LEGAME TRA ARCHITETTURE E FUNZIONI NELLE STRUTTURE DI PRONTO SOCCORSO

Anna Maria Ferrari

NAPOLI 20_11_2016

x congresso nazionale
simeu
NAPOLI 18-20 NOVEMBRE 2016

La realtà sta cambiando

RESEARCH
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Using Dat
Emergenc
Design: A

Shari J. Welch, MD

Dr. Welch is a
Intermountain
Delivery Rese
with Utah Eme
City, UT, and
Emergency De
Alliance

Data suggest an optimal size for ED functional units.
The now-recognized arrival and census curves for the ED suggest a department that expands and contracts in response to changing census.

EDs can optimize their functioning by marrying **good processes and operations to good design.**
This review paper is an attempt to bring this new information to the attention of the **multidisciplinary team of architects, designers, and clinicians**

La realtà sta cambiando

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Using Data To Drive Emergency Department Design: A Metasynthesis

Shari J. Welch, MD

Changing demographics affect the way EDs operate

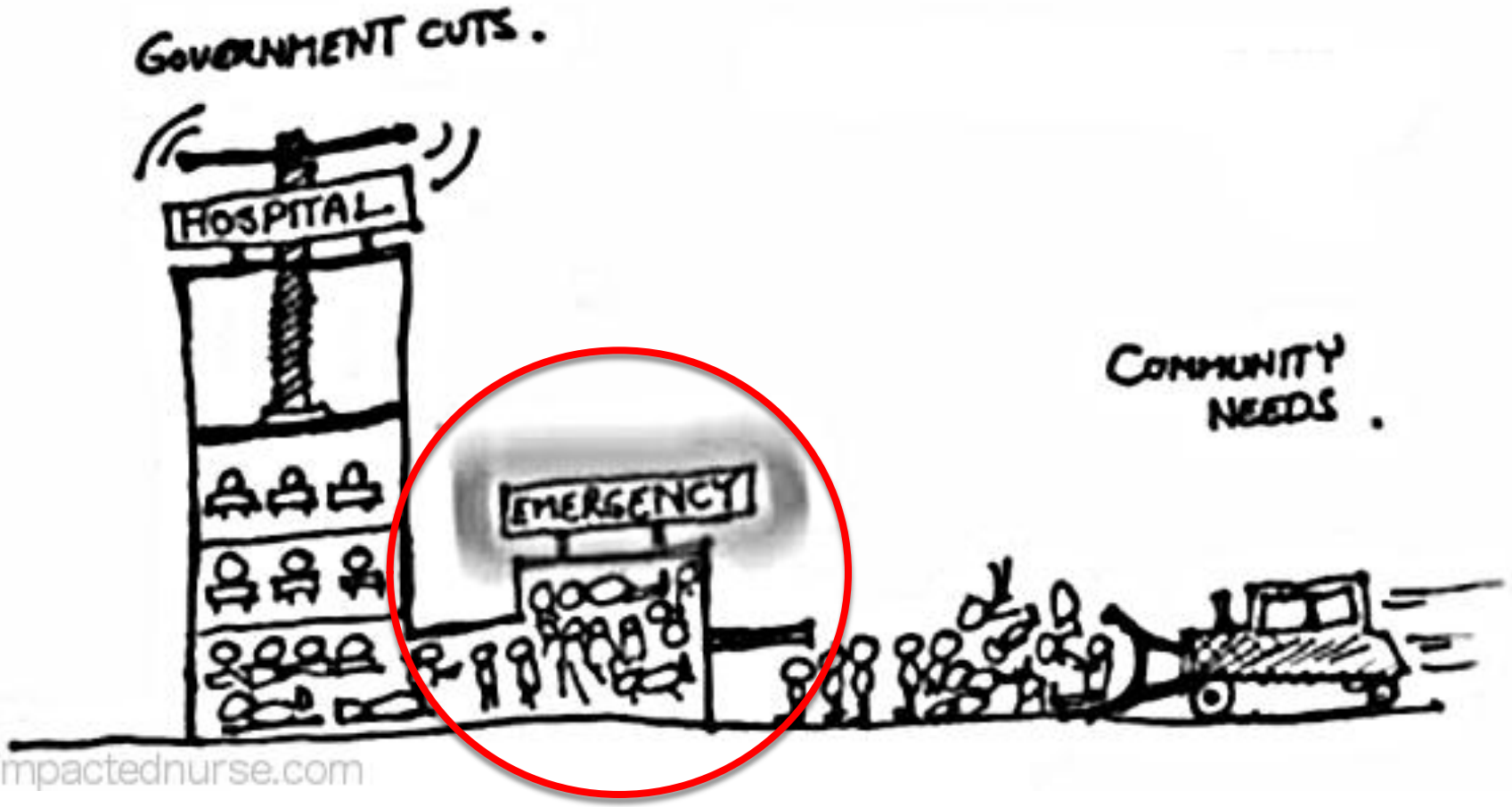
As patients age, the complexity of their acute health care needs increases.

As the **Baby Boomers** reach their senior years, they will hit the ED like a tidal wave.

The sheer amount of information, diagnostic and therapeutic tasks, and personnel involved in caring for these complex patients **will make it necessary to change space, processes, and operations in the ED.**

La realtà sta cambiando

- Overcrowding……cronico
- Aumento dell'età media dei pazienti assistiti
- Aumento della complessità dei pazienti
- Ridotta recettività dell'Ospedale
- Esigenze della popolazione


GOVERNMENT CUTS.
HOSPITAL
EMERGENCY
COMMUNITY NEEDS.
impactednurse.com


RESUSCITATION
Patient Locker
impactednurse.com

“I WANT TO SEE THE DOCTOR”

- Uno dei principali motivi per cui un paziente si presenta al dipartimento d'emergenza è per avere una visita medica
- I pazienti si aspettano un trattamento rapido o immediato per i loro sintomi.
- Molti pensano che ci sia un medico in attesa di vederli immediatamente e prendersi cura di loro, una volta arrivati presso il dipartimento di emergenza. Quando questa aspettativa non è soddisfatta, diminuisce significativamente la soddisfazione del paziente

“I WANT TO SEE THE DOCTOR”: MEETING PATIENTS’ EXPECTATIONS IN THE EMERGENCY DEPARTMENT-M. L. Roper. J Emerg Nurs 2010

“I WANT TO SEE THE DOCTOR”

- L’attesa della visita medica promuove aggravamento, ansia e stress per il paziente, la sua famiglia e gli accompagnatori
- **I tempi d'attesa attuali sono ai più alti livelli di sempre**
- L’aumento dell’attesa della visita medica aumenta il rischio di effetti avversi
- **Ridurre i tempi d’attesa è un'impresa importante e significativa per ogni dipartimento d'emergenza.**

“I WANT TO SEE THE DOCTOR”: MEETING PATIENTS’ EXPECTATIONS IN THE EMERGENCY DEPARTMENT-M. L. Roper. J Emerg Nurs 2010

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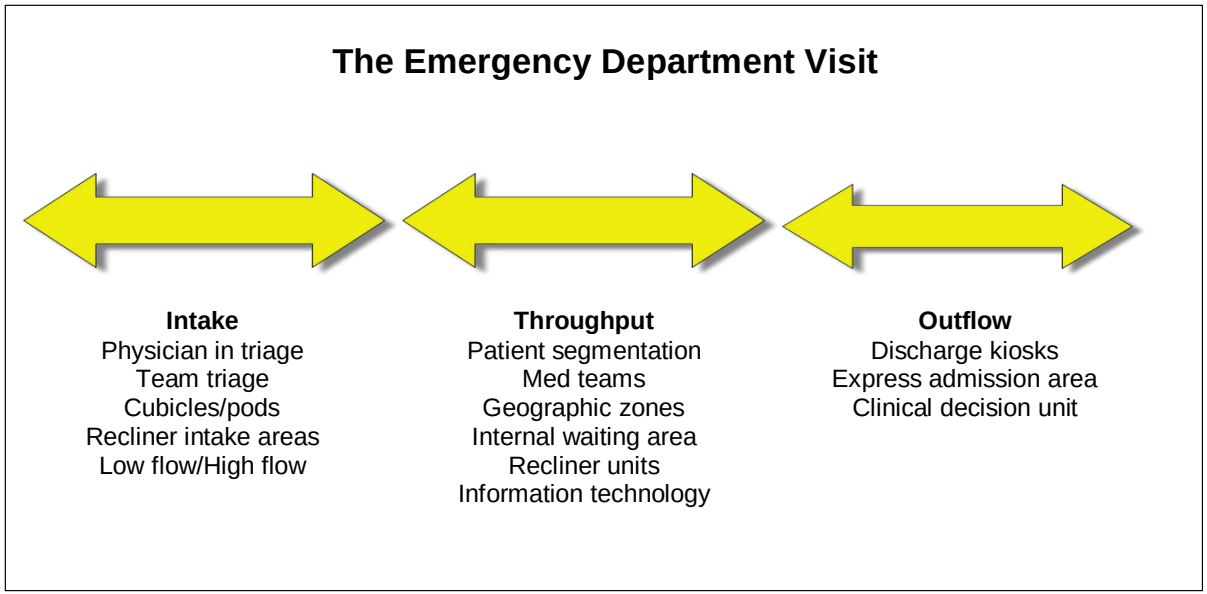


Figure 3. Emergency Department operational innovations.

Most of the operational research done in emergency medicine has focused on patient intake (also known as the *front end*) because improvements in the intake process can have a dramatic and immediate impact on patient satisfaction, door- to-physician times, and LWBS

February 2010

URGENT Matters

Robert Wood Johnson Foundation

THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF PUBLIC HEALTH AND HEALTH SERVICES

URGENT MATTERS LEARNING NETWORK II ISSUE BRIEF 1

Improving Patient Flow & Reducing Emergency Department (ED) Crowding

Optimizing Emergency Department Front-End Operations

Jennifer L. Wiler, MD, MBA
Christopher Gentle, MD
James M. Halfpenny, DO
Alan Heins, MD
Abhi Mehrotra, MD
Michael G. Mikhail, MD
Diana Fite, MD

From the Division of Emergency Medicine, Washington University in St. Louis School of Medicine, St Louis, MO (Wiler); the Department of Emergency Medicine, Christiana Care Health Services, Newark, DE (Gentle); Forrest Hills Hospital, Forrest Hills, NY (Halfpenny); the Department of Emergency Medicine, University of South Alabama College of Medicine and Medical Center, Mobile, AL (Heins); the Department of Emergency Medicine, University of North Carolina, Chapel Hill, NC (Mehrotra); the Department of Emergency Medicine, St. Joseph Mercy Hospital, Ann Arbor, MI (Mikhail); and the Department of Emergency Medicine, University of Texas Medical School at Houston, Houston, TX (Fite).

As administrators evaluate potential approaches to improve cost, quality, and throughput efficiencies in the emergency department (ED), "front-end" operations become an important area of focus. Interventions such as immediate bedding, bedside registration, advanced triage (triage-based care) protocols, physician/practitioner at triage, dedicated "fast track" service line, tracking systems and whiteboards, wireless communication devices, kiosk self check-in, and personal health record technology ("smart cards") have been offered as potential solutions to streamline the front-end processing of ED patients, which becomes crucial during periods of full capacity, crowding, and surges. Although each of these operational improvement strategies has been described in the lay literature, various reports exist in the academic literature about their effect on front-end operations. In this report, we present a review of the current body of academic literature, with the goal of identifying select high-impact front-end operational improvement solutions. [Ann Emerg Med. 2010;55:142-160.]

Optimizing Emergency Department Front-End Operations-

Ann Emerg Med. 2010;55:142-160

- Immediate bedding
- Bedside registration
- Advanced triage protocols and triage-based care protocols
- Physician/practitioner at triage
- Dedicated “fast track” service line
- Tracking systems and “white boards”
- Wireless communication devices
- Kiosk self check-in
- Personal health record technology (“smart cards”)
- Team approach patient care (“Team Triage”)
- Resource-based triage system(s)
- Waiting room design enhancements
- Full / surge capacity protocols
- Incentive based staff compensation
- Time to evaluation guarantee
- Referral to next-day care (“deferral of care”)

Figure. Strategies to improve ED front-end processing.

Flussi e strutture

Esigenze da prendere in considerazione nella progettazione di un nuovo ED

Patients / Families in the ED

Background

- Race
- Nationality
- Religion
- Economics
- Literacy

Types

- Senior
- Adult
- Children
- Men
- Women

Arrivals

- Walk-In / Ambulatory
- Trauma / Ambulance
- Trauma / Air Care

Satisfiers

- Quality Outcomes
- Quick Throughput Time
- Access to Information
- Attentive MD/RN
- Natural Light
- Positive Distractions
- Dignity / Compassion

Dissatisfiers

- Noise
- Bright Lights
- Uncoordinated Care
- Cold Dirty Environments

RN/Staff in the Emergency Department

Types

- Nurses
- Techs
- Students
- Radiology
- Lab / Phlebotomy
- Housekeeping
- Security
- Administration
- Registration
- Social Services
- Dietary
- Respiratory
- Bed Placement

Satisfiers

- Access to Technology throughout Department
- Decentralized Supplies
- Efficient Room Design
- Access to MDs
- Patient Tracking
- Infection Control
- Visual Connection to Patients

Dissatisfiers

- Long Travel Distances
- Inefficient Work Space
- Lack of Design Participation
- Lack of Storage

MDs in the Emergency Department

Types

- ER Doc
- Specialists
- Residents
- Contract vs. Employee
- Visiting

Satisfiers

- Access to Technology throughout Department
- Physician Charting Space
- Right Sized Room Design
- Access to Unit Coordinator

Dissatisfiers

- Long Wait Times for Orders
- Inefficient Work Space
- Lack of Design Participation

EMS in the Emergency Department

Types

- Ambulance
- Police
- Fire Department
- Air Care

Satisfiers

- Ease of Vehicle Access
- Access to Technology
- Secure Department
- Squad Room
- Available Supplies
- Comm. with ER in Route

Dissatisfiers

- Travel Distance into ER
- Poor Trauma Room Layout
- Lack of Design Participation

Leadership in the Emergency Department

Types

- Hospital Executives
- Physician Leadership
- Nursing Leadership
- Research
- Patient Advocate
- Families
- Patients

Satisfiers

- Reduced Staffing
- Increased Capacity
- Efficient Design
- Access
- Healing Environment
- Access to Information
- Improved Outcomes
- Speed of Throughput

Dissatisfiers

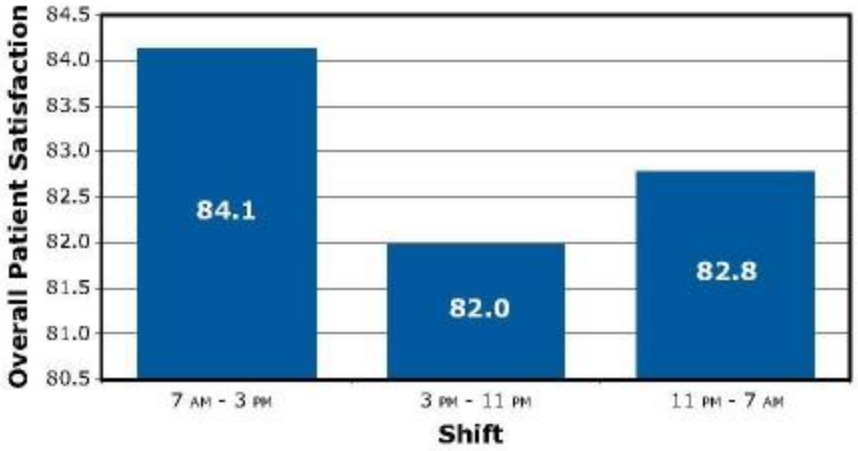
- Budget
- Schedule
- Quality
- Inefficiency

Patient Flow and Performance Metrics by Volume and Acuity: The EDBA Annual ED Data Survey

2011 Results for 830 EDs seeing 29.6m pts	Hi CPT Acuity	Under age 18	Admit %	Transfer %	EMS Arrival	EMS Arrival Admit	Median LOS	**MLOS Treat & Release**	MLOS Admit	LBTC	Door to Doc	EKG per 100
Over 100K	66%	20.2%	21.8%	0.9%	23%	42%	214	182	356	2.3%	31	30
80 to 100K	71%	18.4%	20.9%	1.1%	21%	44%	218	187	362	3.4%	38	25
60 to 80K	66%	18.2%	20.8%	1.2%	19%	44%	205	174	337	2.8%	35	31
40 to 60K	65%	19.5%	19.1%	1.4%	18%	43%	186	156	303	2.3%	33	28
20 to 40K	63%	20.2%	17.1%	1.8%	16%	41%	160	134	261	1.7%	28	26
Under 20K	55%	23.7%	12.7%	2.7%	12%	39%	139	115	227	1.4%	23	20
Pediatric	48%	99.0%	11.4%	0.6%	8%	33%	147	132	270	1.4%	31	4
Adult, Specialty	71%	2.7%	25.5%	1.1%	23%	48%	240	204	346	3.2%	40	34
Urgent Care, Freestanding	41%	23.6%	4.2%	3.4%	7%	31%	100	97	240	1.0%	22	12

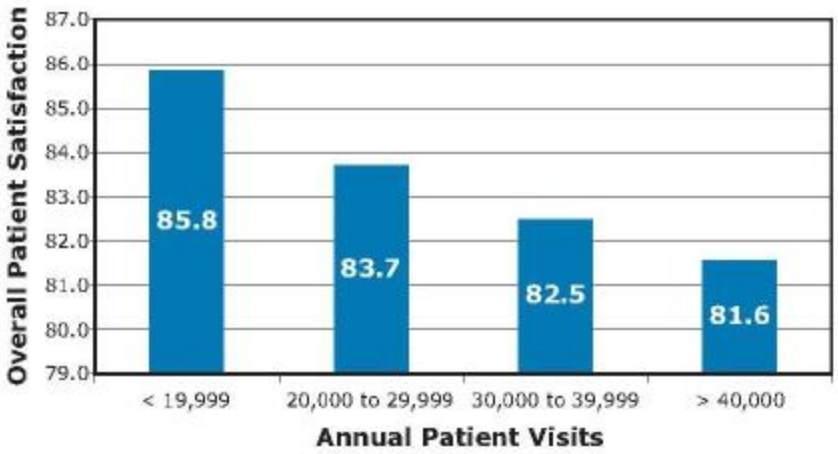
2011 Data from the Emergency Department Benchmarking Association (EDBA)

Patient Satisfaction by Shift



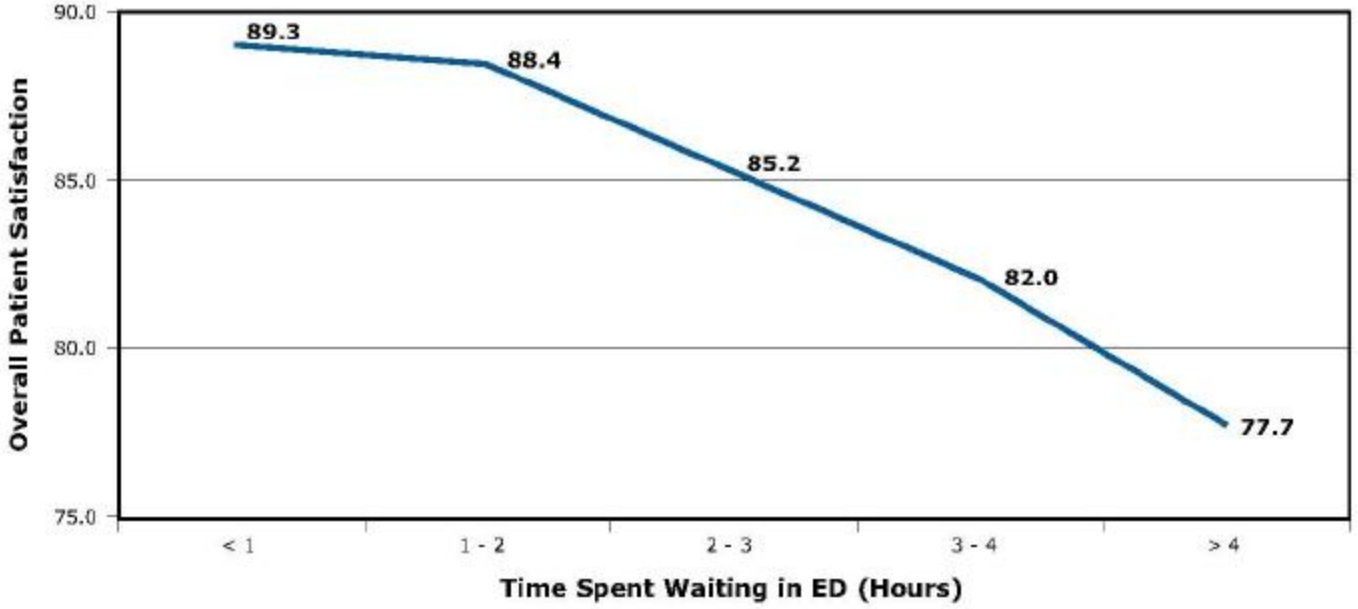
Represents the experiences of 1,509,541 patients treated at 1,552 hospitals nationwide between January 1 and December 31, 2006

Patient Satisfaction by Volume



Represents the experiences of 1,509,541 patients treated at 1,552 hospitals nationwide between January 1 and December 31, 2006

Patient Satisfaction by Time Spent in the ED



Represents the experiences of 1,509,541 patients treated at 1,552 hospitals nationwide between January 1 and December 31, 2006

Una soluzione può essere quella di replicare X volte il modulo "vincente" corrispondente al layout necessario per gestire circa 20.000 pazienti (1 postazione/1500 pazienti)

Daytona Beach, Florida

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Using Data To Drive Emergency Department Design: A Metasynthesis

Shari J. Welch, MD

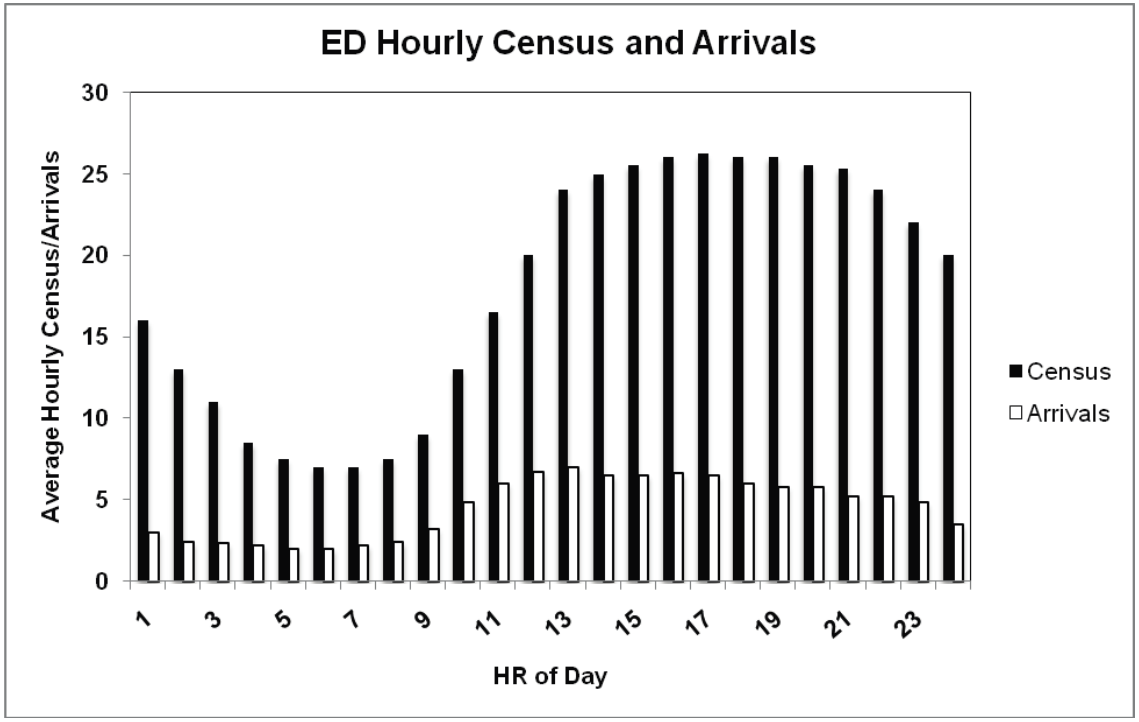

Figure 2. Census and arrival curve of the Emergency Department.

The Breathing Emergency Department

It is well recognized that the workload in an ED is not level throughout the day. The ED space and operations must be able to flex up and down to meet this ex- treme variation in census and arrivals through- out the day.

Triage/Intake

- Is changing from, “Who can wait?” to the initial evaluation area
- Minimal nurse screening to determine most efficient path for patient (streaming)
- Incorporating physician evaluation
- Incorporating ancillary resources and results waiting in close proximity

Segment Incoming Patient Flow

Matching Our Service Delivery to Our Incoming Patient Streams

Triage

Brief RN Assessment:
ESI Evaluation / Evaluation of Acuity

Low Acuity Pathway
ESI Levels 5, 4, + some 3s

Moderate Acuity Pathway
Most ESI Level 3s

High Acuity Pathway
ESI Levels 1 + 2

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The big operational change of putting a physician at the front of the ED visit needs translation into traditional ED designs

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Applications to Design

Lower-acuity patients can be managed in reclining chairs in a zone of cubicles, and visibility is less critical.

Jewish General Hospital

Lady David Institute for Medical Research

Jewish General Hospital

Lady David Institute for Medical Research

Ambulance Bay
Resuscitation Rooms
Triage
Blue Unit
Observation Rooms
Emergency
RAZ
Radiology
Psychiatry
Family Room

Jewish General Hospital
Lady David Institute for Medical Research

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Higher-acuity patients *would likely be managed best on stretchers in larger rooms that can accommodate a resuscitation team, ventilator, EKG machine, and portable x-ray machine all at once.*

These rooms should be directly visible from the staff work station.


EXIT

THE AMERICAN INSTITUTE OF ARCHITECTS

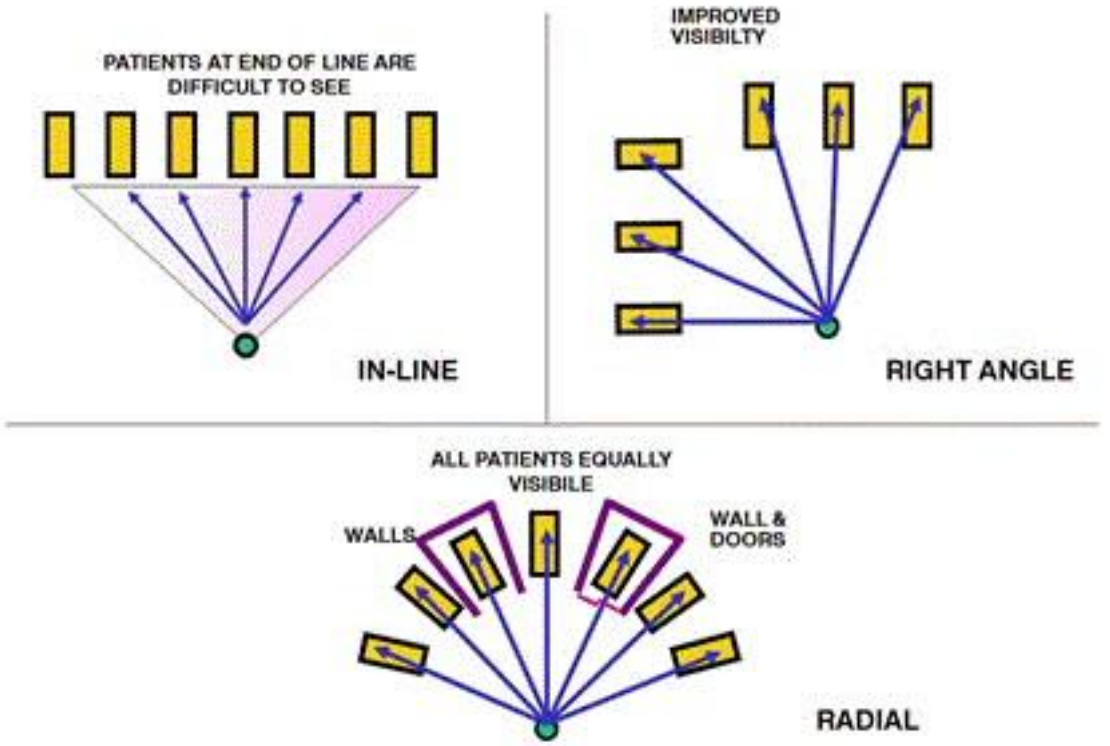


Figure 1: Linear layouts restrict visibility. Creating a right angle can improve on this, but can create awkward spaces. a radial layout allows all rooms to be visualized, and all staff to be proximal with no wasted space.

Evolution of the ED

By James Harrell, FAIA, FACHA, LEEP AP and Angela Mazzi, AIA, ACHA, EDAC

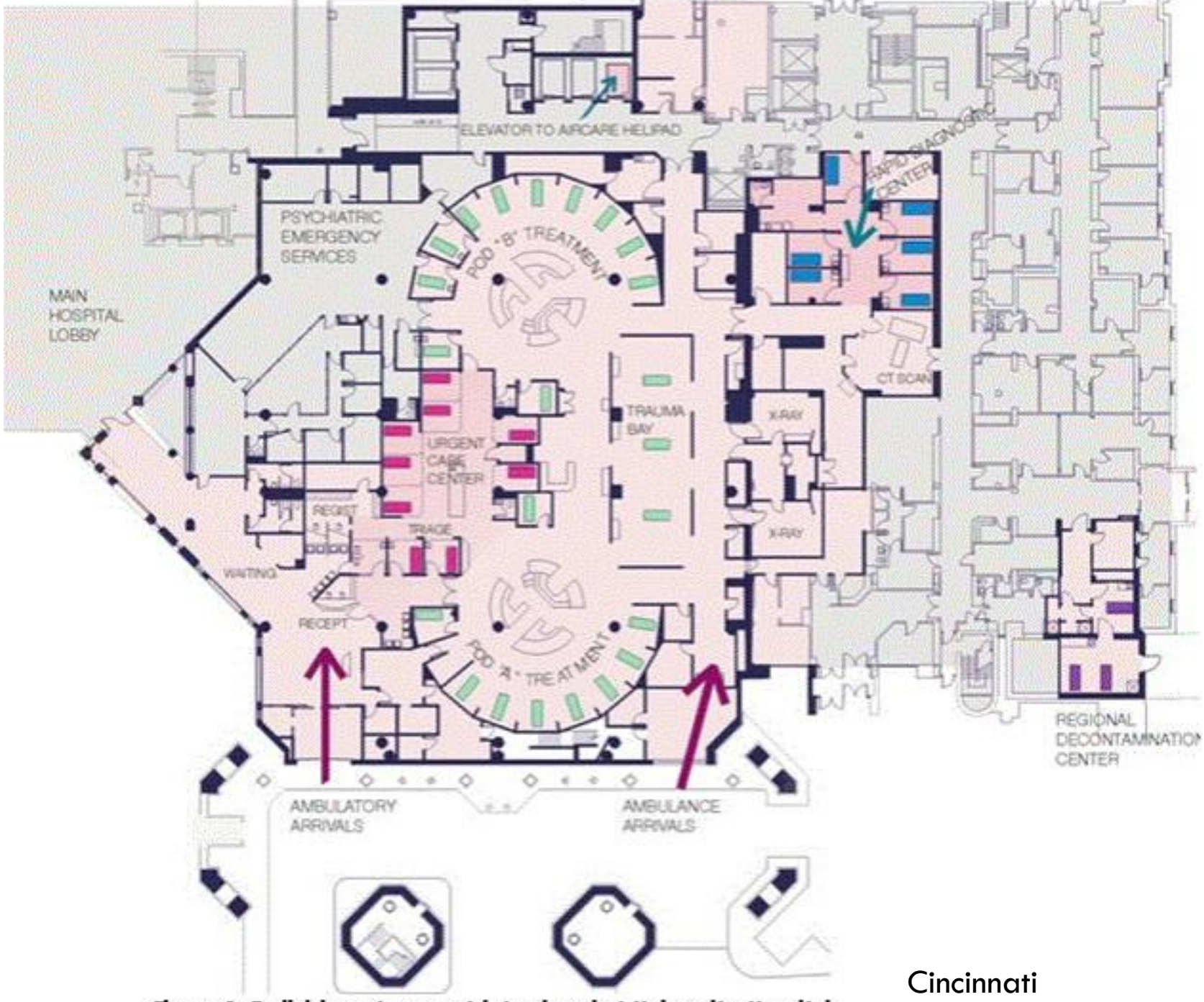
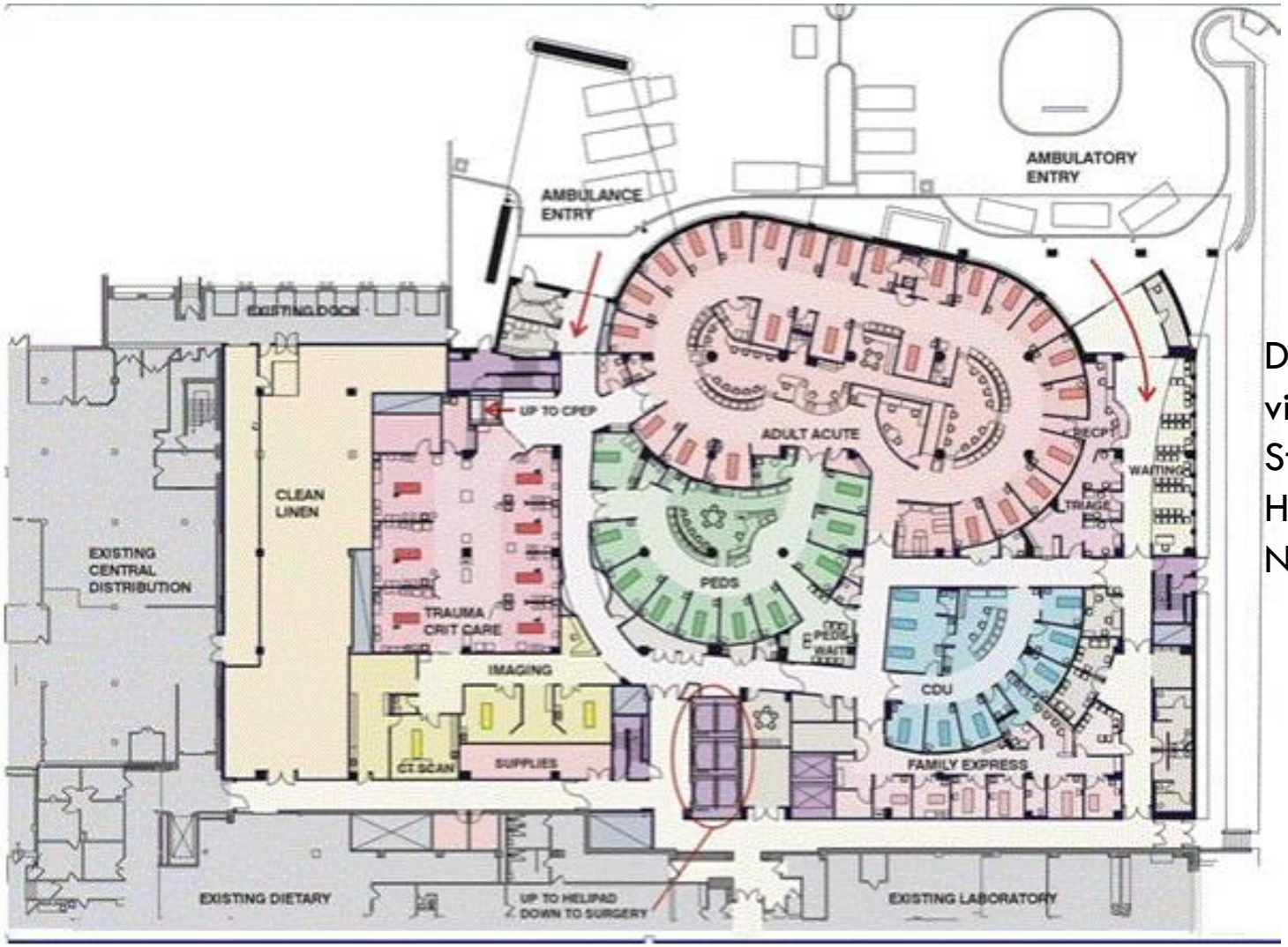


Figure 4: Radial layout concept introduced at University Hospital.

Cincinnati



Designed for 65,000 visits per year, Strong Memorial Hospital in Rochester, NY

Figure 5: concept is advanced with triage flow-through and decentralization of supplies

Ribbon design

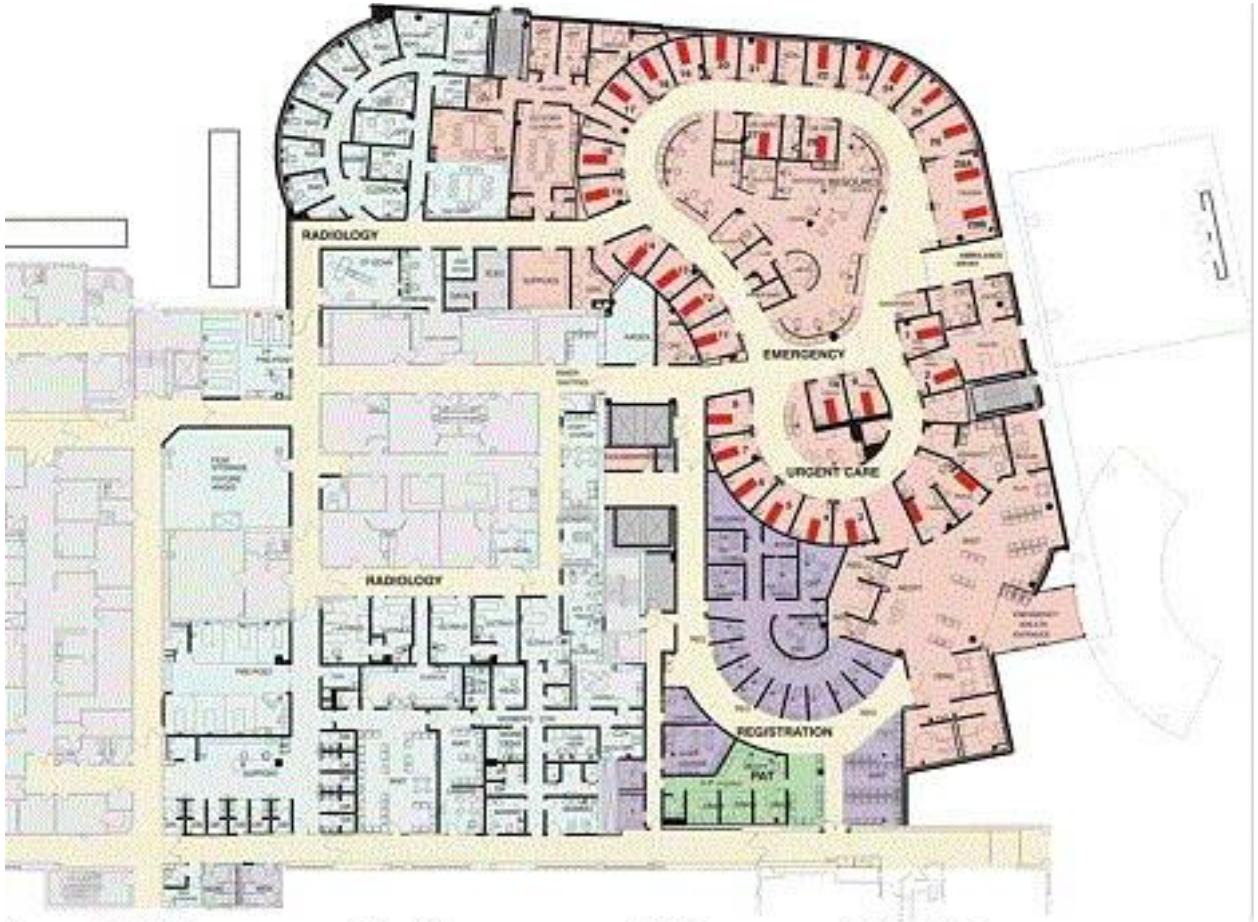


Figure 6: Ribbon concept is fully expressed at Marymount Hospital

Using a ribbon design for ED optimization

"**With a linear layout, visibility from the staff work core is approximately four beds,**"
says ribbon pioneer, Jim Harrell, FAIA, FACHA, architect at GBBN Architects.

"By arraying exam rooms **in a curvilinear fashion, that improves to eight beds,**" he explains.

His first ribbon layout of open bays at the University of Cincinnati Medical Center in the mid-1980s

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Improvements at Outflow

- *Discharge Kiosks*
- *Express Admission Unit*
- *Clinical Decision Unit*

SIMULARE

Photo courtesy of ZGF Architects [enlarge]

A mock-up of Seattle Children's emergency department. Designers used full-scale models to try new layouts and identify potential problems.

PROGETTO DI RIORGANIZZAZIONE DIPARTIMENTO EMERGENZA URGENZA

Nuovi Percorsi di Cura in Pronto Soccorso

Sperimentazione Prototipo 22-04-2015

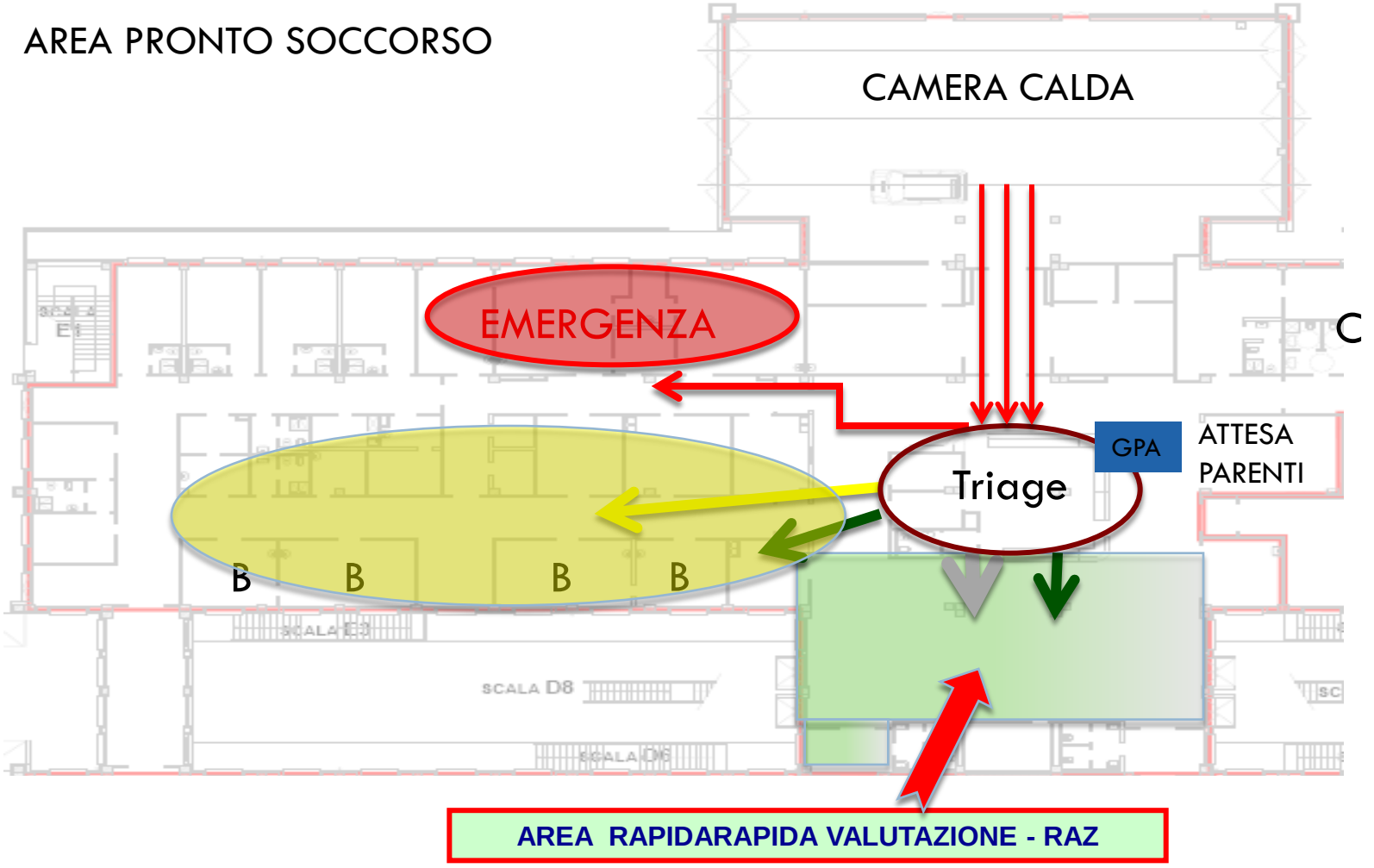
AREA
RAPIDA
VALUTAZIONE e
TRATTAMENTO

RAZ : Rapid Assesstment Zone

in collaborazione con Dipartimento di Scienze e Metodi dell'Ingegneria,
Università di Modena e Reggio Emilia

Design Thinking
Ingegneria Reggio Emilia

AREA PRONTO SOCCORSO



SPERIMENTAZIONE

MODELLI DI RIFERIMENTO

Emergency department overcrowding and access block

CAEP Position Statements

Canadian Association of Emergency Physicians
A. Affleck; P. Parks; A. Drummond; B. H. Rowe; H. J. Ovens

CJEM 2013;15(6):359-370

Rapid Assessment Zones (RAZ)": Many EDs have had success with organizing and staffing specific areas to meet specific patient population needs. "Fast

Zone di trattamento ambulatoriale o per codici minori, per pazienti con basso rischio di ricovero che non hanno bisogno di una barella. Possono essere curati in spazi non tradizionali di cura, spesso necessitano di barella per un periodo molto breve seguito da periodi di trattamento ed attendere in comode sedie che occupano meno spazio e risorse.

Zona di valutazione rapida o RAZ, può essere utilizzata per la valutazione iniziale dei pazienti ad acuità intermedia che sono abbastanza stabili per aspettare su una sedia, ma richiedono una barella per valutazione e/o esami/procedure.

Jewish General Hospital, Montreal

Inaugurato l'ED con RAZ nel 2014

Visitato da un nostro collaboratore di progetto nel Dicembre 2014

Welcome to the RAZ-z-z-z-z

They're soft, they're padded and they're perfect for snoozing—though they're not really intended for sleeping.

They're also among the most unusual features of the new Emergency Department: the comfy reclining chairs in the Rapid Assessment Zone (RAZ).

Note the word "rapid". The RAZ is where patients are seen and discharged promptly—hence the use of recliners rather than stretchers. On occasion, though, when the pods (the Emergency Department's more elaborate treatment units) are full, patients in serious but relatively low-risk condition are shifted to the RAZ.

It's not an ideal solution, but it means that these patients don't have to spend the night on a stretcher in an uncomfortably bright and noisy corridor.

Gabrielle Dubois, for example, came to the RAZ with jaundice on a Tuesday evening in early April, where she spent the night in a recliner while awaiting gall bladder surgery. "It felt fine, but it would have been even more comfortable if I didn't have back problems," she said. "The RAZ was quiet, the lights were dim and I got a few hours of sleep, which is more than I expected."

Is the recliner at all similar to a seat on a long-haul flight? "Maybe," said Ms. Dubois, "if you travel first-class."

Comfy reclining chairs ready for the next group of patients in the Rapid Assessment Zone.

Jewish General Hospital, Montreal

Studi dimostrano che l'intervento della RAZ ha migliorato gli indicatori di prestazione in tutti i casi studio: il tempo di processo complessivo dei pazienti (dall'ingresso all'uscita) è stato ridotto in media di 3 ore, il tempo alla visita (dall'ingresso nel PS alla visita ambulatoriale) è stato ridotto in tutti i casi studio (da un minimo di 8 minuti ad un massimo di 30 minuti), così come i pazienti usciti senza visita (dal 7 al 32 % nei diversi ospedali implementanti la RAZ).

! Source: http://emergencymed.med.ualberta.ca/Research/Areas-of-Research/Documents/ES%20RAZ_July%202011.pdf

Effective Approaches in Urgent and Emergency Care

Paper 2

NHS

Interim Management and Support

Rapid Assessment and Treatment Models in Emergency Departments

Anche nel Regno Unito si raccomandano modelli di rapida gestione dei pazienti che iniziano in prossimità del triage. Presentano caratteristiche diverse dalla RAZ e in qualche modo possono esserne complementari

June 2012

La nostra declinazione

Area

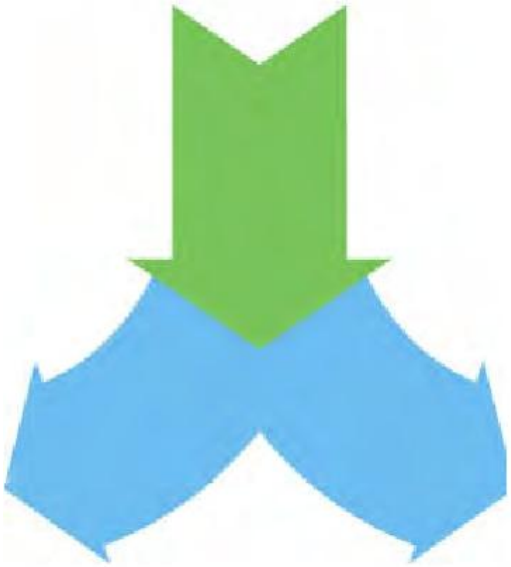
di Rapida

Valutazione

e Trattamento

- Ex sala d'attesa dei pazienti "verticali" che permette alle equipe medico-infermieristiche dedicate di lavorare a stretto contatto con il triage, ottimizzando i percorsi di presa in carico, il see and treat ed il fast track
- La disponibilità di due box di visita in uno dei quali è possibile una valutazione medica rapida di codici maggiori in caso di necessità

L’Infermiere di Triage deve individuare i pazienti da inviare in ARV, I cosiddetti pazienti verticali (deambulanti o in seggetta)



Verticale (Area RV)

Orizzontale (Ambulatori)

L'Infermiere di Triage continua comunque ad assegnare I codici colore che determinano la priorità di visita.
Allo stesso tempo inizia a suddividere i pazienti in base alla complessità assistenziale e alla criticità clinica per collocare I pazienti in una delle tre aree in cui sarà suddiviso il PS: Alta Criticità, Media Criticità, Bassa Criticità (verticali)

		Criticita clinica		
		Bassa	Media	Alta
Complessità Assistenziale	Bassa	Area Bassa Intensità	Area Bassa Intensità	Area Alta Intensità
	Media	Area Media Intensità	Area Media Intensità	Area Alta Intensità
	Alta	Area Media Intensità	Area Media Intensità	Area Alta Intensità

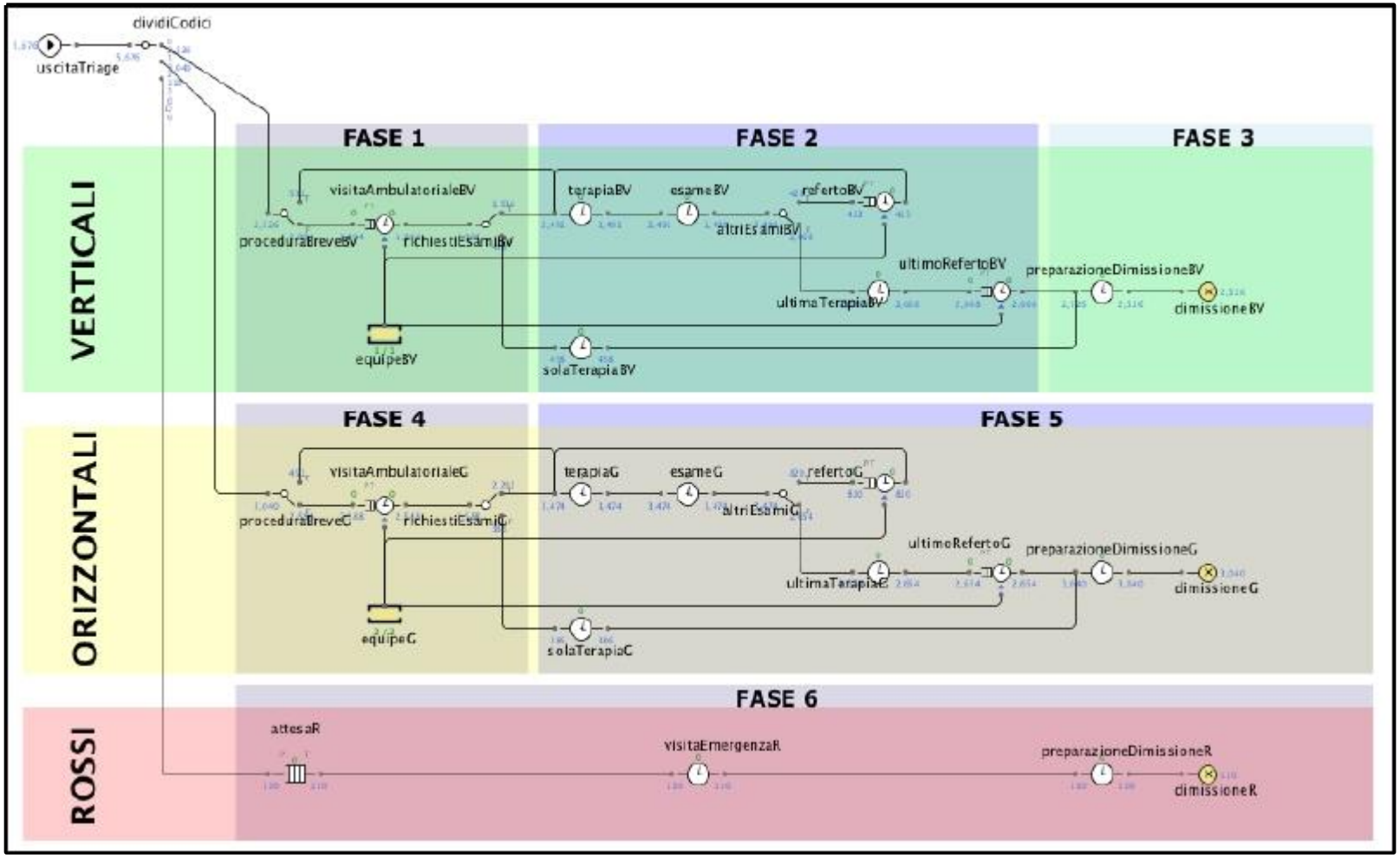
Schema decisionale adottato per l'assegnazione alle tre aree

Ci aspettiamo di valutare in Area di RV almeno il 50% dei pazienti che accedono al Pronto Soccorso (nelle 15 ore di attività)

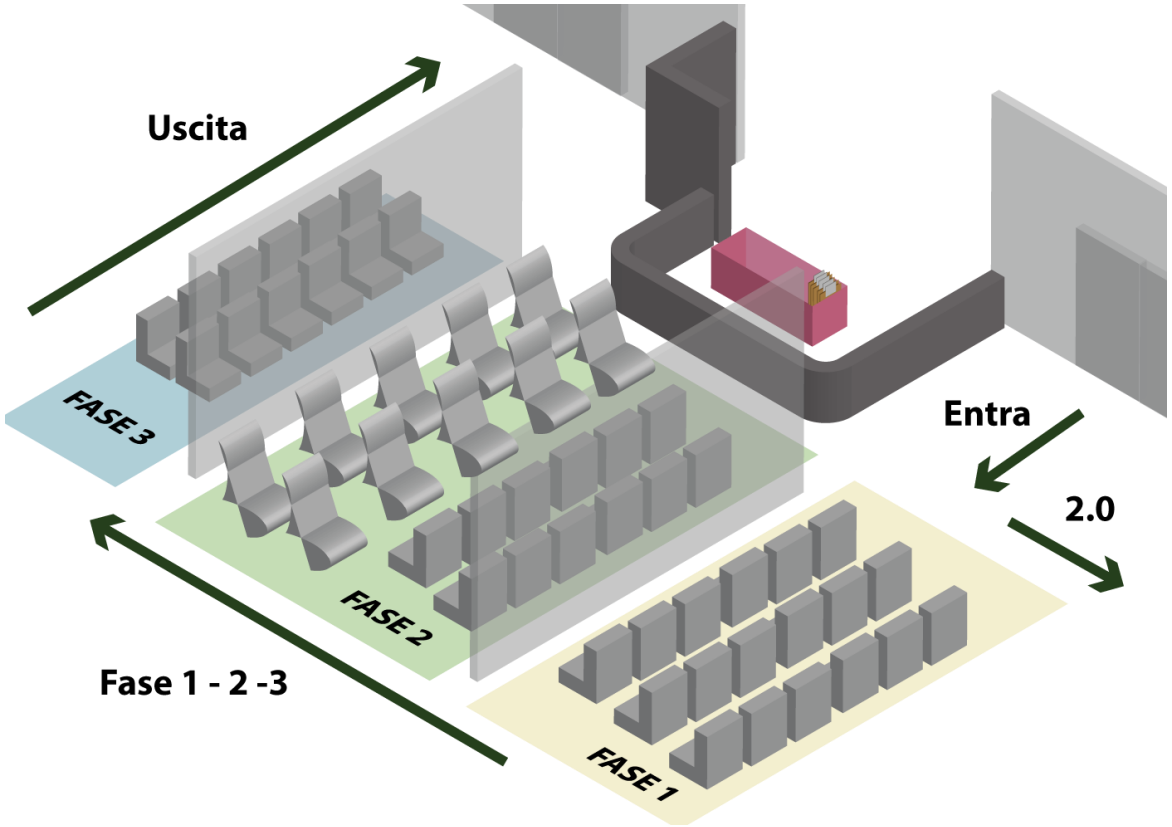
	Barelle (40%)	Sedia (18%)	Camminante (42%)	
Bianco	0.9%	6.1%	93.0%	100 %
Verde	30.9%	**19.1%**	**50.0%**	100 %
Giallo	78.2%	15.2%	**6.7%**	100 %

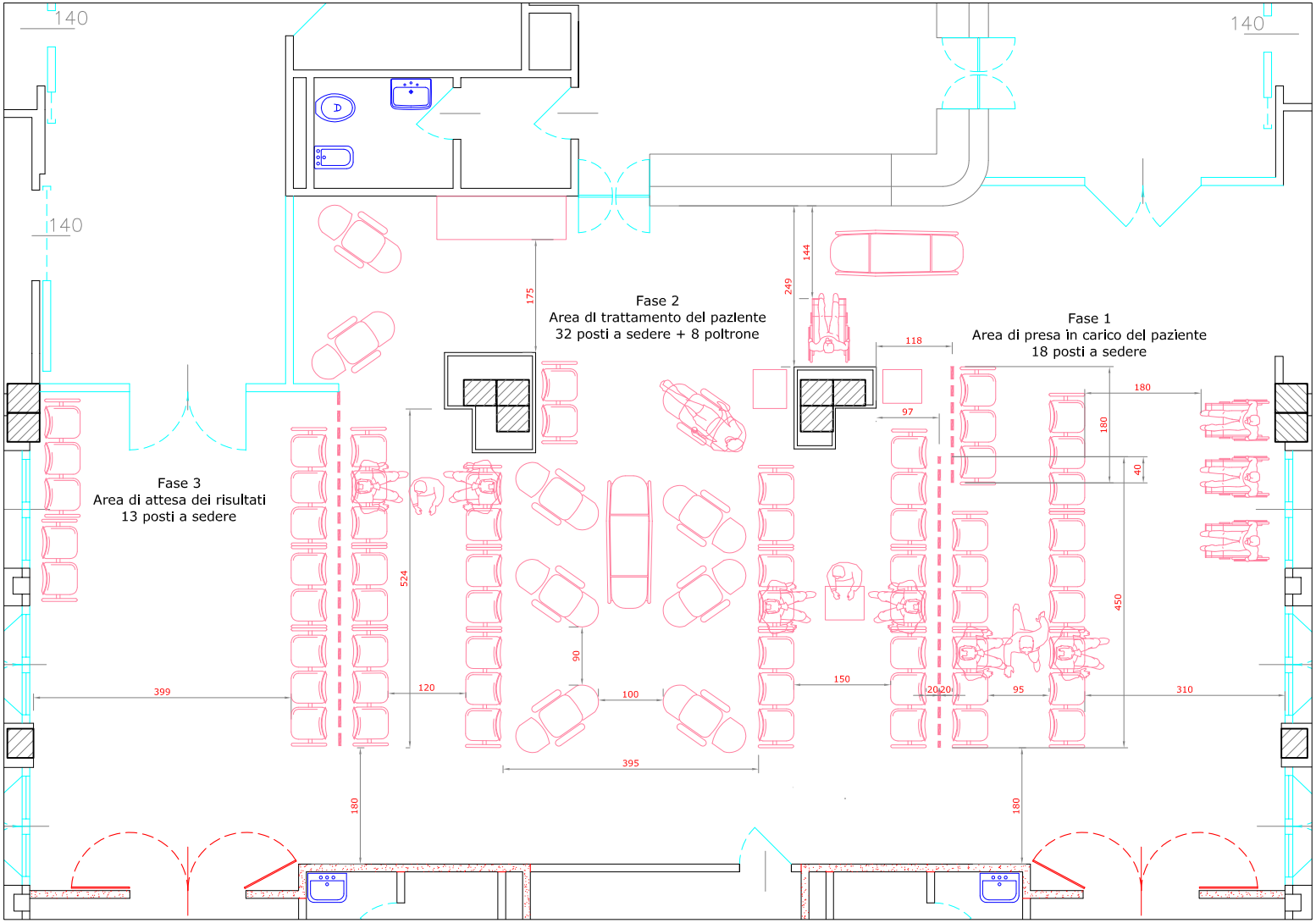
Rilevazione 20-27 febbraio. Stima pazienti verticali e codici colore.

Riproduzione della nuova organizzazione da testare all'interno della simulazione

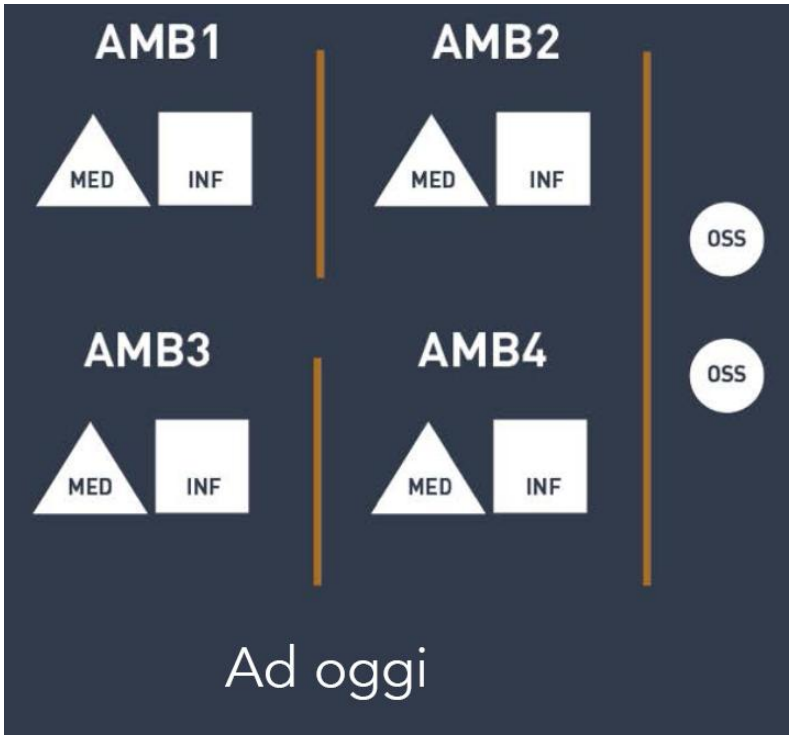


L’ex sala d’attesa si trasforma in Area di Rapida Valutazione e Trattamento

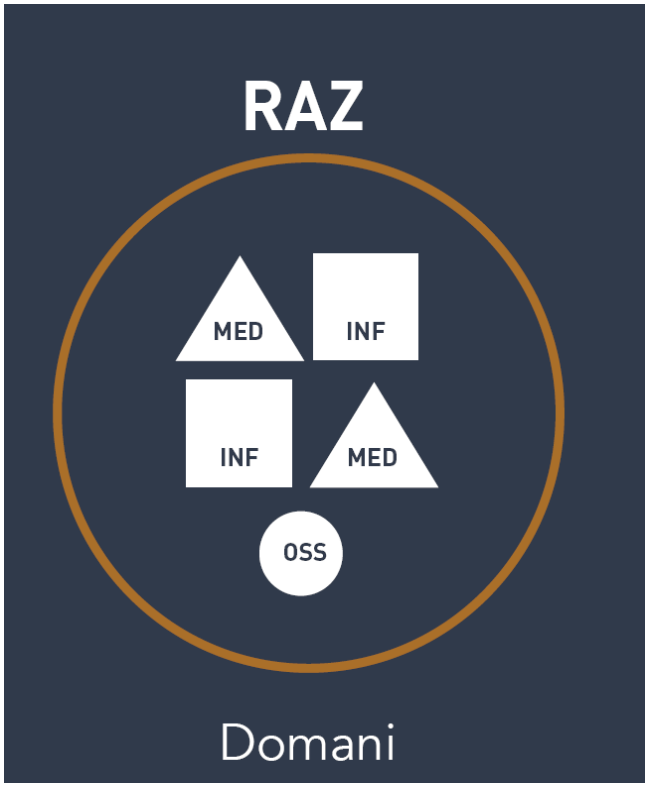



140
140
140
Fase 3
Area di attesa dei risultati
13 posti a sedere
Fase 2
Area di trattamento del paziente
32 posti a sedere + 8 poltrone
Fase 1
Area di presa in carico del paziente
18 posti a sedere
175
249
144
118
97
180
180
40
450
524
90
399
120
100
150
20
20
95
310
395
180
180

RICOLLOCAZIONE DELLE EQUIPE MEDICO/INFERMIERISTICHE



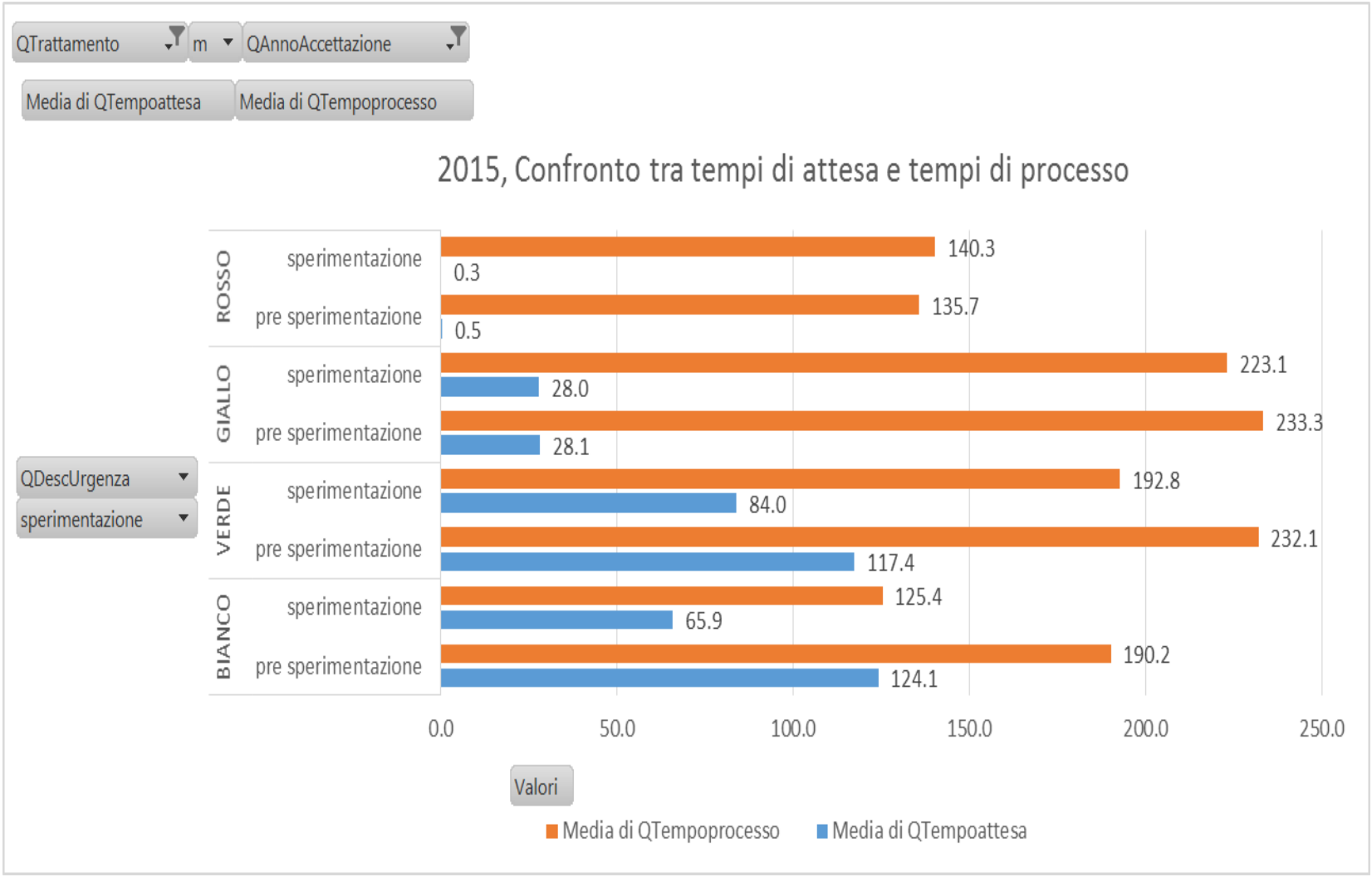
4 equipe M/I distribuite in 4 ambulatori



2 equipe M/I nella stessa area di lavoro

Cosa abbiamo misurato prima e dopo

- Dati
  A. Tempo alla visita
  B. Tempo di processo complessivo,
     sia dei codici gialli che dei codici verdi e
     bianchi
  C. Tasso di abbandono prima della visita medica
- Qualità della visita
- Impressioni dello staff, sulla qualità del lavoro.
- Impressioni del paziente



Dati dal 1/1/15 al 12/5/15. Sperimentazione iniziata il 22/4, quindi 21 giorni di sperimentazione.

Grazie dell'attenzione