

PATIENT SAFETY AND QUALITY IMPROVEMENT

Patricia Chambers, MD



OFFICE of CONTINUING
MEDICAL EDUCATION
Quillen College of Medicine
EAST TENNESSEE STATE UNIVERSITY

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August 18, 2022 “Patient Safety” Faculty Development

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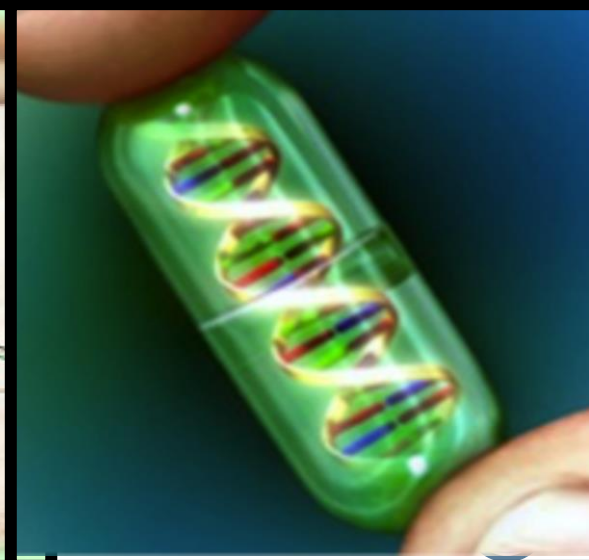
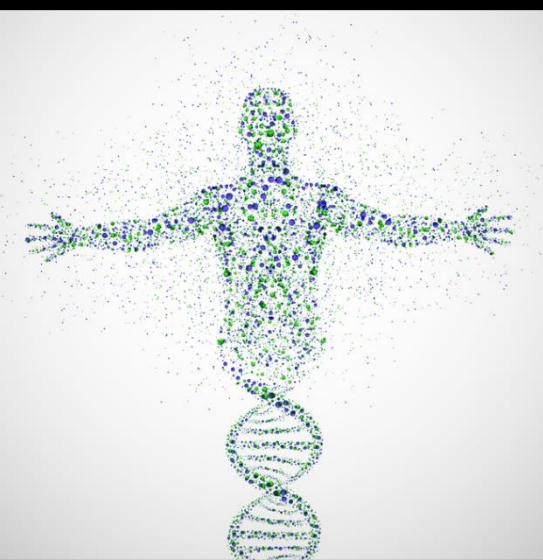
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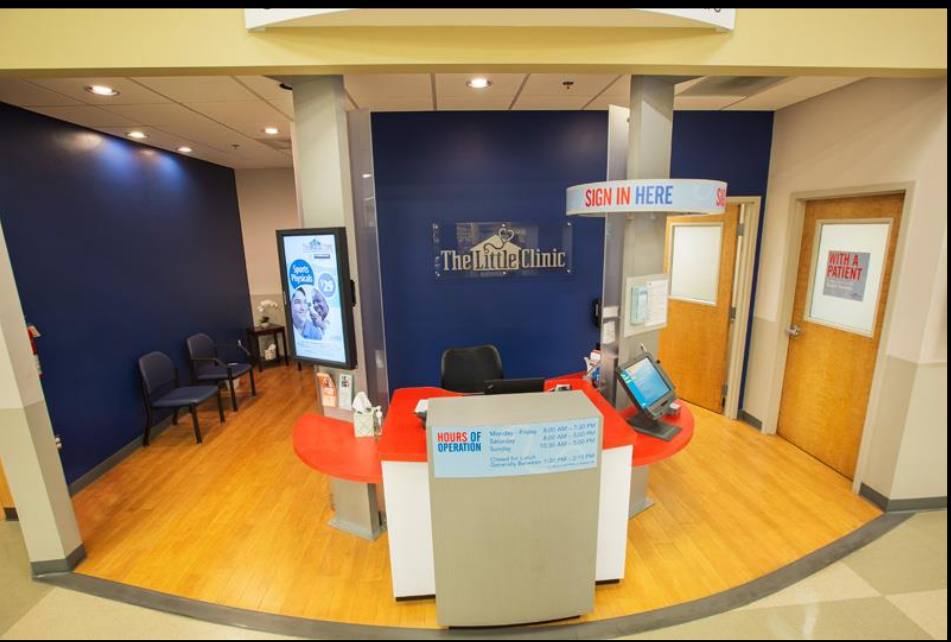
Objectives

- Review the emergence of Evidence Based Medicine
- Define the role of institutional culture and individual contribution to Patient Safety
- Introduce the theory of incident genesis and contrast with the person-centered approach
- Describe High Reliability Organizations and understand the strategies by which these organizations achieve their consistent results and high resilience towards critical incidents

Medicine in the past 100 years



Government and Medicine



The Emergence of the Medical Profession

The art of medicine...

Expert opinion

Experience

Authoritarian judgment



No standard of care

No reliable method of measuring effectiveness

Evidence Based Medicine

"Really?"

Yes...

desPLEX

to prevent ABORTION, MISCARRIAGE and
PREMATURE LABOR

*recommended for routine prophylaxis
in ALL pregnancies...*

96 per cent live delivery with **desPLEX**
in one series of 1300 patients^{1,2}—
— bigger and stronger babies, too.^{3,4}

No gastric or other side effects with **desPLEX**
— in either high or low dosage^{1,4,5}



Don't just
do something -



sit there.

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NETWORK

Evidence Based Medicine

Clinical Epidemiology- “the application, by a physician who provides direct patient care, of epidemiological and biometric methods to the study of diagnostic and therapeutic process in order to effect and improve health.”

-David Sackett

- Critical Appraisal of the Literature
- EPIDEMIOLOGY + MEDICAL RESEARCH= **EBM**
 - 1991= Gordon Guyatt: EVIDENCE-BASED Medicine
 - Clinical Epidemiology
 - Biomedical Informatics
 - Evidence-Based Guidelines

Evidence Based Medicine



3rd EDITION

Users' Guides to the Medical Literature

A MANUAL FOR EVIDENCE-BASED CLINICAL PRACTICE

Gordon Guyatt, MD
Drummond Rennie, MD
Maureen O. Meade, MD
Deborah J. Cook, MD



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The Cochrane Library is published by Wiley for The Cochrane Collaboration.

The Cochrane Collaboration is an international not-for-profit organization:

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“**RCTs** are the foundation of a hierarchy of evidence that culminates with pooled data from multiple trials...”

the **META-ANALYSIS**



**we've
always
done it
this way**



Could you
KILL
a
sacred cow?

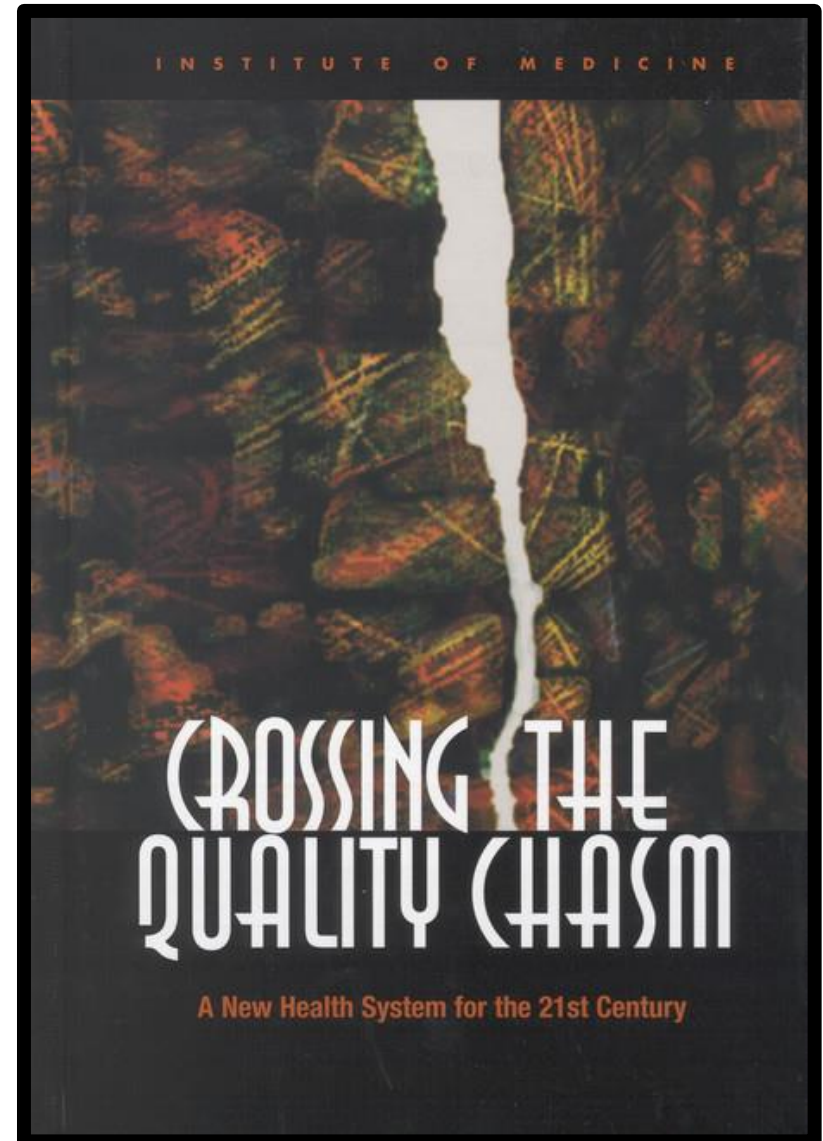


Keep me safe...

Heal me...

Be nice to me...

Patient Safety and Quality Improvement

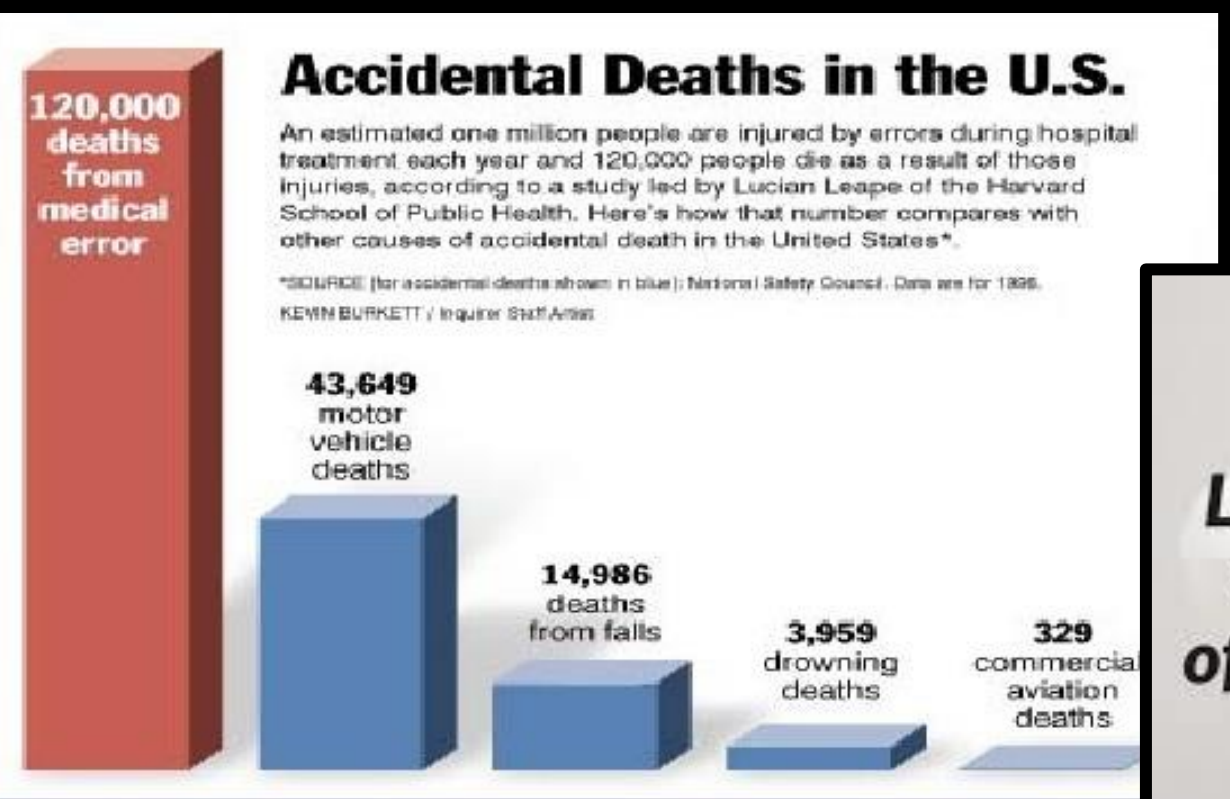


Medical Error Statistics

44,000 to 98,000 Americans dying annually from medical errors

44,000 = 120 people/day (737 capacity)

98,000 = 268 people/day (747 capacity)



DANGEROUS

ULTRA-SAFE

Total lives lost per year

10^5
 10^4
 10^3
 10^2
 10^1
 10^0

Health care

Driving



Mountain climbing

Chartered flights

Scheduled airlines

Bungee jumping

Chemical manufacturing

European railways

Nuclear power

10^0

10^1

10^2

10^3

10^4

10^5

10^6

10^7

Number of encounters per fatality

Examples of High Reliability Organizations **or Not?**

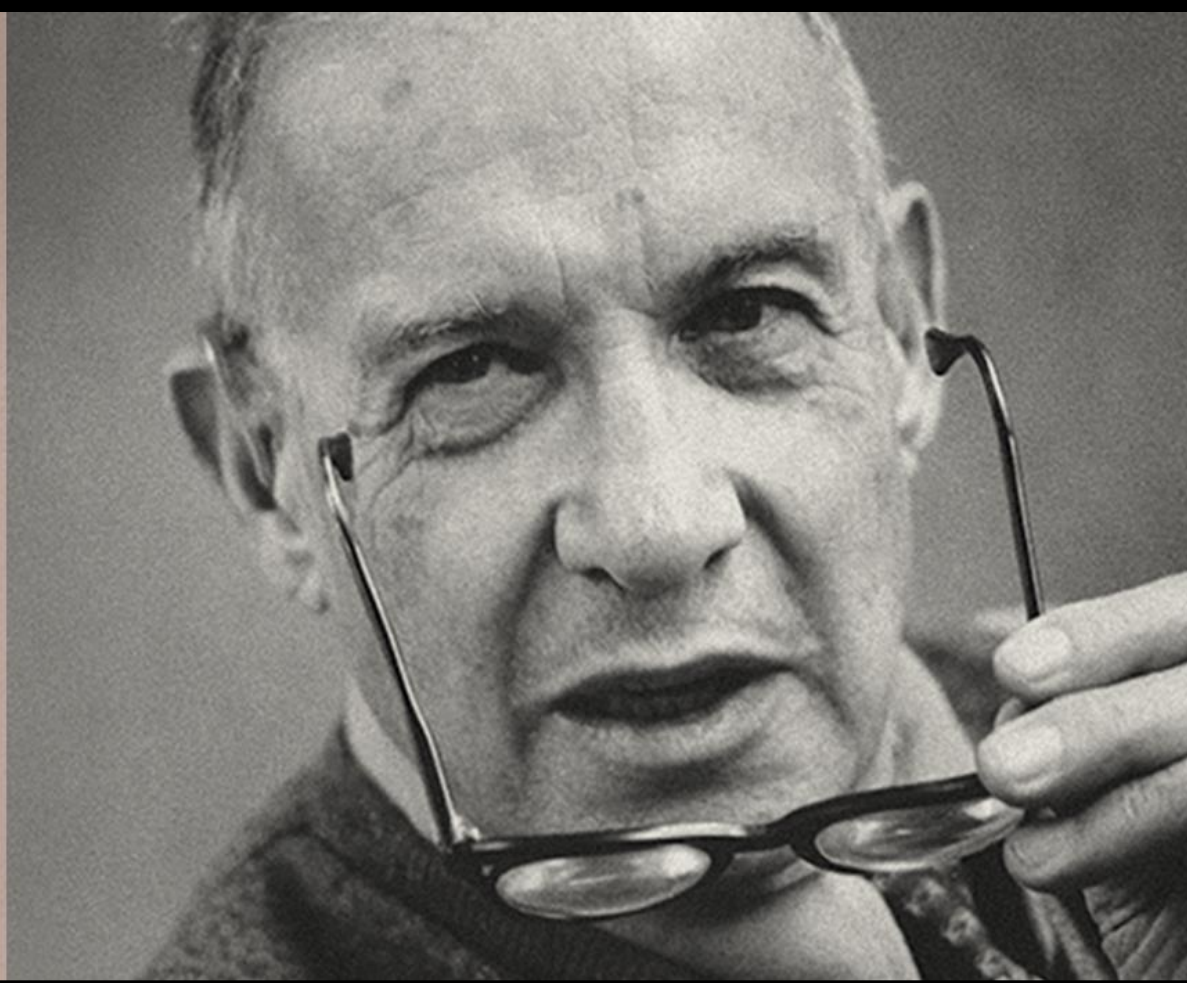
- Nuclear Navy
- Commercial nuclear power
- Aircraft carrier operations
- ~~Hospital patient care~~
- Military nuclear deterrent
- Forest service
- Aviation
- Nuclear weapons assembly and disassembly





**CULTURE
EATS
STRATEGY
FOR
BREAKFAST.**

- Peter Drucker

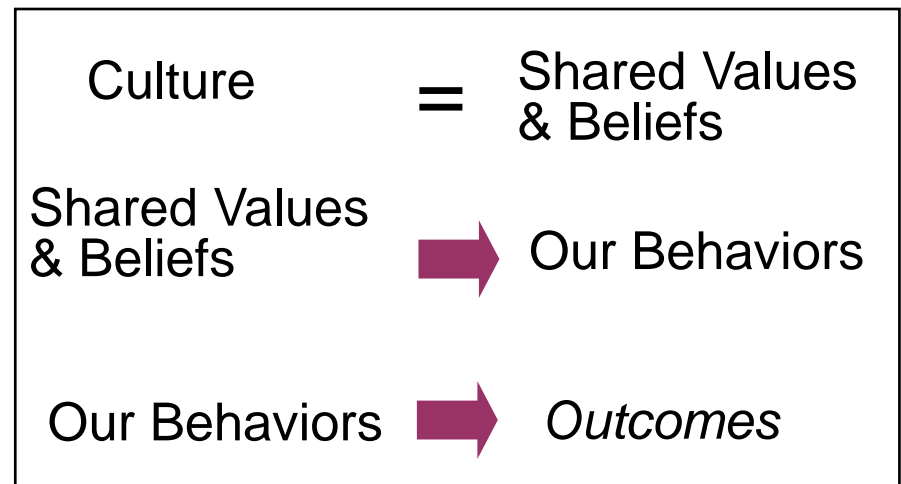


Culture – What Is It Anyway?



Culture

Shared values
and beliefs of individuals
in a group or organization



Institutional Culture vs Individual Contribution



Safe & Reliable Culture Maturity Model



Value



Tipping Point =
Psychological Safety



Generative

Safety is how we do business around here
constantly vigilant and transparent.

Proactive

Anticipating and preventing problems
before they occur; Comfort speaking up.

Systematic

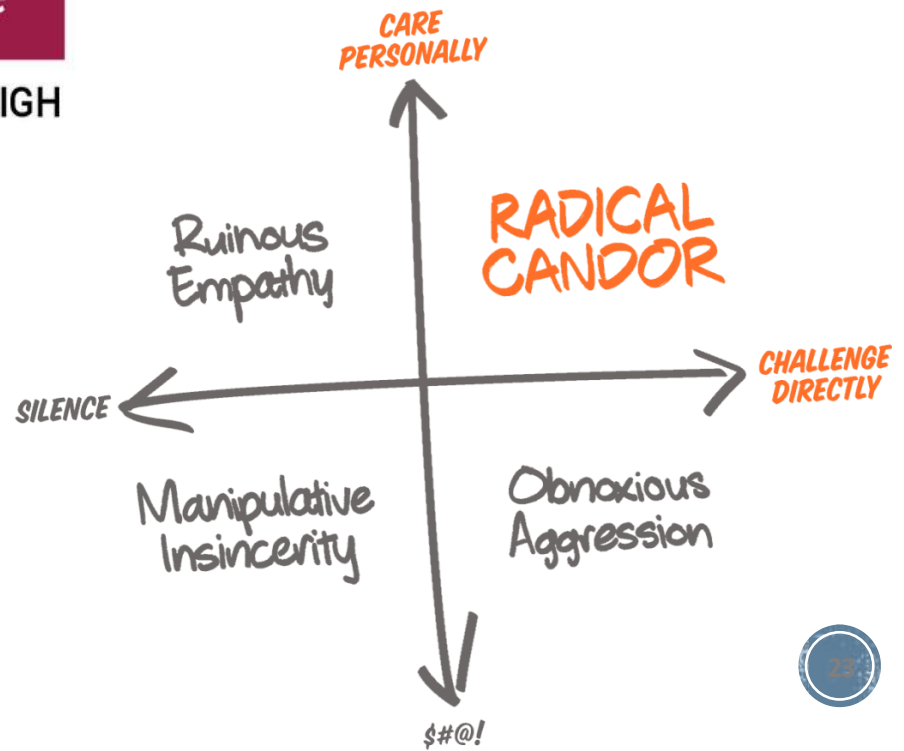
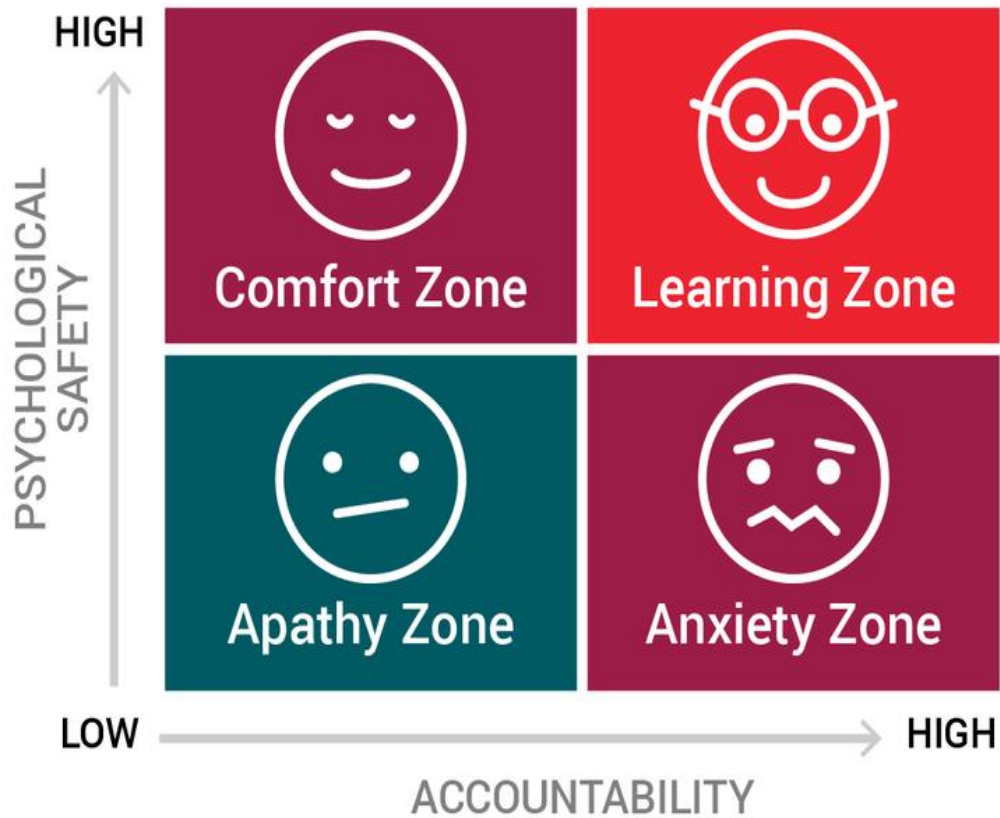
We have systems in place to
manage all hazards.

Reactive

Safety is important. We do a lot every
time we have an accident.

Unmindful

Who cares as long as we're not
caught *chronically complacent.*



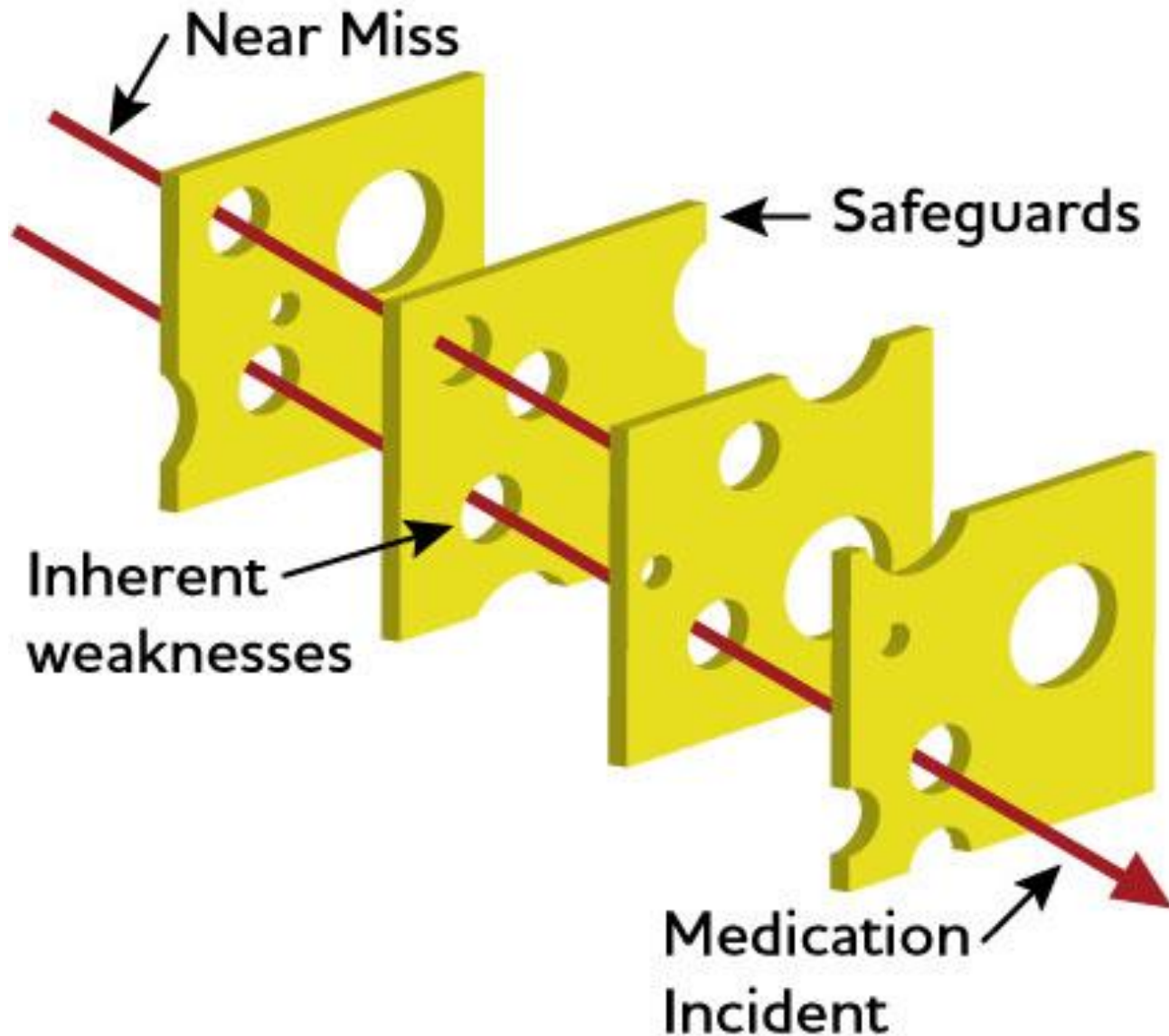
Expected Safety Behaviors for All

Everyone makes a personal commitment to safety

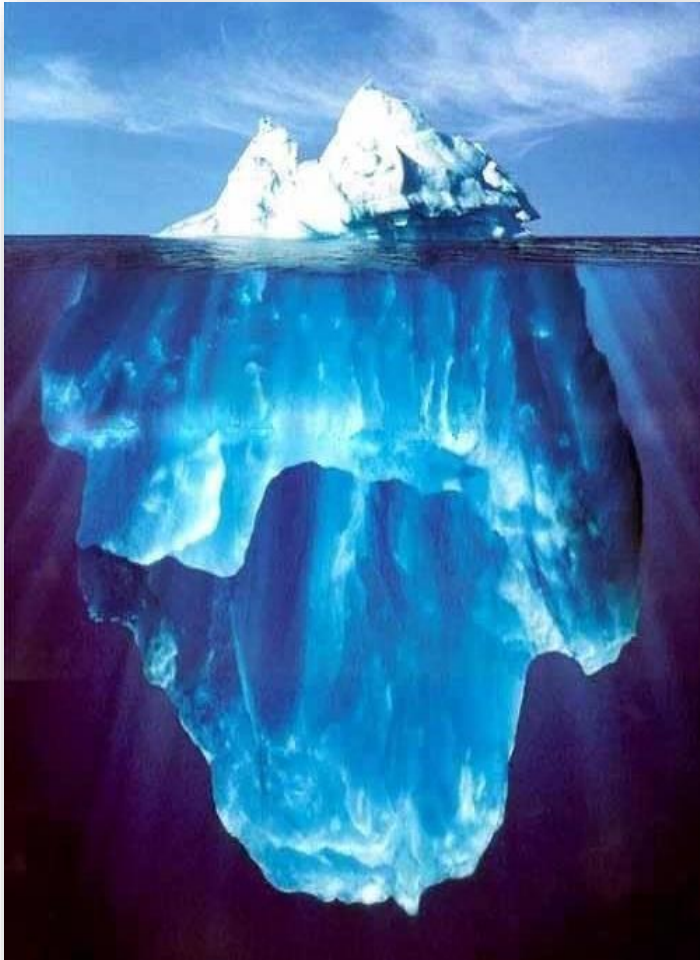
Everyone is accountable for clear and complete communication

Everyone supports a questioning attitude

SWISS CHEESE MODEL



SSE- Tip of the ICEBERG



**Above the water line:
Actual harm to the
patient
SSE**

**Below the water line:
Potential Patient Harm
No harm events
Near Miss
Unsafe Conditions**

A deviation from generally accepted performance standards (GAPS) that...

Serious Safety Event

- Reaches the patient *and*
- Results in moderate harm to severe harm or death

Serious Safety Events

Precursor Safety Event

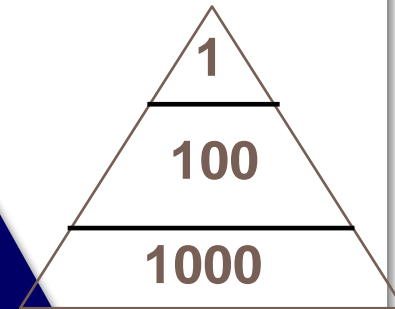
- Reaches the patient *and*
- Results in minimal harm or no detectable harm

Precursor Safety Events

Near Miss Safety Event

- Does not reach the patient
- Error is caught by a detection barrier or by chance

Near Miss Safety Event



CLINICAL GUIDELINES

Agency for Healthcare Research and Quality (AHRQ)
National Guideline Clearing House

American Academy of Pediatrics (AAP)

Canadian Paediatric Society (CPS)
Position Statements and Practice Points
Clinical Practice Tools and Resources

CareTrack Kids (Australia)
CareTrack Kids

Children's Hospital of Philadelphia (CHOP)
Clinical Pathways

Cincinnati Children's Hospital
Conditions & Treatment
Cincinnati Children's Evidence-based Decision Making

Clarity Informatics
Quality Improvement Service

Cochrane Child Health Field
Cochrane Reviews in Child Health

Cochrane Library
Child Health

Back

Topic Outline

SUMMARY AND RECOMMENDATIONS

INTRODUCTION

DEFINITION OF FEVER

EVALUATION

MANAGEMENT

Ill-appearing

Febrile infant (younger than 90 days of age): Management

Authors: Hannah F Smitherman, MD, Charles G Macias, MD, MPH

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Contributor Disclosures

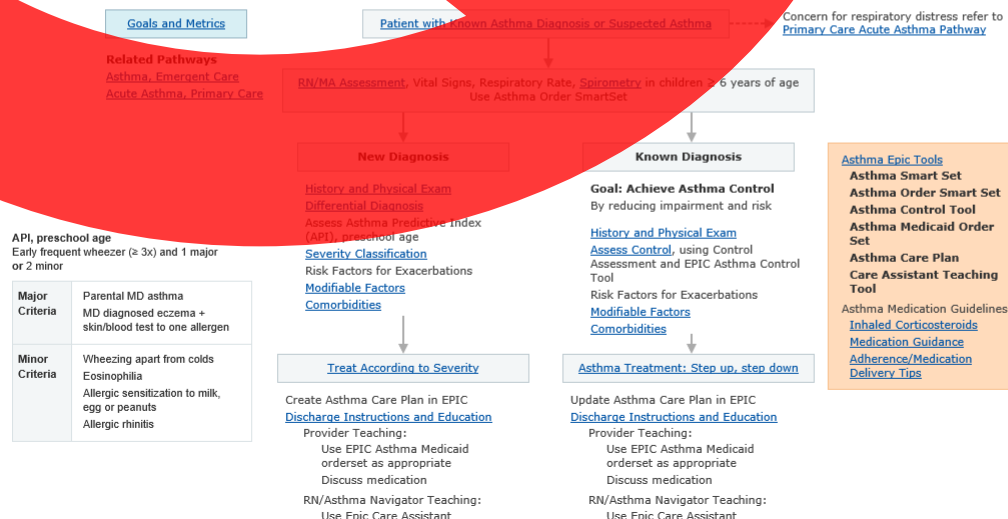
All topics are updated as new evidence becomes available and our peer review process is complete.

Literature review current through: Dec 2020. | This topic last updated: Nov 25, 2020.

INTRODUCTION

Safest Care=Adhering to Best Practice Guidelines

Primary Care Clinical Pathway for Children with Known Asthma Diagnosis or Suspected Asthma



Evidence
A Clinical Index to Define Risk of Asthma in Young Children with Recurrent Wheezing
2020 Focused Updates to the Asthma Management Guidelines: Clinician's Guide
Asthma Care Quick Reference
Global Initiative for Asthma GINA Guidelines
Community Resources
Cap4kids
Community Resource Connects

- Patient safety and quality are SYSTEMS issues...





Albert

Starting Definitions of *Reliability*

Chaotic Process

<80% Reliability

Level 1

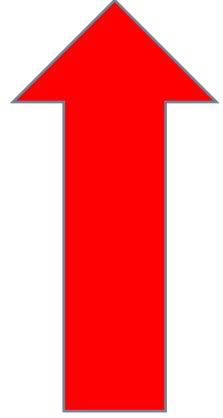
80-90% Reliability or 1-2 failures for every 10 opportunities

Level 2

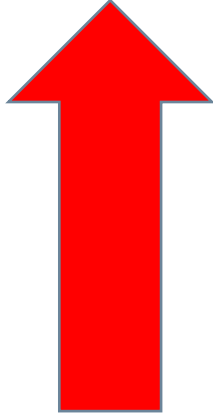
95% Reliability or < 5 failures for every 100 opportunities

Level 3

99% Reliability or <5 failures for every 1000 opportunities



Training/
Reminders



Tools

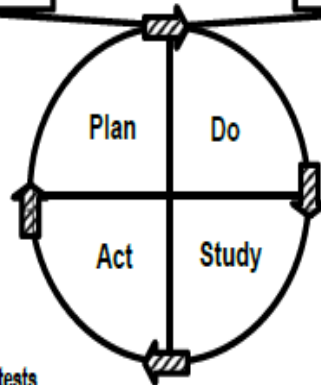


Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?



Plan the tests

- What do you want to learn and how will you measure it?
- What do you predict will happen?
- Plan for change or test (who/what/when/where)
- Plan for collection of data

Do the tests

- Test the changes
- Was the cycle carried out as planned?
- Record data and observations
- What did you observe that was not part of our plan?

Study the effects of the tests

- Did the results match your predictions?
- Compare the result of your test to your previous performance
- What did you learn?

Act on the knowledge gained

Decide to Adopt, Adapt, or Abandon

- **Adapt:** Improve the change and continue testing plan; plans/changes for next test.
- **Adopt:** Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability
- **Abandon:** Discard this change idea and try a different one.

A. Eliminate Waste

1. Eliminate Things That Are Not Used
2. Eliminate Multiple Entry
3. Reduce or Eliminate Overkill
4. Reduce Controls on the System
5. Recycle or Reuse
6. Use Substitution
7. Reduce Classifications
8. Remove Intermediaries
9. Match the Amount to the Need
10. Use Sampling
11. Change Targets or Set Points

B. Improve Work Flow

12. Synchronize
13. Schedule into Multiple Processes
14. Minimize Handoffs
15. Move Steps in the Process Close Together
16. Find and Remove Bottlenecks
17. Use Automation
18. Smooth Work Flow
19. Do Tasks in Parallel
20. Consider People as in the Same System
21. Use Multiple Processing Units
22. Adjust to Peak Demand

C. Optimize Inventory

23. Match Inventory to Predicted Demand
24. Use Pull Systems
25. Reduce Choice of Features
26. Reduce Multiple Brands of Same Item

D. Change the Work Environment

27. Give People Access to Information
28. Use Proper Measurements
29. Take Care of Basics
30. Reduce Demotivating Aspects of Pay System
31. Conduct Training
32. Implement Cross-Training
33. Invest More Resources in Improvement
34. Focus on Core Processes and Purpose
35. Share Risks
36. Emphasize Natural and Logical Consequences
37. Develop Alliance/Cooperative Relationships

E. Enhance the Producer/Customer Relationship

38. Listen to Customers
39. Coach Customers to Use Product/Service
40. Focus on the Outcome to a Customer
41. Use a Coordinator
42. Reach Agreement on Expectations
43. Outsource for "Free"
44. Optimize Level of Inspection
45. Work with Suppliers

F. Manage Time

46. Reduce Setup or Startup Time
47. Set up Timing to Use Discounts
48. Optimized Maintenance
49. Extend Specialist's Time
50. Reduce Wait Time

G. Manage Variation

51. Standardization (Create a Formal Process)
52. Stop Tampering
53. Develop Operational Definitions
54. Improve Predictions
55. Develop Contingency Plans
56. Sort Product into Grades
57. Desensitize
58. Exploit Variation

H. Design Systems to Avoid Mistakes

59. Use Reminders
60. Use Differentiation
61. Use Constraints
62. Use Affordances

I. Focus on the Product or Service

63. Mass Customize
64. Offer Product/Service Anytime
65. Offer Product/Service Anyplace
66. Emphasize Intangibles
67. Influence or Take Advantage of Fashion Trends
68. Reduce the Number of Components
69. Disguise Defects or Problems
70. Differentiate Product Using Quality Dimensions
71. Change the order of process steps
72. Manage uncertainty, not tasks



[Project Charter](#)

[Stakeholder](#)

[Analysis](#)

[High-Level Process Map](#)

[Process Outcomes Flowchart](#)

[Voice of the Customer](#)

[Simplified FMEA](#)

[5 Whys - Single](#)

[5 Whys - Multiple](#)

[Pareto Chart](#)

[SMART Aim](#)

[Operational Definition](#)

[P-Chart](#)

[P Chart BETA version](#)

[Run Chart](#)

[Run Chart \(2-Line\)](#)

[U-Chart](#)

[U-Chart BETA Version](#)

[X-Bar and S-Chart](#)

[XMR Chart](#)

[Days-Between Chart](#)

[Key Driver Diagram](#)

[Parallel Ramps](#)

[PDSA Ramp Tool Package - PowerPoint](#)

[PDSA Tool Package - Excel](#)

[Sustainability Plan](#)

[Training Within Industry \(TWI\)](#)

[Implement/Sustain Performance Checklist](#)

[Spread Checklist](#)

[Sustainability plan for Care Algorithm](#)

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GET TO WORK

YOU AREN'T BEING PAID TO BELIEVE IN THE POWER OF YOUR DREAMS.

Improving the Critical Airway Admission

Key Driver Diagram (KDD)

Project Leader(s): Lauren Swift, MD

Revision Date: 2/13/2021

Interventions (LOR #)

Key Drivers

SMART Aim

We will increase the adherence to Safe Airway Bundle from 35% to 80% by June 1st, 2023.

Population: Patients admitted with critical airway

Global Aim

To ensure all admitted Critical Airway patients maintain airway safety throughout inpatient stay

Appropriate Data Operational Definitions

Standardization of Process

Appropriate level of Medication Review

Responsive Point of Care Mitigation

Reliable Capture of Key Learnings from misses

Develop codebook of working definitions (LOR 1)

Work with Qual to design database

Map out current Med Rec Process vs Ideal process (LOR 1)

Involve Pharmacy in review

Automated Reminders in EPIC (LOR 2)

Standardized Med Rec Intake Form Forms (LOR 2)

Key
Gray shaded box = completed intervention
Green shaded box = what we're working on right now
LOR # = Level of Reliability Number, e.g., LOR 1

Process Name: Admission of Critical Airway Pediatrics

INTERVENTIONS

Educate staff on concern recognition
Identify known precursor events
Standardized intake form developed

Concerns for medical/follow up needs identified and passed on to Charge RN
Urgent Concerns prioritized

MD ED Concerns- Patricia
MD UC Concerns- Kirsten
APRN Concerns- Michelle
Pt Services

Key Items identified on INTAKE FORM, direct ask of the family obvious
Involved party from family perspective identified
Other items obvious

Ask of the family is obvious
Due date is easy to see

Some concerns need more time!

Some concerns will need a second look.

CURRENT PROCESS

Patient arrives at ED and Critical Airway identified

Patient is Admitted

Bed Assigned based on airway status

Safe Airway Bundle ordered

Floor team and nurses huddle

Patient arrives on floor

Airway plan Reviewed with Family

FAILURE MODES

Ideally- precursor event and initial dissatisfaction identified IN SITU
Delayed Reporting- Initial event not acknowledged and mitigated, patient/family leaves ED/UC
Further delay- ie phone not checked, email misrouted

Level of urgency not appreciated
Relay of the concern is not passed on with right degree of ALERT
Lag in Response

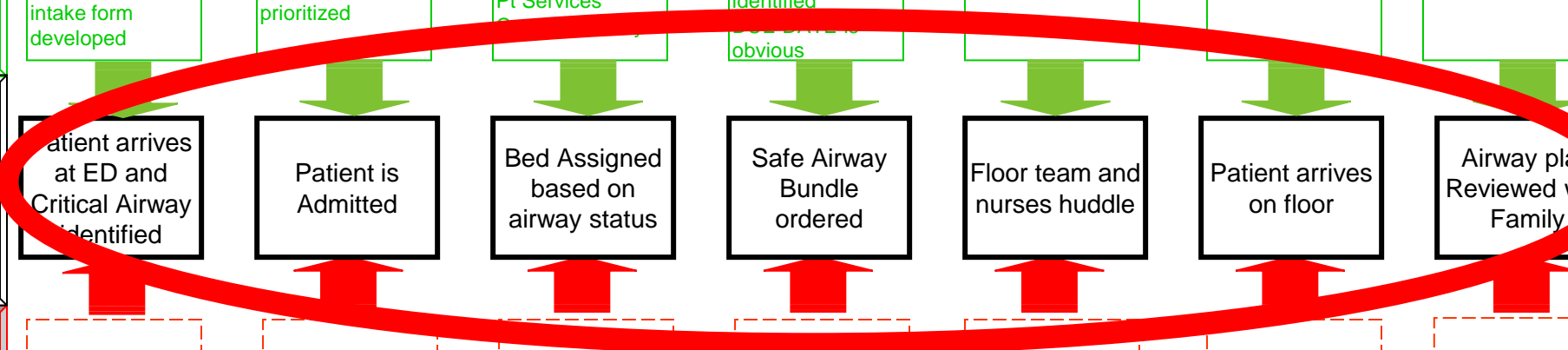
Concern is disseminated to the wrong reviewer(s)- over or under leveled

Reviewer with delay in getting the message.
Message lost in stack of "To dos"
Competing priorities interfere with review

Frontline Staff did not received the concern- didn't get phone call, didn't read email
Wrong frontline staff made aware
Frontline staff not aware of time constraints

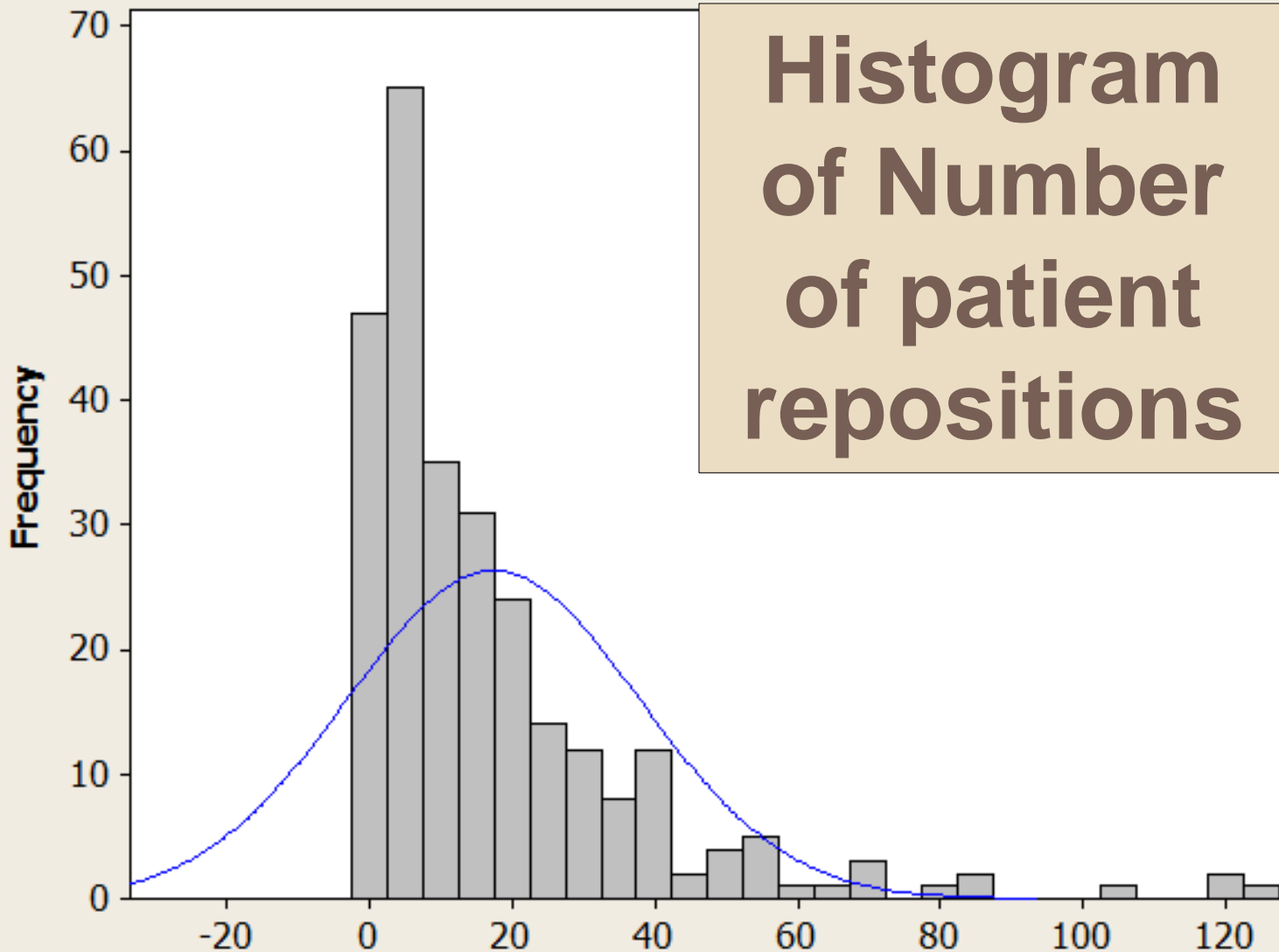
Responses routed to Reviewer Only
Reviewer offline or out of office
Waiting on multiple steps in review process

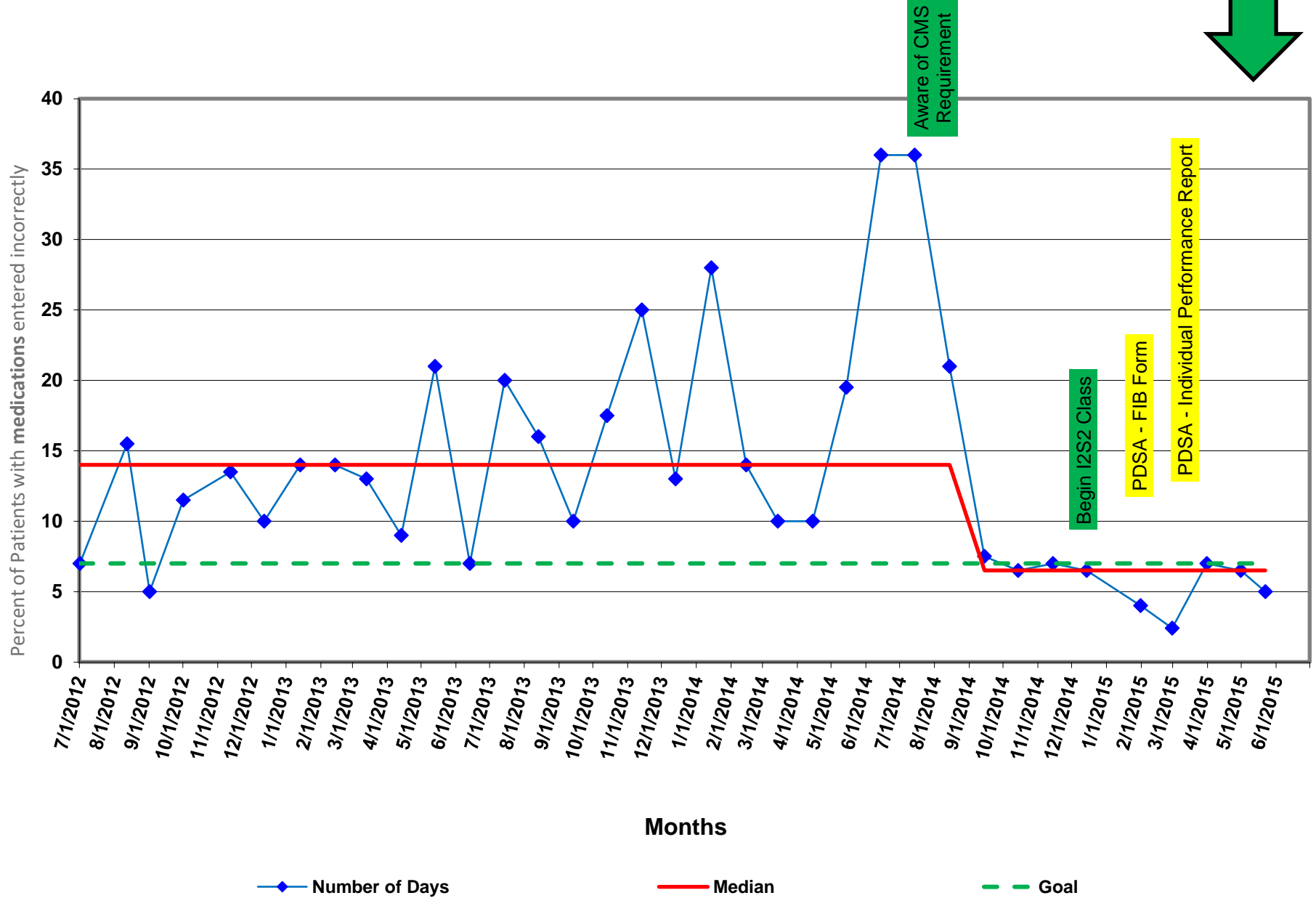
Family does not answer phone.
Family not satisfied by the resolution.
Family Requests second review or has additional questions.



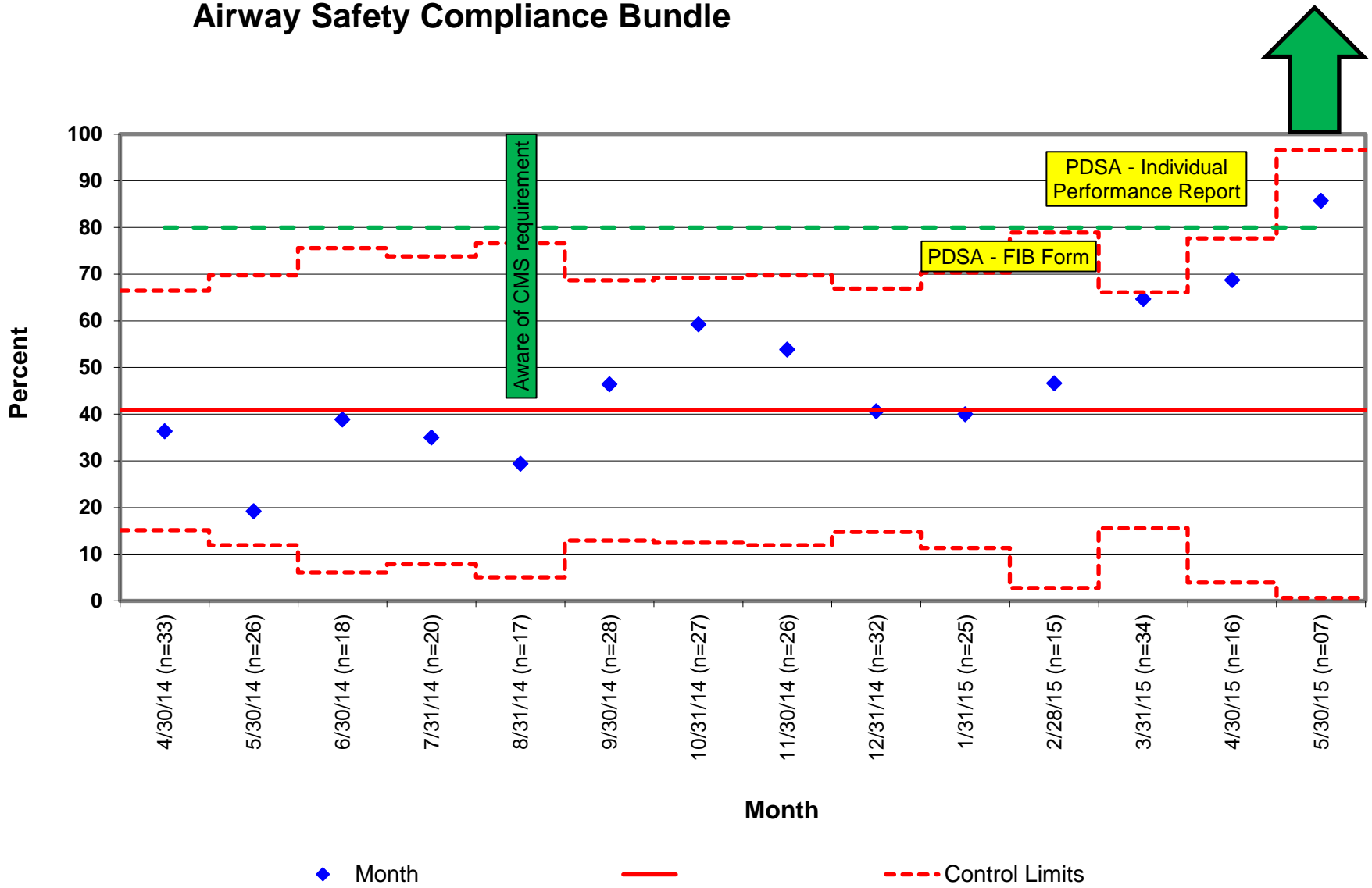
Histogram of Number of patient repositions

Mean	17.45
StDev	20.56
N	271





Airway Safety Compliance Bundle

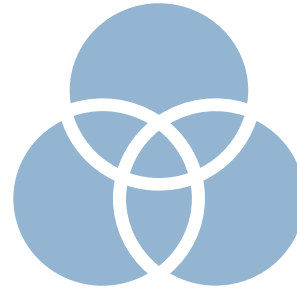




Thank you!



A Culture of Safety



Culture work = the glue that keeps your HAC and other improvements efforts intact and sustainable

High Reliability Units

Error Prevention

Leadership Methods

Safety Governance

Just Culture

Cause Analysis

Disclosure

Employee/Staff Safety

Patient & Family Engagement

References

- JAMA
- The Cochrane Library
- To Err is Human
- Crossing the Quality Chasm

