



97,999 and Florence:
Creating a Culture of Safety

Jeff Glasheen, MD
Associate Professor of Medicine
Director, Hospital Medicine Program
University of Colorado Denver



Meet Tina

- 47 yo female
- Cough for 1 mo; improves spontaneously
- 10 days later develops fatigue and shortness of breath with extremity swelling
- Post-viral cardiomyopathy
- Deteriorates, requires heart transplant
- A month after transplant d/c home



After Discharge

- Day 1 Doing well
- Day 2 Continues to do well
- Day 3 Mild dyspnea on exertion
- Day 4 More short of breath
- Day 5 Worsened symptoms, 8 # wt gain
- Day 6 Biopsy, grade 2 rejection

Objectives

- Discuss current state of patient safety
- Briefly overview methods of improvement
- Creating a culture of patient safety

Hospital Personnel are Highly Proficient

- Function at 99% proficiency level
- Unacceptable by industry standards
 - 99% equates to:
 - 16,000 lost pieces of mail each hour
 - 32,000 check deductions from the wrong bank account each hour
 - 2 unsafe plane landings at DIA every day

Donchin Y, Qual Safe Health Care 2003;12:143-48

Hospital Errors are Common

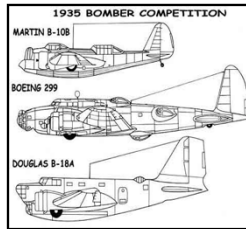
- Institute of Medicine (1999)
 - 44,000-98,000 annual hospital deaths from medical error
 - 8th leading cause of death in US
 - MVAs 43,458
 - Breast Cancer 42,297
 - AIDS 16,516

How Can We Improve Quality?

- Select/train MDs to have stronger ethical bond to their patients
- Offer incentives that result in better quality
- Reduce cognitive and psychological burdens that lead to error
- Better training for MDs to give them more expert knowledge

U.S. Army

- U.S. Army Air Corps flight competition
 - October 30, 1935
 - Airplane manufacturers build long-range bomber
 - Boeing B-299 v. Martin 145 v. Douglas DB-1
 - 5 times as many bombs
 - Fly faster, 235 mph
 - Fly twice as far, set flight distance record > 3000 mi
 - Army ready to buy 65 of the Boeing model



Boeing B-299

- B-299
 - 103 foot wing-span
 - Four engines (vs. two for the M & D planes)
- Taxied onto the runway
- Roared down the tarmac
- Lifted off smoothly
- Climbed quickly to 300 feet



Boeing B-299

- Stalled
- Turned on one wing
- Crashed in a fiery explosion
- 2 of 5 crew members died
- Including the pilot, Major Ployer P. Hill



What went wrong?

- No mechanical failure
- Pilot error
- Substantially more complex
 - Four engines
 - Retractable landing gear
 - New wing flaps
 - Electric trim tabs → needed constant adjustment to maintain control at variable airspeeds
 - Constant-speed propellers whose pitch had to be regulated
- Major Hill got this all right
- Prior to takeoff forgot to release a new stabilizer on the rudder controls
- Newspaper report
 - "Too much plane for one man to fly"
- Army bought smaller, easier to operate planes
- Boeing almost went bankrupt

"Too much plane for one man to fly" Boeing's Solution

- Boeing developed a checklist for pilots to use
- Step-by-step checks for
 - Take-off
 - Flight
 - Landing
 - Taxiing
- B-299 flew 1.8 million miles w/o an accident
- Became the B17 bomber, decisive advantage in WWII bombing campaign against Germany



“Too much plane for one man to fly”
Healthcare’s Problem

- Incredibly complex care provided
- Hospitals are complex systems & are prone to error
- Most errors are not the result of a lack of education, knowledge, or caring
- Most errors result from simple human mistakes

“Too much plane for one man to fly”
Healthcare’s Solution

- Solution is not to train clinicians to do the right thing under all circumstances
- Rather improve systems so that they won’t allow you to do the wrong thing
- This is not intuitive for most physicians

Meet Jim

- 61 yo male admitted with R LE cellulitis
- Admission orders antibiotics, VTE proph
- Day 2 develops frank hematochezia
- Transferred to ICU, given PRBC
- Colonoscopy reveals diverticulosis
- Debilitated from ICU stay→rehab
- Day 12 discharged to home

Meet Sarah

- 51 yo female
- Admitted to ICU with severe CAP
- Intubated, started on broad spectrum antibiotics
- Day 2 improving
- Day 3 off vent
- Day 5 severe sepsis from femoral line infection
- Day 6 line removed
- Day 10 on oral antibiotics
- Day 14 discharged to home

Keystone Project

- CRBSI common, deadly, costly
 - 80,000 CRBSI annually
 - Kills between 30,000-62,000 annually
 - CRBSI costs \$2.3 billion annually
- 103 Michigan ICUs
 - Wash your hands
 - Clean skin with chlorhexidine soap
 - Cover yourself and patient when placing catheter
 - Avoid groin catheters
 - Take out unneeded catheters
- Median CRBSI per 1000 catheter-days
 - Before 2.7
 - 3 months 0
 - 18 months 0

But Most Often Don't

- Social and cultural reasons
- Physicians are famously autonomous
- Technical solution (checklist) can't solve a social/cultural problem
- Work when inserted into a culture of safety

Burning Platform

- People need to think there is a problem
- Need a sense of urgency to change

Quality Needs Leadership

- Leadership is not being in charge, a position of power, autocratic
- Not just the Dean, Chair, hospital CEO
- Keystone Leadership Team
 - Senior executive, provided resources
 - Nurse and MD leader per ICU
 - ICU staff

Translate Urgency to Vision

- Vision should inspire
 - Power of collective vision
 - Overcome barriers
 - Should be inspirational and aspirational

BIDMC Vision

- BIDMC will eliminate all preventable harm by January 1, 2012.

Translate Vision into Strategies

- Square Pegs...Round Holes
 - Only 20% of medical schools are adopting comprehensive QI/PS curriculum
 - Engineering concepts
 - Systems thinking
 - Safety science
 - QI
 - Human factors
 - Teamwork
 - Even fewer offer chance to experience examination of patient care processes

Hospitalist Training Program

- Commenced 2004
- Comprehensive clinical program
- Focused on skills around QI/PS
 - 50 hours of curriculum—QI science, HC finance, leadership, teamwork
 - Development of mentored QI project
 - One month of dedicated project time
 - Longitudinal—1.5 year project time

Meet Rory

- 63 yo male HTN and DM
- Acute right sided weakness for 45 minutes
- Symptoms improved
- Admitted with TIA at 9am

Later that day...

- | | | | |
|---|---|---------|------------------------------|
| ■ 5pm | □ R-sided hemiplegia & aphasia | ■ 645pm | □ HCT completed |
| ■ 530pm | □ Nurse calls physician, no answer x 3 | ■ 715pm | □ HCT read by rads; no bleed |
| □ Realizes different physician covering after 5pm | | ■ 730pm | □ Rads alerts MD of findings |
| ■ 550pm | □ Physician evaluates, orders non-con HCT | ■ 735pm | □ Neurology consulted |
| □ Transport unavailable | | ■ 800pm | □ Neurology sees Rory |
| ■ 620pm | □ To CT but patient in scanner | | |

Rory's symptoms do not improve. Eventually transferred to a nursing home.

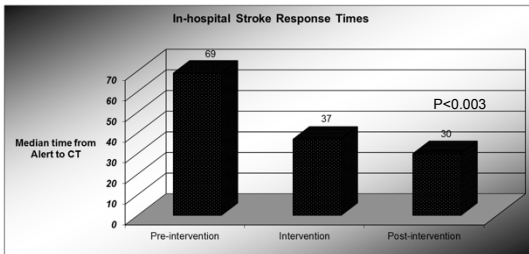
Improving Inpatient Stroke

- Root Cause Analysis of current process
 - Identify the problems
 - Delay to recognition
 - Delay to call MD
 - Delay to CT
 - Delay to therapy

Improving Inpatient Stroke

- Improve process
- Communication pathways
 - Algorithm – who gets called first, how and by whom
- Convert serial actions to occur in parallel
 - Notification of radiology to prepare for CT scan
- Transportation
 - Who, when, how
- Checklist cards
- Continuous Quality Improvement
 - Real time feedback

Improving Inpatient Stroke



Key Strategy # 2...Data

- None of us wants to harm patients
- Few of us believe we harm patients
- We are all inherently skeptical
- Improvement impossible w/o data
- National data too easy to ignore
- Provider-level data is essential
- Valid, believable, real time

Remove Obstacles

- Why aren't people already doing this?
- What systems or structures are undermining the vision/strategy?
- How can you remove these barriers?
- Take it a step further—how can you make it easier to do the right thing?

Generate Short-term Wins

- Plan and create these; reward the “changers”
- What rewards will motivate behavior change?

Consolidate Gains into Culture

- Use credibility for more change
 - What next steps to try will extend gains?
 - What other structures/systems could be changed to make this even more successful—beyond the short-term win?
- Anchor new approaches in the culture
 - Begin to hire/promote/develop people who believe in this type of culture?
 - Develop future goals that tie into your new culture.

Meet Florence

- 68 yo female h/o afib on warfarin
- Admitted with altered mental status
- CT revealed massive intracerebral bleed
- INR 7.2
- Review of chart shows TMP/SMX given for UTI one week prior
- No INR check in past 3 months
- Care withdrawn, Florence passed away
