only guess at the course of the season. Prediction and

Desperate times

- Clear the queue: test now, result now, act now
 - Consultant, radiology, ancillary TAT
 - Dominoes
 - Weekend elective and ancillary services
 - Afternoon plan for next MORNING discharge
 - Evening ancillary services
 - What's pending at 3pm? 5pm?
- ED admits will continue to happen
- Commit to a fix, not a discussion

WORLD NEWS

Viccellio found to be entirely correct about everything he says

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- "Natural

Two years ago, U.S. Navy personnel and their families assigned to the Artogi Nivy base, home of the U.S.S. Kittyhuwk, were torated to a rare experience when Terry Homing and his local Brish/American band, Innisfree, traveled to the base to emertain then on St. Patrick's Day. Heming and the other five members of Innisfree were delighted and honceed to be able to go to Japan and lift the spirits, if only for a few hours, of the Navy personnel and their families.

For the third year in a row, Fleming.

— a local insurance broker in Rolling Hills by day and an extertainer by might—and the band travel to entertain the Navy men, worsen and furnities at various in or the meaning the statement of the second seco

Fleming, the leader of the value of secondary and harmonics, actually is the only moreher of the band from

tae, a news director with City news Desis Doyle, Celtic harpist, a professor at Glendale College, Kevin Word, keyboards and baggipes, music teacher and assistant director of the Orange County Symphany; and Mike Tiffany, hass, a computer engineer. The band has been playing the length and breath of Caldernia for the past 25 years. They have played at pubs, wakes, weddings, birthdays and on occasions where there was little excuse for throwing a party.

Plenting says it was by coincidence the band got the opportunity to travel to Japan. Another band was unable to travel at the last orieste and so he and his band were offered the opportunity to go in their place.

With some trepidation they made their first trip and with the overwhelming response they received at output as four could be received.

THE CON COUNTY SET OF STATE OF

Even though for from home, the Arrupi base — structed a few boars south of Tolon — feh like home away from home, with its lush green rolling landscape and its multitude of cherry blosseen trees. "Yet," Fleming says, "one was struck by the commisseen and dedication of our men and weaten in uniform as they played their part in protecting and serving in an over challenging and hostile world."

A couple of the families even took time out from their busy schedule to host Terry and the band members. They treated them to a guided toor of the base and accompanied them on a few exciting trips off the base, visiting treated and ground good flacks.

Constitution description Tokyo, the are Constitution in the they assumed a place called "Scraffy Morphy," an Irish pub located in the heart of a brinking downward. Upon a prior the establish-

Guizness and good pub grets. It also happened to be open mic night, so the band members took over the stage and emertained the le iten-filled hours. It turn was itest one of many in the city.

A special bond dave the band members and and already exchang occurred when the were on leave in the Un

For more informat band, log www.busisfreemasic.com



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