The Clockwork ED

Best Practices for Maximising Emergency Department Throughput and Capacity
I. Confronting the ED Crisis

II. The High-Performance ED
Doing More with Less

Annual US ED Visits and Emergency Departments, 1997-2005

Visits in Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>ED Visits</th>
<th>Emergency Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>4.813</td>
<td>92.8</td>
</tr>
<tr>
<td>1998</td>
<td>94.8</td>
<td>99.5</td>
</tr>
<tr>
<td>1999</td>
<td>103.1</td>
<td>106.0</td>
</tr>
<tr>
<td>2000</td>
<td>111.0</td>
<td>111.0</td>
</tr>
<tr>
<td>2001</td>
<td>112.6</td>
<td>112.6</td>
</tr>
<tr>
<td>2002</td>
<td>114.8</td>
<td>114.8</td>
</tr>
<tr>
<td>2003</td>
<td>4.611</td>
<td>4.611</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Annual Emergency Department Attendances in NHS Trusts England

Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
<td>16.5</td>
</tr>
<tr>
<td>2006-07</td>
<td>16.5</td>
</tr>
<tr>
<td>2009-10</td>
<td>16.5</td>
</tr>
<tr>
<td>2012-13</td>
<td>21.7</td>
</tr>
</tbody>
</table>

ED Presentations in Australian Public Hospitals

<table>
<thead>
<tr>
<th>Year</th>
<th>Attendances</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>3,627,912</td>
</tr>
<tr>
<td>2001-02</td>
<td>4.914,896</td>
</tr>
<tr>
<td>2002-03</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td></td>
</tr>
</tbody>
</table>

UK Patients Reporting A&E Wait of Four Hours or More

n = 46,000

- 2004: 23%
- 2008: 27%
- 2012: 33%

Australian Emergency Department Efficiency Challenge

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage Meeting Target</th>
<th>Gap to 2016 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>61.1%</td>
<td>28.9%</td>
</tr>
<tr>
<td>VIC</td>
<td>65.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>QLD</td>
<td>66.9%</td>
<td>23.1%</td>
</tr>
<tr>
<td>WA</td>
<td>78.5%</td>
<td>11.5%</td>
</tr>
</tbody>
</table>


1) Compound Annual Growth Rate.
Projected Population Growth by Age

Australia

A Deadly Problem

10-Day Mortality

<table>
<thead>
<tr>
<th></th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Crowded</td>
<td>101</td>
</tr>
<tr>
<td>Overcrowded</td>
<td>144</td>
</tr>
</tbody>
</table>

Study in Brief

- Retrospective analysis of two equivalent cohorts of 66,608 patients (overcrowded department vs. not overcrowded department) presenting to ED of single, urban, Australian public teaching hospital, over three 48-week periods
- Analysis to test primary outcome of death in hospital within 10 days of ED presentation

Access Block an “Illness”

“Access block is not an inconvenience. It is not a problem of EDs. Access block is an illness, and not a benign illness. It has a morbidity and mortality rate and a growing literature about it. A search in MEDLINE (1950 to Week 2 of October 2007) using the keywords access block, crowding and overcrowding identified 163 articles. This Journal alone has published 26 articles in recent years.”

Professor George Braitberg
Medical Journal of Australia

Dissecting Key Barriers to Improvements

**Barrier #1**
**Suboptimal Resource Allocation**

- Inappropriate use of ED by non-acute patients
- Insufficient ED bed capacity
- Inappropriate allocation of capacity by patient type
- Inefficient layout/design

**Key Questions**
- Is there an opportunity to redirect non-acute patients in a principled manner?
- Do I need to consider building more ED capacity?
- Are there still opportunities to improve my operational efficiency?

**Barrier #2**
**Suboptimal ED Processes**

- Overly lengthy triage and registration
- Failure to parallel process key evaluation and treatment phases
- Failure to dissect and manage patients by acuity level
- Delayed ancillary orders, tests, and results
- Inability to secure specialist consults

**Key Questions**
- Do I need to shorten my triage process?
- Have I implemented bedside registration or tried to parallel process registration with triage?
- Have I expedited all phases of diagnosis?
- Do I have sufficient call coverage?

*Source: Advisory Board interviews and analysis.*
Dissecting Key Barriers to Improvements

**Barrier #3**

Lack of Inpatient Bed Availability

- Insufficient inpatient capacity
- Inefficient discharge policies
- Lack of transparency into bed availability
- Lack of accountability for timely placement

**Key Questions**

- Is there an infrastructure in place to ensure transparency, accountability for timely placement of patients?
- Have I optimised my discharge policies to allow for optimal throughput?
- Do I have a principled approach to handling ED boarders?

**Barrier #4**

Inability to Sustain Improvements

- Inability to locate patients
- Suboptimal staff communication
- Difficulty in monitoring progress on key initiatives
- Lack of accountability throughout the organisation

**Key Questions**

- Have I evaluated key technologies that will help hardwire long-term efficiency gains?
- Do I leverage data to accurately evaluate opportunities for improvement?
- Does the ED staff and the rest of the hospital feel accountable for the performance of the ED?

Source: Advisory Board interviews and analysis.
The Clockwork Emergency Department

Optimising Capacity and Throughput to Meet Ever-Growing Demand

Maximising Resource Allocation
I
Addressing Capacity Constraints

II
Reforming Core Emergency Department Processes

III
Preventing Ancillary Delays

IV
Expediting Inpatient Admissions

V
Hardwiring Sustainable Gains

#1 Acuity-Based Redirect
#2 Proactive Frequent User Program
#3 ED Toolkit

Special Report: Emergency Department Design

#4 Expedited Triage
#5 Bedside Registration
#6 Check-In Kiosks
#7 Low-Acuity Fast Track
#8 Split-Flow Management

#9 Preemptive Order Guidelines
#10 Lab Intervention Field Guide
#11 Portable Ultrasound Adoption
#12 Refined Contrast Protocol
#13 Dedicated CT Scanner

#14 Patient Placement Command Center
#15 Day-of-Amount Discharge Planning
#16 Full Capacity Protocol
#17 Psych Transition Infrastructure
#18 Hospitalist ED Phone Consult

#19 Patient Tracking
#20 Demand-Based Staffing Model
#21 Instant Communication Network
#22 Best-in-Class Dashboards

Emerging Technology: ED Business Intelligence

CODA
Creating a Culture of Accountability

Lesson #1:
Dedicated Support Elevates Impact of Technology

Lesson #2:
Front-Line Staff the Most Powerful Agents of Change

Lesson #3:
Success Dependent on Hospitalwide Buy-in

Lesson #4:
Lasting Change Improbable without Support from the Top

Classic Practices
• No-Delay Nurse Report
• Dedicated Admissions Nurse
• EP Admit Authority

Classic Practices
• Efficiency Profiling

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The Clockwork Emergency Department

Webconference Series Part 1

I
Maximising Resource Allocation
Addressing Capacity Constraints
- Emergency Department Design
- ED Toolkit

II
Reforming Core Processes
Minimising Door-to-Doc Time
- Expedited Triage
- Bedside Registration
- Low-Acuity Fast-Track
- Split-Flow Management
- Patient Delay Updates
- Charting Scribe

Series Part 2

IV
Expediting Inpatient Admissions
Promoting Bed Availability
- Patient Placement Command Centre
- Full Capacity Protocol
- Psych Transition Infrastructure
- No-Delay Nurse Report
- Dedicated Admissions Nurse
- ED Admit Authority

Series Part 3

V
Hardwiring Sustainable Gains
Leveraging Data and Technology
- Patient Tracking
- Demand-Based Staffing Model
- Instant Communication Network
- Best-in-Class Dashboards
- Efficiency Profiling
Maximising Resource Allocation

- ED Toolkit
- Emergency Department Design
Expansion Alone (Rarely) the Solution

If You Build It…

Bryant Hospital\(^1\) expands ED from 22 to 29 beds

Volumes increase 20% over next 12 months

Arlington Hospital\(^1\) doubles square footage of ED

Ambulance bypass the very next day

1) Pseudonym.

Source: Advisory Board interviews and analysis.
A Story Repeated

Impact of ED Expansion at Vanderbilt

**Left Without Being Seen**

- **Percentage**
  - Pre-Expansion: 3.5%
  - Post-Expansion: 2.7%
  - p=0.06

**Mean LOS**

- **Hours**
  - Pre-Expansion: 4.6 hours
  - Post-Expansion: 5.6 hours

**Admission Hold LOS**

- **Hours**
  - Pre-Expansion: 3.0 hours
  - Post-Expansion: 4.1 hours

**Only One Piece of the Puzzle**

“ED expansion appears to be an insufficient solution to improve diversion without addressing other bottlenecks.”

*Jin Han, MD*

*Vanderbilt University Medical Center*

---

1) Did Not Wait.
2) Measured during five-month period before expanded ED opened.
3) Measured during five-month period after expanded ED opened.

## Efficiency Metrics Should Drive ED Expansion Decision

### Assessing Current Performance

<table>
<thead>
<tr>
<th>ED Performance Metric</th>
<th>Average Performance (50th Percentile)</th>
<th>Best Demonstrated Practice (10th Percentile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED ALOS, All Patients (Minutes)</td>
<td>184</td>
<td>118</td>
</tr>
<tr>
<td>ED ALOS, Admitted Patients (Minutes)</td>
<td>268</td>
<td>214</td>
</tr>
<tr>
<td>ED ALOS, Discharged Patients (Minutes)</td>
<td>150</td>
<td>97</td>
</tr>
<tr>
<td>Did Not Wait Rate (Percentage of Patients)</td>
<td>2.3%</td>
<td>0.79%</td>
</tr>
<tr>
<td>Average Number of Ambulances Diverted per Month</td>
<td>9.29</td>
<td>5.25</td>
</tr>
</tbody>
</table>

*Source: H*’Works, Washington, DC; Advisory Board interviews and analysis.*
Finding the Productivity “Sweet Spot”

**Key Issues**
- Inefficient ED processes, lack of clinician awareness leading to suboptimal patient flow
- Teaching facilities struggling to train residents without compromising efficiency
- Approaching optimal throughput level, but ED flow still hampered by inefficiencies across the hospital
- Inability to find inpatient bed for ED patients requiring admission likely primary bottleneck
- Apart from unanticipated surges in demand, ED moving patients through efficiently without going on diversion or relying on hallway beds
- Strong coordination with inpatient ward staff to make beds available for inpatients coming from the ED
- Staff burning out as ED struggles to keep up with unrelenting demand, particularly from nonurgent cases
- Increase in patient acuity could force ED to adopt drastic measures to manage capacity
- No pressing need to expand, but adding beds could avert future capacity crunches
- Unless ED handles low-acuity patient population, new beds a must to provide relief for over-worked clinicians

**Clinical Advisory Board Commentary**
- Process improvement (including inpatient bed turnover) first order of business before sinking money into additional ED beds
- ED expansion an alluring “solution” to suboptimal performance, but additional ED beds not addressing the core problems

**Annual Visits per Bed**:  

- **<1,400**: "Under-Performing"  
- **1,400-1,600**: "Room for Improvement"  
- **1,700-2,000**: "Firing on All Cylinders"  
- **2,000+**: "Stretched to the Limit"

1) Includes fixed treatment areas and fast track, but not alternative units.

Source: Advisory Board interviews and analysis.
Evaluating Potential Throughput Gains and Bed Needs

Tool #1: Throughput Opportunity Calculator

Hospital inputs LOS reduction targets; calculator allows for up to four different scenario analyses.

<table>
<thead>
<tr>
<th>Throughput Calculator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Annual ED Volumes</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Unit-Level Information</td>
</tr>
<tr>
<td>Annual Volume</td>
</tr>
<tr>
<td>Fast Track</td>
</tr>
<tr>
<td>General ED</td>
</tr>
<tr>
<td>Trauma</td>
</tr>
<tr>
<td>Overall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOS Reduction Targets: Percentage Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
</tr>
<tr>
<td>Fast Track</td>
</tr>
<tr>
<td>General ED</td>
</tr>
<tr>
<td>Trauma</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculated LOS Targets (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
</tr>
<tr>
<td>Fast Track</td>
</tr>
<tr>
<td>General ED</td>
</tr>
<tr>
<td>Trauma</td>
</tr>
<tr>
<td>Overall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fast Track Throughput Opportunity Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
</tr>
<tr>
<td>Current Patient Capacity</td>
</tr>
<tr>
<td>Current Patient Throughput</td>
</tr>
<tr>
<td>Additional Patient Potential</td>
</tr>
<tr>
<td>Conversion Rate of Additional Patients</td>
</tr>
<tr>
<td>New Patient Capacity</td>
</tr>
<tr>
<td>New Patient Throughput</td>
</tr>
<tr>
<td>Patient Throughput Benchmarks</td>
</tr>
<tr>
<td>Additional Throughput Opportunity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General ED Throughput Opportunity Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
</tr>
<tr>
<td>Current Patient Capacity</td>
</tr>
<tr>
<td>Current Patient Throughput</td>
</tr>
<tr>
<td>Additional Patient Potential</td>
</tr>
<tr>
<td>Conversion Rate of Additional Patients</td>
</tr>
<tr>
<td>New Patient Capacity</td>
</tr>
<tr>
<td>New Patient Throughput Rates</td>
</tr>
<tr>
<td>Patient Throughput Benchmarks</td>
</tr>
<tr>
<td>Additional Throughput Opportunity</td>
</tr>
</tbody>
</table>

Source: Advisory Board interviews and analysis.
Evaluating Potential Throughput Gains and Bed Needs

Throughput Calculator Results

Results page displays summary of new throughput estimates by scenario, compares results to current performance.

Source: Advisory Board interviews and analysis.
Evaluating Potential Throughput Gains and Bed Needs

Tool #2: ED Bed Demand Forecaster

Hospital estimates ED volume growth

Tool determines future bed needs based on new throughput targets, volume estimates

Source: Advisory Board interviews and analysis.
## Free Up Capacity for Highest Acuity ED Patients

### Creating Alternative Treatment Areas

<table>
<thead>
<tr>
<th>Description</th>
<th>Physician Triage</th>
<th>Express Care</th>
<th>Mid Care</th>
<th>Main ED</th>
</tr>
</thead>
</table>
| **Low Acuity**       | • Physician treats patients immediately in triage  
• Open during peak hours | • Minor problems treated in hallway beds  
• Open during peak hours | • Sub-waiting rooms for patients waiting on pathology, x-ray results  
• Open during peak hours | • Standard ED treatment area for patients with emergent conditions  
• Open 24 hours a day |
| **Conditions Treated** | • Ear pain  
• Toothache  
• Urinary tract infection  
• Medication refills | • Sprains and strains  
• Abscesses  
• Non-displaced fractures | • Abdominal/pelvic pain  
• Low risk chest pain  
• Syncope with stable vital signs | • Intractable nausea/vomiting  
• Chest pain with unstable vital signs  
• Acute stroke |
| **Staffing**         | • Dedicated emergency physician  
• Registered nurse | • Dedicated emergency physician  
• Registered nurse | • 3 registered nurses  
• Phlebotomist  
• Technician | • 3 physicians  
• 1 charge nurse  
• 2 triage nurses  
• 3 registered nurses  
• 2 technicians |

Source: Advisory Board interviews and analysis.
Relieving Stress on the Main ED

Primary Treatment Sites, Methodist Willowbrook

Case in Brief: Methodist Willowbrook

- 119-bed hospital with a 12-bed ED in Houston, Texas
- Launched physician triage, Mid Care in September 2005, followed by Express Care opening in April 2006

Source: Advisory Board interviews and analysis.
Relieving Stress on the Main ED

Willowbrook ED Utilisation

Annual ED Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>41,111</td>
</tr>
<tr>
<td>2005</td>
<td>44,623</td>
</tr>
<tr>
<td>2006 (E)</td>
<td>48,866</td>
</tr>
</tbody>
</table>

Patients Treated in ED Bed

<table>
<thead>
<tr>
<th>Year</th>
<th>Patients Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>41,111</td>
</tr>
<tr>
<td>2005</td>
<td>39,119</td>
</tr>
<tr>
<td>2006 (E)</td>
<td>30,786</td>
</tr>
</tbody>
</table>

No Need to Add Beds

“We can get by with the same physical space by getting people discharged through Physician Triage and Express Care. The administrators really love this concept—no more adding beds.”

Dr. Patrick G. Woods
ED Medical Director
Methodist Willowbrook

Source: Advisory Board interviews and analysis.
Remove Impediments to an ED Bed

Eliminating Front-End Registration

Registration-less Reception Area
No space for registration equipment prevents registration prior to placing patient in ED bed

Dedicated Registration Space
Portion of nursing station set aside for clerks’ equipment and supplies

Case in Brief: Dodd Health System
- Health system in Northeastern US with freestanding ED 10 miles from main campus
- Renovated freestanding ED facility in 2004 to accommodate expanded imaging services and provide more patient amenities

1) Pseudonym.

Source: Advisory Board interviews and analysis.
Case in Brief: Ball Memorial Hospital

- 400-bed hospital in Muncie, Indiana
- Opened a new waiting room-free ED in 2003 to improve patient satisfaction
- When ED has trouble placing patients immediately into a bed, administration knows they must work on getting patients out on the back end

Patient Destination After Triage, Ball Memorial
July 2003–April 2004

- 95% Immediately Placed in Bed
- 5% Taken to Alternate Waiting Areas

## Evolving Toward a More Flexible ED Blueprint

<table>
<thead>
<tr>
<th>Description</th>
<th>Racetrack</th>
<th>Pods</th>
<th>Interlocking Pods</th>
<th>Pure Linear Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>• Treatment rooms lining outside perimeter with a central nursing station in the middle</td>
<td>• Treatment rooms arranged in small groups around a central nursing station</td>
<td>• Treatment rooms arranged in small groups around a central nursing station</td>
<td>• Two rows of treatment rooms aligned along staff-only corridor with separate public circulation space along the outside perimeter</td>
</tr>
<tr>
<td><strong>Patient Flow</strong></td>
<td>• Patients, staff, and equipment move in space around central nursing station</td>
<td>• Patients, staff, and equipment share same circulation space within pods</td>
<td>• Patients, staff, and equipment share same circulation space within pods</td>
<td>• Patients, families move in exterior corridors</td>
</tr>
<tr>
<td></td>
<td>• Patients, staff, and materials share same hallways</td>
<td>• Compact patient circulation</td>
<td>• Compact patient circulation</td>
<td>• Enter ED rooms from perimeter spaces</td>
</tr>
<tr>
<td><strong>Staff Flow</strong></td>
<td>• Staff moves in and out of central nursing station</td>
<td>• Direct flow to ED rooms from central nursing station</td>
<td>• Direct flow to ED rooms from central nursing station</td>
<td>• Staff share central corridor with equipment, materials</td>
</tr>
<tr>
<td></td>
<td>• Share same traffic patterns as patients, families, and materials</td>
<td>• Compact staff flow</td>
<td>• Compact staff flow</td>
<td>• Staff enter treatment rooms from central corridor</td>
</tr>
<tr>
<td><strong>Degree of Flexibility for Future Expansion</strong></td>
<td>• Relatively flexible, but requires expansion of nursing station or creation of new station</td>
<td>• Moderate level of flexibility</td>
<td>• Moderate level of flexibility</td>
<td>• Extremely flexible—rooms built onto the end of the corridor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Design allows for future expansion</td>
<td>• Design allows for future expansion</td>
<td>• Design unwieldy if room count along corridor exceeds 50 spaces</td>
</tr>
</tbody>
</table>

Source: Advisory Board interviews and analysis.
# Evolving Toward a More Flexible ED Blueprint

## Advantages

<table>
<thead>
<tr>
<th>Racetrack</th>
<th>Pods</th>
<th>Interlocking Pods</th>
<th>Pure Linear Model</th>
</tr>
</thead>
</table>
| • Simple patient circulation  
• Good line of sight to patients  
• Staff can congregate easily | • Permits closer monitoring of patients  
• Enables segregation of patients by acuity level or illness | • Permits closer monitoring of patients  
• Enables segregation of patients by acuity level or patient type | • Easily expands, contracts depending on patient volumes  
• Less congested corridors for staff  
• Staff core can serve as semi-sterile core during outbreak/disaster surge |

## Disadvantages

<table>
<thead>
<tr>
<th>Racetrack</th>
<th>Pods</th>
<th>Interlocking Pods</th>
<th>Pure Linear Model</th>
</tr>
</thead>
</table>
| • Line of sight diminishes as treatment rooms added  
• Mixes patient, staff, equipment flows | • Incapable of flexing up/down depending on patient volumes  
• Pods can become specialised silos | • More flexible than traditional pod arrangement, but still locked into rigid pod formation | • Staff communication difficult along long corridor  
• Poor visibility of public circulation space for staff  
• Patients may be stranded at end of corridor as rooms close |

## Advisory Board Assessment

<table>
<thead>
<tr>
<th>Racetrack</th>
<th>Pods</th>
<th>Interlocking Pods</th>
<th>Pure Linear Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A good fit for EDs with less than 20 beds, but has significant growth and traffic challenges</td>
<td>• Layout promotes specialisation at the expense of patient flow</td>
<td>• Layout allows specialisation, but still the potential for substandard patient flow</td>
<td>• A flexible option that adapts to hourly volume fluctuations, but poses staff communication, patient monitoring challenges</td>
</tr>
</tbody>
</table>

Source: Advisory Board interviews and analysis.
Reforming Core ED Processes
Door to Doc Time
Reforming Core Emergency Department Processes

Complex ED Process Plagued by Bottlenecks

Source: Advisory Board interviews and analysis.
ED Patient Dissatisfaction a Major Concern

Not the Service Patients Demand

Average Patient Rating of Overall Care

**Hospital Inpatient**

- Excellent: 42.5%
- Very Good: 34.0%
- Good: 16.3%
- Fair: 5.3%
- Poor: 1.9%

**Emergency Department**

- Excellent: 25.5%
- Very Good: 30.1%
- Good: 27.1%
- Fair: 12.8%
- Poor: 4.5%

Source: National Research Corporation; Advisory Board analysis.
Largest “Touch Point” with Consumers

Not the Service Patients Demand

Annual Presentations, Australian Public Hospitals

2005–2006

Number of patients admitted from Emergency Department

Inpatient Admissions

ED Visits

4.4M

4.8M

1.3M

Wait Times Biggest Driver of Patient Satisfaction

The Longer the Stay, the Lower the Satisfaction

Overall Patient Satisfaction by ED LOS

- 89% for <1 hour
- 88% for 1-2 hours
- 85% for 2-3 hours
- 82% for 3-4 hours
- 78% for >4 hours

Most Important, Most Problematic

Patient Assessment of Problems in EDs

- More Problems
  - Physician Conduct
    - Communication
    - Listening
    - Responsiveness
  - Discharge Instructions
  - Emotional Support
  - Family Communication
  - Facility Appearance
  - Caregivers Working Together

- Fewer Problems
  - Pain
    - Staff Responsiveness
  - Nurse Conduct
    - Communication
    - Responsiveness
    - Courtesy
  - Wait Time
    - Time to doctor
    - Length of stay

Less Important to Patients

More Important to Patients

Source: National Research Corporation; Advisory Board interviews and analysis.
It’s Not Always about Clinical Quality

Perception Trumps Reality

Patient Satisfaction vs. *Perceived* Throughput Time

\[ r = 0.62 \]

Correlation: **STRONG**

Patient Satisfaction vs. *Actual* Throughput Time

\[ r = -0.12 \]

Correlation: **NONE**

**Study in Brief**

Study explores relationship between patient acuity, perceived and actual throughput times and ED patient satisfaction. The study used a prospective survey of 1,865 ED patients at a large, inner-city hospital during one month. Researchers found that “emergent” acuity patients had a more favorable impression of throughput time and overall visit compared to “urgent” and “routine” patients. Finally, overall ED satisfaction correlated with perceived throughput time but not actual throughput time.

In the Meantime…

Press Ganey 2006 ED Patient Survey Results

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>How well were you kept informed of delays?</td>
<td>1</td>
</tr>
<tr>
<td>Degree to which staff cared about you as a person</td>
<td>2</td>
</tr>
<tr>
<td>How well was your pain controlled?</td>
<td>3</td>
</tr>
<tr>
<td>Nurses’ concern to keep you informed about your treatment</td>
<td>4</td>
</tr>
<tr>
<td>Staff concern to keep family or friends informed about status during course of treatments</td>
<td>5</td>
</tr>
</tbody>
</table>

Communication critical to high patient satisfaction

Key Interventions to Consider

- Patient greeter
- Electronic updates
- Frequent updates from staff

Providing Information and Reassurance

Attending to ED Patients at Del Mar

ED Support Position in Brief

- Part-time position during peak hours Friday–Sunday, 8:00 p.m.–12:00 a.m.
- Salary: $11 per hour
- Retail (customer service) experience

- Circulates in all 22 patient rooms
- Discusses wait, fields complaints, contacts MDs, RNs as appropriate

- Circulates in waiting area
- Informs patients about delays

Serves as contact for waiting families

Source: “National Hospital Ambulatory Medical Care Survey: 2000 Emergency Department Summary,” CDC, April 22, 2002; Advisory Board interviews.
Getting Up to Speed

**Standard Hospital Orientation**
- Attends hospitalwide orientation courses
- Classes given in 3 modules; days 1, 30, and 90
- Goal to learn hospital policies, safety procedures

**Special ED Preceptorship**
- Precepted in ED by RN
- Training time: 3 to 4 shifts
- Goal to learn about layout and patient flow

Avoiding Common Pitfalls

- **Educate staff regarding purpose of position**: Prevents staff from viewing role as staff support rather than patient support
- **Meet with pastoral care and social workers to discuss role**: Precludes cross-territorial issues
- **Select candidate with service (preferably retail) experience**: Ensures candidate will round efficiently, not become engaged in clinical explanation, pastoral or social work

Source: Advisory Board interviews.
Patients Most Unforgiving with Upfront Delays

Top of the Wish List

Time to Doctor Trumps All Other Concerns

<table>
<thead>
<tr>
<th>Patient Concern Report Card</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1  Waiting to see physician</td>
<td>3.63</td>
</tr>
<tr>
<td>#2  Correct and accurate diagnosis</td>
<td>3.65</td>
</tr>
<tr>
<td>#3  Relief of pain</td>
<td>3.87</td>
</tr>
<tr>
<td>#4  Explanation of diagnosis and treatment</td>
<td>4.13</td>
</tr>
<tr>
<td>#5  Patient-physician time</td>
<td>4.35</td>
</tr>
<tr>
<td>#6  Politeness of physician</td>
<td>4.82</td>
</tr>
<tr>
<td>#7  Patient-nurse time</td>
<td>5.34</td>
</tr>
<tr>
<td>#8  Clean waiting room</td>
<td>5.87</td>
</tr>
</tbody>
</table>

Front of Patients’ Minds

Patient Preferences Revealed in Inaccuracies

Patients’ Estimates of Wait Time

**Time to See Physician**

- Overestimate: 22%
- Accurate Estimate: 50%
- Underestimate: 28%

**Total ED Stay**

- Overestimate: 24%
- Accurate Estimate: 37%
- Underestimate: 39%

Seeming Like an Eternity

Time waiting for physician keenly felt by patients

A Kinder Assessment

Patients less attuned to minutes spent waiting later in stay

Sick and Tired of Waiting for the Doc

Watching the Clock

US ED Patients Waiting Longer to See a Doctor

Median Wait to See Doctor, Minutes

- 1997: 22 minutes
- 2004: 30 minutes

36% increase

ED Visits by Doctor Wait Time, 2005

- Less Than an Hour: 63.2%
- One Hour or More: 25.4%
- Unknown: 11.3%

Closely Tied to Satisfaction

Average Satisfaction Score by Time-to-Doctor Interval

5-Point Scale

<table>
<thead>
<tr>
<th>Time-to-Doctor Interval</th>
<th>Average Satisfaction Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30 Minutes</td>
<td>4.35</td>
</tr>
<tr>
<td>31-60 Minutes</td>
<td>4.22</td>
</tr>
<tr>
<td>1-90 Minutes</td>
<td>4.05</td>
</tr>
<tr>
<td>90+ Minutes</td>
<td>3.71</td>
</tr>
</tbody>
</table>

Patient Forced Through Tedious Encounters

Conventional ED Patient Pathway

<table>
<thead>
<tr>
<th>Step</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Arrival</td>
<td></td>
</tr>
<tr>
<td>Reception</td>
<td>2–5 minutes</td>
</tr>
<tr>
<td>Triage</td>
<td>8–10 minutes</td>
</tr>
<tr>
<td>Registration</td>
<td>~10 minutes</td>
</tr>
<tr>
<td>Primary Nurse Assessment</td>
<td>5–10 minutes</td>
</tr>
<tr>
<td>Average Time to a Doctor¹</td>
<td>56.3 minutes</td>
</tr>
<tr>
<td>ED Bed Placement</td>
<td>5 minutes</td>
</tr>
</tbody>
</table>

**Going Through the Motions**
- Six separate steps
- Even without wait time, 25 minutes to a bed
- Seeing four different individuals before seeing a doctor

---

¹ US National average time.

Source: Centers for Disease Control, *National Hospital Ambulatory Medical Care Survey*, 2005; Advisory Board interviews and analysis.
A Drawn-Out and Duplicative Process

Repeating Ourselves

Triage Information Overlaps with Nurse Documentation

*Patient Information Collected*

- ✔ Chief Complaint
- ✔ Subjective History
- ✔ Objective Assessment
- ✔ Medications
- ✔ Allergies
- ✔ Vitals
- ✔ Immunisations
- ✔ Weight

Comprehensive Triage

Nurse Assessment

Source: Advisory Board interviews and analysis.
Prolonging the Wait

Longer Assessment Adding to Patient Down Time

Wait Times to Triage

Triage ~10 minutes

<table>
<thead>
<tr>
<th>Patient</th>
<th>Sign-In Time</th>
<th>Time to Triage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>6:02 pm</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Patient 2</td>
<td>6:05 pm</td>
<td>8 minutes</td>
</tr>
<tr>
<td>Patient 3</td>
<td>6:05 pm</td>
<td>19 minutes</td>
</tr>
<tr>
<td>Patient 4</td>
<td>6:07 pm</td>
<td>24 minutes</td>
</tr>
</tbody>
</table>

ED Survey of Triage Conducted by Type

2005
n=444

- Comprehensive Triage: 74.5%
- Other or No Triage: 25.4%


1) Total does not equal 100% due to rounding.
Collecting Just the Facts

Short Form Triage

Limiting the Assessment to Chief Complaint

Triage Form

<table>
<thead>
<tr>
<th>TRIAGE ASSESSMENT FORM</th>
<th>PATIENT BARCODE LABEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Acuity Category:</td>
</tr>
<tr>
<td>Date:</td>
<td>□ Trauma</td>
</tr>
<tr>
<td>Arrival Time:</td>
<td>□ Emergent</td>
</tr>
<tr>
<td>SS#:</td>
<td>□ Urgent</td>
</tr>
<tr>
<td>Arrival Mode:</td>
<td>□ Nonurgent</td>
</tr>
<tr>
<td>□ Walk-In □ Ambo □ Police □ Other</td>
<td></td>
</tr>
<tr>
<td>Age:</td>
<td>Destination:</td>
</tr>
<tr>
<td>DOB:</td>
<td>□ Trauma</td>
</tr>
<tr>
<td>Sex:</td>
<td>□ Emergent</td>
</tr>
<tr>
<td>Race:</td>
<td>□ Urgent</td>
</tr>
<tr>
<td>Chief Complaint:</td>
<td>□ Fast-Track</td>
</tr>
<tr>
<td>RN Signature:</td>
<td>□ Psych</td>
</tr>
<tr>
<td></td>
<td>□ Chest Pain</td>
</tr>
<tr>
<td></td>
<td>Personal MD:</td>
</tr>
<tr>
<td></td>
<td>□ MD Requested:</td>
</tr>
</tbody>
</table>

Complete medical history, vitals reserved for primary nurse assessment

Triage limited to basic information: chief complaint, acuity assignment

Triage Assessment Time

Minutes

8-10

Comprehensive Triage

Short Form Triage

Source: Advisory Board interviews and analysis.
Quick Look Triage/Quick Reg

Getting Twice the Information in One Encounter

Registration Clerk Information Collected

- ✓ Name
- ✓ Date of Birth
- ✓ Social Security Number

Quick Look Nurse Information Collected

- ✓ Chief Complaint
- ✓ 5-Level ESI\(^1\) Assignment
- ✓ Vitals
- ✓ Weight
- ✓ Allergies

Case in Brief: Banner Health

- Regional health system of 20 hospitals serving the Southwest, headquartered in Phoenix, Arizona
- Overhauling comprehensive triage to include only basic facts to start medical record, obtain chief complaint, and assign acuity level

\(^1\) Emergency Severity Index (5-level).

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.
Combined Effort Saves Time

Triage Time

Minutes

- Traditional Triage: 10-15 minutes
- Quick-Look Triage/Quick Reg: 5-10 minutes

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.
Care First, Questions Later

Bypassing the Registration Desk

Bedside Registration Process

- Reception
- Triage
- Physician Assessment
- Computer Registration
- Manual Registration

Critical Success Factors

- Quick registration conducted at sign-in to ensure care record can begin
- Registration occurs during patient down time
- Bed available for expedited patient placement

Source: Advisory Board interviews and analysis.
### Case in Brief: St. Mary’s Regional Medical Center

- Regional hospital located in Reno, Nevada, with annual ED patient volumes of 53,000 in 2004
- Prior to developing plans for ED expansion, department faced tight capacity constraints, increased ambulance diversions
- Hospital had already focused on minimising ancillary delays and refining admission process; external consultants recommended moving registration to bedside

### Arrival to Bed Time

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Before Bedside Registration</th>
<th>After Bedside Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

### Arrival to Doctor Time

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Before Bedside Registration</th>
<th>After Bedside Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>

Caring for the ‘Treat and Street’ Population

Wanting Quicker Care for Minor Patients

Key Elements of the Conventional ED Fast Track

**Dedicated Space**
Area set aside for non-urgent patients, often only open during peak hours

**Explicit Triage Criteria**
Strict set of inclusion/exclusion rules triggered at triage; specifies appropriate fast-track patients

**Dedicated Staff**
Clinical personnel exclusively assigned to fast track care

Source: Advisory Board interviews and analysis.
Common Fast Track Pitfalls

Non-Dedicated Staff

Some personnel expected to split responsibility with main ED

Space Outside the ED

Pod of rooms sometimes separate from ED, requiring patient transport

Lack of Set Criteria

Lax criteria tagging too many patients for fast-track service

Source: Advisory Board interviews and analysis.
Getting a Not-So-Fast Track?

Pathway Falling Short of LOS Goals at Mary Washington

Key Fast-Track Features

**Space**
- 16-bed unit, part of ED near triage

**Staffing**
- 3 PAs, 2 RNs, 2 techs
- PA could see 2.1 patients per hour

**Inclusion Criteria**
- ESI level 4, 5 patients, some level 3 patients

Average ED Length of Stay

<table>
<thead>
<tr>
<th>Hours</th>
<th>Overall</th>
<th>Fast Track</th>
<th>Fast-Track Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual LOS</td>
<td>3.75</td>
<td>2.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Actual LOS an hour beyond goal

Source: Mary Washington Hospital, Fredericksburg, VA; Advisory Board interviews and analysis.
Case in Brief: Mary Washington Hospital

• Community hospital located in Fredericksburg, Virginia, with annual ED patient volumes of 85,000
• Faced growing lengths of stay for treat and release patients, volumes spilling over in fast-track area
• Decided to reengineer low-acuity area to capture the lowest-acuity patients who need the fewest resources; renamed the area Super Track

Source: Mary Washington Hospital, Fredericksburg, VA; Advisory Board interviews and analysis.
## Optimising Resource Allocation

### Matching Complaint to Patient Needs

#### Utilisation Review Reveals Truly ‘Minor’ Cases

**ESI Resource Categories**

<table>
<thead>
<tr>
<th>Patient Need</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crutches, splint, sling</td>
<td>0</td>
</tr>
<tr>
<td>CT; MRI, ultrasound, angiography</td>
<td>1</td>
</tr>
<tr>
<td>EKG, X-ray</td>
<td>1</td>
</tr>
<tr>
<td>IV fluids or IM or nebulised medications</td>
<td>1</td>
</tr>
<tr>
<td>Labs</td>
<td>1</td>
</tr>
<tr>
<td>Medication refill</td>
<td>1</td>
</tr>
<tr>
<td>Specialty consultation</td>
<td>1</td>
</tr>
<tr>
<td>Tetanus immunisation</td>
<td>0</td>
</tr>
<tr>
<td>Wound care</td>
<td>0</td>
</tr>
</tbody>
</table>

**Utilisation Review**

<table>
<thead>
<tr>
<th>Chief Complaint</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>2+</td>
</tr>
<tr>
<td>Back pain</td>
<td>1</td>
</tr>
<tr>
<td>Chest pain</td>
<td>2+</td>
</tr>
<tr>
<td>Ear complaint</td>
<td>0</td>
</tr>
<tr>
<td>Extremity pain</td>
<td>1</td>
</tr>
<tr>
<td>Headache</td>
<td>2</td>
</tr>
<tr>
<td>Laceration</td>
<td>0</td>
</tr>
<tr>
<td>Med refill</td>
<td>0</td>
</tr>
<tr>
<td>Urinary complaint</td>
<td>1</td>
</tr>
</tbody>
</table>

Refining Eligibility

Percentage of ED Visits by Resource Utilisation

- 2 or More Resources: 66%
- 0–1 Resource: 24%

Common Super Track Conditions

- Single extremity injury
- Ear ache
- Laceration repair
- Uncomplicated sore throat
- Medication refill
- Generally, ESI\(^1\) level 4, 5 patients


1) Emergency Severity Index (5-level).
Staffing to Arrivals

Low-Acuity Patient Arrivals by Hour of Day

Needs Assessment

**Staffing**
Matched staff productivity—two patients per hour—to peak arrivals; now staffs two PAs and two nurses to this area

**Space**
Assigned based on staffing; one PA/RN team allotted two rooms and one chair for splinting, minor procedures

Source: Mary Washington Hospital, Fredericksburg, VA; Crane J, “Redesigning Your Front-End and Transforming Patient Care,” October 18, 2007; Advisory Board interviews and analysis.

1) Physician Assistants.
Regaining Treatment Time and Resources

More Bang for the Buck

Fewer Staff Treating More Patients per Hour

Low-Acuity Area Staffing

<table>
<thead>
<tr>
<th></th>
<th>PAs</th>
<th>RNs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>After</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Staff Productivity

Patients per Hour

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
</tr>
<tr>
<td>After</td>
</tr>
</tbody>
</table>

Source: Mary Washington Hospital, Fredericksburg, VA; Advisory Board interviews and analysis.

1) Physician Assistants.
Emptying Beds for Sicker Patients

ED LOS, Low-Acuity Patients

Minutes

- Overall: 150
- 50-90
- 60-90
- 30-45

Beds Allocated to Low-Acuity Patients

- Before Super Track
- After Super Track

12 beds now open for sicker patients

Source: Mary Washington Hospital, Fredericksburg, VA; Advisory Board interviews and analysis.

1) Patients requiring neither radiology nor lab testing.
Looking to Refine the Model

Using Different Criteria

**Standard Fast-Track Model**

- High Acuity
- Low Acuity

**Bendigo Health Fast-Track Model**

- Complex
- Simple

Complexity determined by suspected amount of investigation and resources patient will need based on number of dispositional unknowns.

Case in Brief: Bendigo Health

• A 672-bed multidisciplinary health service located in rural Victoria, Australia, sought to evaluate impact of streaming model that separates patients into a “simple” and “complex” stream.

• Multiple linear regression models were used to time series data from 43 months prior and 15 months following the intervention and determine impact on percentage of emergency patients admitted to inpatient bed within eight hours, percentage of non-admitted emergency patients with length of stay less than four hours, percentage of emergency patients who left without being seen.

• In conclusion, the implementation of the streaming model improved eight and four hour performance indicators associated with length of stay in the ED.

Busier and Faster

Percentage of Patients in 4 and 8 Hour Categories

Monthly Trend

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of emergency patients with LOS &lt;8 hours</th>
<th>Percentage of non-admitted patients with LOS &lt;4 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>(0.32%)</td>
<td>(0.34%)</td>
</tr>
<tr>
<td>Post-Intervention-2006</td>
<td>0.62%</td>
<td>0.54%</td>
</tr>
<tr>
<td>Post-Intervention-2006</td>
<td>0.62%</td>
<td>0.54%</td>
</tr>
</tbody>
</table>

ED Presentations

<table>
<thead>
<tr>
<th>Year</th>
<th>Presentations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 2004-2005</td>
<td>32,607</td>
<td>9%</td>
</tr>
<tr>
<td>August 2005-2006</td>
<td>35,397</td>
<td>9%</td>
</tr>
</tbody>
</table>

Streaming intervention August 2005

Practice: Split-Flow Management

Only Giving a Bed to Those Who Need It

Reengineering the Care Pathway

Key Split-Flow Principles

1. Replace Triage with Quick Look
   - Parallel process front-end steps to expedite time to a provider
   - Remove “triage” from nurses’ vocabulary to emphasise process change

2. Split Patient Flow
   - Split patient flow into groups of sick patients and less-sick patients
   - Match care pathway to these groups

3. Less-Sick Patients Don’t Own Beds
   - Keep less-sick patients vertical and dressed as much as possible; move patients to testing, treatment
   - Higher-acuity patients immediately given ED beds

4. Size to Meet Demand with Queuing Analyses
   - Calculations relating patient volumes with length of resource use ensures adequate physician and nurse staffing, space

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.
Case in Brief: Banner Health

- Regional health system serving Southwestern US, headquartered in Phoenix, Arizona
- Facing lagging patient wait times, high rate of patients leaving without being seen by providers throughout system EDs
- Partnered with Arizona State University industrial engineers to overhaul ED process flow; implemented split-flow management across eight EDs

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.
Split-Flow a Systemwide Win at Banner

Preventing Patient Elopement

**Average Door-to-Doctor Time**

- Before Split-Flow: 117 minutes
- After Split-Flow: 49 minutes

58% decrease

**Percentage of Patients that Left Without Treatment**

- Before Split-Flow: 7.1%
- After Split-Flow: 1.6%

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.

1) (Did Not Wait) Results aggregated from eight sites.
Cutting Stays While Adding Patients

Average ED LOS¹

Minutes

Before Split-Flow

After Split-Flow

14% decrease

Systemwide ED Patient Volumes¹

1% increase

Source: Banner Health, Phoenix, AZ; Advisory Board interviews and analysis.

¹ Results aggregated from eight sites.
Developing a Patient Flow Strategy

Quantifying the Opportunity

<table>
<thead>
<tr>
<th>Volume Considerations</th>
<th>Key Questions</th>
<th>Focused Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Will ED volumes support a split-flow approach?</td>
<td>• Calculate percentage of low-acuity patients, compare LWBS rate to national benchmarks</td>
</tr>
<tr>
<td></td>
<td>• Are LWBS(^1) rates continually high, problematic?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>J F M</td>
<td></td>
</tr>
</tbody>
</table>

| Staffing Productivity  | • Can staff be allocated to match patient arrivals and acuity in the care process? | • Calculate staff productivity based on demand, match to patient arrivals during peak hours |
|                        | • Do I have enough staff to support a split patient flow?                      |                                                                                     |

| Space Reconfiguration  | • Can you reconfigure current space to match new patient flow patterns?       | • Calculate percentage of patients needing beds, length of bed utilisation; apply this to volume of low-acuity patients |
|                        | • Can beds be traded for chairs to more carefully manage resources?           |                                                                                     |

| Cultural Readiness     | • Are staff prepared and willing to modify the care process?                 | • Review magnitude of change on individual staff roles                                |
|                        | • Survey key staff on willingness to alter current practice                   |                                                                                     |

\(^1\) Left Without Being Seen (Did Not Wait)

Source: Advisory Board interviews and analysis.
## Understanding the Options

<table>
<thead>
<tr>
<th></th>
<th>Traditional Fast Track</th>
<th>Low-Acuity Fast Track</th>
<th>Split-Flow Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients Included</strong></td>
<td>• Patients meeting triage level 4, 5 criteria; some level 3</td>
<td>• Only patients meeting triage level 4, 5 criteria</td>
<td>• Patients meeting triage level 3, 4, 5 criteria</td>
</tr>
<tr>
<td><strong>Provider Involvement</strong></td>
<td>• PAs¹, some NPs², occasional physician involvement</td>
<td>• PAs, some nursing staff</td>
<td>• Physicians, nursing staff, occasional mid-level provider involvement</td>
</tr>
<tr>
<td><strong>Diagnostic Process</strong></td>
<td>• Sequential process of nurse assessment, documentation, followed by physician assessment, documentation</td>
<td>• Parallel process focused on quick treatment, discharge</td>
<td>• Parallel process focused on quick initiation of test, treatment orders</td>
</tr>
<tr>
<td><strong>Dedicated Resources</strong></td>
<td>• Often 6–16 bed unit, space typically contiguous with ED, although not always</td>
<td>• 2–6 treatment spaces near triage; provider-to-room ratio 1:2</td>
<td>• 8–12 exam/procedure rooms for intake area; space with chairs, recliners for results waiting area</td>
</tr>
<tr>
<td><strong>Advantages</strong></td>
<td>• Separates “simple” patients out, can dedicate mid-level providers to this area</td>
<td>• Sub-segmenting fast track requires fewer beds, staffing resources</td>
<td>• Speeds time-to-physician assessment, ensures beds only given to appropriate patients</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>• Sequential care process duplicates main ED delays in smaller space, may require space reconfiguration</td>
<td>• Low volumes of low-acuity patients may decrease productivity of staff dedicated to this area</td>
<td>• Requires shift in staff processes, physician engagement in focusing on low-acuity cases, potential space reconfiguration</td>
</tr>
<tr>
<td><strong>Success Factors</strong></td>
<td>• ED volumes over 25K • Providers in this space focused on throughput, adequate staff and volumes to safeguard productivity</td>
<td>• ED volumes over 30K • High percentage of low-acuity or non-urgent patients</td>
<td>• ED volumes over 30K • Cultural focus on delivering patients to providers, not beds</td>
</tr>
</tbody>
</table>

¹ Physician Assistant. ² Nurse Practitioner.

Source: Clinical Advisory Board interviews and analysis.
Emergency Physician the Bottleneck at Both Ends

Going Nowhere Fast
Bed to Physician, Minutes

29
20
12

Slowest Third  Average  Fastest Third

Specimen Collection  Transport to Lab
13  15
Accessing by Lab  Lab Processing  Lab Analysis
8  13  15
Results to Physician
3

Overwhelmed and Distracted

A Hundred Duties

A Large Component of Each Doctor’s Day

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Patient Care</td>
<td>61%</td>
</tr>
<tr>
<td>Direct Patient Care</td>
<td>39%</td>
</tr>
<tr>
<td>Walking</td>
<td>15%</td>
</tr>
<tr>
<td>Charting</td>
<td>32%</td>
</tr>
<tr>
<td>Talking with Other Providers</td>
<td>14%</td>
</tr>
<tr>
<td>Teaching</td>
<td>12%</td>
</tr>
<tr>
<td>Analysing Test Results</td>
<td>10%</td>
</tr>
<tr>
<td>Phone Calls</td>
<td>8%</td>
</tr>
<tr>
<td>Other Paperwork</td>
<td>6%</td>
</tr>
<tr>
<td>Talking with Other Providers</td>
<td>3%</td>
</tr>
</tbody>
</table>

Managing Amid Chaos

Minutes per Hour Managing 3+ Patients Simultaneously

- Emergency Physicians: 37.5
- Primary Care Physicians: 0.9

Average Number of Breaks in Tasks per Hour

- Emergency Physicians: 5.4
- Primary Care Physicians: 1.8

Note: Three-hour observation periods.

Charting Scribe

Personal Assistant to the Physician

Scribe Role and Responsibilities

A Personal Note Taker

Recording Exam Findings → Completing Follow-up Documentation → Obtaining Chart Sign-Off

A Constant Reminder

Initiating Others → Flagging Test Results → Alerting EPs

EP Documentation per Patient

*Seconds*

- Handwritten Medical Record: 220
- Dictated Medical Record: 155
- Charting Scribe: 20

EP Productivity

*Patients per Hour*

- Handwritten Medical Record: 2.2
- Dictated Medical Record: 2.28
- Charting Scribe: 2.44


1) Model productivity gain.
Multiple Benefits from a Scribe

Speeding Patient LOS at Somerset Medical Center

*Average ED LOS, Minutes*

| Patients treated by physicians with scribe spend 46 fewer minutes in ED |
|---|---|
| Without Scribe | With Scribe |
| 228 | 182 |

Scribes Improve Charge Capture

*Average Patient Charge*¹

<table>
<thead>
<tr>
<th>Without Scribe</th>
<th>With Scribe</th>
</tr>
</thead>
<tbody>
<tr>
<td>$222</td>
<td>$246</td>
</tr>
</tbody>
</table>

¹ 11% increase

Source: Somerset Medical Center, Somerville, NJ; Emergency Medical Associates/MedAmerica, Inc.; Advisory Board interviews.
Productivity Redefined

“With a scribe, I no longer have to worry about my charts. I can roam the ED, go back and reevaluate patients, discharge patients, interpret x-rays and so on. Now that’s what I call being productive.”

Emergency Physician
Bausch Hospital

“[With a scribe] I really can see twice as many patients. It’s like having double coverage.”

Emergency Physician
Bell Hospital

Source: Somerset Medical Center, Somerville, NJ; Emergency Medical Associates/MedAmerica, Inc.; Advisory Board interviews.
The Clockwork Emergency Department

Webconference Series Part 1

I
Maximising Resource Allocation
Addressing Capacity Constraints
- Emergency Department Design
- ED Toolkit

II
Reforming Core Processes
Minimising Door-to-Doc Time
- Expedited Triage
- Bedside Registration
- Low-Acuity Fast-Track
- Split-Flow Management
- Patient Delay Updates
- Charting Scribe

Series Part 2

IV
Expediting Inpatient Admissions
Promoting Bed Availability
- Patient Placement Command Centre
- Full Capacity Protocol
- Psych Transition Infrastructure
- No-Delay Nurse Report
- Dedicated Admissions Nurse
- ED Admit Authority

Series Part 3

V
Hardwiring Sustainable Gains
Leveraging Data and Technology
- Patient Tracking
- Demand-Based Staffing Model
- Instant Communication Network
- Best-in-Class Dashboards
- Efficiency Profiling