Increasing Value in the Emergency Department: Innovations to Improve Cost and Quality



Bigger, Badder, Stronger – or – Smaller, Better, Faster?

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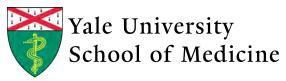
Nir Harish, MD, MBA

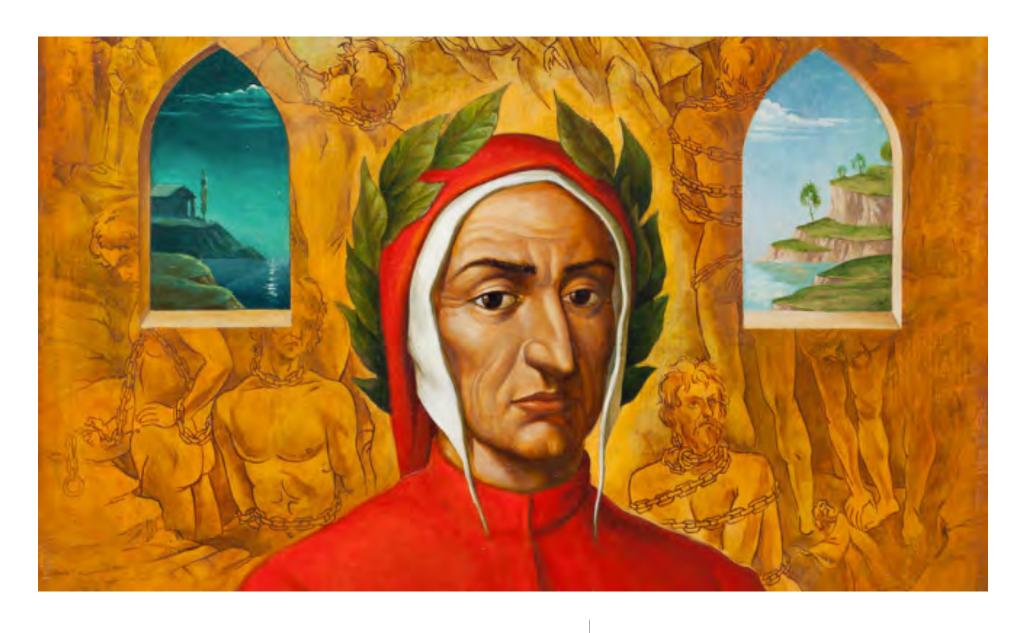
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Dante's Circles of Well: The Future of Emergency Care

Nir J. Harish Richard D. Zane



Abandon All Hope, You Who Enter Here

Punishments meted out to sinners in Dante Alighieri's Inferno

FIRST CIRCLE (LIMBO)

Unbaptized / Virtuous Pagans Struck with grief from a lack of God's presence

SECOND CIRCLE

Lustful Blown about by violent and endless wind

THIRD CIRCLE

Gluttons Bombarded with rain, hail, and black snow

Hoarders

Forced to push boulders to the center of the circle

FOURTH CIRCLE

Spenders Forced to push boulders back out of the center of the circle

Wrathful

Engaged in combat with one another on the surface of the River Styx

FIFTH CIRCLE

Sullen Sunk to the bottom of the River Styx

SIXTH CIRCLE (CITY OF DIS)

Heretics Locked in burning stone coffins

RING ONE

Violent Forced to swim in a boiling stream of blood

SEVENTH CIRCLE (PLAIN OF FIRE)

RING TWO

Suicides

Transformed into thorny trees that are ripped apart by Harpies

RING THREE

Blasphemers / Sodomites / Usurers Condemned to a desert of blazing sand with a constant rain of fire

POUCHES

POUCHES

Flatterers Immersed in human excrement

Diviners Contorted until

their heads are backward and they cry until blind

Simoniacs

holes head

exposed and burned

Placed in

first with

their legs

EIGHTH CIRCLE (MALEBOLGE

Hypocrites Forced to wear cloaks of lead

Thieves Chased and bitten by reptiles

Corrupt Politicians False Counselors Wrapped in individual Immersed in pool of boiling pitch columns of flame

Schismatics Split from

chin to groin by sword

Falsifiers Compelled to scratch their itching skin

NINTH CIRCLE (PIT OF HELL)

Betravers of Kin Lodged head first in blocks of ice

ANTENORA Betravers of Country Forced to eat one

PTOLOMEA

Betrayers of Guests Lodged head up in blocks of ice with frost freezing their eyes so that they cannot cry

JUDECCA

Betravers of Benefactors Contorted and lodged completely within blocks of ice

Pimps/

Seducers

marching

Whipped by

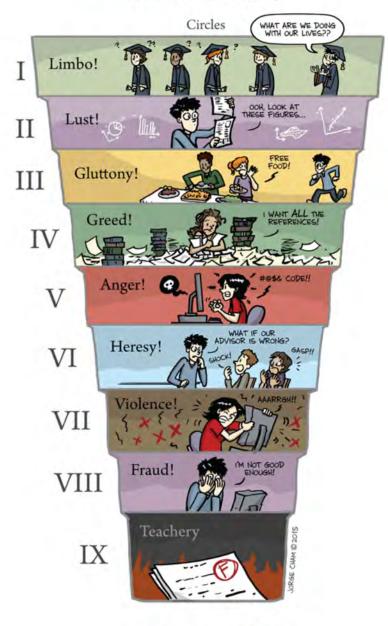
demons while

another

CENTER Brutus, Cassius, Judas Iscariot Chewed endlessly in Lucifer's jaws

DANTE'S INFERNO

(ACADEMIC EDITION)



IF A PICTURE IS WORTH A THOUSAND WORDS...

What does emergency care look like today?



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Mission of Emergency Medicine



We care for those in crisis

What is the scope of the mission?

- Acute, Episodic and Unscheduled Care
- Emergent, Urgent, Primary
- Safety Net
- Emergency Sensitive Condition
- Beyond unexpected emergency or accident
- Diagnostic Center
- Systematized and Integrated
- Fulcrum between Inpatient and Outpatient Care





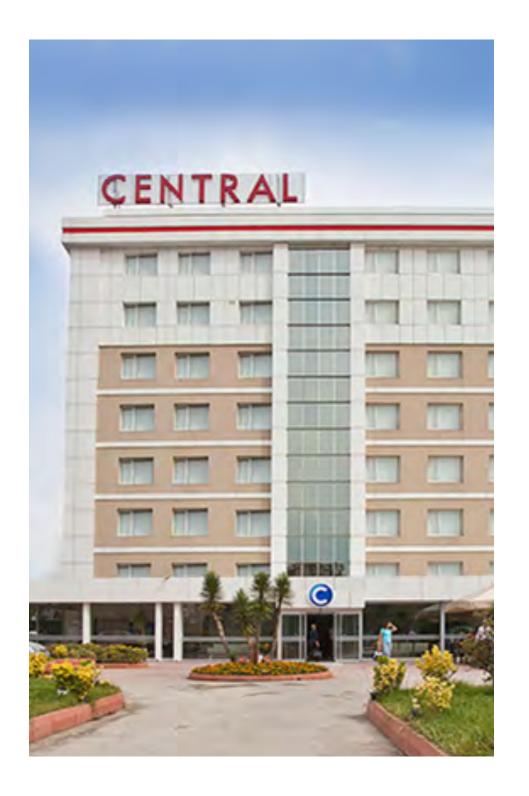


Centralizing care made sense historically

- There were no Emergency Physicians
- Diagnosis was time- and laborintensive
- Many conditions required admission
- Transportation was challenging
- · Paper charts (!)

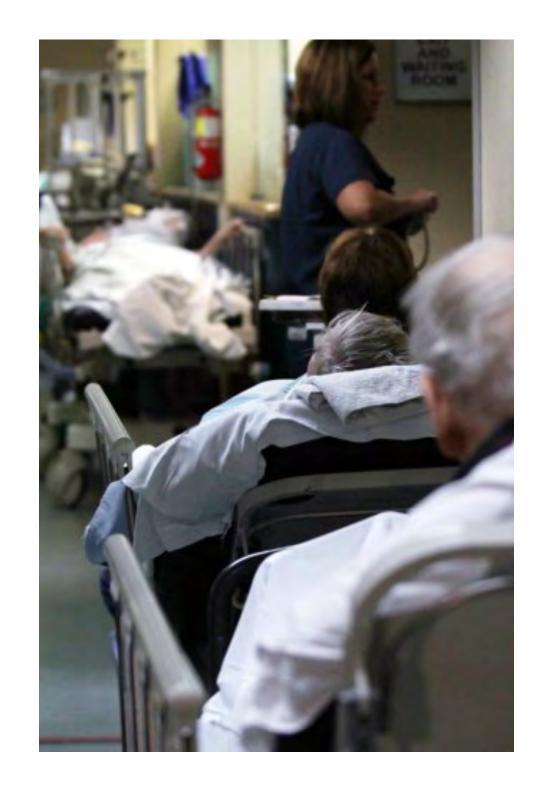
And has benefits today

- Operational efficiency
- Less redundant equipment
- Reduces need for inter-facility transfers
- Educational benefits



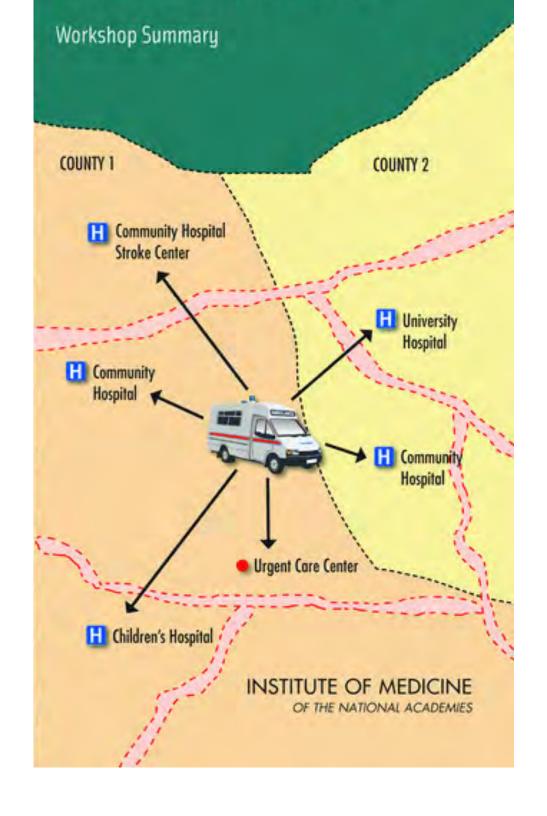
But does centralized care still make sense?

- 136 million ED visits in 2011, an
 8% increase from 2006
- Growth in ED utilization has outpaced population growth
- Even with 1,000+ bed megahospitals, crowding and boarding have not gone away
- Can we really fit more people into our EDs?



But does centralized care still make sense?

- The nature of the health care system around us has changed
 - Trauma Designations
 - · Centers of Excellence
- New imperative to get patients to the right facility at the right time



The Burning Platform

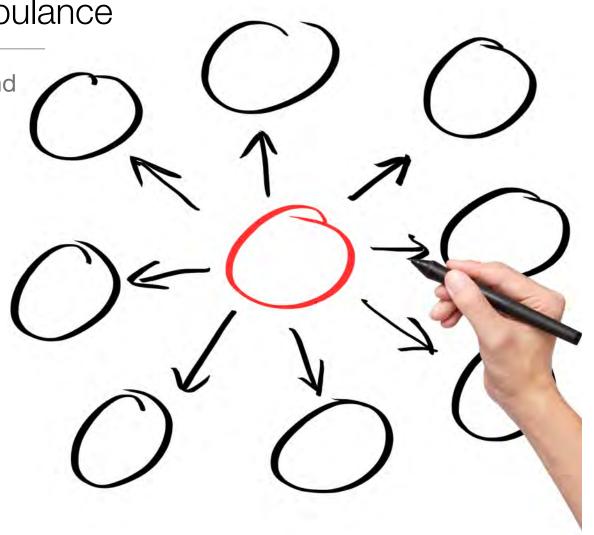
- ED is the fulcrum between inpatient and outpatient care
 - Spend 2%, control 20%?
- Imperative to contain costs
 - Public and private payers
 - Rising out-of-pocket spending
 - Risk-sharing, e.g. ACOs
- Payment models will change
 - Fee-for-service is going away
 - · What is the role of EM?



Times have changed since the horse-drawn ambulance

Technology for diagnosis and communication

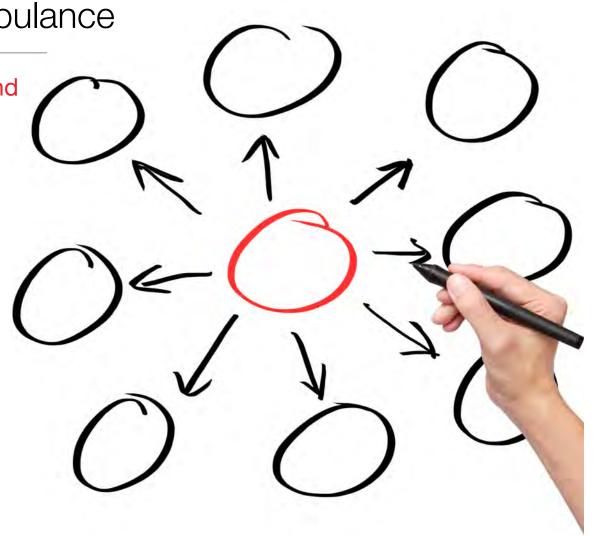
- Tele-health and remote monitoring
- Emergency Medicine has evolved
- Advanced paramedicine



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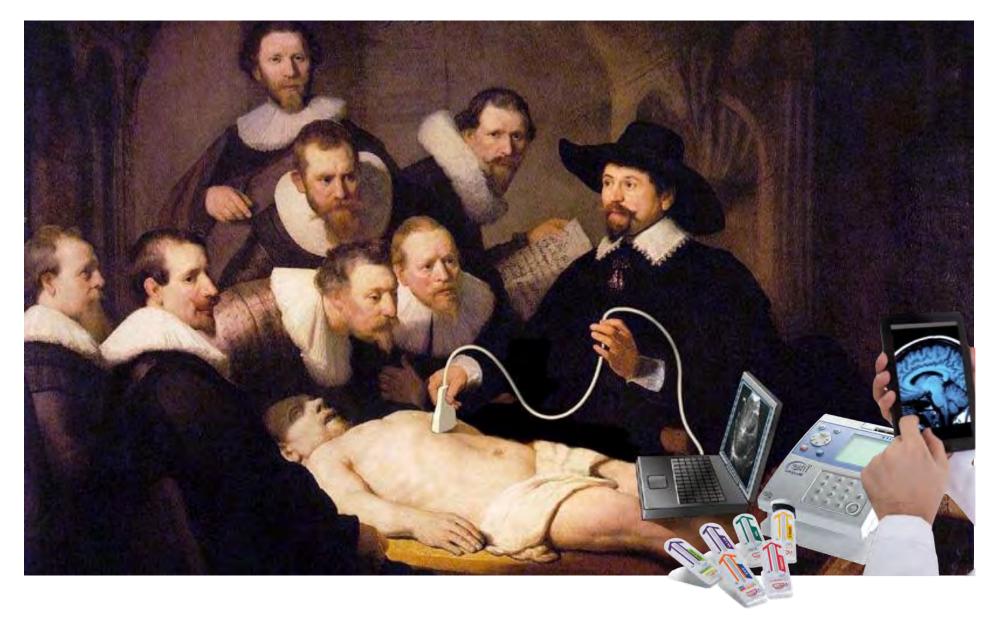
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Advances in technology

Remember invasive angiography?



Advances in technology

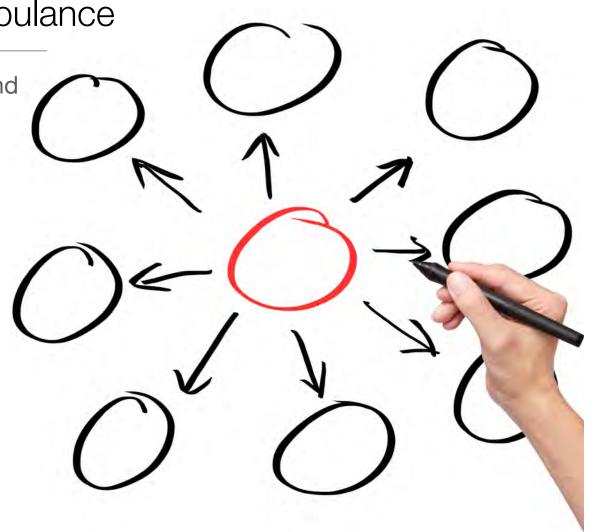
Imaging, Lab and Communication

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Tele-health: Radiology

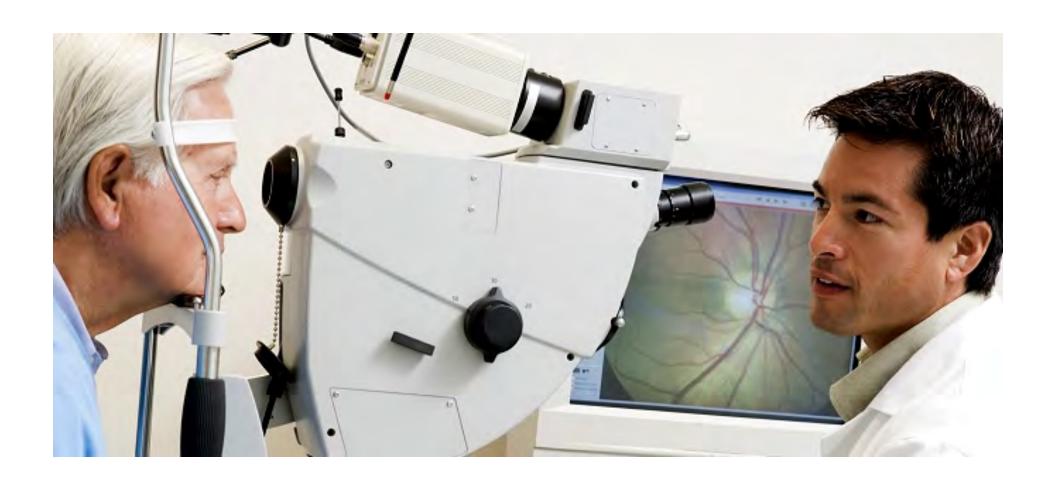
Used in >50% of US EDs. Still radical.

C



Tele-Health: Stroke

Who needs an on-site neurologist?

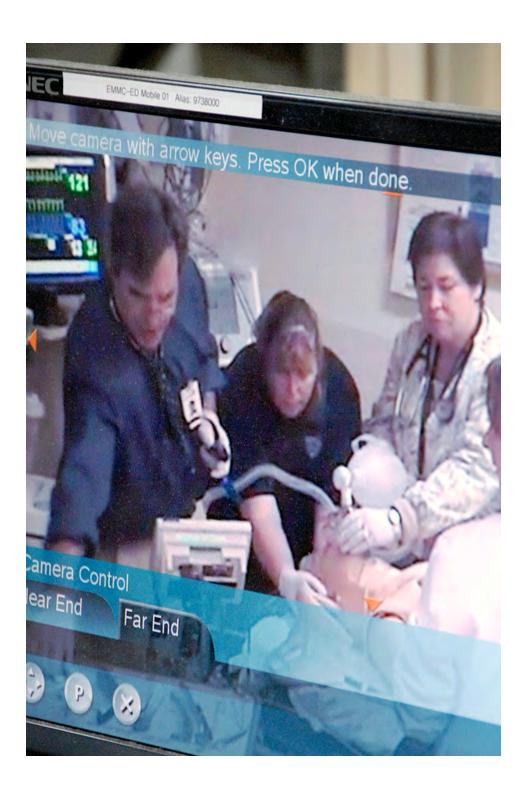


Tele-Health: Ophthalmology

Brings ophthalmology to any bedside

Tele-Health: Emergency Medicine

ED-to-ED



Tele-Health: **Emergency Medicine**

Direct-to-Patient



JeffConnect...

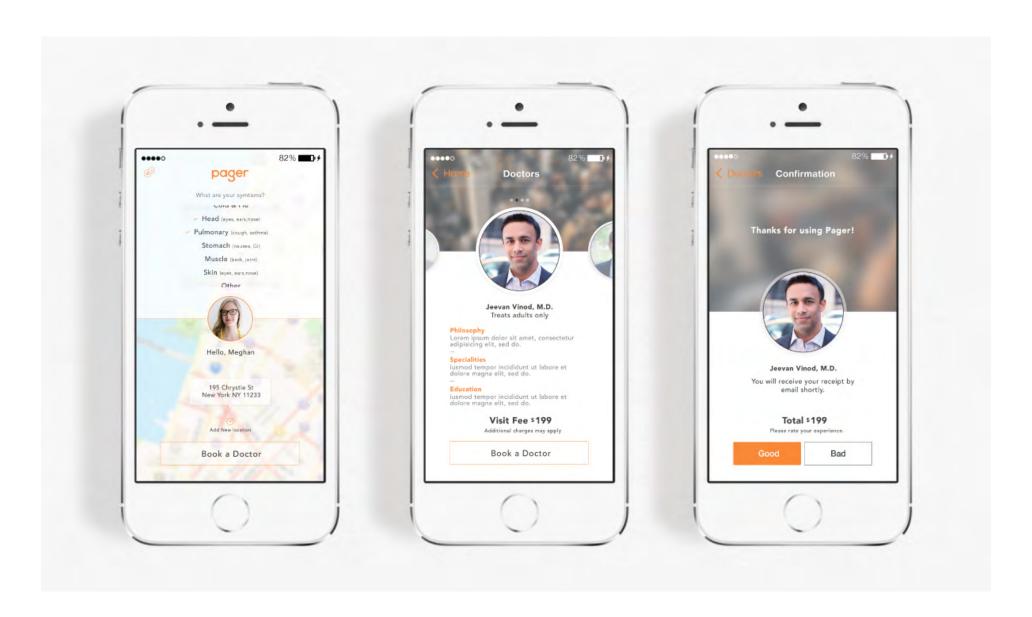


Home Admissions

Mount Sinai Health System & Johns Hopkins University



Remote Monitoring



Emergency Physician House Calls

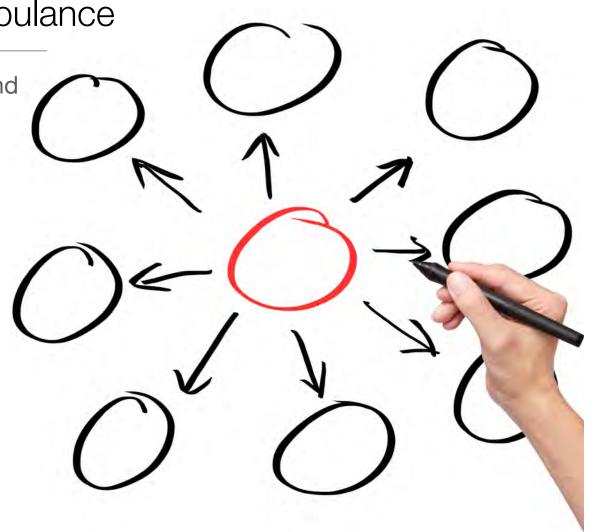
Pager

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The Evolution of Emergency Medicine

Emergency Medicine is no longer limited to acute stabilization and treatment.

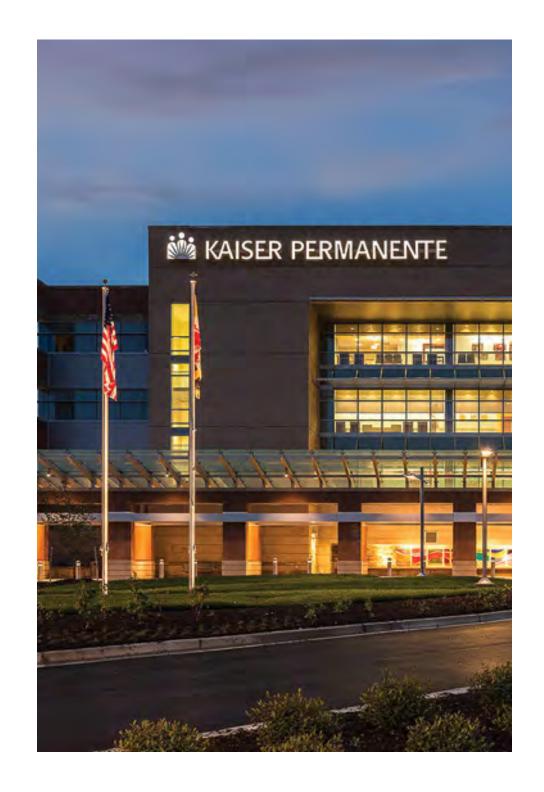
We have become...

- The diagnostic hub of the health care system
- A faster, better alternative to short-term hospitalization
- Active participants in the health of our communities and populations



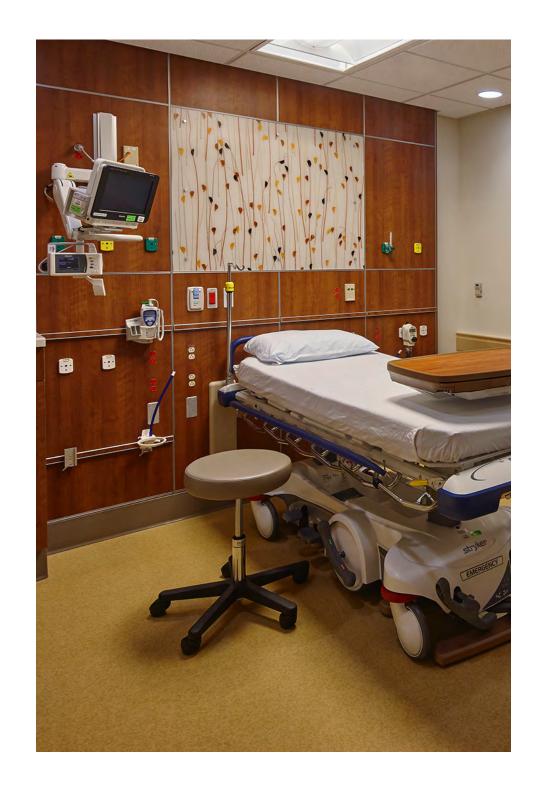
Kaiser-Permanente: Diagnostic Center

- The ED is becoming the diagnostic hub of the health care system, and Emergency Physicians are increasingly seen as diagnosticians
- KP-Colorado has formalized this role through RADAR: The Regional Acute Diagnostic and Referral Center
 - Outpatient diagnostic center staffed by EPs
 - Patients referred by PCPs or other Kaiser clinics
 - Urgent diagnostic testing serial troponins, CT for appendicitis, etc
 - Only sent to hospital if an urgent diagnosis is made



ED Observation Units

- EM today goes beyond initial treatment and stabilization
- ED-run, protocol-driven
- 36% of EDs had an OU in 2007.
 Now hard to imagine building an ED without one.
 - Replace >10% of admissions
 - Reduce LOS by up to 38%
 - Save >\$1,500 per patient
- Now even FSEDs and "super urgent cares" have OUs



University of Michigan: EC3

- The scope of EM is also growing past just initial stabilization of critical patients
- First of its kind: 9-bed ICU embedded in the ED
- Staffed by EM-Intensivists
- Immediate access to intensive care without worrying about bed availability
- Patients who can be rapidly stabilized in EC3 may no longer require ICU admission



Population Health

- Emergency Medicine discovered its role in population health, in part, through frequent utilizers
- Instead of complaining about "inappropriate use" of the ED, we are starting to embrace our role as the gateway to health:
 - Hotspotters programs
 - Bridges to Care
 - Project Access
 - Health Leads

BRIDGES TO CARE

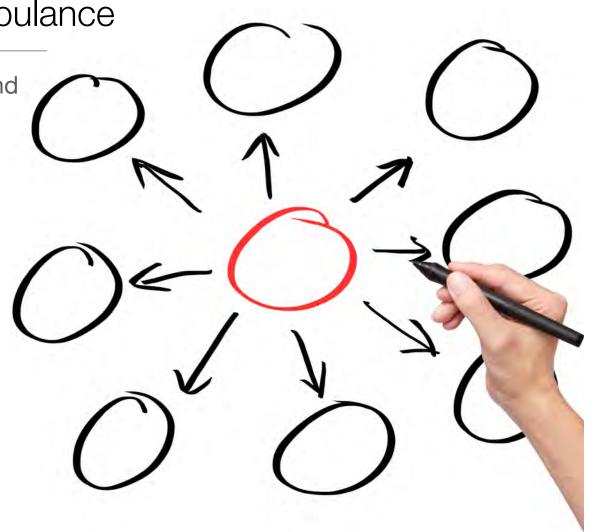




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Community Paramedicine

- Paramedics are providers on wheels. Why just for emergencies?
- Geisinger's Mobile Health Team Pilot (March 2014—June 2015)
 - Requested by PCP, cardiologist, or post ED or hospital discharge
 - Prevented 168 inpatient days among 704 patients
 - Reduced ED visits and admissions for CHF by 50%
 - Readmissions for CHF fell by 15%



Mobile Stroke Units

- Paramedics are diagnosing STEMIs. Why not strokes?
- Ambulance with small CT and hospital tele-stroke services
- tPA is initiated en route in consultation with neurology
- UTHealth, Cleveland Clinic, UC Health

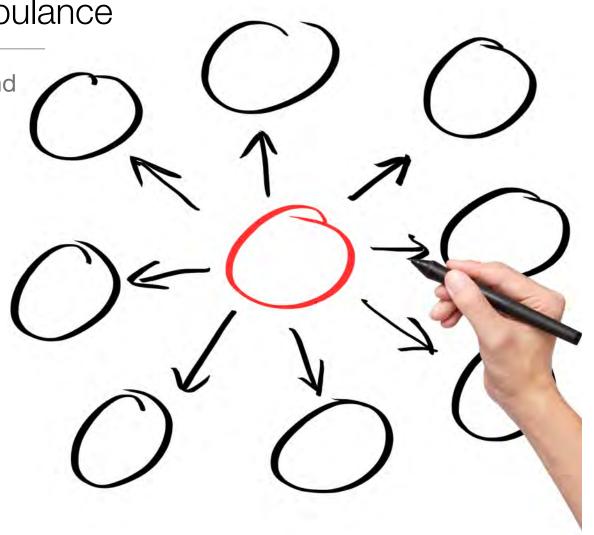




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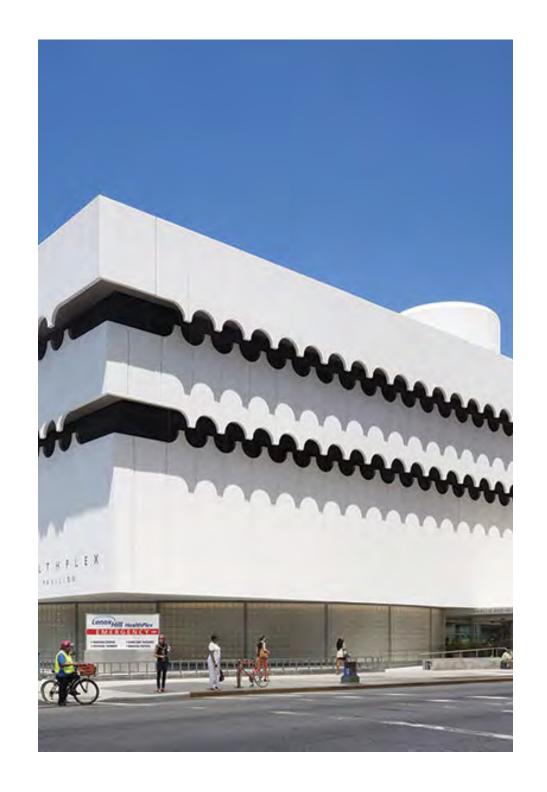


Taking the ED out of the hospital

The Ultimate Experiment

Hospital Satellite EDs

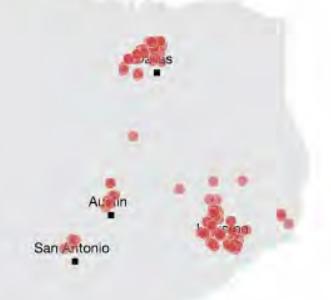
- In 2009, these accounted for 86% of FSEDs
- Akron General Hospital showed some (limited) decrease in central ED volume with opening 2 FSEDs
- In large systems with multiple inpatient hospitals, patients who need admission can go to whichever facility has bed availability
- Integration with health system facilitates rapid transfer protocols
 - Akron: 100% DTB time < 90 min from 2 FSEDs



Independent FSEDs

- Recent rapid growth in states that do not require CON
- Texas, Florida and Colorado
- 22 FSEDs in TX in 2002, today there are more than 162
- CMS does not recognize independent FSEDs as EDs
- Ongoing evolution in regulation of independent FSEDs

Year
2015
Freestanding emergency rooms
162





Aurora Central

7 Beds 1 MD, 1 RN, 1 tech, 1 admin CT, X-ray, US Moderate complexity labs Telehealth



Colorado Springs "Micro" hospital

- ED: 8 ED beds, 3 obs beds
- 22 inpatient beds
- · 4 ICU beds
- 3 Operating Rooms

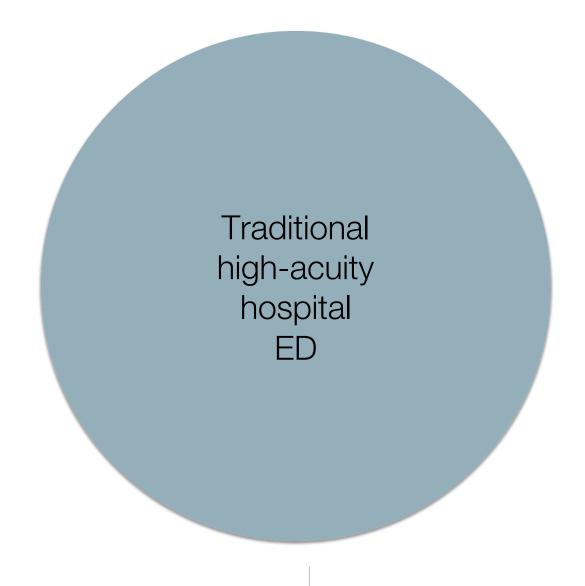


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Dante's Circles of Well



The Circles of Well

Model for Emergency Care

Regional
Centers of
Excellence

