

Tyson's Story



Background

- In 2012, East Tennessee Children's Hospital began to plan, design, and build a state-of-the-art patient and family-centered care tower for Clinics, Surgery, and NICU.



From Parking Lot to Completion

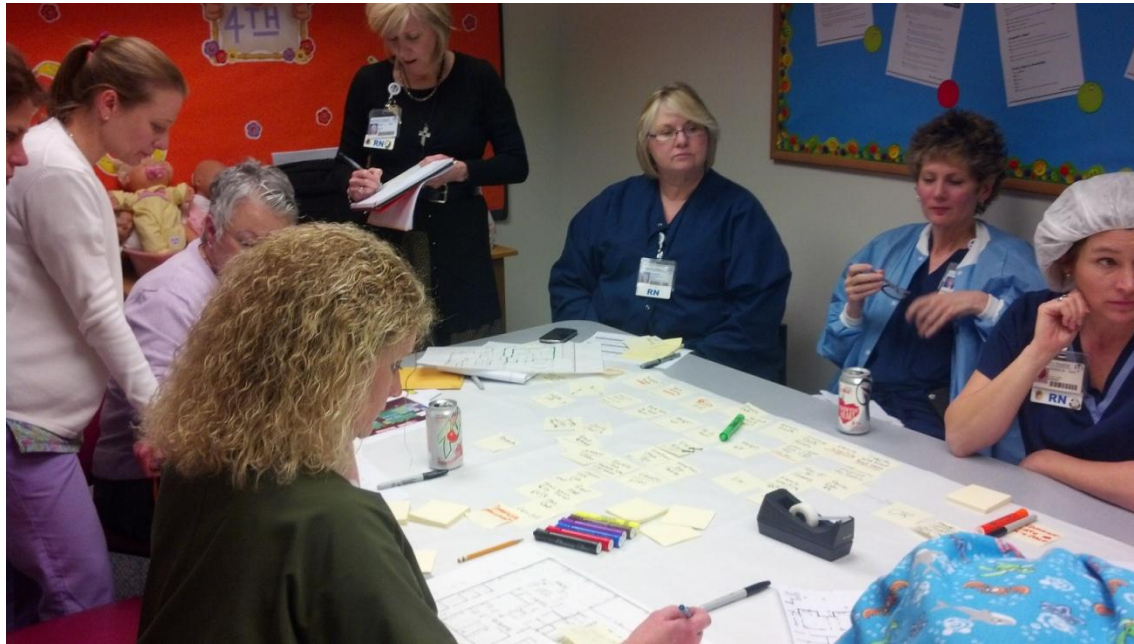
Opportunity



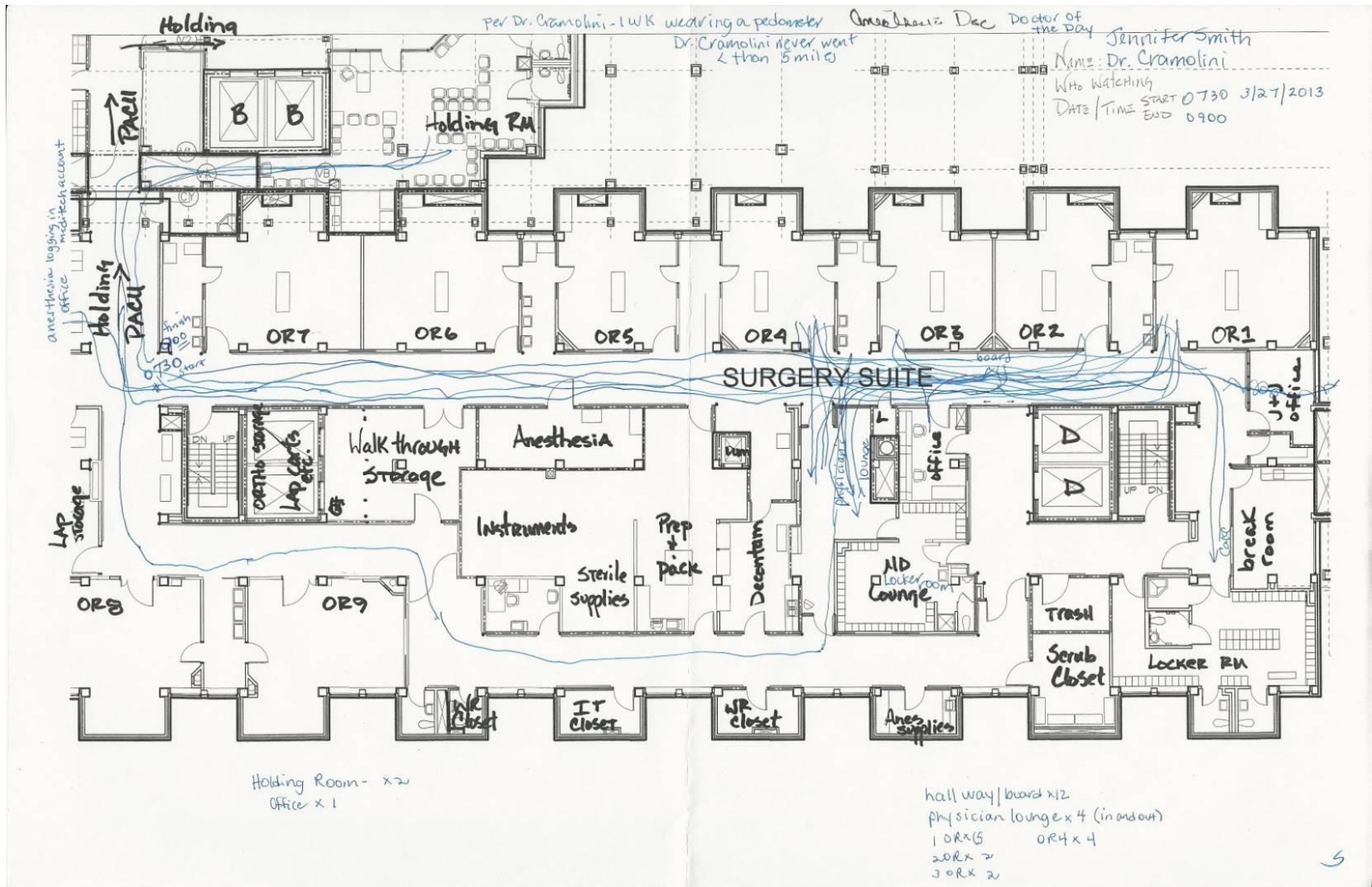
Learning from our past, understanding our present, to design our future.

Schematic Design

- From concept to completion user groups including front-line team members, providers, management, and families were involved with the design and planning of a new tower.



Spaghetti Diagrams



Chip Game



Mock Rooms



Testing with real equipment



Head Wall Design



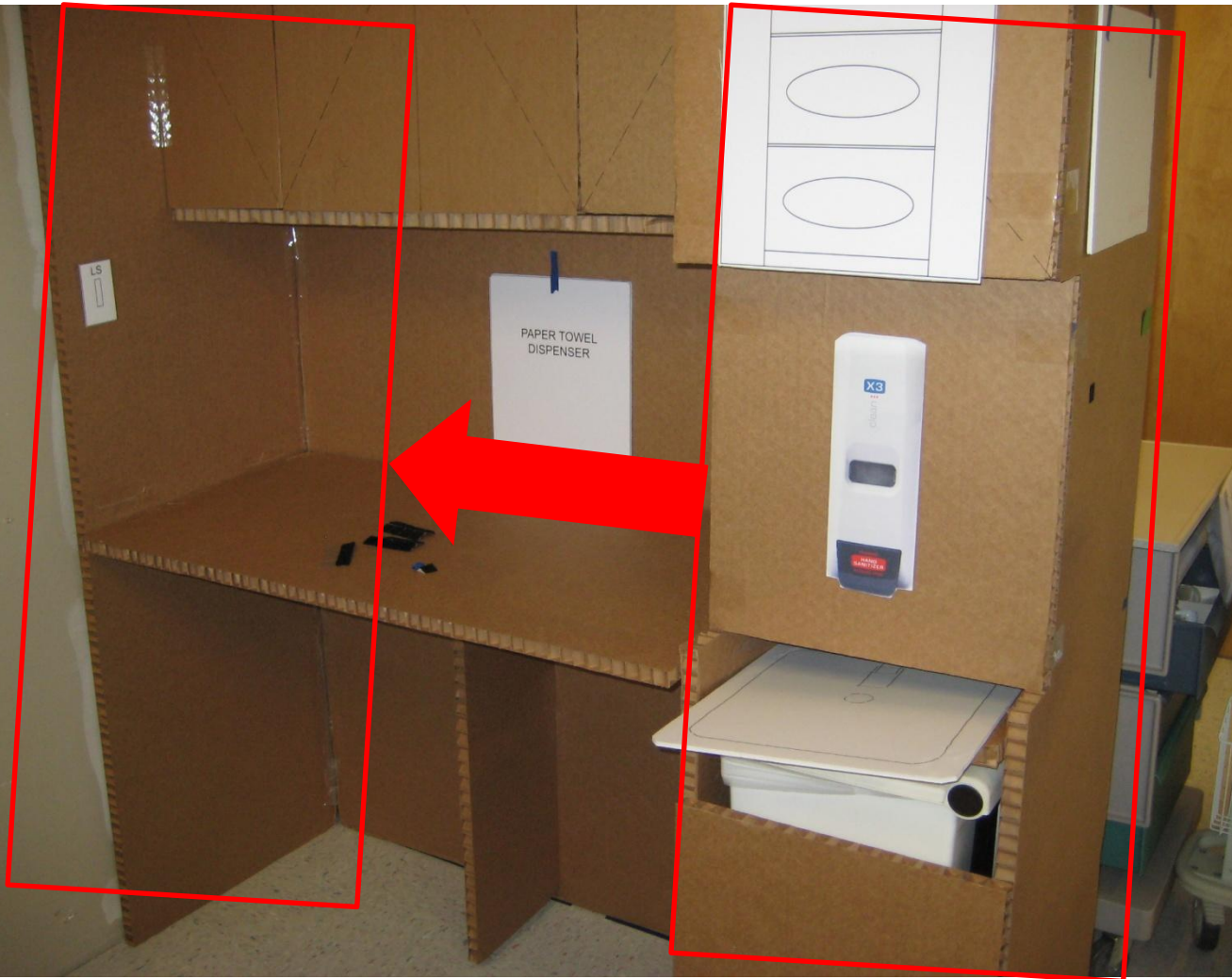
NICU Workstation



NICU Workstation Change

Note:

Move cabinet to wall side to make access to counter space and sink easier for providers and family.



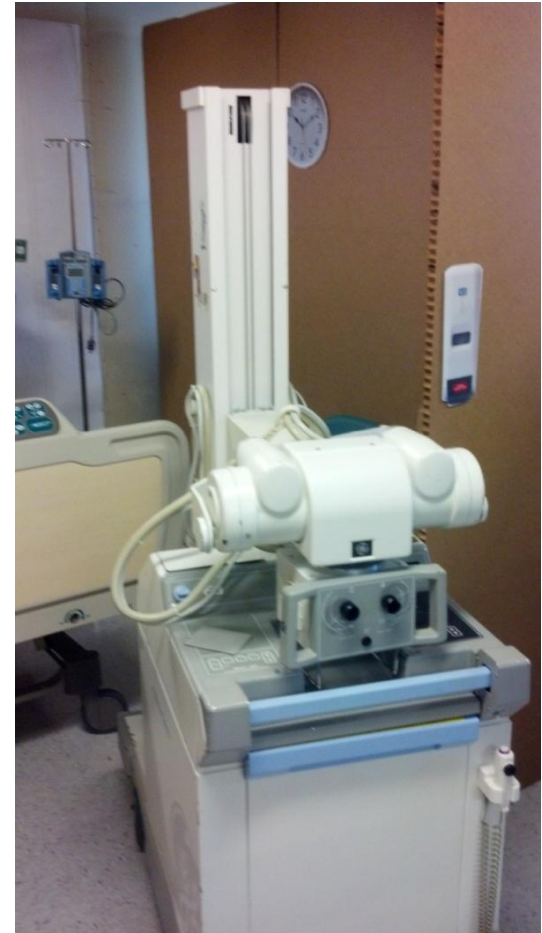
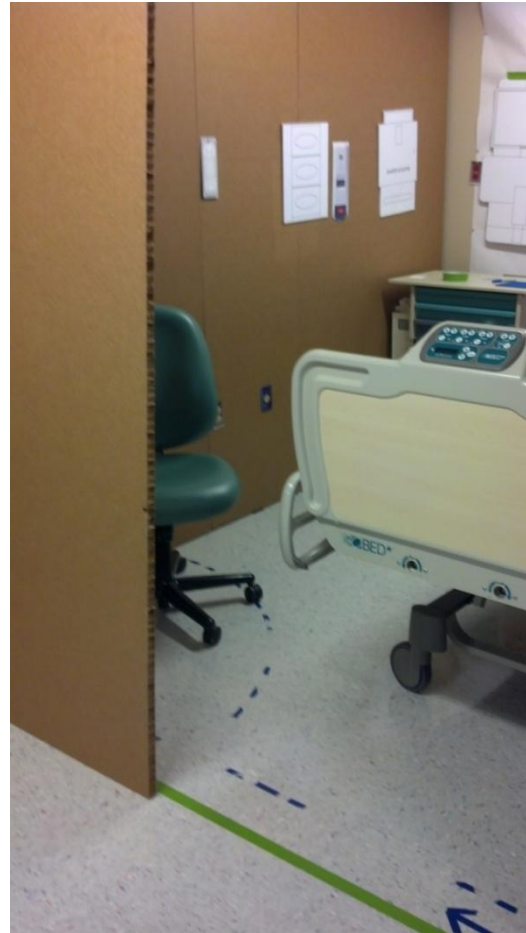
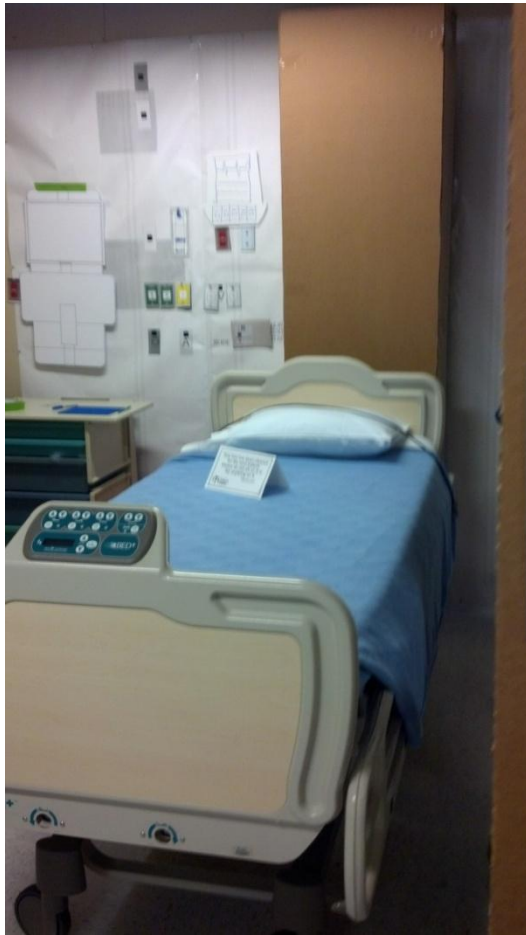
Clinic Provider Space



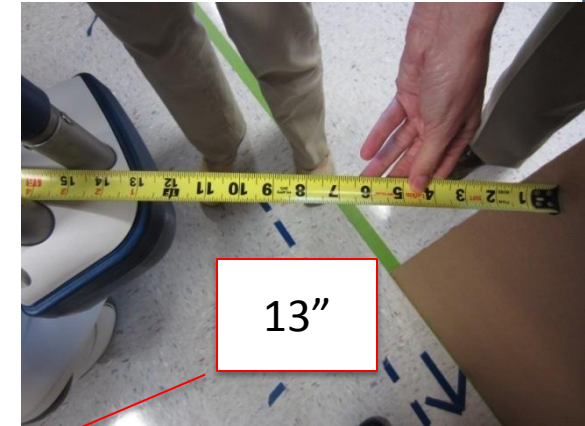
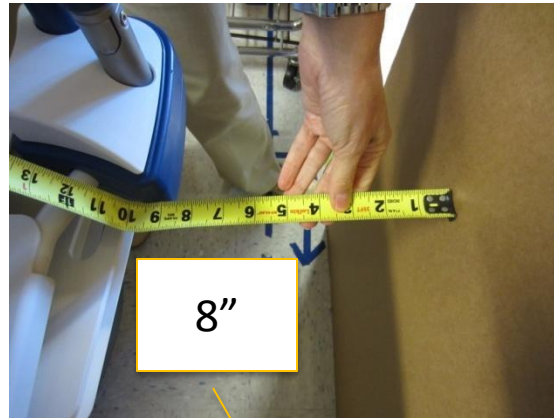
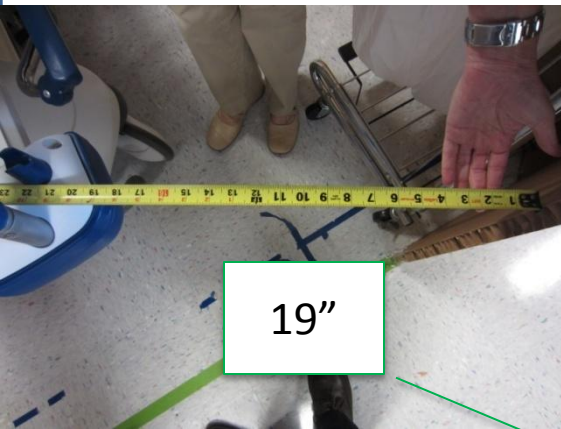
Pre/Post Room



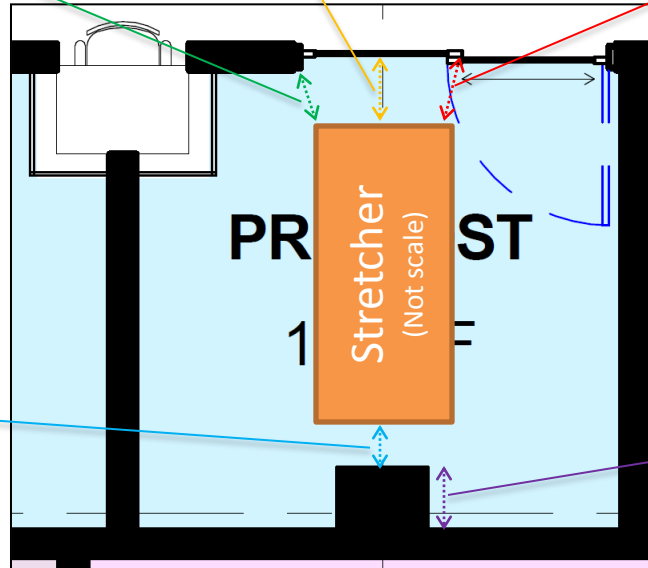
Clearance Issues



18" Column : Stretcher : 12" Off



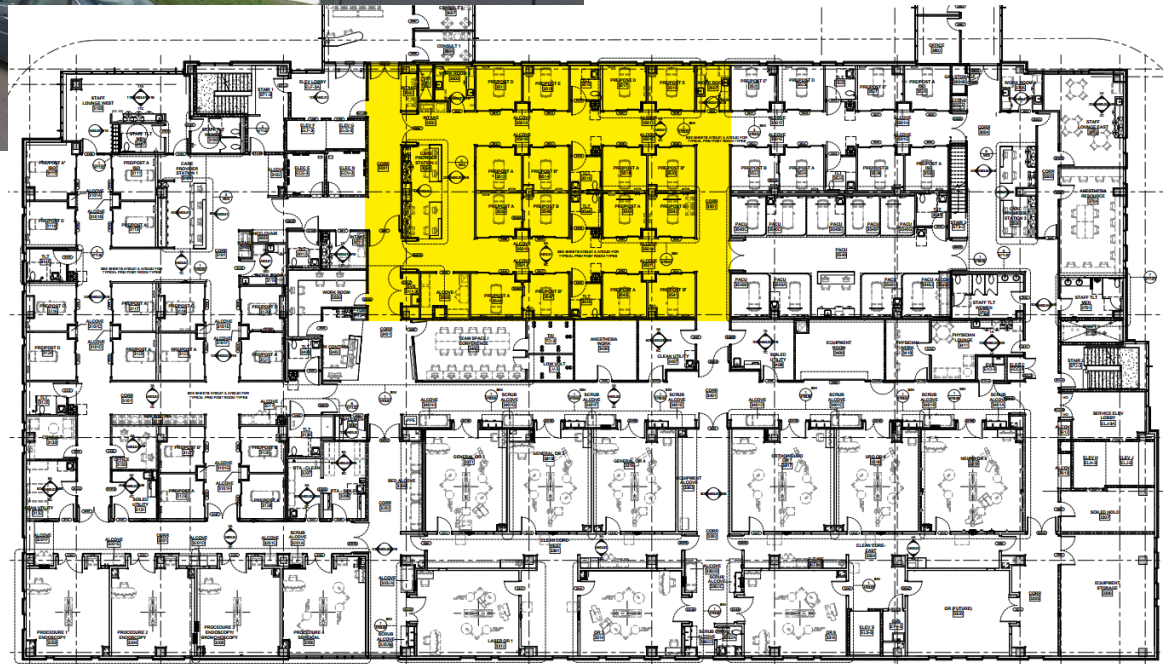
Note
2 rooms have
18" columns



Note
Bed Type is
Stretcher



Floor Design Validation



Neighborhoods



Room Modeling

Date: Tuesday, February 25, 2014
 Time: 12:30
 Cases: 58

Room occupied in this time period

Utilization				
Reg.	P/P	PACU	Pro.	OR
33%	43%	67%	50%	22%

Discharge Count			24
P-1	P-16	P-31	
Eye	Gen	EGD	
P-2	P-17	P-32	
Bronch	EGD	ENT	
P-3	P-18		
T&A	Dent		
P-4	P-19		
Tubes	T&A		
P-5			
Ortho			
P-6			
Tubes			
P-7			
T&A			
P-8	P-23		
Eye	T&A		
P-9	P-24		
T&A	EGD		
P-10			
EGD			
P-11			
T&A			
P-12			
T&A			
		P-43	
		EGD	
P-14			
ENT			
P-15			
T&A		MRI	

Procedure Pre/Post

Surgical Pre/Post (West)

Surgical Pre/Post (East)

Reg.	Wait	P/P 1	P/P 2	P/P 9	P/P 10	P/P 17	P/P 19	P/P 35	P/P 37	P/P 39
P-57	P-54	P-52			P-48			P-13	P-28	P-22
EGD	EGD	EGD			EGD			Eye	Eye	Gen
		P/P 3	P/P 4	P/P 11	P/P 12	P/P 18	P/P 20	P-36	P/P 38	P/P 40
						P-47				P-21
						URO				Ortho
		P/P 5	P/P 6	P/P 13	P/P 14	P/P 25	P/P 27	P/P 29	P/P 31	PACU 3
		P-46	P-49			P-35			P-38	PACU 4
		EGD	EGD			ENT			Tubes	PACU 5
		P/P 7	P/P 8		P-16	P/P 26	P/P 28	P/P 30	P/P 32	PACU 6
		P-50	P-56							PACU 7
		EGD	EGD							PACU 8

Reg. = Registration

P-48 = Scheduled Patient #48

EGD = Surgery Type

Out-Patient (Yellow)

P/P = Pre/Post Room

Patient Pre Surgery

Patient Post Surgery

In-Patient (Green)

Pro. = Procedure/Endo Room

Procedure ORs			
Pro. 1	Pro. 2	Pro. 3	Pro. 4
P-42			P-40
Dent			Dent

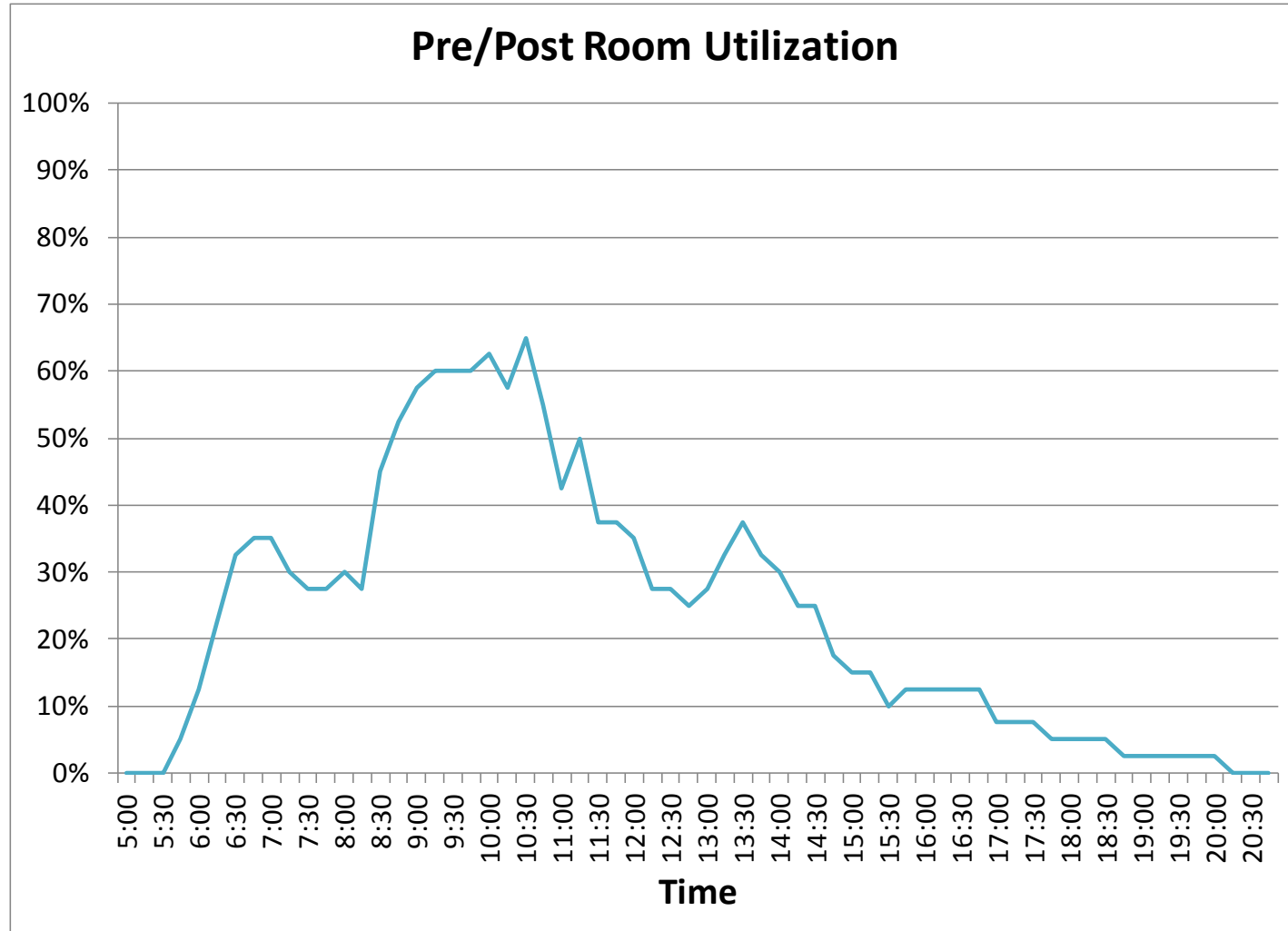
Surgical ORs (West)		
OR 2	OR 3	OR 4
	P-29	
	T&A	
OR 1		OR 5

Surgical ORs (East)	
OR 7	OR 8
P-44	
Ortho	
OR 6	Future OR

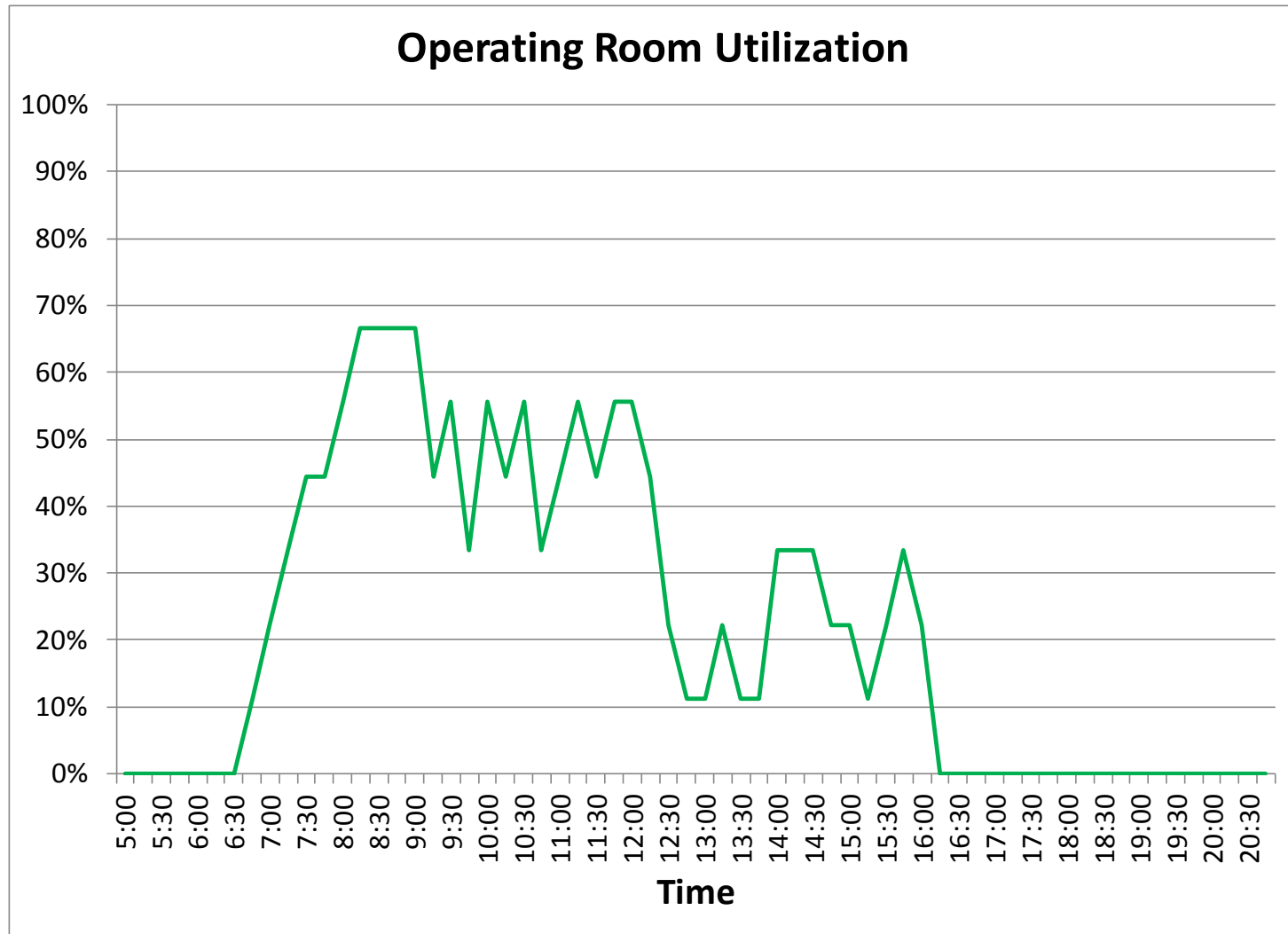
Waiting Room Occupancy			
2 Fam.	3 Fam.	4 Fam.	5 Fam.
29	59	89	119

Red Font = Discharged in this time period
 Black Font = Discharged in previous time period

Pre/Post Room Validation



Pre/Post Room Validation



Equipment Planning

- Complete Keep vs. Buy Inventory Analysis

Department	Qty	Um	Item	Description	Model	Manufacturer			
OUTPATIENT CLINIC									
Count							Use	Don't Use	
	1	ea	ANL3313	Analyzer, Glucose, Manual	Accu-Check	Abbott Diagnostic			
	2	ea	BIN0051-F	Bins, Storage, Wall Mount	Wall Supply Storage	Frame WRX			
	1	ea	CAB4504	Cabinet, Storage, 2-Door, 36"x18"x78"H		76218 Penco Products			
	1	ea	CAR0505	Cart, Emergency, 6-Drawer	LEC63	InterMetro Industries			
	4	ea	CHR1808-F	Chair, Recliner, Treatment, Mobile	Symmetry3300-000-007	Stryker Medical			
	33	ea	CLK1915-F	Clock, Battery, 12" Diameter	SAL-2BS-12R-4	Primex Wireless			
	4	ea	COP0001	Copier, Freestanding	5053FIN (Leased)	Xerox Corp			
	1	ea	ERG0003	Ergometer, Bicycle	818E	Quinton Instrument			
	1	ea	EXR7101	Exerciser, Stepper		1550 Sammons Preston			
	9	ea	FLM0101-F	Flowmeter, Air, 0-15 Lpm Future Item	1264 (Budget)	Ohmeda Medical			
	9	ea	FLM1504-F	Flowmeter, Oxygen, 0-15 Lpm Future	1260 (Budget)	Ohmeda Medical			
	33	ea	GLB0300-F	Glove Box Holder, Triple	Pac Rac #1050	Peace Medical			
	2	ea	HMP1201	Hamper, Linen 18" Diameter w/Lid, Chrome	P-120-L	Pedigo Products			
	1	ea	LTS0504	Light, Exam, Ceiling Mt.	Spectra 9"	Skytron			
	1	ea	LTS0517	Light, Exam, Ob/Gyn, Mobile	2112 Floor	Stryker Medical			
	2	ea	MAT0501	Mat, Exercise, Floor, Folding, 48"x72"	3042-46	Hausmann Industries			
	2	ea	MED1326-F	Medication Dispenser, Main, Half Cell	OmniRx	OmniCell Technologies			
	1	ea	OVN0051	Oven, Electric, Freestanding	JKPO30DPBB	GE Healthcare Technologies			
	1	ea	PMP1909	Pump, Suction, Portable, Battery	S-Scort Duet	Armstrong Medical Industries			
	23	ea	SFG0102	Sphygmomanometer, Aneroid, Wall Mt.	5091-38	Tycos Div Welch Allyn			
	2	ea	STA0052	Station, Stadiometer	Akytron 226	Hi-Rite			
	23	ea	STL0501	Stool, Exam w/Air Lift	Five Series - 526 GS	Pedigo Products			
	23	ea	TBL0520	Table, Examination,/Treatment, w/cabinet		104 Midmark			
	4	ea	TBL6701-F	Table, Overbed	Companion I	Stryker Medical			
	1	ea	TRD3101	Treadmill, Elec. w/Handrails, EMI Filter		2000 GE Marquette			
	26	ea	TRK0301-F	Track, Cubicle Curtain	Location Only	General Contractor			
	2	ea	WCH0101	Wheelchair, Adult w/I.V. Rod, Large	4000 Series	Invacare			
	2	ea	WSH0410	Washer, Dish, Undercounter, 24"	FPHD2481KF	Frigidaire			

Keep vs. Buy Results

- Analyzed new facility equipment needs with current equipment resulting in budget **savings** of....

\$560,000

Major Schematic Design

- Designed perioperative space with end-to-end patient flow on one floor.
- Redesigned room doors to allow for emergency equipment access.
- Reduced number of Pre/Post rooms with a column at the headwall from **11 to 2**.
- Reduced new facility equipment needs by **\$560,000**
- Validation of 40 bed Pre/Post room capacity
- Ability to meet patient demand with two less planned ORs resulting in **\$812,000** cost avoidance

Surgery Improvements



End-to-End Flow on One Floor

Periop Assessment

- **Operational Assessment:**
 - Interviewed 17 physicians and hospital leaders.
 - Conducted direct observation of periop operations.
- **Value Stream Analysis:**
 - Input from 22 ETCH employees
 - Reviewed our current process from doctor's office to hospital discharge.
 - Identified improvement focus areas.



Top Opportunities

Core processes


- Combine and optimize electronic medical records (EHR)
 - Communication board needs
- Process transition to new space needs analysis
 - Perioperative processes
 - Anesthesia
 - Ancillary

Prepare for new space

- Patient information flow
 - Physician practice, ETCH depts.
- Day of surgery patient flow
 - Admitting, Pre-op, OR, Post, Discharge

Pre-Day of Surgery Information

- Created new patient information flow process with support materials, tracking, and shared information access impacting:
 - Scheduling
 - Registration
 - Pre-op
 - Surgeon offices
 - Patient families



For reservations
Call 865-541-8128 and fax order to: 865-541-8289


Preoperative: Surgical Booking Order

Surgery date: _____ Post op: Observation Inpatient PICU OPS
Surgeon: _____ PCP: _____
Surgical diagnosis (ICD 10 consistent description): _____
Surgical procedure: _____
Special equipment request:
• Implants: _____
• X-ray: C-ARM Disc Portable O- ARM
• Laser: Pulse dye Omniguide CO2 Holmium
• Navigation system: ENT Neuro
Ancillary lab request: Frozen section Fresh Bone marrow Blood gas
Additional special patient prep request: _____

Patient information
Legal name: _____
Gender: Male Female Date of birth: _____
Please list two phone numbers below: Social security no.: _____-_____-_____
Primary phone #: _____ Secondary phone #: _____
Address: _____

Name legal guardian: _____ (mom/dad or other)
Primary insurance: _____ Identity no: _____
Policy holder name: _____ Date of birth: _____
Insurance holder social security no.: _____
Pre-certification no: _____ (send as soon as possible)

Secondary insurance: _____
Identity no: _____ Pre-certification no: _____



Form No. 31504 (10/19) st

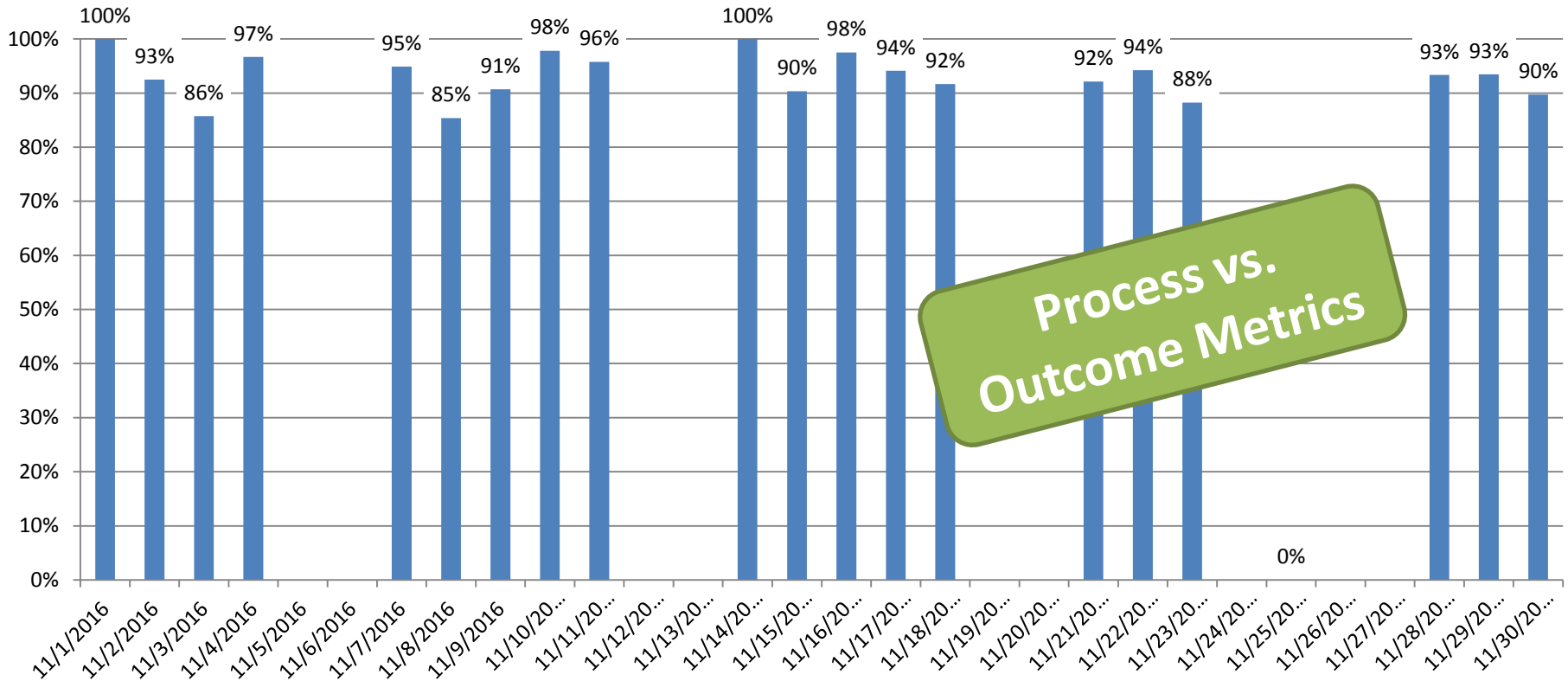
Booking Changes Deployment

- In person deployment for surgical offices accounting for **89%** of our volume
 - Hundreds of people impacted
 - Face-to-face meetings
 - Material packets
 - Follow-up meetings
- On-site deployment to all internal personnel affected or impacted

Surgeon	Service	Complete	Not Complete
Al-Tawil, Youhana S MD	GI	X	
Moreno, Francisco G MD	ENT	X	
Angel, Carlos A MD	GENERAL	X	
Vaughan, William Glaze	GENERAL	X	
Devoid, David MD	GI	X	
Ammar, M. Samer MD	GI	X	
Jensen, Eric MD	GENERAL	X	
Belmont, Michael J MD	ENT	X	
Ray, R Mark MD	ENT	X	
Halter, Denise DDS	DENTAL	X	
Crawford, J Jay MD	ORTHO	X	
Myers, Richard III DDS	DENTAL	X	
Lee, Jared MD	DENTAL	X	
Sears, Cameron J MD	ORTHO	X	
Riden, David J MD	GU	X	
Townsend, Joseph R DDS	DENTAL	X	
Little, John P MD	ENT	X	
Hulse, Evon E DDS	DENTAL	X	
Evans, Elizabeth DDS	DENTAL		X
Gitschlag, Gary N MD	EYES	X	
Wood, James M DDS	DENTAL		X
Schmitt, Allyson MD	EYES	X	

Right Information Right Time

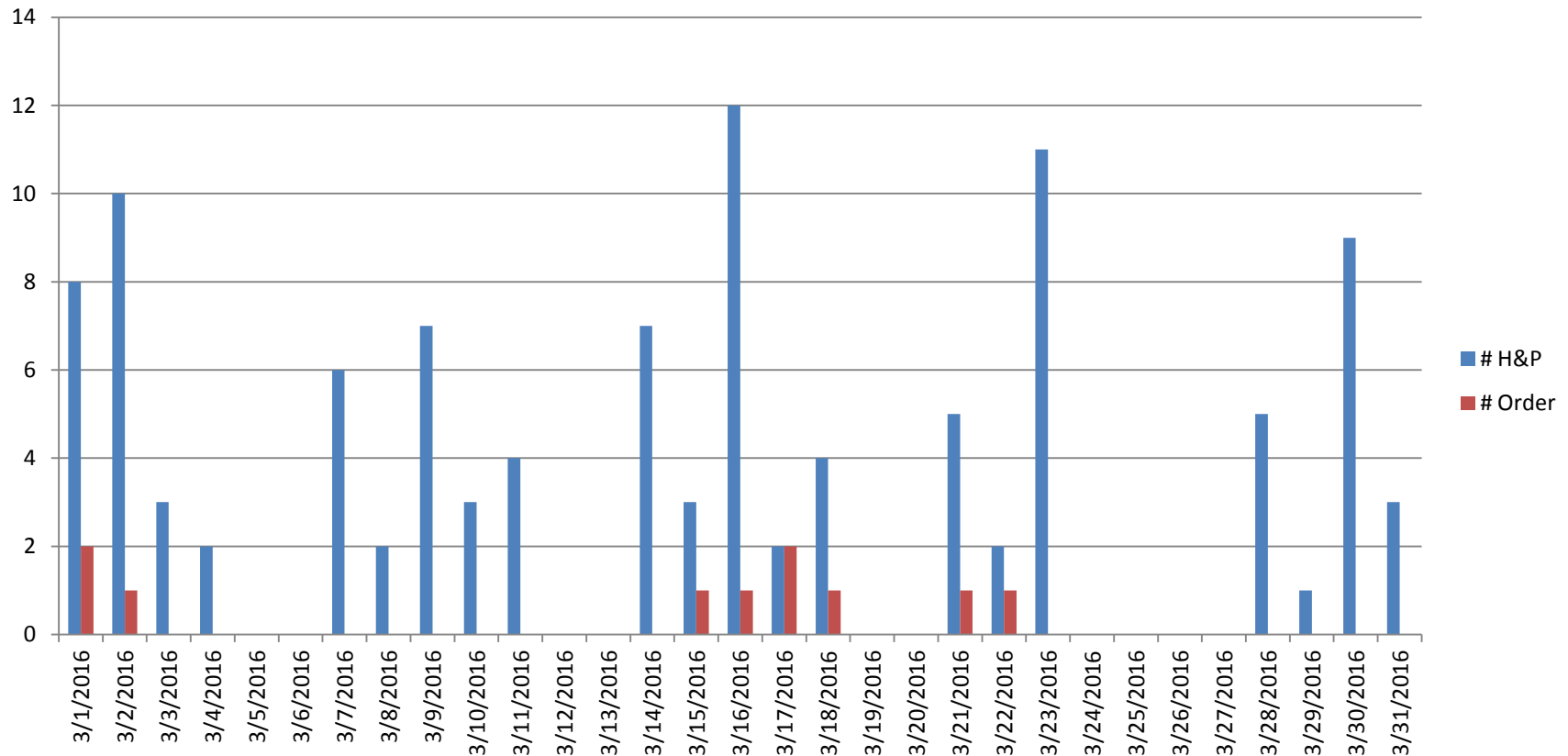
Booking Sheet Received in OR Scheduling Office 3-Days Out - November 2016



Baseline Average: 10%
Current Average: 93%

Right Information Right Time

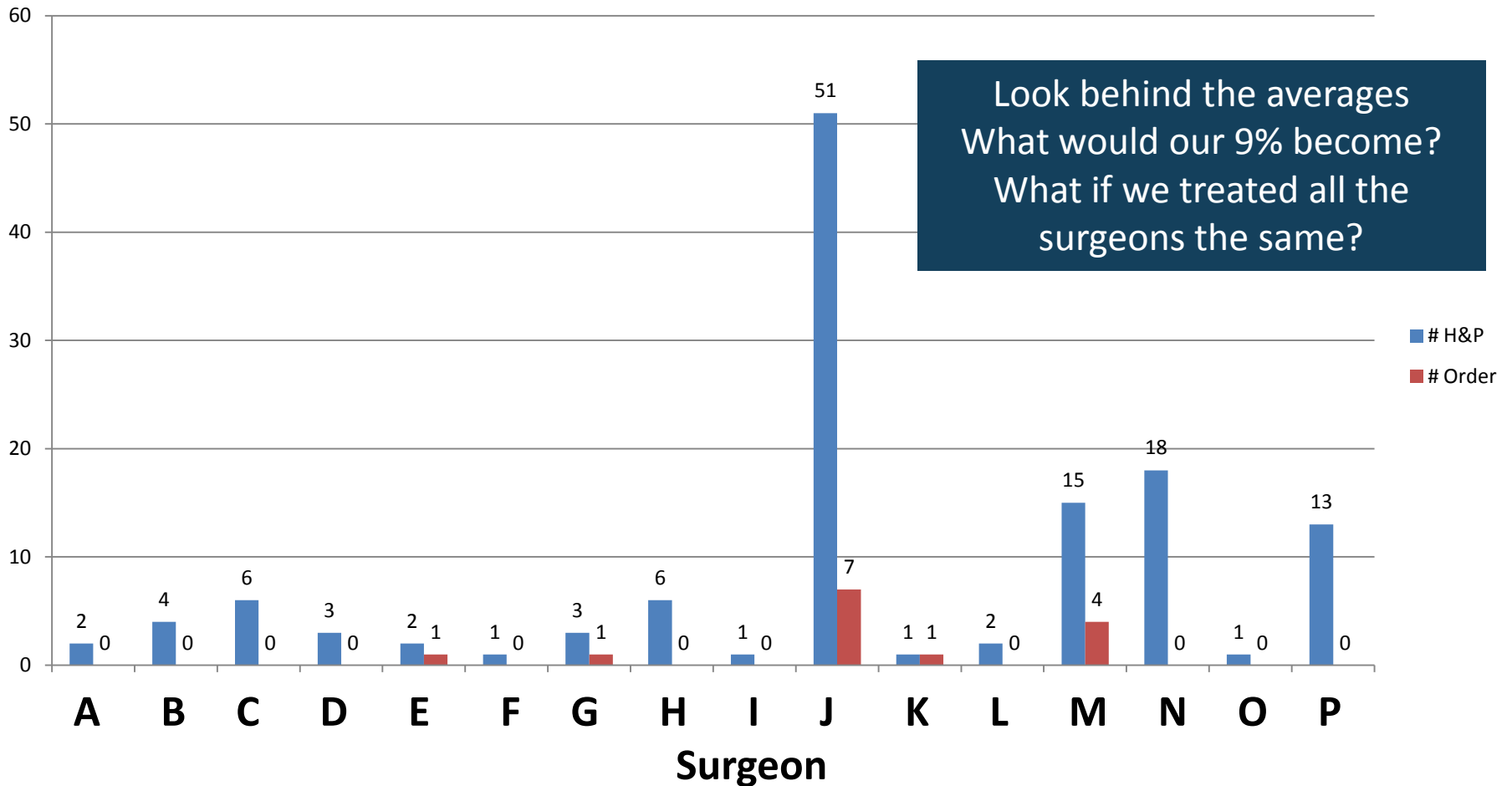
Number of H&P's and Orders Not Completed on Day of Surgery



Baseline Average: 20%
Current Average: 9%

Data vs. Information

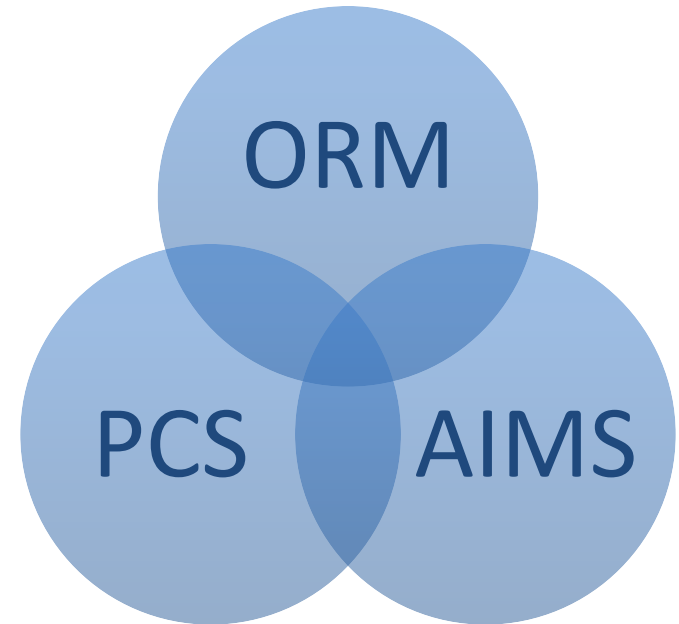
Number of H&P's and Orders Not Completed on Day of Surgery by Provider



Day of Surgery Information

- In the new space our Pre/Post assignments are combining with PACU.
- Redefine the data elements essential to Outpatient Surgery to ensure we have the right information available to the right person at the right time.
- The team defined patient information needed by all stakeholders for the flow and coordination of services.

EMR Modules



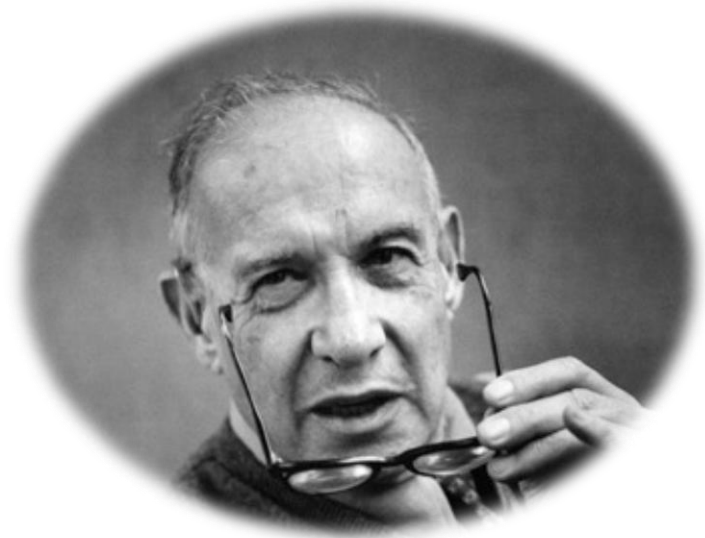
520

Currently, there are approximately 520 possible questions being asked of patients/families prior to surgery. This increases the opportunities for errors, increases preoperative task time for staff, and causes frustration for both families and staff.

Planned Abandonment

"Yet planned, purposeful abandonment of the old and of the unrewarding is a prerequisite that frees up resources to focus on the successful pursuit of the new and highly promising."

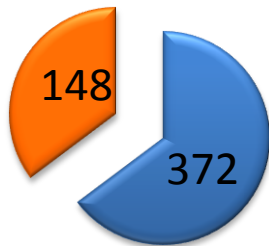
- Peter Drucker



Information Flow Redesign Results

Pre Data

Currently we gather 520
information fields
148 of those are duplicates



■ Unique Code Values ■ Duplicate Values

Post Data

Future state: 199 items
21 duplicate items



■ Unique Code Values ■ Duplicate Values


Final Results

- Total items decreased by: 62%
- Duplication decreased by: 86%
- Purposeful duplication of items that benefit from verification

Pre Process Flow

Patient Priority Board

Room	OR	Priority	Name	Age	Sex	Nurse	Doctor	Pre-op Goal	Patient Arrived	Vitals	Anesthesia admit	Nursing admit	Versed	Pre Out	Post In	30 Min. Vitals	Anesthesia Post-op Admit	Discharge



The charge nurse as air traffic controller ensuring flow through the department and to the OR

What our patients now experience

- Average time to get a patient ready for surgery is **41 minutes**.
- Patients experience our pre-op goal of 60 minutes **90%+ of the time**.
- Voice of the Customer:

“We’re now only collecting essential information from our patients and families. I now have time to build relationships with my patients. This is why I went into nursing”



“I called my husband on the day of surgery and couldn’t believe the improvements made in the reduction of repetitive questions and the improvement of staff working in tandem. It was a night and day difference”

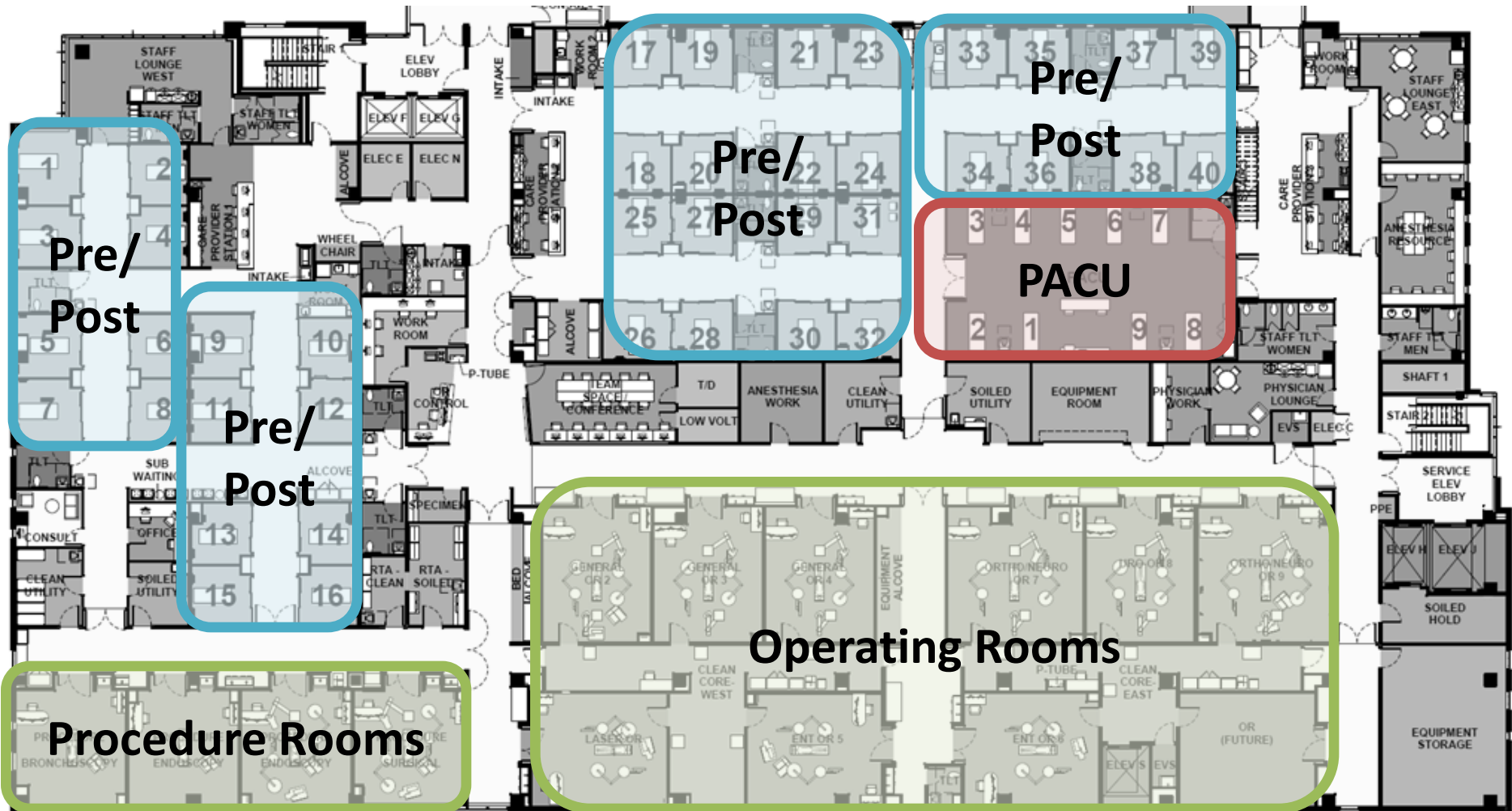


Pre Surgery Improvements

- Review OPS downstream operations in Holding Room and Operating Room.
 - Baseline Current State On-Time Starts: **29%**
 - Current State On-Time Starts : **58%**
 - Future State Goal On-Time Starts : **66%+**

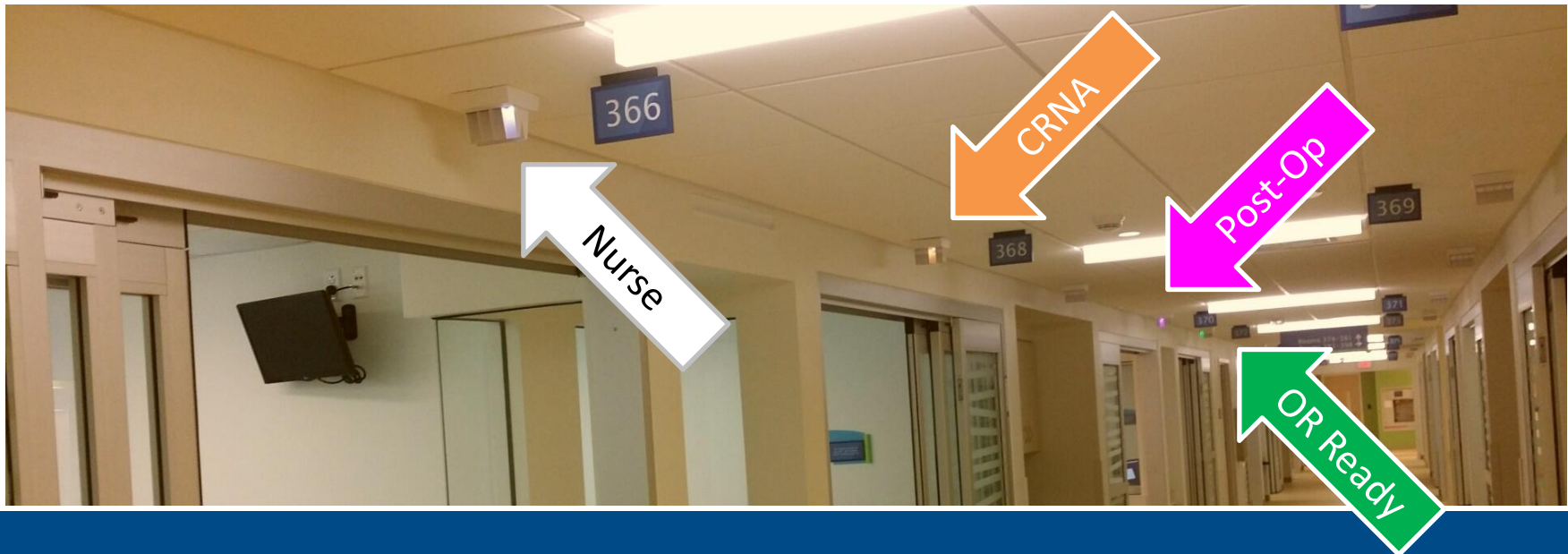


Zone Management



Sharing Patient Status

Main OR													
Room	OR	OR Time	PRI	Pat Name	Surgeon	Anes.	Arrival	Status	Versed	PostRm	Comments		
436	ENDO 01	08:50		Patient Names	DEVOIDD	CRAMOLINI	06:45 01/17	RN				Go	REG SDC
446	ENDO 02	01:00			THORNHIC	CRAMOLINI	10:59 01/17	Cancelled				Go	REG SDC
446	ENDO 02	01:20	Y		THORNHIC	HOIG	11:28 01/17	OR-Ready	Needed			Go	REG SDC
445	ENDO 02	02:00			THORNHIC	JUSTICE	10:54 01/17	MD				Go	REG SDC
420	OR 03	12:30			LEEJ02	LEMBERSKY	10:54 01/17	ANES	Needed			Go	REG SDC
421	OR 03	01:40			LEEJ02	LEMBERSKY	12:10 01/17	PCA				Go	REG SDC
423	OR 05	12:30			SEARSC		10:32 01/17	CRNA				Go	REG SDC
443	OR 06	10:30	Y		CRAWFORJ	SANNER	09:10 01/17	CRNA				Go	REG SDC
424	OR 06	12:00			CRAWFORJ	SANNER	10:17 01/17	RN				Go	REG SDC
425	OR 06	12:45			CRAWFORJ	HOIG	10:21 01/17	OR-Ready	Given			Go	REG SDC
441	OR 09	01:00		LITTLEJ	HOIG	11:20 01/17		Given			Go	REG SDC	



Live Simulation & Go-Live Practice

- Model surgery schedules with staff in the new space to refine process and communication signaling.



Standard Work

Standard Work

1. DESCRIPTION

Check standard work catalog to ensure consistent naming. List Process group and sub group if applicable

Title: Pre/Post Workflow
Last Revision Date: 11/3/16
Process Group(s): Pre/Post RN, Pre/Post PCA, Pre/Post HUC
Process Owner/Contact: Sherry Edmonds

2. PROCESS KEY POINTS

- Anesthesia criteria determine pt location from OR
- Pt placement depends on schedule (census)
- Whiteboard used by all disciplines for pt status/location
- 2 Pods -Surgery and Endo
- 9 bed PACU
- 2 eight bed zones in Endo
- 3 eight bed zones in Pre/Post
- 2 RN team/1PCA assigned to each 8 bed zone
- All pts receive Phase I and Phase II recovery

3. DETAIL – option 1: choose this format as the default.

Level of detail may vary depending on how much work has been done in this area.

Could be: Patient Check-in.... or Take patient blood pressure.

Key points: What's important for the reader to keep in mind for this step? Any suggestions for scripting?

Tool/System: Optional – may specify which tab to go to in athena, or where to find a reference on the network, for example
 Est. Time: Optional – helpful to set expectations for how long a step generally takes

#	Who	What	Key Points/Suggestions	Tool, System	Est. Time
1	Clinical Leader	Assigns pt room Determines arrival times day prior to surgery Assigns preop/postop phone calls to RN	Preop/postop phone calls are divided among staff and assigned to RN's	schedule	
2	Clinical Leader	Assigns staff zone teams	2 RN (1 phase I-1 phase II) 1 PCA	Map	
3	Admitting	Pt arrives/registers Face sheet and labels print to main nurse's station **Inpatients will arrive and be placed in pre/post room.	**all Endo patients will be transported via stretcher from inpatient room. **Completes preoperative record for patient	Verify arrival on admission clipboard	

Audit Card # 1

INTAKE



Observation: PCA performing intake process

1. Was urine obtained and labeled for HCG?
 - Was urine transferred to vacutainer?
 - Label correctly placed on tube with date, time, initials, and HCG?
 - Placed in biohazard bag?
 - Tube closed appropriately?
2. Pulse ox placed on patient and placed on Philips monitor
 - Was armband scanned to admit patient to monitor?
 - Discharge patient from monitor?
3. Were orange and white lights turned on?



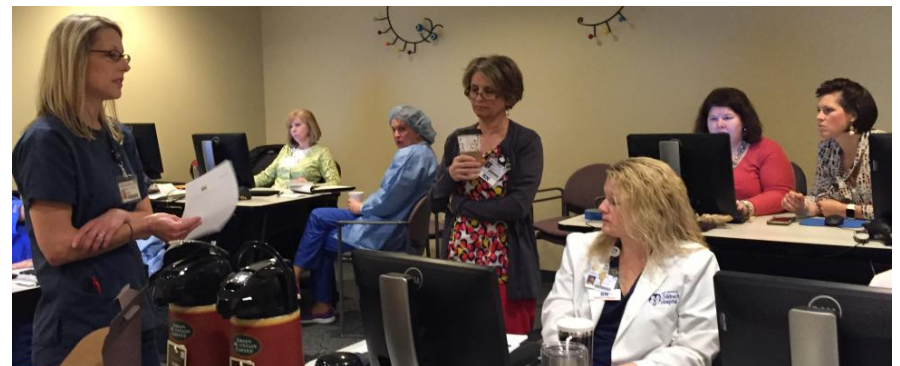
Move Planning

- Define all areas where processes will need to (or should) adapt:
 - New space
 - New process
 - Separation of services (materials)
 - Co-location of services (admitting, pre/post)
- Identify specific needs to be addressed
- Categorize, and prioritize work
- Define
 - Next steps, Owner, Timeframes, Support required

29 High Priority Process

- 23 Complete
- 6 In-process

Perioperative Services New Facility Process Changes										Last Update: 10/5/2016		
New Step	Task	Owner	Priority (High, Med, Low)	Start Date	End Date	Status	If Rejected?	Notes/Other	Next Step	Standard work	Outcome	Last Update
38	Review PACU criteria and when we can graduate to Post Op Room	Rebecca Glenn Dr. Queen	1 - High	1/20/16		In-Process		10/5/16: Still need to review criteria for each area (PACU, Post Room, Inpt Room)	8/29/16: No Updates 7/26/16: No Updates. Need guidelines from Dr.	Needed		10/5/2016
39	Ask for cell phone number on registration	Marti Dragich Jenny Smith	1 - High			Not Started		7/18/2016: We are verifying phone number now at registration, but I would think when they call the patient	8/29/16: In test and works as needed. Go-live date needed. Waiting for TelaVox Go-	Needed		8/29/2016
40	Standard process documentation	Sherry Edmonds Sara Matalik	1 - High	1/20/16		In-Process		Any standard work can be used as training material	Next: Build standard work spreadsheet to capture the breakdown of standard work needed	Needed		3/11/2016
41	RC oxygen manifold locations	Shella Ware	1 - High	1/20/16	1/20/16	Complete		Understand backup systems for emergency O2	Review plan and location.	No	1) Backline secure messaging system 2) Second option	1/20/2016
43	Zone Management (combine with 12) How do we determine to/f to	Sherry Edmonds JKA Work Jenny Smith Rebecca Glenn	1 - High			Scheduled		Lean to support. Determine groups that fit this need. Document and add to standard process documentation.	JKA effort Sherry to work with Isaac and Jen to select a date for work.	Needed		9/10/2016
44	Who owns paper chart packet?	Sherry Edmonds, Grace Allen Casha Mayberry	1 - High	1/20/16	3/14/16	Complete		Casha to get a list of current paper chart and review with team.	Review what is currently in packet determine what when should change	Needed	3/14/16(5E): We took 4 pieces out of the packet. 2 sharing	3/14/2016
45	Can we track patients in 6.07 where the patient is located?	Tammy Mosier & Barb Barr	1 - High	1/20/16	3/8/16	Complete	Yes	3/18/16: This has been addressed by adding the OPS patient room numbers to the ORM destination dictionary.	3/20/16--IT exploring 3 options and reporting back to John and Barb (Rick, Tammy, Vicki and	Needed	This will go-live with OPS move to ORM.	3/8/2016
48	Public transport drop off and pickup	Barb Barr Grace Allen	1 - High	1/20/16	1/29/16	Complete			Talk to Bo and Bill about drop of plan	N/A	Families will drop off at new entrance on 21st and White.	1/29/2016



Provider and Employee Orientation

- Prepare for move by providing an overview of the space and changes.



Welcome to the Scripps Networks South Tower
Perioperative Services

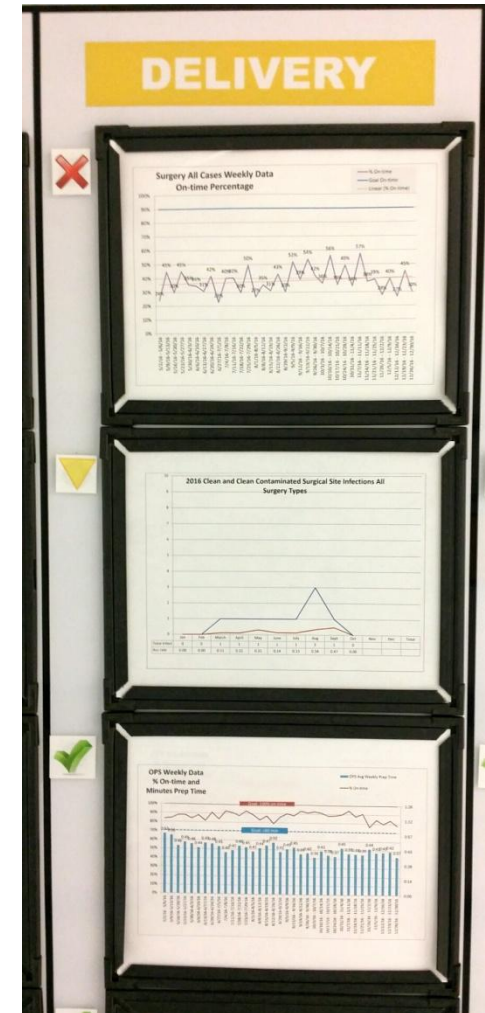
Please take a "Journey" to learn all about our department with this musical scavenger hunt.

(Provide proof of finding all locations by following the clues below)

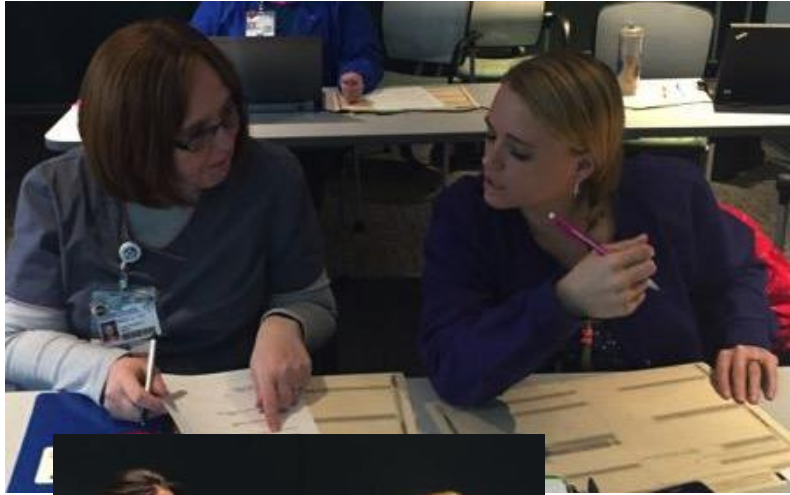
Area to find:	Clue:	Title: <i>Scan the QR code to hear the song</i>
Locker Rooms (entrance on 4 th floor)	We wish we were only working 8 hours like this East TN native sings from a movie with the same name.	9 to 5 Dolly Parton
Locker Rooms (exit to Periop Unit)	We might not be playing sports but we are a team.	Put Me in Coach John Fogarty
Pre/Post Care Station Back	This shakes like this song describes.	You Shook Me All Night Long ACDC
Gas Storage Room	You may or may not feel the way this song suggests.	Peaceful Easy Feeling Eagles
Laryngospasm Kit (Workroom Back)	This song is the opposite of the goal of having these kits.	Take My Breath Away Berlin
Offices (Jenny, Sherry,	This is something that we often take for granted but is necessary	Breathing Jason Derulo

Next Steps:

- **On-time Starts Kaizen:**
Continued improvement to OR on-time starts performance.
- **Refine Management System:**
Building a leadership support and reporting structure to sustain long-term performance.
- **Implement Schedule Smoothing:** Review scheduling strategy to improve overall OR utilization.



Moving Forward Together



How did we do?



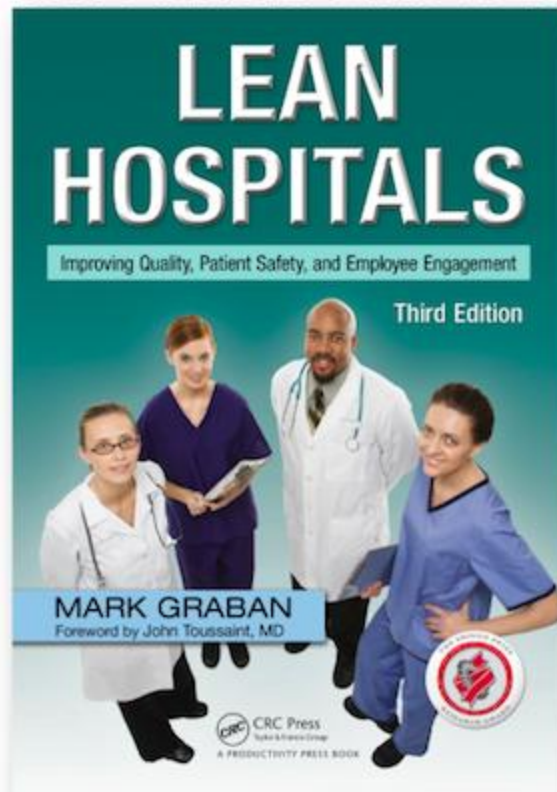
TO DO LIST FROM DR. JAMES RAWSON

- ✓ 1. Engage Physicians
- ✓ 2. Include patients/families in PI projects
- ✓ 3. Free up \$1M of waste and reinvest it in healthcare
- ✓ 4. Tweet your lessons learned
- ✓ 5. Report the impact of the \$300M reinvestment in US healthcare at SHS2017

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Chapter 10

Lean Design

Better, Faster, and Cheaper

In recent years, health systems have partnered with their architects and construction builders to embrace “Lean design” principles and practices. It is possible to build, renovate, or finish out spaces in a way that breaks traditional trade-offs. Spaces and buildings can work better (for patients and staff), faster (completed before estimated dates), and cheaper (coming in under budget or less expensive than similar projects). As with anything Lean, these benefits come from engaging people and improving processes, not by cutting corners or somehow limiting the value that is being created.

What problems are being solved with Lean design? For one, traditional design processes don’t involve frontline staff in the process enough, either getting no input or superficial input, until the new space is handed over to staff. Or, input is received only from a select few, making it more difficult for others to accept the design.

Secondly, traditional design focuses too much on the space or layout, often focused on making it larger or look better, without considering workflows—fitting the space to the workflows or simultaneously improving workflows and space to get the fit that works best in practice.

Thirdly, design and construction is often a batch process, with major stages of work being “thrown over the wall” without many opportunities to iteratively improve a design throughout the process. Instead of a hospital asking the architect to design a building for them, the Lean design process means that everybody works together to design and build more effective spaces and buildings.

Bernita Biekmann, AIA, EDAC, LSSBB, an architect and director of Lean strategy for architecture firm HKS, says, “The traditional approach was more of a ‘Band Aid’ approach, trying to fix immediate problems instead of looking out beyond today for how to be a hospital of the future or to create an ideal state of working.”²¹ Space design must consider future ways of working, and vice versa. A hospital that expects nurses to spend more time at the bedside might build smaller nurses’ stations, while providing technology and workflow improvements that help make that work effectively.

“We no longer rely on experts or architects to tell us how to design the building,” says Dr. David Munch, former chief clinical and quality officer at Exempla Lutheran Medical Center (Colorado). Instead, Munch continues, “We deeply engage the frontline in codifying their ideal work flows.

Questions?



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Poster





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