

# Get A Faster Hospital In Five Days

A Special Report by Jay Arthur

**Every hospital seems to have the same problem: patient flow.** This shows up in many ways:

- Patient Dissatisfaction
- ED divert hours, patient boarding, LWOBS, turnaround time
- OR delays, turnaround times
- Imaging delays, turnaround times
- Lab delays, turnaround times
- Bed management delays
- Late discharges
- Long patient length of stay (LOS)
- Lost revenue

**What one element is critical to both patient flow and satisfaction?**

Time—wait time and turnaround time.

*Health care delivery often involves complex processes that have evolved over time and that are neither patient-focused nor clinician-friendly. When systems do not work well, health care workers resort to creating “workarounds,” adding additional layers of “patches” and “fixes” to poorly functioning systems.*

-Christopher S. Kim, M.D.

## A Faster Emergency Department in Five Days

In 2009, Press Ganey found that ED turnaround times still average *over four hours*, basically unchanged over the last decade. In 2006 the CDC found that 40 percent of hospital EDs were overcrowded. One Harvard study found that ED wait times rose 36 percent from 1997 to 2004.

Robert Wood Johnson Hospital, winner of the 2005 Baldrige Award, has ED turnaround times of:

- *38 minutes for discharged patients*
- *90 minutes for admitted patients*

How is this possible? How did they do it? **By systematically eliminating the delays between registration, triage, exam, lab, imaging, and discharge or admission/transport.** Because of reduced turnaround times, they offer a 15-minute door-to-nurse and a 30-minute door-to-doctor guarantee. Faster turnaround times enabled the hospital to grow by over 10% per year requiring the addition of a new nursing wing.

### **Faster patient flow means greater patient satisfaction and more money!**

Studies have shown that patient satisfaction begins to decrease when ED LOS exceeds two hours. There are two populations of patients who visit the ED, so let's separate the emergent from the non-emergent cases and look at patients who get discharged.

If it only takes a couple of minutes to see the triage nurse, a few more minutes to get registered, a few more minutes for doctor diagnosis, then the total time spent on any one patient is perhaps nine minutes. So why does it take most EDs over two hours to handle each patient? Sure some patients need lab work (11 minutes) and others need radiology, but most of those tests take less than an hour. We're still looking at 35-60 minutes, not two hours or more.

If we look at admitted patients, they are taken into the ED immediately without having to wait. They see the doctor immediately. Tests are done STAT. Registrations are done at the bedside. Nursing floor bed assignments take only a few minutes. Nursing reports are fast. Transport to the

ICU, cardiac care, or med/surg floors take only 15-20 minutes. These patients should fly through the ED, but they take longer than the discharged patients, two-to-three times longer. Sure they have to be stabilized, but why does it take hours to get them into an assigned bed?

**The answer, across the board, is delay.** There is too much time *between* activities. The admission staff is busy, so patients have to wait. The triage nurse is busy, so patients have to wait. The ED is boarding patients who should be in a nursing unit, so patients have to wait. The ED nurse can't reach the floor nurse to give a report and vice versa. Neither nurse can leave to transport the patient. Beds are available but not staffed. And so on.

## **Imagine a Faster ED**

Imagine an emergency room where patients walk in and something surprising happens:

1. They use the magnetic strip on the driver's license, insurance card or credit card to check in and register using a kiosk. The kiosk automatically takes pictures of all of these IDs and uses the data to find the patient's medical history, validate insurance, and so on.
2. Completing registration this way triggers a "pull" signal that brings the next nurse in the queue to collect the patient from the entry area and move them to an exam room.
3. Entering the exam room and gathering the patient's vital signs triggers a pull signal for the next ED doctor in the rotation.
4. The doctor examines the patient with the nurse available and requests any tests or X-rays using a hand-held device that kicks off the orders.
  - a. The nurse draws any blood or other samples required and either: a) sends them to the lab for processing or b) uses point-of-care testing to get results in 11 minutes or less. (Approximately 70% of patients require lab work.)
  - b. The nurse transports the patient to imaging if needed (approximately 30% of patients require medical imaging.)
5. Completion of the tests triggers a pull signal to the ED doctor to collect the results, diagnose and recommend treatment.
6. The doctor then initiates treatment. Any "teaching" material or paperwork required is prepackaged and ready for the nurse to prepare the patient for discharge or admission.

7. Initiating admission kicks off a pull signal for a bed in the appropriate unit. If there isn't enough staff in that unit to handle the admission, a pull signal may request an on-call nurse to come to work.
8. Instead of all being done manually, as most of this is now, it's all carefully orchestrated and technically linked to minimize all delay. Many of these activities can happen in parallel, not sequentially as they do today.

A discharged patient is in and out in 30 minutes. An admitted patient is in a nursing unit bed in 60. Of course there will be exceptions, a rush hour accident may tie up one of the doctors, but most patients are discharged. Finding ways to handle them in "one-piece flow" will dramatically improve ED performance.

Simply speeding up discharge and housekeeping of nursing unit beds can alleviate boarding and overcrowding in the ED. Empowering triage nurses to order X-rays for possible fractures without doctor involvement can accelerate diagnosis and treatment. Scheduling radiologists during the hours of highest trauma injuries (think rush hour and Friday/Saturday night), can accelerate ED throughput. Prepackaging common triage kits can accelerate treatment.

## **Faster Door-to-Balloon (D2B) Time in Five Days**

The ED at UMass Memorial Health Care reduced D2B from 180 minutes in 2004 to less than 60 minutes. To optimize D2B times, they measured and optimized the four key steps: 1) Door-to-EKG completion, 2) Data to Diagnosis, 3) Diagnosis to decision, and 4) decision to balloon. Door-to-EKG time fell to 1-2 minutes which enabled the ED physician to stay in the room to diagnose, decide and initiate call in the surgical team. On call teams were scheduled with at least one team member within 20 minutes of the hospital. Valet parking of team cars cut five minutes off the time. Electronic EKG transmission from ambulances to the ED removed additional delays allowing patients to go directly to the cardiac catheterization lab bypassing the ED and reducing D2B times to less than 50 minutes. These changes reduced AMI mortality to 11.7 percent, significantly below the 16.6 percent national average.

Lessons learned from D2B times were applied to door-to-incision time for vascular surgery and door-to-diuretic times for congestive heart failure patients.

## **A Faster Operating Room in Five Days**

Copenhagen University Hospital wanted to reduce the time between surgical operations. The improvement team found that too much time (60+ minutes) was spent:

- investigating if the patient got required information from the surgeon (10 minutes),
- unpacking individual sterile disposables (30 minutes),
- waiting for missing devices (5 trips per surgery),
- waiting for the patient to regain consciousness to be transferred to recovery (20 minutes)
- waiting for transport to recovery (10 minutes)

With some basic analysis, the team implemented countermeasures to save 60 minutes:

- Surgeon draws an “X” on patient’s wristband when the patient has been informed about the operation allowing anesthesia to begin.
- Prepackaged sterile disposables replaced individual disposables saving two theater nurses and 30 minutes.
- Standard checklists ensure that all materials are gathered before the operation starts.
- Anesthetic depth was adjusted so that the patient wakes up when operation is finished.
- Hospital orderlies move patients to recovery immediately.

## **Faster Medical Imaging in Five Days**

North Shore University Hospital wanted to improve patient throughput on its CT scanners to decrease length of stay and increase patient satisfaction. Average turnaround time (TAT) was 20.7 hours and varied from 8-to-34 hours. Target for improvement? 16 hours. Identified problem areas included:

- manual scheduling process leading to calls from nursing units
- time consuming prep and delivery of contrast media
- CT tech travel to requisition printer (6,480 feet per day)
- transporter availability and travel (432 feet per day)

After analysis of these various issues, the improvement team implemented several countermeasures:

- Relocate requisition printer in between the two CTs, saving over 6,000 feet per day of unnecessary travel.
- Dedicated CT transporter
- Excel-based schedule maintained in imaging and viewable by all nursing units. This reduced phone calls and cancellations due to improper patient prep or availability.
- Instead of a rigid schedule with no room for stat orders, a “pull system” adjusted the patient transport and scan to accommodate just-in-time stat scans.
- Contrast preparation was reassigned to the evening shift, refrigerated and delivered during the transporter’s morning run for inpatients.
- One CT was dedicated to complex procedures and the second was dedicated to routine high-volume procedures to maximize patient flow.
- Staffing was adjusted to demand

**Results:**

- Average TAT fell from 20.7 hours to 6.45 hours
- 200 additional inpatient scans per month
- 60 additional outpatient scans per month
- \$375,000 in additional revenue
- Cancellations due to improper prep dropped from 30.6% to 22.7%.

**A Faster Lab in Five Days**

One 2400 sq. ft. hospital lab wanted to reduce turnaround times which would reduce ED turnaround times and reduce length of stay in the nursing units. Using pedometers, they tracked their travel time for a week. They conducted what's known as a 5S (sort, straighten, shine, standardize and sustain) to clean the area of 10 years worth of clutter (4 hours), then mapped the value stream (4 hours) and redesigned the workflow (4 hours).

Then, using Post-It Notes and a flipchart, the lab team was able to redesign the lab to reduce:

- Staff Movement 54% (Goal 30%)
- Floor Space 17% (Goal 10%)
- Phlebotomist Travel 55% (21,096 feet ~ 4 miles ~ 1.5 FTE)
- Tech Travel 40% (2,304 feet 0.15 FTE over 3 shifts)
- Sample Travel 55% 23,400 feet and 7 hours of delay per 24 hours

Some changes could be implemented immediately, others required coordination to move machinery and recalibrate. The lab got a lot faster with less than two days of effort.

## **A Faster Nursing Unit in Five Days**

The same is true in nursing units. Nurses have to walk too far to get what they need. One redesigned nursing unit cut travel by 67% resulting in improved patient satisfaction, nursing satisfaction and clinical outcomes. The unit got faster in a matter of days.

Additionally, nurses hesitate to take patients before shift changes, doctors make rounds at different times, orders are issued but not executed for a period of time, patients are discharged but no family member can collect them, and on it goes. Delay, delay, delay.

The solution to this problem? Eliminate the delay.

## The Problem Isn't Where You Think It Is

Every department—ED, ICU, Med/Surgical nursing floors, radiology, lab, housekeeping, bed management and so on—think they are doing the best job they can. Everyone is working hard...everyone wants to do a good job...everyone wants to serve the patient, but...

### **Insight #1: The patient is idle most of the time.**

**Rule #1:** Stop watching your clinical staff. Start watching the patient, because the patient is idle 57 minutes out of every hour of the total turnaround time.

Patient length of stay doesn't increase all at once. It increases in 10-15-30 minute intervals.

- Why? Because the patient is idle, waiting on the next step in their diagnosis or treatment.
- Why are they waiting? Because the steps in their care haven't been linked up to eliminate delays.
- Why haven't they been linked up? Because no one is measuring and monitoring the time between steps.

Everybody seems to know how long it takes to do their job. It takes bed management 5-10 minutes to assign a bed, assuming one is available. It takes 15-20 minutes to transport a patient to a bed. It takes housekeeping 22 minutes to clean an ICU or medical/surgical bed. The ED triage nurse takes only a few minutes to evaluate a patient. The ED doctor only takes a few minutes to examine the patient.

**But nobody knows how long the delays are between each of these steps.**

**Rule #2:** Start measuring the delays *between* steps in the patient's care, because this is how LOS increases and patient satisfaction *decreases*.

### **Insight #2: Walking is Waste!**

Any amount of time that a doctor or nurse or technician spends walking is waste. Reduce the distance they travel and it will improve patient satisfaction and outcomes.

### **Insight #3: Speed is critical to patient satisfaction!**

Unfortunately, current hospital management practices discourage accelerating patient flow. The staff worries that if you move patients too quickly, they might have to send nurses home because of empty beds. Nurses depend on their income just like the rest of us, so they think they are actually being punished if they reduce patient delays.

As Robert Wood Johnson Hospital discovered, however, **faster patient flow leads to more jobs, not fewer.** Patients are smart, they can tell a faster hospital from a slower one.

Some of the clinical staff thinks that accelerating patient flow means making the clinicians work faster or harder. But accelerating patient flow has little to do with clinicians; it has to do with reorganizing the work to get faster *patients*.

The clinical staff also worries that “haste makes waste,” that faster turnaround times will lead to poorer outcomes, but that’s only true if the clinician hurries. Accelerating patient flow isn’t about making clinicians faster; it focuses on speeding up the patient. **Reducing delays between steps in patient treatment will actually give the clinician *more time with the patient*, not less.**

When the patient is handled in one, seamless interaction, there is less time spent learning what happened in the previous step (e.g., reading the chart) and more time spent with the patient.

**Result: improved patient satisfaction.**

Handling a patient seamlessly also prevents the opportunity to miss a step or do a step twice. Simply reducing delays will cut errors by 50%. **Result: Fewer medical errors.**

## Take the Dominos Challenge

Dominos made the guarantee that they could cook a pizza and deliver it to your home in 30 minutes or it was free. It began a revolutionary shift in customer expectations.

Google taught everyone that they could find anything they want immediately and often for *free*.

Customers used to want better, faster and cheaper products and services; now they want everything free, perfect, and *now*, including healthcare.

That shift in customer expectations is hitting hospitals as well. IF Robert Wood Johnson Hospital can offer a door-to-doctor *guarantee*, you might consider setting the same kinds of objectives:

- 30 minutes from door-to-doctor in the ED
- 30 minutes from “bed requested” to patient-in-bed
- 30 minutes from lab/radiology order to execution
- 30 minutes from discharge order to patient-discharged
- 30 minutes from dirty room to clean room, dirty OR to clean OR.

## How to Get a Faster Hospital in Five Days

Although the case studies in this report offer some constructive ideas, most clinical staffs will not implement an improvement *unless they have a hand in its design*.

### Improvements Are Possible If It Helps the Patient or the Provider

Healthcare professionals want to help create improvements that:

- Increase patient safety and satisfaction
- Improve quality of care
- Reduce lead or turnaround times
- Improve productivity without compromising patient outcomes
- Reduce medical errors

## **How is it possible to get a faster Hospital in Five Days or Less? It takes a team.**

1. Gather a team that believes it's possible to improve patient flow (e.g., ED doctor, ED nurses, ED clerk, and ED admissions). Some people just don't believe it's possible; if so, they won't be useful on the team. Don't load the team with skeptics.
2. **Prework:** Use pedometers to gather travel data about the clinicians. Identify and collect "wait times" for patients between steps in treatment.
3. Have a trained facilitator assist the team in identifying the major delays and unnecessary movement of people or supplies using tools like value-stream mapping and spaghetti diagramming. Have the team identify possible countermeasures to these problems.
4. Implement the countermeasures and measure results
  - Implement process-oriented improvements immediately
  - Move machines or supplies to more convenient locations immediately
  - Project manage more complicated changes (e.g., IT systems changes, hardware changes, etc.)
5. Verify that the countermeasures actually reduce turnaround times. (Some times they don't.)
6. Standardize the improved methods and procedures as a permanent way of doing things.
7. Measure and monitor turnaround times to ensure peak performance.

### **Need Guidance?**

The first project may seem scary, but we can facilitate your improvement teams to achieve breakthroughs in patient flow. Once you've learned how, you'll find it easy to continue. Haven't you waited long enough to get a faster hospital in five days or less?

Jay Arthur, the KnowWare Man, works with hospitals that want to get faster, better and cheaper in a matter of days using the proven methods of Lean Six Sigma. Jay is the author of [Lean Six Sigma Demystified](#) and the [QI Macros SPC Software for Excel](#). Jay has worked with healthcare companies to reduce denied claims by \$3 million per year, appealed claim turnaround time and lab turnaround times by 30-70 percent.

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