Envision
PHYSICIAN SERVICES

Staffing Your Emergency Department Efficiently, Effectively and Safely: Core Concepts

Kirk Jensen, MD, MBA, FACEP

The ED Patient Flow Collaborative, July 2017

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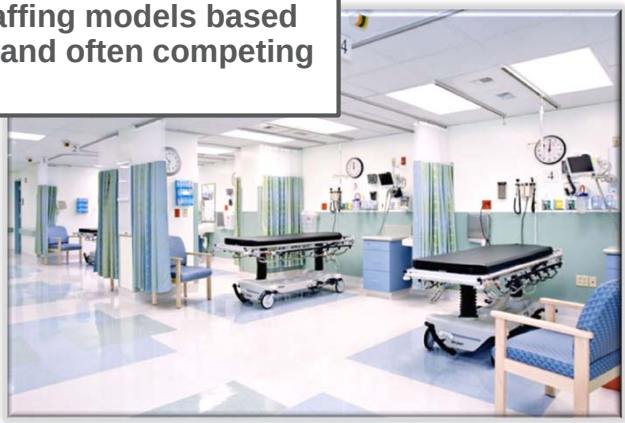
Our Goals and Objectives

- Defining the critical variables in staffing an emergency department.
- Identifying the key concepts that drive your strategies in meeting your staffing needs.
- Building out staffing models based on challenging and often competing priorities…



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Staffing Your ED - An Outline for Our Time Together:

- Setting goals and targets for staffing decisions
- A relatively deep dive into ED Physician staffing
  - MDs/APPs/Scribes/Alternative models
- Demand-Capacity modeling, planning, and staffing
- RN staffing
- Appendices:
  - Physician/APP Demand/Capacity-Based Back-Up Systems
  - The Simple Math Behind Modeling Workloads and Capacity
  - Benchmarking Staffing and Performance

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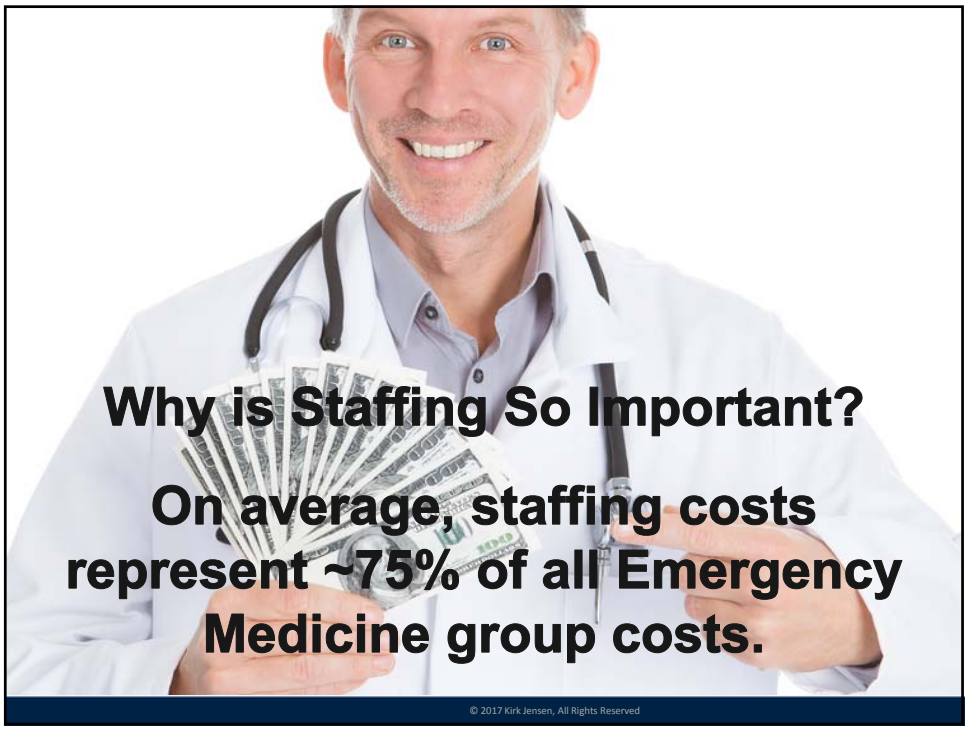

Why is Staffing So Important?

"No margin, no mission…"

How well you match your staffing (<u>costs</u>) to your workload (<u>revenue</u>) through staffing and scheduling determines the profitability of your physician group, nursing staff, and hospital…

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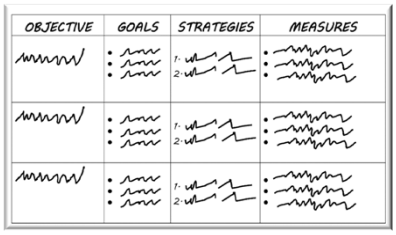
An Overview of the Drivers of ED Staffing

Strategic Drivers

- Quality
- Safety
- Service
- Cost



Tactical Drivers

- Patient Volume
- Acuity
- Patient Length of Stay
- Boarders-Admit Holds
- Physician Capabilities
- Non-Physician Staffing
- Nursing Expectations and Nurse Staffing
- Hospital Expectations

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Managing Your Hospital's Expectations…
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There is the occasional challenge or disagreement…
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How a Hospital Typically Sets Goals and Objectives for ED Physician and Nurse Staffing…

External Drivers

- External Benchmarks
  - Professional organizations (MGMA, ACHE, ENA, EDBA)
  - Consulting groups
  - ED staffing companies and groups
- Cost
- Complaints and Anecdotes
- The Neighborhood

Internal Drivers

- Hospital leadership typically considers physician compensation and the overall spend
- Nursing staffing is often based on the previous year's budget, volume trends and often a set of benchmarked numbers…

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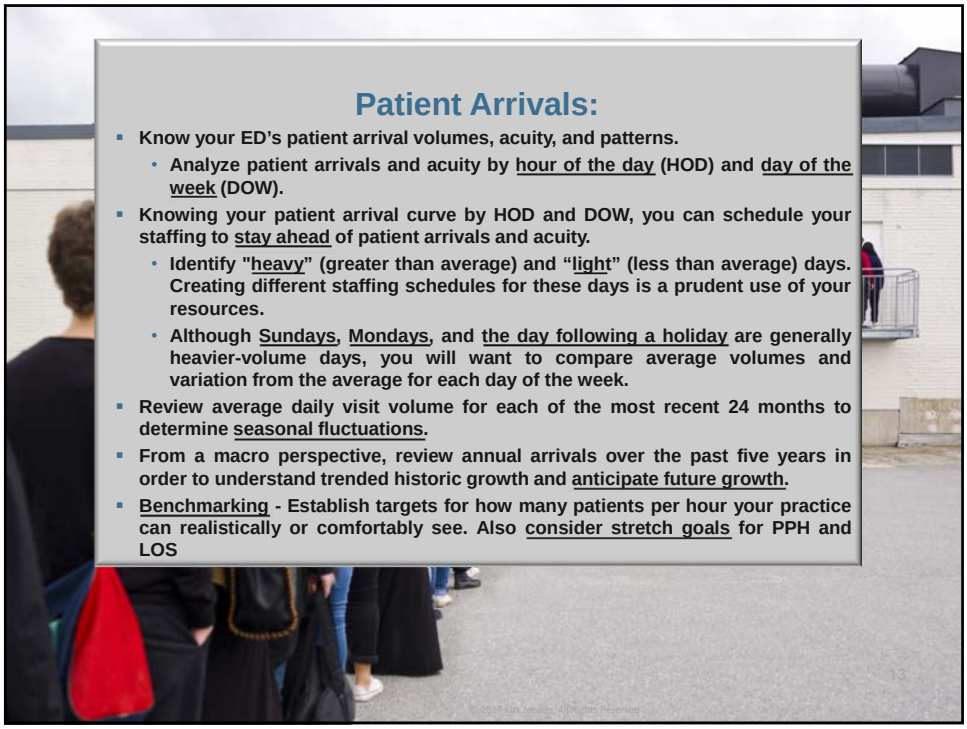
How a Physician Group Often Looks at Analyzing and Setting Goals for ED MD/APP Staffing…

- **The Group's Internal Driving Forces**
  - Patient volume and acuity
  - Compensation
  - RVUs - Patient acuity and work effort (complexity)
  - Internal performance standards
  - Ease of recruiting/retention
  - Lifestyle

- **The Group's External Driving Forces**
  - Customer/Client Satisfaction (Key Clients and Stakeholders include - Patients, Nursing, Attending Physicians, the Hospital Board…)
  - Operational performance standards
  - Special Causes - e.g.- Stroke center, Cardiac center, "30 Minute Guarantee"…
  - External Benchmarks
  - Compensation, ease of recruiting, and retention


Patient Arrivals:
Know your ED's patient arrival volumes, acuity, and patterns.
Analyze patient arrivals and acuity by hour of the day (HOD) and day of the week (DOW).
Knowing your patient arrival curve by HOD and DOW, you can schedule your staffing to stay ahead of patient arrivals and acuity.
Identify "heavy" (greater than average) and "light" (less than average) days. Creating different staffing schedules for these days is a prudent use of your resources.
Although Sundays, Mondays, and the day following a holiday are generally heavier-volume days, you will want to compare average volumes and variation from the average for each day of the week.
Review average daily visit volume for each of the most recent 24 months to determine seasonal fluctuations.
From a macro perspective, review annual arrivals over the past five years in order to understand trended historic growth and anticipate future growth.
Benchmarking - Establish targets for how many patients per hour your practice can realistically or comfortably see. Also consider stretch goals for PPH and LOS
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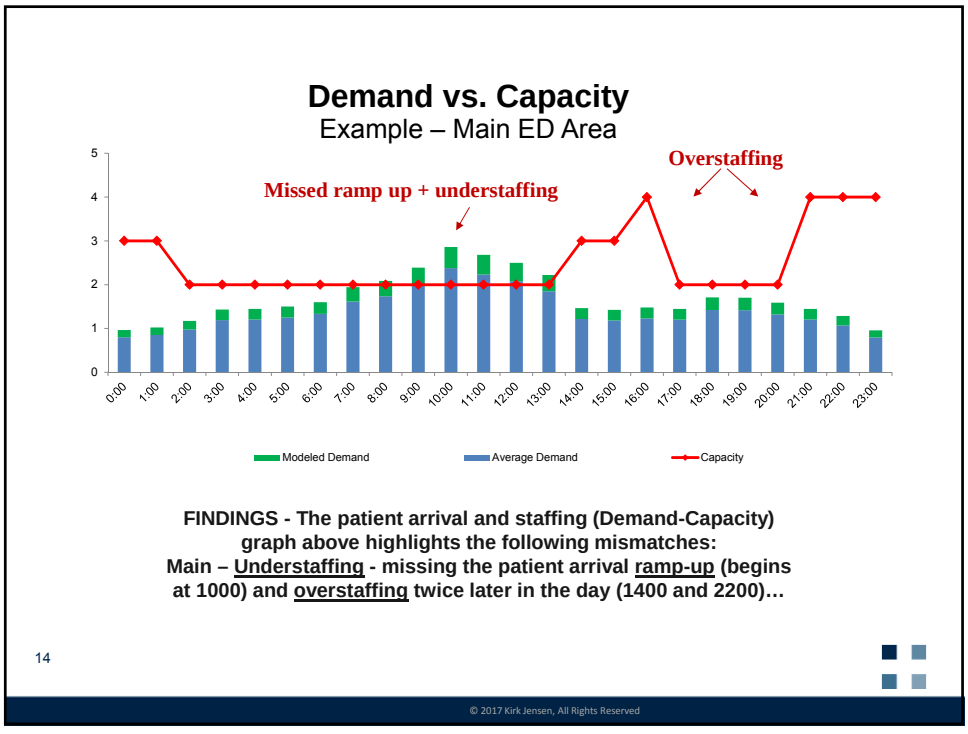
Demand vs. Capacity
Example – Main ED Area
Overstaffing
Missed ramp up + understaffing
5
4
3
2
1
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Modeled Demand
Average Demand
Capacity
FINDINGS - The patient arrival and staffing (Demand-Capacity) graph above highlights the following mismatches:
Main – Understaffing - missing the patient arrival ramp-up (begins at 1000) and overstaffing twice later in the day (1400 and 2200)…
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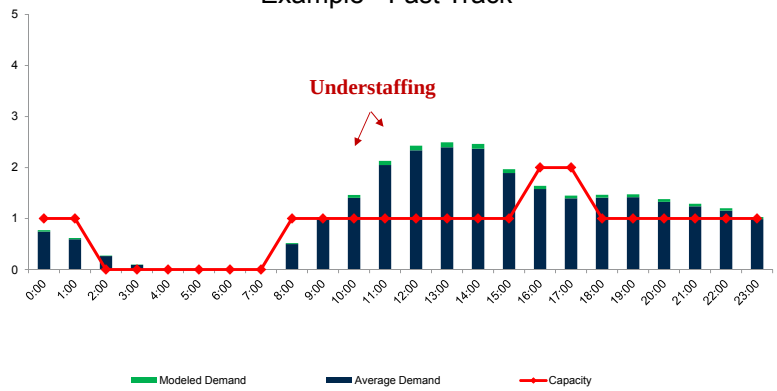
Demand vs. Capacity

Example - Fast Track



FINDINGS - The patient arrival and staffing (Demand-Capacity) graph above highlights the following mismatches:
Fast Track – Understaffing from 1000 to 1600…

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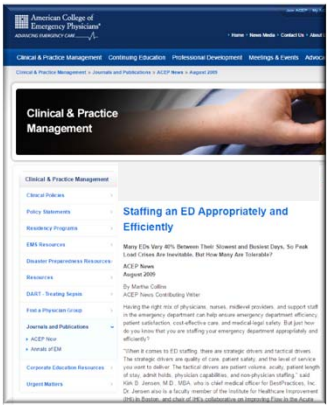
Staffing an ED Appropriately and Efficiently

- "There are two ways of looking at how staffing affects operational efficiency and service. For one, the more efficient your doctors are, the less coverage you need. On the other hand, if you are trying to drive throughput or flow through a system with fixed capacity, such as the ED, and if your space is limited, then you actually need higher staffing levels to drive throughput,"
- "If ED beds are a rate-limiting step, which they are for many EDs, then you actually need more staff to drive efficient throughput than you would if you had the beds you needed"
- "The ED by its nature is often either overstaffed or understaffed because patient volume is not evenly distributed. Many smaller EDs have as much as a 40% variation between their slowest and busiest days, so peak load crises are inevitable. The real question is how many are tolerable? How far do you bend before you break?"



ACEP News August 2009
Interview with Kirk Jensen, MD

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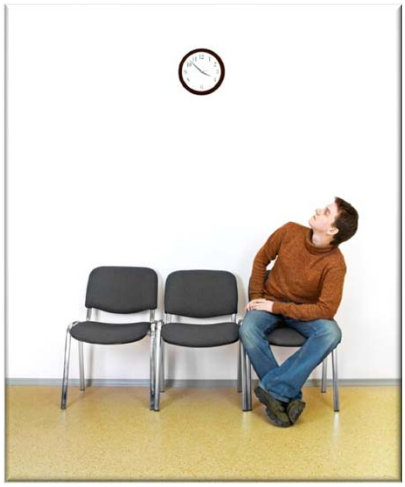
The Impact of Patient Acuity

- Higher acuity patients require additional staffing resources for evaluation, management, treatment and disposition…
- And you must have a realistic understanding of your server(s) capacity…
  - Doctors/Nurses/Beds…

Patient Length of Stay (LOS)

- Longer patient LOS requires more staffing time and attention…
- Longer LOS also reduces the number of available beds…
- Nursing needs to factor in the increased workload generated by lengthy LOS and/or Boarding Hours…



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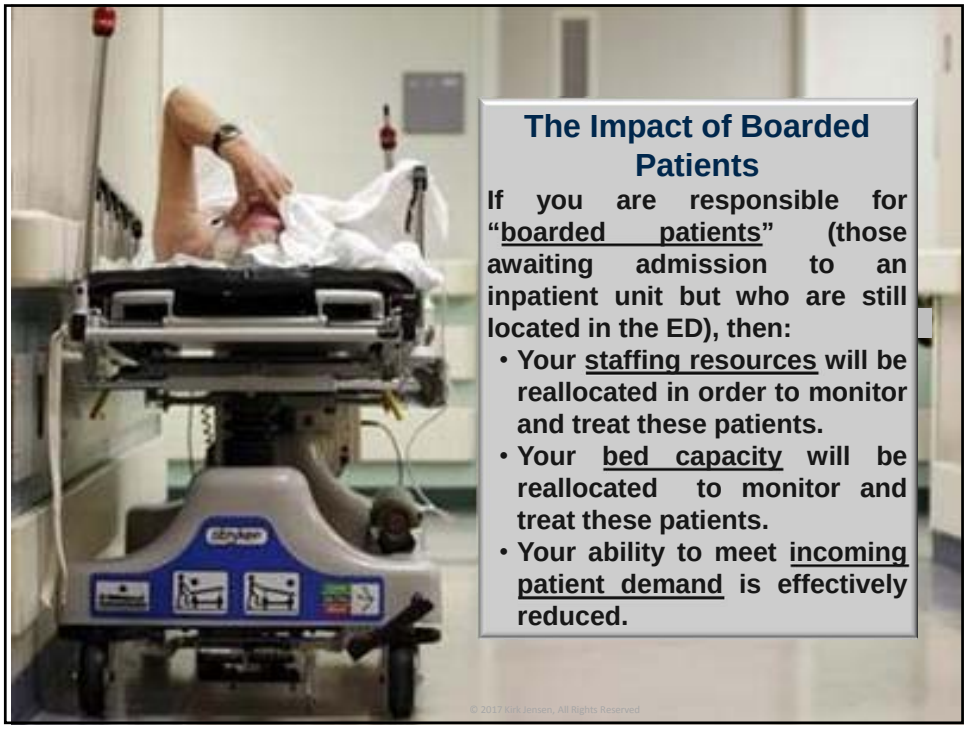


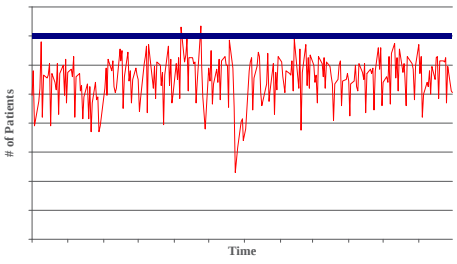
The Impact of Boarded Patients

If you are responsible for "boarded patients" (those awaiting admission to an inpatient unit but who are still located in the ED), then:

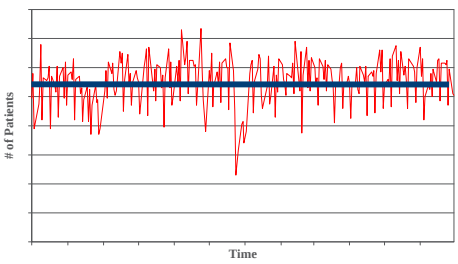
- Your staffing resources will be reallocated in order to monitor and treat these patients.
- Your bed capacity will be reallocated to monitor and treat these patients.
- Your ability to meet incoming patient demand is effectively reduced.

Examining fluctuations in ED volume: What should capacity look like to guarantee quality care?

Staff to peak loads?



Staff to averages?



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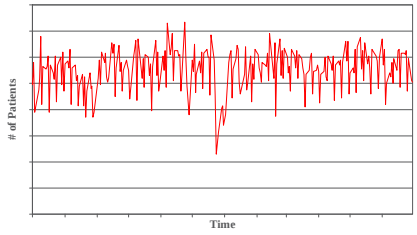
Eugene Litvak, PhD, Boston University

Peak Loads*:

- Staffing to eliminate peak loads entirely will put you out of business…
- Failing to staff to minimize peak loads will put you out of your contract…

*Paraphrasing Ron Hellstern, MD



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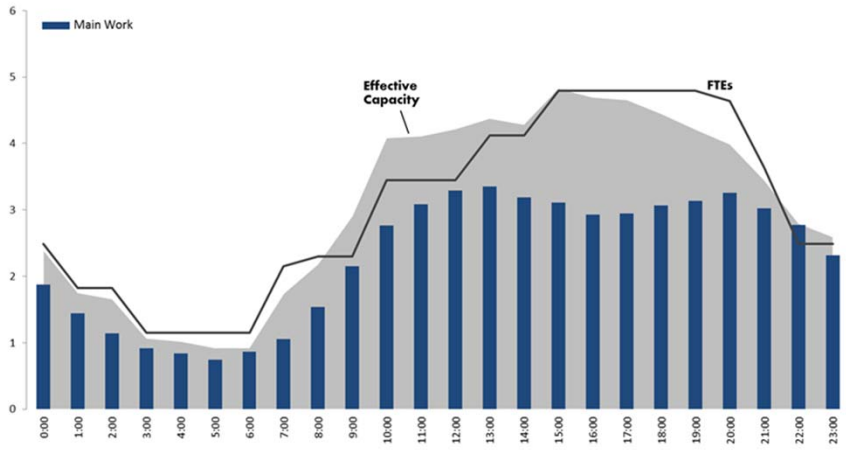
Demand-Capacity Management- Putting It All Together:

Modeling and Matching Staffing (Capacity) to Predicted Patient Arrivals (Demand)



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Identifying Your Patient Flow and Staffing Bottlenecks by Key Server (MD/APPs, RNs, Beds) and by HOD

Waiting lines/queues form when capacity exceeds demand at various servers. When this happens bottlenecks begin to form. The bottleneck defines the speed and limits the flow of entities through a system. Begin looking for bottlenecks by identifying servers/areas with high utilization.

HOURLY DATA		OVERALL ED			MAIN ED			FAST TRACK		
HOD	Avg. ED Arrivals	Overall ED Bed Utilization	Overall ED MD/APP Utilization	Overall ED RN Utilization	Main ED Bed Utilization	Main ED MD/MLP Utilization	Main ED RN Utilization	Fast Track Bed Utilization	Fast Track MD/APP Utilization	Fast Track RN Utilization
0:00	3.49	49%	103%	122%	61%	103%	122%	0%	0%	0%
1:00	2.80	38%	80%	96%	48%	80%	96%	0%	0%	0%
2:00	2.32	30%	64%	76%	38%	64%	76%	0%	0%	0%
3:00	2.08	25%	53%	64%	32%	53%	64%	0%	0%	0%
4:00	1.88	22%	47%	56%	28%	47%	56%	0%	0%	0%
5:00	1.89	21%	44%	52%	26%	44%	52%	0%	0%	0%
6:00	2.38	22%	46%	77%	28%	46%	77%	0%	0%	0%
7:00	3.51	28%	59%	49%	35%	59%	49%	0%	0%	0%
8:00	5.34	41%	72%	72%	51%	72%	72%	0%	0%	0%
9:00	6.88	57%	73%	59%	81%	88%	65%	42%	42%	42%
10:00	7.90	68%	84%	68%	90%	95%	70%	70%	63%	63%
11:00	8.27	71%	88%	71%	93%	98%	73%	75%	67%	67%
12:00	8.16	73%	91%	74%	97%	103%	76%	76%	67%	67%
13:00	7.94	73%	90%	73%	97%	103%	76%	74%	66%	66%
14:00	7.74	71%	72%	72%	95%	75%	74%	72%	64%	64%
15:00	7.73	70%	71%	71%	93%	74%	73%	71%	64%	64%
16:00	7.89	70%	71%	71%	93%	74%	73%	72%	64%	64%
17:00	8.00	71%	72%	72%	94%	75%	74%	74%	66%	66%
18:00	8.06	72%	73%	79%	96%	76%	84%	74%	66%	66%
19:00	7.94	72%	73%	87%	96%	76%	97%	74%	66%	66%
20:00	7.56	71%	78%	84%	94%	85%	95%	71%	63%	63%
21:00	6.80	66%	99%	165%	103%	92%	154%	23%	0%	0%
22:00	5.79	63%	97%	163%	79%	97%	163%	0%	0%	0%
23:00	4.62	61%	91%	153%	76%	91%	153%	0%	0%	0%

Analyzing ED Patient Arrivals (Volume & Acuity) by Yearly Volume

Volume-Band Analysis of Split-Flow Arrival Patterns:

Projected Low Acuity Patient Hourly Arrivals and Potential Fast Track "On Steroids" Arrivals

	20K		25K		30K		40K		50K		60K		70K		80K	
Hour of Day	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s	Total Arrivals	ESI 5,4, & some 3s
0	1.26	0.57	1.64	0.74	2.17	0.98	2.79	1.26	3.78	1.70	4.15	1.87	5.29	2.38	6.05	2.72
1	1.02	0.46	1.27	0.57	1.71	0.77	2.24	1.01	3.09	1.39	3.35	1.51	4.33	1.95	4.95	2.23
2	0.83	0.37	1.05	0.47	1.39	0.63	1.85	0.83	2.57	1.16	2.73	1.23	3.60	1.62	4.12	1.85
3	0.72	0.33	0.94	0.42	1.24	0.56	1.66	0.75	2.20	0.99	2.35	1.06	3.08	1.38	3.52	1.58
4	0.66	0.29	0.85	0.38	1.13	0.51	1.51	0.68	2.00	0.90	2.14	0.96	2.80	1.26	3.20	1.44
5	0.65	0.29	0.88	0.39	1.11	0.50	1.51	0.68	1.97	0.89	2.15	0.97	2.76	1.24	3.16	1.42
6	0.84	0.38	1.08	0.49	1.38	0.62	1.91	0.86	2.37	1.07	2.66	1.20	3.32	1.49	3.79	1.71
7	1.30	0.59	1.69	0.76	2.05	0.92	2.80	1.26	3.49	1.57	3.98	1.79	4.88	2.20	5.58	2.51
8	2.08	0.94	2.64	1.19	3.13	1.41	4.27	1.92	5.11	2.30	6.24	2.81	7.15	3.22	8.18	3.68
9	2.71	1.22	3.45	1.55	4.07	1.83	5.50	2.48	6.60	2.97	8.47	3.81	9.23	4.16	10.55	4.75
10	3.14	1.42	4.06	1.83	4.68	2.11	6.32	2.84	7.73	3.48	9.78	4.40	10.82	4.87	12.37	5.57
11	3.29	1.48	4.24	1.91	4.94	2.22	6.61	2.98	8.06	3.63	10.22	4.60	11.28	5.08	12.89	5.80
12	3.29	1.48	4.18	1.88	4.87	2.19	6.52	2.94	8.02	3.61	9.91	4.46	11.22	5.05	12.83	5.77
13	3.18	1.43	4.03	1.81	4.72	2.13	6.35	2.86	7.77	3.50	9.53	4.29	10.88	4.90	12.44	5.60
14	3.14	1.41	3.95	1.78	4.59	2.07	6.19	2.79	7.59	3.42	9.27	4.17	10.63	4.78	12.14	5.46
15	3.13	1.41	3.93	1.77	4.60	2.07	6.18	2.78	7.65	3.44	9.18	4.13	10.71	4.82	12.24	5.51
16	3.26	1.47	4.06	1.83	4.76	2.14	6.30	2.84	7.76	3.49	9.50	4.27	10.86	4.89	12.42	5.59
17	3.32	1.49	4.07	1.83	4.81	2.17	6.40	2.88	7.85	3.53	9.65	4.34	10.99	4.94	12.56	5.65
18	3.46	1.56	4.16	1.87	4.88	2.20	6.44	2.90	8.07	3.63	9.76	4.39	11.29	5.08	12.91	5.81
19	3.38	1.52	4.05	1.82	4.79	2.16	6.35	2.86	8.03	3.61	9.66	4.35	11.24	5.06	12.85	5.78
20	3.19	1.44	3.85	1.73	4.58	2.06	6.04	2.72	7.59	3.42	8.98	4.04	10.63	4.78	12.15	5.47
21	2.79	1.26	3.40	1.53	4.16	1.87	5.44	2.45	6.86	3.09	8.14	3.66	9.61	4.32	10.98	4.94
22	2.32	1.04	2.80	1.26	3.51	1.58	4.63	2.08	5.95	2.68	7.02	3.16	8.32	3.75	9.51	4.28
23	1.80	0.81	2.20	0.99	2.83	1.27	3.70	1.66	4.79	2.15	5.44	2.45	6.70	3.02	7.66	3.45
Total-Day	54.8	24.6	68.4	30.8	82.1	37.0	109.5	49.3	136.9	61.6	164.3	73.9	191.6	86.2	219.0	98.6
Total-Year	20000	9000	25000	11250	30000	13500	40000	18000	50000	22500	60000	27000	70000	31500	80000	36000

= 1 clinician, 4 bed FT	seeing between	2.25 and	3 pts/hr	
= 2 clinician, 8 bed FT	seeing between	3 and	6 pts/hr	
= 3 clinician, 12 bed FT	seeing between	6 and	9 pts/hr	
= 4 clinician, 16 bed FT	seeing between	9 and	12 pts/hr	
= 5 clinician, 20 bed FT	seeing between	12 and	15 pts/hr	

ESI Level	1	2	3	4	5	% ESI 3 to FT
%	1%	9%	50%	35%	5%	10%

Target PPH Fast Track	3

Tables adapted from the previous work on ED segmentation by Dr. Jody Crane and Dr. Kirk Jensen (see pp slide 20 in Jensen, Crane. Operational Strategies for Lower Acuity Patients)

Putting It All Together - DCM Modeling & Staffing

General Principles

Narrative:

For a 40K visit ED look for opportunities to selectively apply effective patient segmentation principles based on acuity mix.

For lower acuity sites with higher numbers of ESI Level 4 and 5 patients (4-5 pts/hr at peak), consider running a fast track/super track to effectively segment flow during peak hours (9am – 11pm).

Operational approach:

- Immediate bedding when available, MD go from high to low acuity, APP from low to high
- Fast track hours matched to peak loads
- Quick Look Triage to segment, Quick/Bedside Registration for all
- For ERs with low acuity/low admit: Fast Track/Super Track (9a-11p) with 1 APP with committed resources for lab/rad
- Results waiting area

Operational recommendations

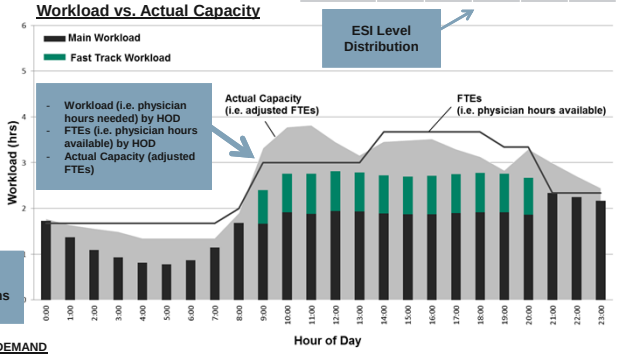
Assumptions:

Variables	Main Room	Fast Track
Patients Per Hour, pts/hr	1.8	3.0
Length of Stay, minutes	160	90

ESI Level	1	2	3	4	5
Percentage	1%	9%	50%	35%	5%

ESI Level Distribution

Workload vs. Actual Capacity



- Workload (i.e. physician hours needed) by HOD
- FTEs (i.e. physician hours available) by HOD
- Actual Capacity (adjusted FTEs)

Demand-Capacity Table

- Patient arrivals represent "raw" demand
- Workload represents the actual demand incoming arrivals place on clinicians
- Staffing Level
- FTE (adjusted staffing level based on staffing mix)
- Utilization - % time server is busy rendering service to patients

PROJECTED DEMAND

Patient Arrivals	2.8	2.2	1.9	1.7	1.5	1.5	1.9	2.8	4.3	5.5	6.3	6.6	6.5	6.3	6.2	6.2	6.3	6.4	6.4	6.4	6.0	5.4	4.6	3.7
Workload	1.7	1.4	1.1	0.9	0.8	0.8	0.9	1.1	1.7	2.4	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.8	2.8	2.7	2.3	2.2	2.2

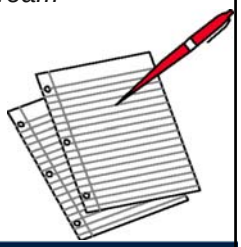
PROPOSED CAPACITY LEVEL

Staffing Level MD	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
Staffing Level APP	1	1	1	1	1	1	1	1	0	1	1	1	1	1	2	2	2	2	2	3	3	2	2	2
Staffing Level Scribes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FTEs	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.0	3.0	3.0	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.3	3.3	2.3	2.3	2.3
Actual Capacity	1.8	1.6	1.6	1.5	1.3	1.3	1.3	1.3	1.9	3.3	3.8	3.8	3.5	3.2	3.5	3.5	3.5	3.3	3.1	2.8	3.3	3.0	2.7	2.4
Utilization	97%	83%	70%	62%	60%	58%	64%	85%	89%	72%	73%	72%	82%	88%	79%	77%	77%	83%	89%	98%	81%	78%	83%	89%

EmCare Innovation Group

ED Physician Staffing and Performance Standards

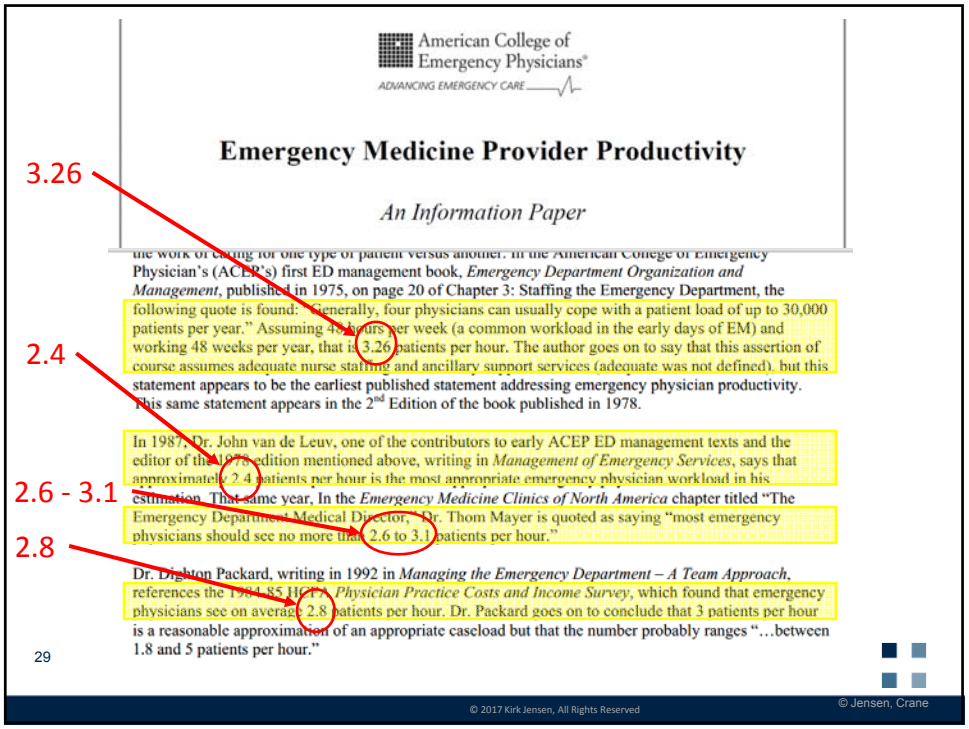
- **Sensible and fair** operational standards for ED physicians
  - *Bed Placement to MD Exam*
  - *Results Available to MD Review*
  - *ED Physician-specific customer satisfaction scores*
- **Common but perhaps suspect** operational standards for ED physicians
  - *Ambulance diversion*
  - *Overall ED patient length of stay on any patient stream*
    - *Admitted ED patients*
    - *Discharged ED patients*
  - *ED admission time*
  - *Walkaways*
  - *Overall patient satisfaction with the ED*



27

What are reasonable physician and/or APP productivity metrics?

28


3.26
2.4
2.6 - 3.1
2.8
American College of Emergency Physicians
ADVANCING EMERGENCY CARE
Emergency Medicine Provider Productivity
An Information Paper
Physician's (ACEP's) first ED management book, Emergency Department Organization and Management, published in 1975, on page 20 of Chapter 3: Staffing the Emergency Department, the following quote is found: "Generally, four physicians can usually cope with a patient load of up to 30,000 patients per year." Assuming 45 hours per week (a common workload in the early days of EM) and working 48 weeks per year, that is 3.26 patients per hour. The author goes on to say that this assertion of course assumes adequate nurse staffing and ancillary support services (adequate was not defined), but this statement appears to be the earliest published statement addressing emergency physician productivity. This same statement appears in the 2nd Edition of the book published in 1978.
In 1987, Dr. John van de Leuv, one of the contributors to early ACEP ED management texts and the editor of the 1978 edition mentioned above, writing in Management of Emergency Services, says that approximately 2.4 patients per hour is the most appropriate emergency physician workload in his estimation. That same year, In the Emergency Medicine Clinics of North America chapter titled "The Emergency Department Medical Director," Dr. Thom Mayer is quoted as saying "most emergency physicians should see no more than 2.6 to 3.1 patients per hour."
Dr. Brighton Packard, writing in 1992 in Managing the Emergency Department – A Team Approach, references the 1984-85 HCFA Physician Practice Costs and Income Survey, which found that emergency physicians see on average 2.8 patients per hour. Dr. Packard goes on to conclude that 3 patients per hour is a reasonable approximation of an appropriate caseload but that the number probably ranges "…between 1.8 and 5 patients per hour."
29
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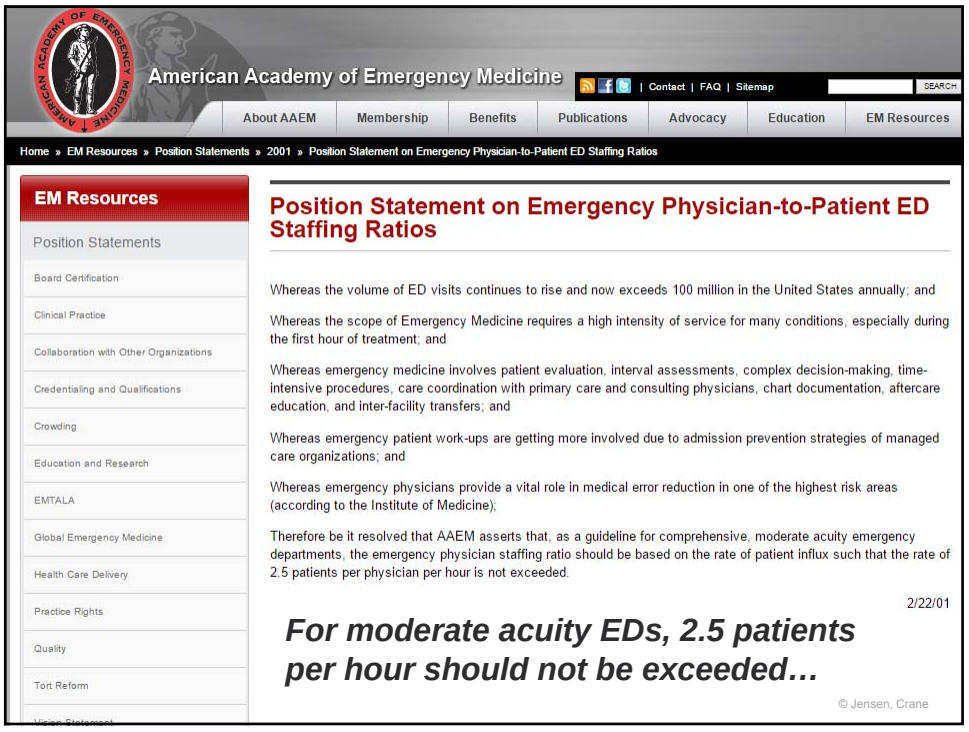
American Academy of Emergency Medicine
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Home » EM Resources » Position Statements » 2001 » Position Statement on Emergency Physician-to-Patient ED Staffing Ratios
EM Resources
Position Statements
Board Certification
Clinical Practice
Collaboration with Other Organizations
Credentialing and Qualifications
Crowding
Education and Research
EMTALA
Global Emergency Medicine
Health Care Delivery
Practice Rights
Quality
Tort Reform
Position Statement on Emergency Physician-to-Patient ED Staffing Ratios
Whereas the volume of ED visits continues to rise and now exceeds 100 million in the United States annually; and
Whereas the scope of Emergency Medicine requires a high intensity of service for many conditions, especially during the first hour of treatment; and
Whereas emergency medicine involves patient evaluation, interval assessments, complex decision-making, time-intensive procedures, care coordination with primary care and consulting physicians, chart documentation, aftercare education, and inter-facility transfers; and
Whereas emergency patient work-ups are getting more involved due to admission prevention strategies of managed care organizations; and
Whereas emergency physicians provide a vital role in medical error reduction in one of the highest risk areas (according to the Institute of Medicine);
Therefore be it resolved that AAEM asserts that, as a guideline for comprehensive, moderate acuity emergency departments, the emergency physician staffing ratio should be based on the rate of patient influx such that the rate of 2.5 patients per physician per hour is not exceeded.
2/22/01
For moderate acuity EDs, 2.5 patients per hour should not be exceeded…
© Jensen, Crane

How Productive Can or Should Your MD's Be? (i.e. How many Docs do you need?)

- Past numbers often quoted 2.3-2.8 patients per hour…
- We are living with our ***"New Reality…"***
  - Patient complexity, patient acuity, customer service, skilled workforce shortages, crowding, boarders, risk management…
- Should you use PA's, NP's?
  - Alone or with an MD?
- Should you use Scribes?
- How is nursing staffing?
- ***And how does your MIS system impact your flow…***

- ***To the extent that a range can be established, 1.5 -2.5 patients per provider per hour with traditional operational models and acuities…***
- ***Some of the newer operational models may allow for higher pph levels…***

31

Building the Actual Schedule

Your approaches to scheduling could include:

- A review of **historical staffing patterns**
- Aligning clinician **performance and compensation**.
- Make sure the **low acuity service line** (ESI 5s,4s, and select 3s) is **adequately resourced** (space, staff, supplies) and **busy at all times**
- Staffing for your ESI 2s, 3s, and 4s - err on the side of **staffing "fat" or "heavy"** to handle **variations in volume and acuity**
- Factor in physical layout, beds, visual sight lines, communication, space, nursing staffing, attending coverage, back end flow, etc..
- **Team-based patient care processes** - front-loading your patient care,
- **Rule-based computer scheduling programs** can allow for the efficient generation of draft schedules

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Select Observations on Your Approach to Staffing:

- Anticipate **patient demand**, and use a **reasonable asset velocity** (patients evaluated per hour-PPH) for the clinician(s) treating the arriving patients.
- With an agreed upon asset velocity (PPH) build out the **number and duration of shifts**, as well as **how many hours annually** you expect your clinicians to work.
- "***Praise the Lord and pass the ammunition***" – don't overlook the benefits of **a dedicated nocturnist**
- **Ease of recruiting** and your group's historic **staffing retention rate** are crucial drivers of your staffing strategy
  - Certain EDs are easier to staff than others. Staffing in a major city or suburb with several emergency medicine training programs and plenty of physicians and nurses is vastly different than staffing and scheduling an ED in a rural area with no training programs and fewer amenities.
- Make sure you plan for clinicians with **staffing constraints** e.g., limited availability on weekends, holidays, and nights versus those who will rotate nights, evenings, days, weekends, etc.
  - **If you are not careful**, the clinicians with staffing restrictions will drive (impair?...) the schedules of those with the most availability and flexibility

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Leveraging Your Available Talent Pool:

- Employ **the least expensive resource** to accomplish the mission.
- **APPs** - In many EDs, up to 25-35% of the cases can often be effectively and successfully seen independently by APPs.
- **Family practitioners or internists** can see up to 75% or more of the cases that emergency physicians see in some EDs (for a lower staffing cost…).
- Optimize your use of **scribes and techs**
- **SOPs and advanced treatment protocols,** developed and implemented with nursing's participation, can drive efficiency and reduce variation .
- On average, the use of **residents** in the ED is only a net gain when you are using senior-level residents (final year). In general, new residents only add complexity and slowness to the EM clinician's day.

Deciding When to Add Coverage

Identifying your trigger or pain points for adding extra coverage:

- Patients seen per hour (PPH) – Your **asset velocity** (PPH) routinely exceeds your desired target(s).
- **Turnaround times** become progressively longer.
- **LWBS rates** are unacceptably high.
- **Your clinicians are concerned** - shifts are too long or too busy.
- **Patient satisfaction survey results** are unacceptably low.
- There are frequent concerns or complaints about **clinician behavior** in a stressful environment.
- **Leverage predictive modeling** – mapping forecasted and trended volume and acuity against clinician hours – and identifying **thresholds** or **trigger points** for adding staff.

It is important to differentiate **routine variation** in patient volume from **trended or progressive increases** in volume. While both of these result in additional demand and complexity for the ED clinical and nursing staff, the solutions will be different.

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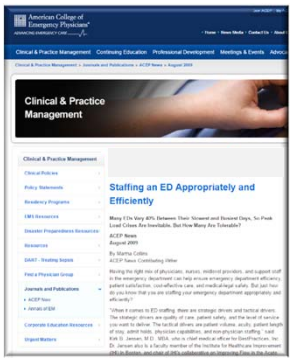
Staffing an ED Appropriately and Efficiently – Deciding When to Add Coverage

- **Worrisome Symptoms:**
  - Elevated patient throughput times
  - High left-without-being-seen rate
  - Low patient satisfaction
  - Clinician behavior in a stressful environment
  - Low clinician satisfaction and retention
- **The four key drivers of patient satisfaction:**
  - Length of stay
  - Quality of the interaction with providers
  - Quality of the explanation
  - Pain management



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The Challenges One Faces with Single Physician Coverage & 12-hour Shifts

- **Single physician coverage** - 8760 hours in a year x 2PPH = 17,520 patients per year
- **64% of the daily ED volume** arrives between 10 a.m. and 10 p.m.
- In an ED with 18,000 annual visits and single coverage, patients are being processed at **2.63 patients per hour** during this peak presentation period.
- During the remainder of the day (10 p.m. to 10 a.m.), patients are seen at less than two patients per hour.
- **Workable strategies** to accommodate increased demand during the 10 a.m. to 10 p.m. shift include:
  - Productivity-based compensation,
  - Template based charting,
  - ED efficiency initiatives,
  - Scribes or personal productivity assistants,
  - Rapid medical evaluation,
  - On-call clinician backup,
  - A transition to eight-hour flex length shifts (shifts that can be two or more hours shorter or longer depending on patient demand), and
  - APPs.

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A Note on Performance - Based Staffing and Payment Models:

- Clinicians often operate more effectively and efficiently when **performance and compensation** are more closely aligned.
- Compensation programs that **align RVU production or PPH with overall earnings** are often able to accomplish better alignment of staffing goals, strategies, and productivity.
- Performance - based production and pay models - **aligning the right clinician with the right patient acuity stream** becomes an opportunity to optimize both value and return.
- The caveat to remember here is that the **lowest cost staffing resource** that **effectively** does the job **should always be maximized first**.

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Advance Practice Providers (APPs) in the ED

- APPs give terrific **flexibility** and allow coverage to be added in a cost-effective way when and where it is needed.
- APPs often prove most productive in a **fast-track type of environment**
- APPs in the **main ED** can be of great use, particularly in areas where physician recruitment and retention are exceedingly difficult.
  - It is not unusual to see mid-level providers averaging only 1 to 1.3 patients per hour when working in the main room.
  - However, when you compare their costs, APPs can still be efficient and effective productive team members within a main emergency department staffing plan.

39

Scribes and Personal Productivity Assistants (PPAs):

What can scribes do for you?

- Complete the chart, order imaging studies and labs, and keep you on task.
- Cognitive off-loading
- Assist in real-time problem solving by being an extender for the physician or APP - improve coding, improve overall asset velocity.
  - Scribes allow for more complete charting,
  - Scribes prompt you for elements that will result in optimizing coding,
  - Scribes assist in promptly getting test results, particularly when they relate to multiple patients.
- Patient rounding assistance for comfort and follow-up with patients and
- Assist nursing and medical-assistant team members in improving overall patient flow.

The Case for Using Scribes (data from Inova Fairfax Hospital, Virginia)

- **18–20% increased charge capture** (via reduction in downcodes when record documentation fails to substantiate care rendered)
- **Asset velocity of 2.3 – 2.5 pph** (pre-scribes **1.9 pph**).
- **Improved RVU** per hour production of **15–20%**
- **89% lab documentation** (pre-scribes **55%**).
- **Improved ratio of compliments to complaints 9:1 per 1000 visits** (pre-scribes **5:1**).

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The Importance (and Perhaps the Necessity…) of Coordinating ED Clinician Staffing (MDs/APPs) and Nursing Staffing

- In many EDs, nurses effectively run the department, and it is the nurses who keep patient care and throughput flowing.
- If nurse staffing levels and/or experience are not where they need to be, then no amount of physician coverage can compensate for it.
- While ED clinicians do not and can not control nurse staffing, there is a management paradox here:
  - You need to know what your MD/APP/Scribe staffing levels are,
  - You need to know what the RN staffing levels are,
  - You need to know what staffing benchmark data RN management/staff is using,
  - You need to know the impact on nursing of prolonged LOS and/or boarding
  - And you need to know how many nursing shifts are going unfilled…and why…
- Nursing and nursing staffing levels have a major impact on patient care, patient throughput and on what the Emergency Department team can accomplish.

"**Emergency physicians may be the scarcest resource in the ED, but they are not the most valuable resource…**"

Benchmarking Nurse Staffing and Productivity

Emergency Department Benchmarking Alliance (EDBA) Figures*:
***Reported in Fall of 2016**

- **RN:**
  - ~.60 ED patients per RN Hour
  - = 1.66 RN hours/ED Patient
- **Techs and Clerks:**
  - ~1.38 patients per hour
  - = .72 Tech/Clerk hours per ED patient

ED Staffing Ratios 2015

	RN	Techs and Clerks	Physician	Physician and APP
Over 100K	0.68	1.28	3.26	2.49
80 to 100K	0.60	1.25	3.07	2.3
60 to 80K	0.60	1.35	3.22	2.7
40 to 60K	0.64	1.54	3.05	2.34
20 to 40K	0.67	1.81	2.78	2.15
Under 20K	0.57	1.73	1.39	1.29
Adult ED	0.59	1.38	2.71	2.14
Peds ED	0.66	1.80	2.39	2.04

Emergency Department Benchmarking Alliance

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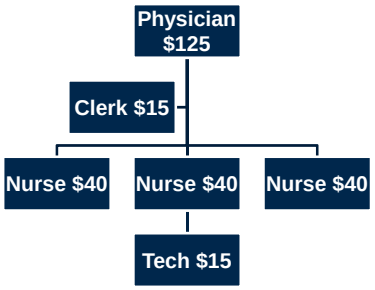
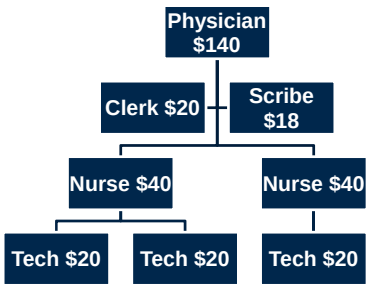
Optimizing Your Staffing Patterns for Service, Safety, and Volume

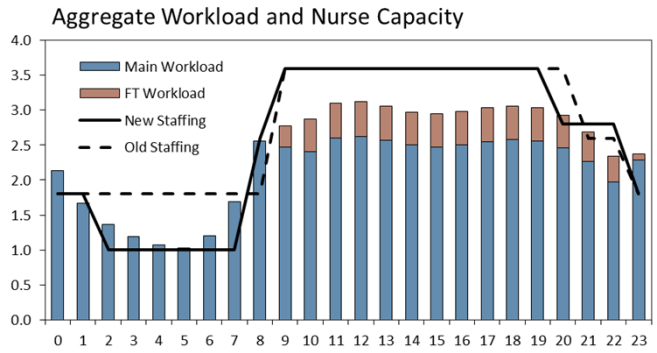
Traditional Staffing Model = $270/Hr



Flexible Staffing Model = $318/Hr



Nursing Demand-Capacity Management
Nurse Staffing and Ratios
An Integrated Approach to Capacity Planning



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Envision HEALTHCARE

How the Nursing Schedule Typically Gets Created:

- An annual budgeting process
- The budgeting process is frequently based on historic numbers and previous staffing levels
- There is often a set of benchmarked staffing numbers which target nursing hours per patient visit
  - You should know what these are and where they come from…
- Nurse staffing models are often based on bed ratios (e.g. 4 beds per nurse)
- Patient volume, acuity, occupancy, and boarding drive staffing needs
- Occupancy is directly proportional to LOS
- Changes in staffing patterns should result from careful analysis of patient demand – volume, complexity, and arrival patterns – and a realistic appreciation of staffing capabilities and capacity.

Staffing Your ED - Closing Observations:

- A consistent and thoughtful approach to staffing is necessary to achieve optimal results
- An accurate assessment of **demand, capacity, and variation** is critical to your success
- **Physician staffing cannot be looked at in isolation**. It must be contextualized relative to nurse staffing, bed constraints, physical space, layout, skill mix and acuity mix
- A keen understanding of the true capacity of your key servers is essential – "**Doctors/Nurses/Beds…**" and effectively aligning each of the key servers with demand…and with each other…
- Remember that "**A bad system will beat a good person every time**." *W. Edwards Deming*
- The best staffing models and schedules require a thorough appreciation of the **science**, **art** and **business** of staffing an emergency department..

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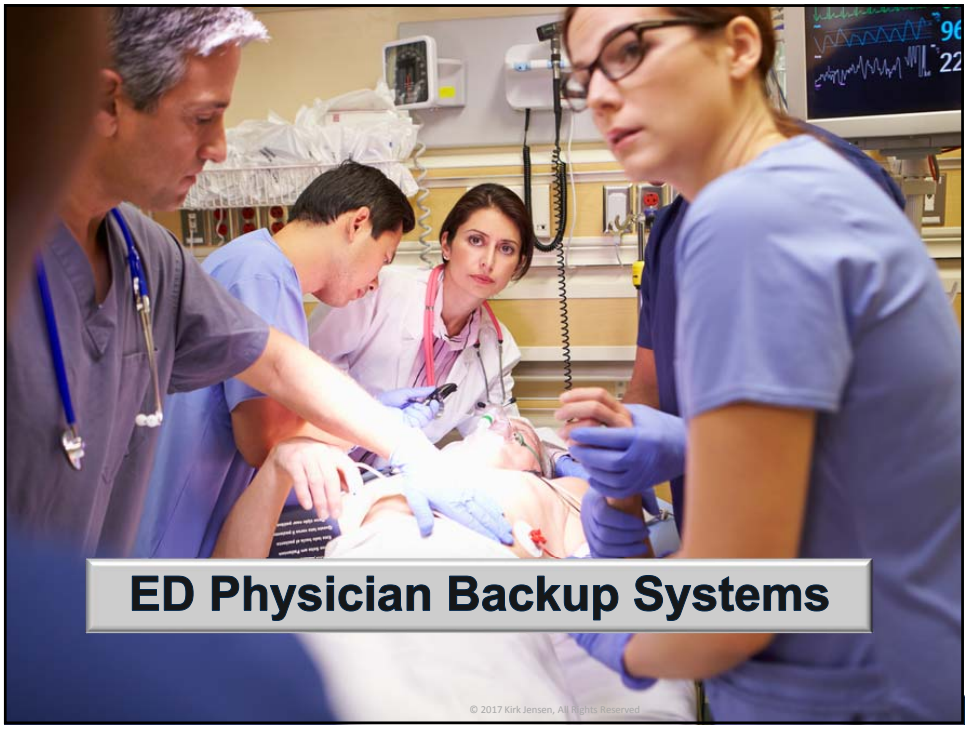
Envision HEALTHCARE

APPENDIX A:
Emergency Department Physician Back-up Systems



Hope is Not a Plan…

ED Physician Backup Systems

- The best systems are formalized and based on **expediting Bed Placement to MD Exam**
- An ED backup system should incorporate plans for the **hospital to provide its members of the backup team** to support the ED when the ED is overwhelmed.
  - **A potential word of warning** – one should probably resist an ED backup system unless or until your hospital provides backup systems to support the ED and the ED MD when the ED is overwhelmed – you must be very careful with this observation…
- Backup systems are most valuable and most effective when they are incorporated into **hospital backup systems** with **pre-defined thresholds**, **triggers**, and **next actions** that have been trialed and agreed upon before the crisis ever happens
  - High census protocols
  - RN's/Tech's can come to the ED to provide "30 Minute Resource"
  - Alternative sites(s) for ED Admission(s)

None of this is as easy as it sounds…

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Potential First Steps In Staffing an Emergency Department ED On-Call System

- "**Jeopardy Call**" ± 2-4 hours at the beginning and end of shift based on pre-defined time performance standards
- Create **formal overlapping shifts**
- Formalized **dedicated call** schedule
- All On Call Systems should have:
  - **An activation process** formalized and based on pre-defined criteria jointly agreed to by hospital and EDMD leadership
  - **The Charge Nurse and the "Officer on Deck"** make the decision to activate the ED MD and other backup systems based on pre-defined time standards

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On-Call System Activation-
Roles and Responsibilities - Food for Thought…

- Dedicated Physician position ("Physician-in-Charge"/ "Officer of the Deck") with whom the Charge Nurse communicates
- Charge Nurse gives Physician-in-Charge opportunity ("X" minutes or "Y" solution) to correct performance failure
- Charge Nurse activates backup if Physician-in-Charge is unable to fix within the predetermined designated time period or parameters

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When Your ED is Overrun
Accurately Assessing Who and What is Needed: Making the Right Diagnosis, and Deploying the Right Treatment Plan…

- Be sure you aren't being asked to cover hospital short-staffing, inappropriate staffing, poor ancillary service support, poor medical staff support, or lack of in-patient beds…
- Remember the Rule of 5:
  - EM providers
  - Nursing/techs
  - Ancillary services
  - Administration
  - Consulting/admitting medical staff

Courtesy of Ron Hellstern, MD, FACEP

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Envision HEALTHCARE

APPENDIX B:

Physicians, Nurses and Beds -

The Simple Math Behind Modeling Workloads and Staffing Needs for Your Critical Servers

Estimating the Number of Docs

The number of physicians can be correctly calculated if you know three pieces of data:

- The average number of hourly arrivals (pts/hr)
- The average physician service rate (pts/hr)
  - Most physicians understand and can readily estimate their service rate in patients seen per hour.
  - The average in the US usually falls between 1.5 and 2.2 pts /hr
  - Service rates in the 2.5-3.0 pts/hr can be expected in an intake team
  - If you don't know what number to use, use an estimate 1.6/1.8/2.0/2.2 pts/hr until you know your actual number(s)
- Your desired physician utilization rate (to account for variation and minimize queuing)

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Estimating the Number of Docs

$$\text{\# of Docs needed} = \frac{\text{(Avg hourly arrivals) / (Average physician productivity)}}{\text{(Desired \% Utilization)}}$$

$$\text{\# of Docs needed} = \frac{(4.0)/(2.0)}{80\%} = \frac{2.0}{80\%} = 2.5 \text{ docs}$$

Assumptions:
Average hourly patient arrivals = 4 pph
Average Physician productivity = 2pph
Desired utilization = 80%

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Estimating the Number of Nurses

The number of nurses can be correctly calculated if you know three pieces of data:

- The average number of hourly arrivals (pts/hr)
- The average nurse service rate (pts/hr)
- Nurses benchmark productivity based on worked hours per patient (hrs/pt)
  - To convert this to a service rate (pts/hr), use the inverse = (1/worked hrs/pt)
  - Service rates in the 1.25-1.5 pts/hr can be expected in an intake team
  - If you don't know what number to use, use a percentage of your doc service rate
- Your desired nursing utilization rate (80% if you don't know)

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Estimating the Number of Nurses

$$\text{\# of Nurses needed} = \frac{\text{(Avg hourly arrivals) / (Average nurse productivity)}}{\text{(Desired \% Utilization)}}$$

$$\text{\# of Nurses needed} = \frac{(4.0) / (.62)}{80\%} = \frac{6.45}{80\%} = 8.06 \text{ nurses}$$

Assumptions:
Average hourly patient arrivals = 4 pph
Average Nursing productivity = .62pph
Desired utilization = 80%

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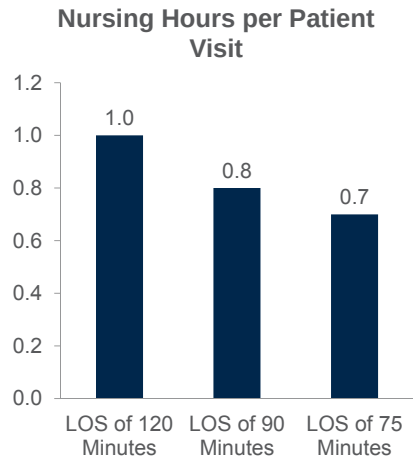
Length of Stay Impact on HPPV*

*HPPV = Hours Per Patient Visit



- Because of the nature of nursing work, HPPV requirements vary based on Length of Stay
- Reducing length of stay to 90 minutes or lower can decrease required staff by more than 20%

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Estimating the Number of Beds

$$\text{\# of beds needed} = \frac{\text{(Avg hourly arrivals) * (Average In-Bed LOS in hours)}}{\text{(Desired \% Utilization)}}$$

$$\text{\# beds needed beds } \underline{\text{beds}} = \frac{\text{(4.0pph) *(120"LOS/60"/h)}}{80\%} = \frac{\text{(4.0pph) *(2h)}}{80\%} = \frac{\text{*8.0}}{80\%} = 10$$

Assumptions:
Average hourly patient arrivals = 4 pph
Average LOS = 120 minutes or 2 hours
Desired bed utilization = 80%

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APPENDIX C: Benchmarking Staffing and Performance

Benchmarking
Metric Driven Management:
You Need Comparative Data- Benchmarking Resources

Be sure to compare hospitals with similar acuity and similar volume…

Where to find data:

- Your neighbors
  - Call and/or visit
- ED Benchmarking Alliance
  - www.edbenchmarking.org
- ACEP
  - http://www.acep.org
- Premier
  - www.premier.com
- VHA
  - www.vha.com
- UHC
  - www.uhc.org

Benchmarking

- Establish goals for how many patients per hour your physicians will treat by benchmarking externally and internally.
- Establish goals for how many hours per patient nursing will staff by benchmarking externally and internally.

The following groups are recommended for external benchmarking:

Medical Group Management Association (www.mgma.com); Emergency Nurses Association (www.ena.org); ED Benchmarking Alliance www.edbenchmarking.org , ACEP http://www.acep.org , Premier www.premier.com, VHAwww.vha.com, UHC www.uhc.org

Your neighbors, call and/or visit..

You should also do your own independent benchmarking in addition to what your hospital or healthcare system supplies you. This may be done by accessing benchmarking data sets. This can also be facilitated by discussing staffing patterns with your colleagues, and/or visiting local contemporaries who direct EDs. This can be expanded outside of your immediate market area to colleagues within the region. As you compare your ED staffing needs, be sure to understand similarities and dissimilarities with hospitals with which you are benchmarking, e.g. admission percentage, LOS, etc.

ED Benchmarking Alliance

- The EDBA is an advocate for improved emergency care, with a multidisciplinary membership and meeting structure and a sharp focus on improving emergency department operations. The group serves as a source of reliable information related to actual ED operations.
- The EDBA represents ~800+ hospitals; the data is current. The EDBA core mission is to support the EM community through data sharing, education, consensus building, research and political advocacy. The EDBA is not-for-profit and has no commercial interests attached. Costs of membership are extremely reasonable.

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

EDBA 2015 Cohort Summary

	Total Sites	Hi CPT Acuity	Peds %	Admit %	Transfer %	EMS Arrival	EMS Arrival Admit	Median LOS	LOS Treat & Release	LOS Fast Track	LOS Admit	LBTC	Door to Doc	EKG per 100	Xray per 100	CT per 100	MRI per 100	US per 100	% Hosp Admits thru ED	Visits per Foot	Beds	Visits per Space	Admit Time
Total All EDs																							
2015 results	1,338	65%	16.9%	16.4%	1.8%	17%	37%	180	154	116	303	2.6%	28	25	44	21	1.2	5.8	65%	3.0	32	1,514	114
Over 100K EDs																							
2015 results	46	68%	17.9%	20.4%	1.0%	24%	41%	242	198	131	424	4.4%	46	32	45	23	1.6	7.4	71%	3.8	75	1,590	181
80 to 100K EDs																							
2015 results	58	67%	13.6%	23.0%	0.9%	22%	43%	245	205	140	381	4.0%	40	30	49	24	1.7	7.7	63%	3.1	59	1,463	161
60 to 80K EDs																							
2015 results	139	68%	17.3%	20.0%	1.2%	21%	43%	212	180	125	350	3.3%	33	29	49	24	1.7	7.0	61%	3.1	44	1,591	135
40 to 60K EDs																							
2015 results	276	69%	14.8%	18.7%	1.5%	19%	41%	195	165	115	323	2.9%	29	26	45	22	1.4	6.6	67%	3.4	32	1,584	128
20 to 40K EDs																							
2015 results	420	64%	17.9%	15.2%	2.1%	15%	36%	162	140	103	277	2.0%	25	23	42	19	1.0	5.6	68%	3.0	28	1,575	98
Under 20K EDs																							
2015 results	322	60%	18.2%	10.7%	3.3%	12%	28%	136	120	118	239	1.5%	21	21	40	17	0.5	3.4	68%	2.2	10	1,334	67
Pediatric EDs																							
2015 Results	38	46%	84.0%	10.0%	0.9%	8%	26%	144	127	100	270	1.7%	26	3	25	4	0.5	4.2	66%	4.0	25	1,894	91
Adult EDs																							
2015 Results	112	72%	4.4%	24.3%	1.2%	24%	45%	236	198	141	360	3.6%	35	33	50	27	1.6	6.2	62%	3.4	43	1,449	152
Urgent Care, Freestanding EDs																							
2015 Results	60	55%	16.9%	8.9%	3.6%	6%	23%	126	115	100	258	1.5%	19	24	45	14	0.7	5.6	0%	2.4	13	1,508	94

Courtesy of Jim Augustine, MD and EDBA
https://www.edbenchmarking.org

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

Benchmarking Nurse Staffing and Productivity

Emergency Department Benchmarking Alliance (EDBA) Figures*:
***Reported in Fall of 2016**

- **RN:**
  - ~.60 ED patients per RN Hour
  - = 1.66 RN hours/ED Patient
- **Techs and Clerks:**
  - ~1.38 patients per hour
  - = .72 Tech/Clerk hours per ED patient

ED Staffing Ratios 2015

	RN	Techs and Clerks	Physician	Physician and APP
Over 100K	0.68	1.28	3.26	2.49
80 to 100K	0.60	1.25	3.07	2.3
60 to 80K	0.60	1.35	3.22	2.7
40 to 60K	0.64	1.54	3.05	2.34
20 to 40K	0.67	1.81	2.78	2.15
Under 20K	0.57	1.73	1.39	1.29
Adult ED	0.59	1.38	2.71	2.14
Peds ED	0.66	1.80	2.39	2.04

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

EDBA Staffing Ratio Definitions

- Nurse, tech, clerk and physician hours
  - The number of patients seen on an average day divided by the average number of clinical hours [nurse/tech/clerk/physician] staffed per day
- Physician and APP hours
  - The number of patients seen on an average day divided by the number of clinical hours of physician staffing added to half the number of staffed APP hours

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

Patient Flow Predictable

General Population use of the ED

Walk-Ins

365/ 1000 Population

80/1000 Population

Total use 445 / 1000 Population

83% Walk-Ins

17% Arrival by EMS

Transfer	Admit	Treat & Release	LBTC
2%	17%	81%	2%

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

A Summary of Key ED Data Points

- American EDs are seeing about 2.8% more patients per year. This is a long-term trend.
- The average American ED is seeing more then 33,000 patients per year.
- More patients arrive with medical illnesses, rather than injuries.
- More patients are elderly, and arrive by EMS.
- The largest group of patients being seen in the ED have private insurance.
- The highest utilization of Emergency Services occurs among nursing home residents. The next highest utilization is by infants under age 1
- The CDC report indicates that 5.2% of patients admitted through the ED in 2009 had been discharged from a hospital in the last 7 days. About 4.2% of admitted patients had been seen recently in the same ED.
- There is continued increase in use of EKGs and MRI scans in diagnosing ED patients.
- Payor mix is not changing significantly

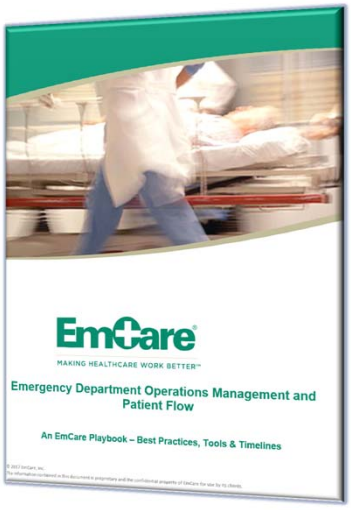
Courtesy of Jim Augustine, MD and EDBA

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

RESOURCES, DATA, BENCHMARKING AND REFERENCES

Emergency Department Operations Management and Patient Flow

An EmCare/Envision Playbook – Best Practices, Tools & Timelines



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Envision HEALTHCARE

Envision/EmCare Patient Flow Resources

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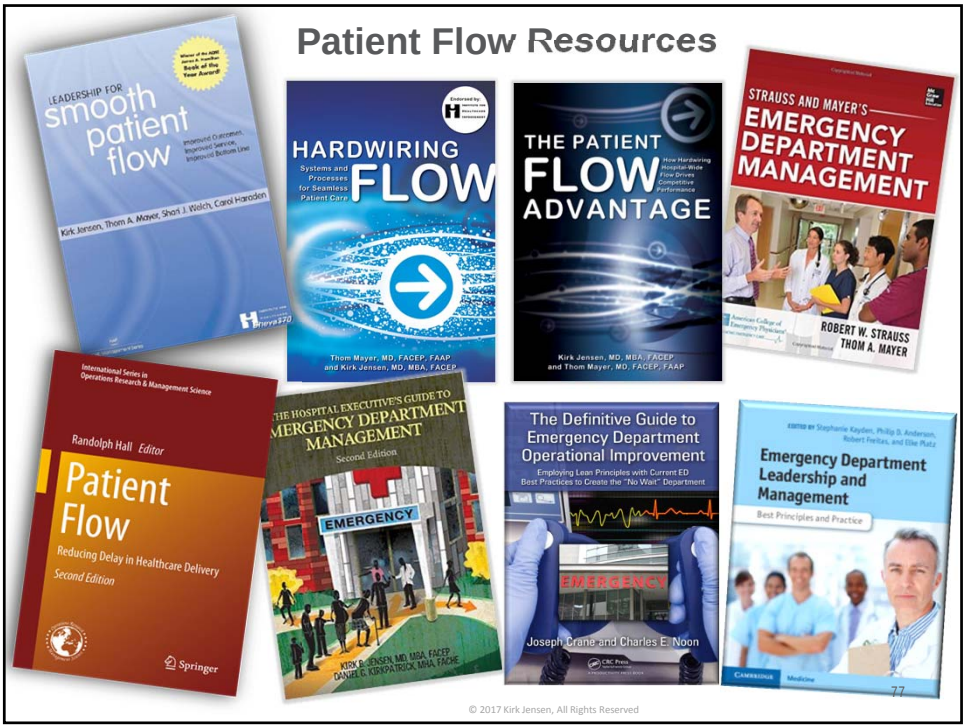
Patient Flow Resources



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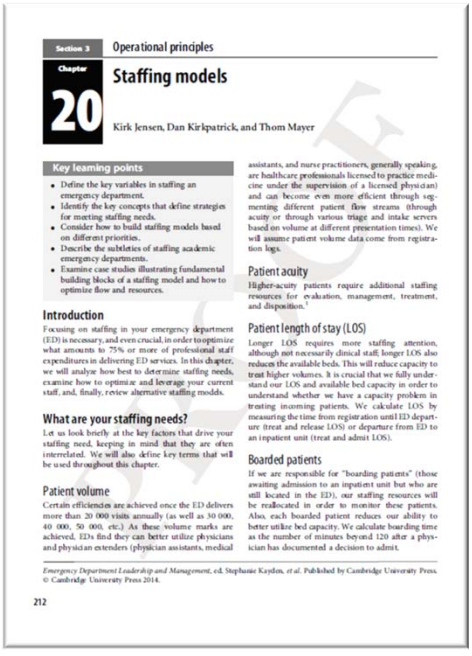

Section 3 Operational principles

Chapter 20

Staffing models

Kirk Jensen, Dan Kirkpatrick, and Thom Mayer

Key learning points

- Define the key variables in staffing an emergency department.
- Identify the key concepts that define strategies for meeting staffing needs.
- Consider how to build staffing models based on different priorities.
- Describe the subtleties of staffing academic emergency departments.
- Examine case studies illustrating fundamental building blocks of a staffing model and how to optimize flow and resources.

Introduction

Focusing on staffing in your emergency department (ED) is necessary, and even crucial, in order to optimize what amounts to 75% or more of professional staff expenditures in delivering ED services. In this chapter, we will analyze how best to determine staffing needs, examine how to optimize and leverage your current staff, and, finally, review alternative staffing models.

What are your staffing needs?

Let us look briefly at the key factors that drive your staffing need, keeping in mind that they are often interrelated. We will also define key terms that will be used throughout this chapter.

Patient volume

Certain efficiencies are achieved once the ED delivers more than 20 000 visits annually (as well as 30 000, 40 000, 50 000, etc.) As these volume marks are achieved, EDs find they can better utilize physicians and physician extenders (physician assistants, medical assistants, and nurse practitioners, generally speaking, are healthcare professionals licensed to practice medicine under the supervision of a licensed physician) and can become even more efficient through segmenting different patient flow streams (through acuity or through various triage and intake servers based on volume at different presentation times). We will assume patient volume data come from registration logs.

Patient acuity

Higher-acuity patients require additional staffing resources for evaluation, management, treatment, and disposition.[1]

Patient length of stay (LOS)

Longer LOS requires more staffing attention, although not necessarily clinical staff; longer LOS also reduces the available beds. This will reduce capacity to treat higher volumes. It is crucial that we fully understand our LOS and available bed capacity in order to understand whether we have a capacity problem in treating incoming patients. We calculate LOS by measuring the time from registration until ED departure (treat and release LOS) or departure from ED to an inpatient unit (treat and admit LOS).

Boarded patients

If we are responsible for "boarding patients" (those awaiting admission to an inpatient unit but who are still located in the ED), our staffing resources will be reallocated in order to monitor these patients. Also, each boarded patient reduces our ability to better utilize bed capacity. We calculate boarding time as the number of minutes beyond 120 after a physician has documented a decision to admit.

Emergency Department Leadership and Management, ed. Stephanie Kayden, *et al.* Published by Cambridge University Press. © Cambridge University Press 2014.

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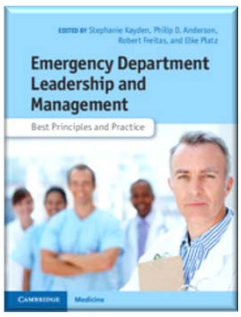


Emergency Department Leadership and Management
Best Principles and Practice
Editors:

Stephanie Kayden, Brigham and Women's Hospital, Harvard Medical School, Boston

Philip D. Anderson, Brigham and Women's Hospital, Harvard Medical School, Boston

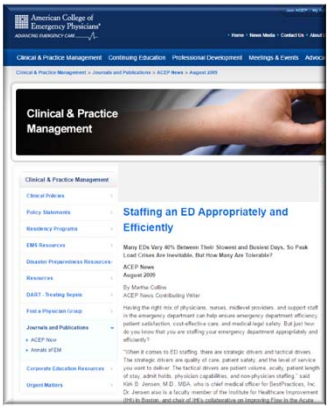
Robert Freitas, Brigham and Women's Hospital, Harvard Medical School, Boston

Elke Platz, Brigham and Women's Hospital, Harvard Medical School, Boston

Cambridge University Press: November 2014

Staffing an ED Appropriately and Efficiently

- "The ED by its nature is often either overstaffed or understaffed because patient volume is not evenly distributed. Many smaller EDs have as much as a 40% variation between their slowest and busiest days, so peak load crises are inevitable. The real question is how many are tolerable? How far do you bend before you break?"
- "There are two ways of looking at how staffing affects operational efficiency and service. For one, the more efficient your doctors are, the less coverage you need. On the other hand, if you are trying to drive throughput or flow through a system with fixed capacity, such as the ED, and if your space is limited, then you actually need higher staffing levels to drive throughput,"
- "If ED beds are a rate-limiting step, which they are for many EDs, then you actually need more staff to drive efficient throughput than you would if you had the beds you needed"
- " What puts you most at risk for medical-legal issues are incidences of misdiagnosis and misadventures in therapy, and the possibility of such incidents is diminished with sufficient coverage"



ACEP News August 2009
Interview with Kirk Jensen, MD

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The Patient Flow Advantage:

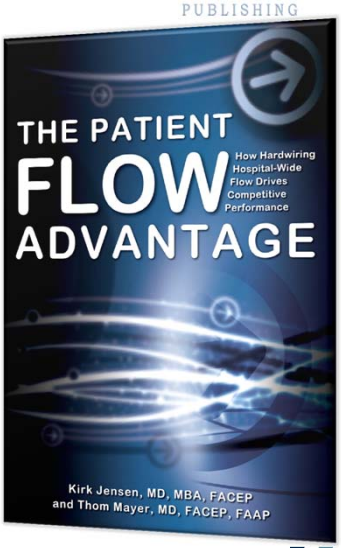
How Hardwiring Hospital-Wide Flow Drives Competitive Performance

Kirk Jensen/Thom Mayer FireStarter Publishing, January 2015

Section 1 — Framing the Flow Mandate
Chapter 1: Why Flow Matters
Chapter 2: Defining Flow: Establishing the Foundations
Chapter 3: Strategies and Tools to Hardwire Hospital-Wide Flow
Chapter 4: Lessons from Other Industries

Section 2 — Advanced Flow Concepts
Chapter 5: Emergency Department Solutions to Flow: Fundamental Principles
Chapter 6: Advanced Emergency Department Solutions to Flow
Chapter 7: Hospital Systems to Improve Flow
Chapter 8: Hospital Medicine and Flow
Chapter 9: Real-Time Demand and Capacity Management

Section 3 — Frontiers of Flow
Chapter 10: Hardwiring Flow in Critical Care
Chapter 11: Smoothing Surgical Flow
Chapter 12: Acute Care Surgery and Flow
Chapter 13: Integrating Anesthesia Services into the Flow Equation
Chapter 14: The Role of Imaging Services in Expediting Flow
Chapter 15: The Future of Flow



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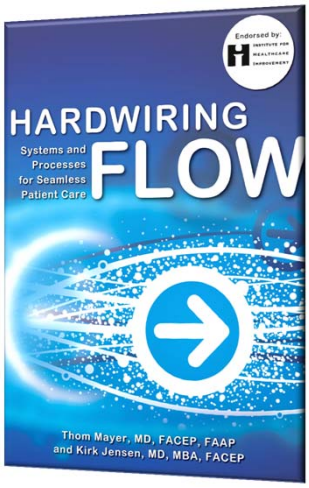
Hardwiring Flow
Systems and Processes for Seamless Patient Care

Studer Fire Starter PUBLISHING

Thom Mayer, MD, FACEP, FAAP
Kirk Jensen, MD, MBA, FACEP

- Why patient flow helps organizations maximize the "Three Es": Efficiency, Effectiveness, and Execution
- How to implement a proven methodology for improving patient flow
- Why it's important to engage physicians in the flow process (and how to do so)
- How to apply the principles of better patient flow to emergency departments, inpatient experiences, and surgical processes



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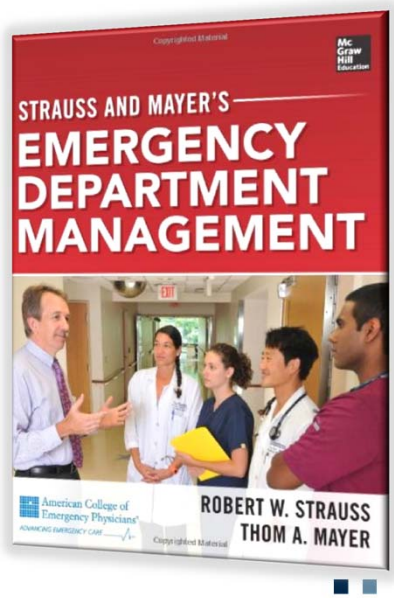
Strauss and Mayer's
Emergency Department Management

- By Robert W. Strauss MD, Thom A. Mayer, MD
- Kirk B Jensen, MD, MBA, FACEP, Associate Editor
- ISBN-13: 9780071762397
- Publisher: McGraw-Hill Professional
- Publication date: January 2014

- **Thom Mayer**, one of two chief editors, co-authored 20+ chapters
- **Rob Strauss**, one of two chief editors, co-authored 20+ chapters
- **Kirk Jensen**, one of two associate editors, co-authored 11 chapters as well as serving as section editor of the Operations: Flow section.
- **Dighton Packard**, Section Editor
- **Jody Crane**, Section editor
- There are multiple other EmCare/envision physicians and people who have co-authored at least a chapter, including Mark Hamm, John Howell, Glenn Druckenbrod and others.



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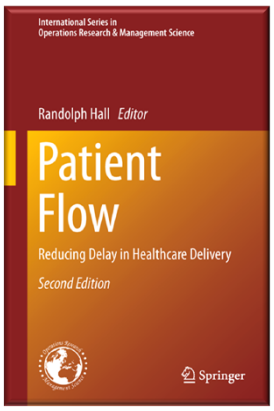

Patient Flow: Reducing Delay in Healthcare Delivery, Second Edition
Randolph Hall, PhD Editor
Springer, January 2014

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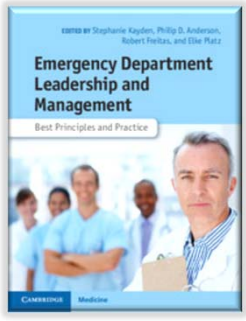
Patient Flow: Reducing Delay in Healthcare Delivery, Second Edition:

1. Modeling Patient Flows Through the Healthcare System, RANDOLPH HALL, DAVID BELSON, PAVAN MURALI AND MAGED DESSOUKY
2. Hospital-wide System Patient Flow-ALEXANDER KOLKER
3. Hospitals And Clinical Facilities, Processes And Design For Patient Flow MICHAEL WILLIAMS
4. **Emergency Department Crowding-KIRK JENSEN**
5. **Patient Outcomes Due to Emergency Department Delays- MEGHAN MCHUGH**
6. Access to Surgery and Medical Consequences of delays BORIS SOBOLEV, ADRIAN LEVY AND LISA KURAMOTO
7. **Breakthrough Demand-Capacity Management Strategies to Improve Hospital Flow, Safety, and Satisfaction-LINDA KOSNIK**
8. Managing Patient Appointments in Primary Care-SERGEI SAVIN
9. Waiting Lists for Surgery-EMILIO CERDÁ, LAURA DE PABLOS, MARIA V. RODRÍGUEZ-URÍA
10. Triage and Prioritization for Non-Emergency Services-KATHERINE HARDING
11. Personnel Staffing and Scheduling-MICHAEL WARNER
12. Discrete-Event Simulation Of Health Care Systems SHELDON H. JACOBSON, SHANE N. HALL AND JAMES R. SWISHER
13. Using Simulation to Improve Healthcare: Case Study-BORIS SOBOLEV
14. Information Technology Design to Support Patient Flow KIM UNERTL, STUART WEINBERG
15. Forecasting Demand for Regional Healthcare-PETER CONGDON
16. Queueing Analysis in Healthcare -LINDA GREEN
17. Rapid Distribution of Medical Supplies - MAGED DESSOUKY, FERNANDO ORDÓÑEZ, HONGZHONG JIA, AND ZHIHONG SHEN
18. Using a Diagnostic to Focus Hospital Flow Improvement Strategies ROGER RESAR
19. **Improving Patient Satisfaction Through Improved Flow- KIRK JENSEN**
20. Continuum of Care Program- MARK LINDSAY
21. A Logistics Approach for Hospital Process Improvement-JAN VISSERS
22. **Managing a Patient Flow Improvement Project-DAVID BELSON**



Emergency Department Leadership and Management Best Principles and Practice

Editors:

- Stephanie Kayden, Brigham and Women's Hospital, Harvard Medical School, Boston
- Philip D. Anderson, Brigham and Women's Hospital, Harvard Medical School, Boston
- Robert Freitas, Brigham and Women's Hospital, Harvard Medical School, Boston
- Elke Platz, Brigham and Women's Hospital, Harvard Medical School, Boston

Cambridge University Press: November 2014

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Improving Patient Flow
In the Emergency Department

Kirk Jensen
Jody Crane

NOVEMBER 2008 **healthcare financial management**

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Leadership for Smooth Patient Flow:
Improved Outcomes, Improved Service, Improved Bottom Line

Kirk B. Jensen, MD, FACEP
Thom A. Mayer, MD, FACEP, FAAP
Shari J. Welch, MD, FACEP
Carol Haraden, PhD, FACEP

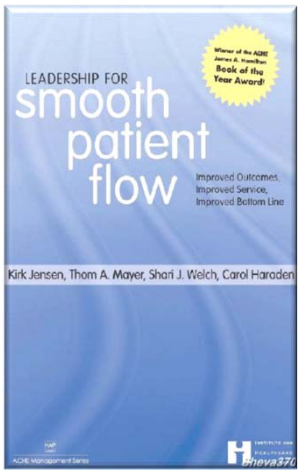
The heart of the book focuses on the practical information and leadership techniques you can use to foster change and remove the barriers to smooth patient flow.

You will learn how to: Break down departmental silos and build a multidisciplinary patient flow team Use metrics and benchmarking data to evaluate your organization and set goals Create and implement a reward system to initiate and sustain good patient flow behaviors Improve patient flow through the emergency department—the main point of entry into your organization The book also explores what healthcare institutions can learn from other service organizations including Disney, Ritz-Carlton, and Starbucks. It discusses how to adapt their successful demand management and customer service techniques to the healthcare environment.

*"**This book marks a milestone in the ability to explain and explore flow as a central, improvable property of healthcare systems. The authors are masters of both theory and application, and they speak from real experiences bravely met."***

Donald M. Berwick, MD
President and CEO
Institute for Healthcare Improvement (from the foreword)

ACHE + Institute for Healthcare Improvement



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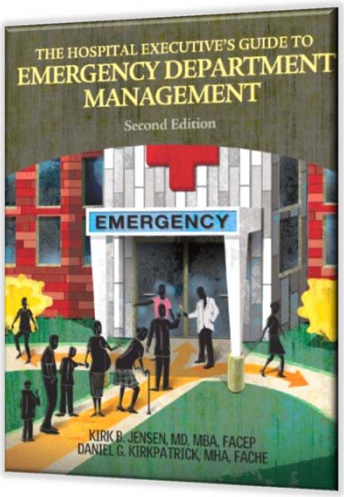
The Hospital Executive's Guide to Emergency Department Management

Kirk B. Jensen, MD, FACEP
Daniel G. Kirkpatrick, MHA, FACHE



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HcPro April 2014

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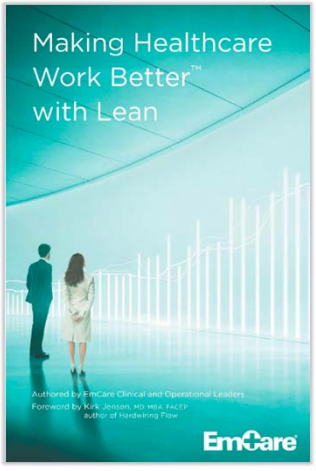
Making Healthcare Work Better™ with Lean

Text and Workbook



Authored by:
EmCare Clinicians and Operational Experts

Foreword: Kirk Jensen

Sample Chapters:

- **Applying Lean to Healthcare**
- **Lean Requires Transformation**
- **Lean System: Integrating Clinical Departments**
- **Lean Emergency Department**
- **Lean OR**
- **Lean in the Surgery Schedule**
- **Lean Inpatient**
- **Lean Transitions**
- **Lean Beyond the Hospital Stay**
- **Lean Radiology**
- **Lean Ancillary Services**
- **Lean Processes for Leaders**

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Real-Time Demand Capacity Management and Hospital-Wide Patient Flow

The Joint Commission Journal on Quality and Patient Safety

Timeliness and Efficiency

Using Real-Time Demand Capacity Management to Improve Hospitalwide Patient Flow

Article-at-a-Glance

Background: The Joint Commission's accreditation standard on managing patient flow, effective January 2005, served as a call to action for hospitals, yet many hospitals still lack the processes and structures to admit or transfer patients to an inpatient bed on a timely basis. In 2007 the University of Pittsburgh Medical Center (UPMC) at Shadyside, a 526-bed tertiary care hospital, began testing and implementing real-time demand capacity management (RTDC) at an initial pilot site. The hospital had identified improved patient flow as a strategic goal in 2002, but a series of patient flow projects failed to result in improvement.

Implementing RTDC: Standard processes for the four RTDC steps—Predicting Capacity, Predicting Demand, Developing a Plan, and Evaluating a Plan—and standard structures for unit bed huddles and the hospital bed meetings were developed. The neurosurgery (NS) service line's ICU and stepdown unit were designated as the first pilot sites, but work was quickly spread to other units.

Results: Improvements were achieved and have been sustained through early 2011 for all measures, including (1) the unit-based reliability of discharge predictions; (2) overnight holds in the postanesthesia care unit, a problem eliminated two months after RTDC work began; (3) the percentage of patients who left without being seen (LWBS),

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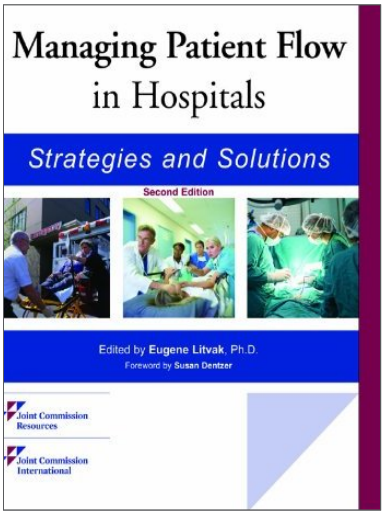
The Joint Commission Journal on Quality and Patient Safety, May 2011 Volume 37 Number 5

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



Chapter 8

Improving Hospitalwide Patient Flow at Northwest Community Hospital

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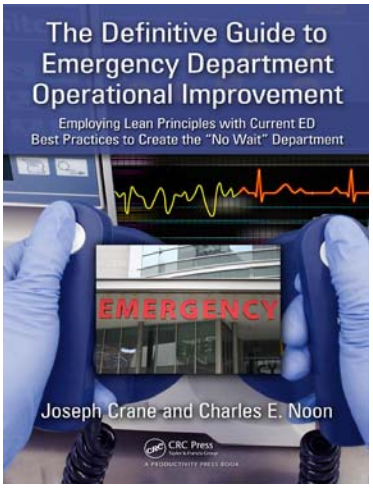
The Definitive Guide to Emergency Department Operational Improvement

X32 Healthcare
Where analytics and innovation meet to define the future of healthcare



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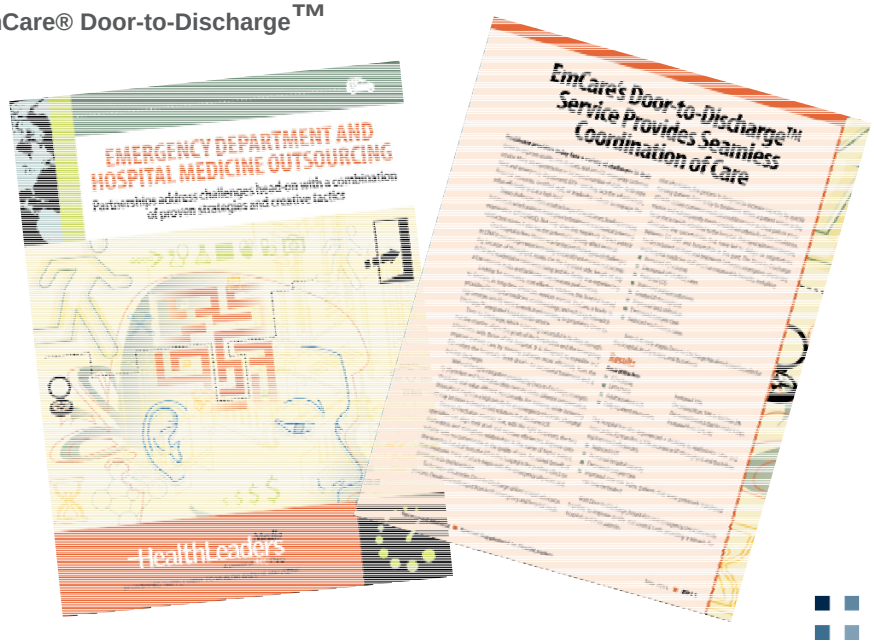
EmCare® Door-to-Discharge™



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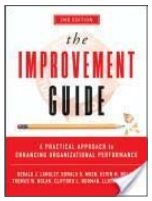
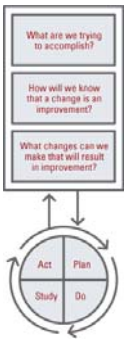
The Improvement Guide and Rapid-Cycle Testing

Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP.

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd edition).

San Francisco: Jossey-Bass Publishers; 2009.





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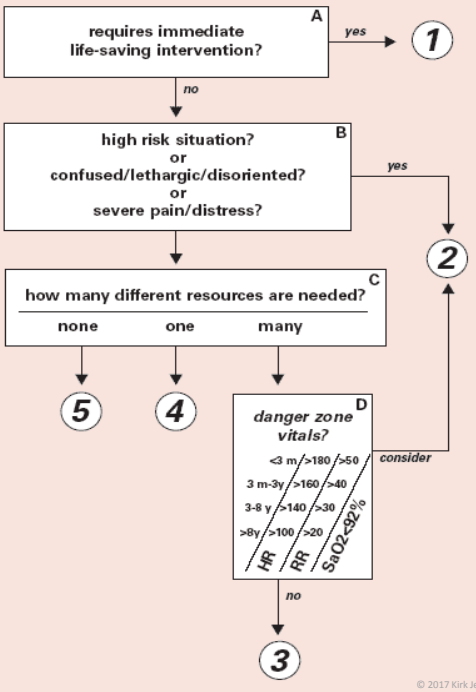

Patient Segmentation by Acuity

ESI 5-Level Triage System:

- Easy
- Highly Reliable
- Allows for quick patient segmentation

Gilboy N, Tanabe P, Travers DA, Rosenau AM, Eitel DR.
Emergency Severity Index, Version 4: Implementation Handbook. AHRQ Publication No. 05-0046-2, May 2005.
Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/research/esi/

Benchmarking Resources

Where to find data

Your neighbors
- Call and/or visit

ACEP
- http://www.acep.org

Premier
- www.premier.com

VHA
- www.vha.com

ED Benchmarking Alliance
- www.edbenchmarking.org

UHC
- www.uhc.org

Be sure to compare hospitals with similar acuity and similar volume…

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