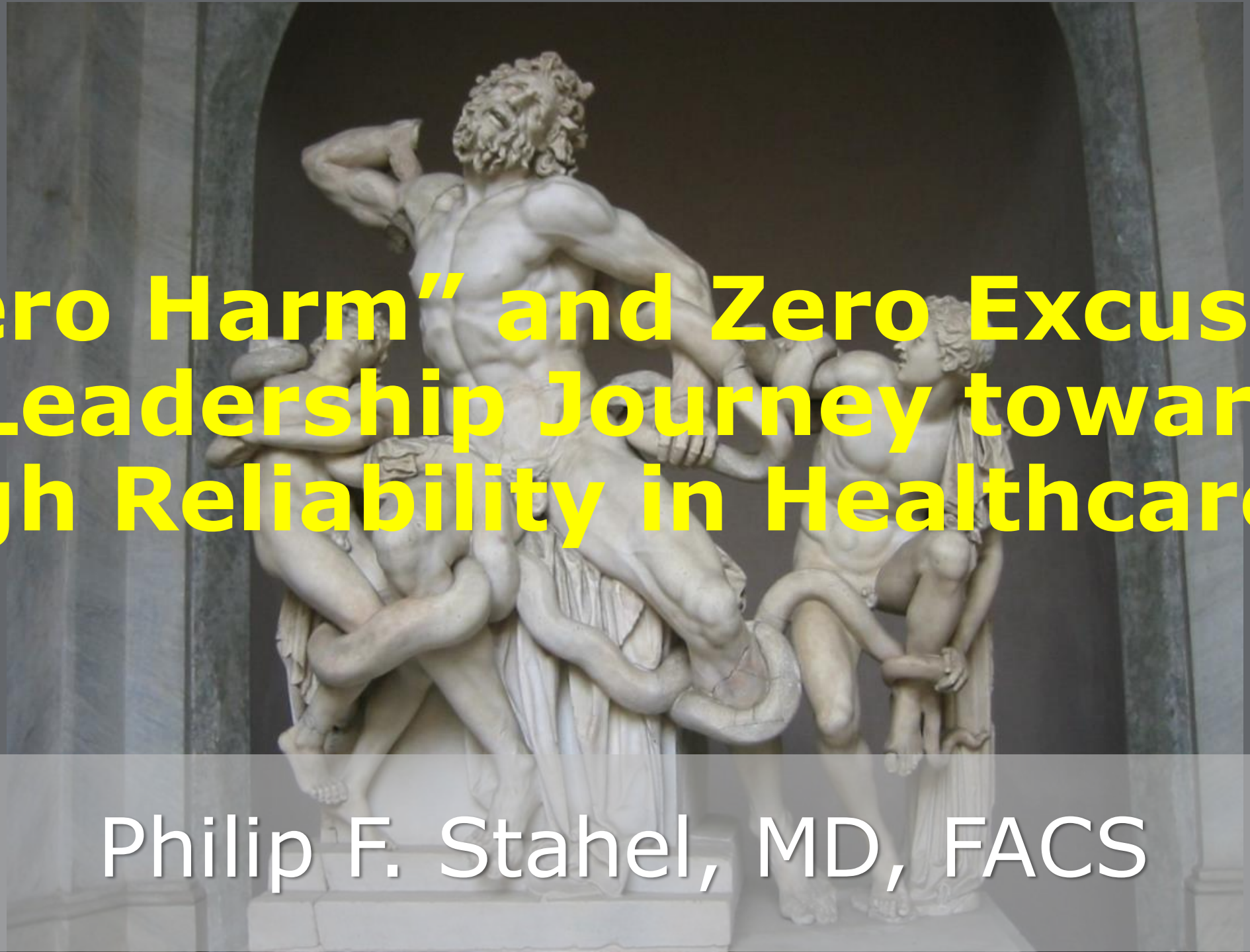


"Zero Harm" and Zero Excuses: A Leadership Journey towards High Reliability in Healthcare."

Philip F. Stahel, MD, FACS

CONFLICT OF INTEREST (COI)

- The speaker is employed by Banner Health.
- The speaker is an unwavering advocate for patient safety.
- There are no other conflicts of interest related to this educational activity.

HRO Safety Curriculum – Learning Objectives

1. Explain the core principles of High Reliability Organizations (HROs)
2. Recognize the different modes and root causes of human error
3. Embrace standardized communication strategies to reduce human error
4. Implement the “stop and think” mnemonic for high-risk procedures
5. Commit to respecting team members for speaking up for patient safety

How Safe is Medical Care in the United States?

Table 1 Leading causes of death in the United States[a]

1. Heart disease (~614 000 deaths per year)
2. Cancer (~591 000 deaths per year)
3. Medical errors (~440 000 deaths per year)

[a]Source:

- http://www.cdc.gov/
- *Journal of Patient Safety* 2013, 9:122–8

Stahel *et al. Patient Safety in Surgery* (2017) 11:1

What is the Secret of High Reliability Organizations?



What is the Secret of High Reliability Organizations?

Reliability is the probability that a system will function successfully.

Reliability (R) = total demands – failures (system error)

$$R = 1 - \varepsilon$$

What is the Secret of High Reliability Organizations?

UNSAFE

SAFE

Reliability (R)	Reliability (R)	Nines	System Error (ε)	System Error (ε)	System Error (ε)
90%	0.9	1	10%	0.1	10^{-1}
99%	0.99	2	1%	0.01	10^{-2}
99.9%	0.999	3	0.1%	0.001	10^{-3}
99.99%	0.9999	4	0.01%	0.0001	10^{-4}
99.999%	0.99999	5	0.001%	0.00001	10^{-5}
99.9999%	0.999999	6	0.0001%	0.000001	10^{-6}

Threshold of human reliability (1 : 1,000)

"Ultra Safe" HROs (1 : 1,000,000)

- ❖ Driving in the U.S.
- ❖ U.S. Healthcare

- ✓ Bungee Jumping
- ✓ Commercial Airlines
- ✓ European Railroads
- ✓ Nuclear Power

Have you heard of the “Sterile Cockpit”?



Trivia Time: Is this a Safety Concern?





United Airlines Flight 328 Denver – Honolulu (February 20, 2021)

Answer: It depends…





United Airlines Flight 328 Denver – Honolulu (February 20, 2021)

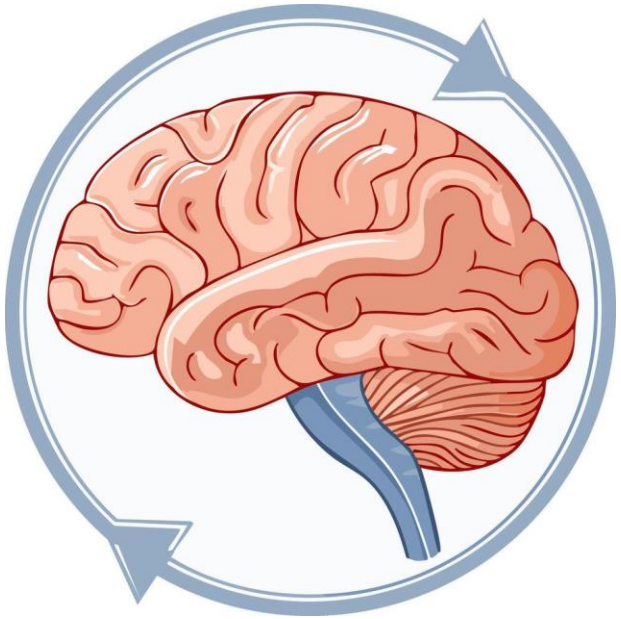
Human Error 101



Amateurs practice until they get it right…
Professionals practice until they NEVER get it wrong!

Human Error 101

Humans process information in three distinct modes:



1. **Skill-based:** "Autopilot mode"
2. **Rule-based:** "If-then response mode"
3. **Knowledge-based:** "Figuring it out mode"

1. Skill-based Errors

Who does this happen to?

- Experts performing routine, familiar tasks
- High automaticity ("Autopilot mode")

Common Errors Types:

- **Slip** – Doing the wrong thing
- **Lapse** – Forgetting to act
- **Fumble** – Mishandling an action



"I was clearly not thinking!"

Error Rate:

- Approximately 25% of all errors that reach a patient

1. Skill-based Errors

SLIP

Performing the act wrong (Error of commission)

- Put milk in pantry instead of refrigerator



LAPSE

Required act is not performed (Error of omission)

- Forget to put milk back in the refrigerator
- Memory is involved – forgot to remember

FUMBLE

Motor skill error (Accident)

- Knock over the milk

2. Rule-based Errors



Root cause:

- Brain scans for known solutions to problem solve
- Rules learned through prior education or experience

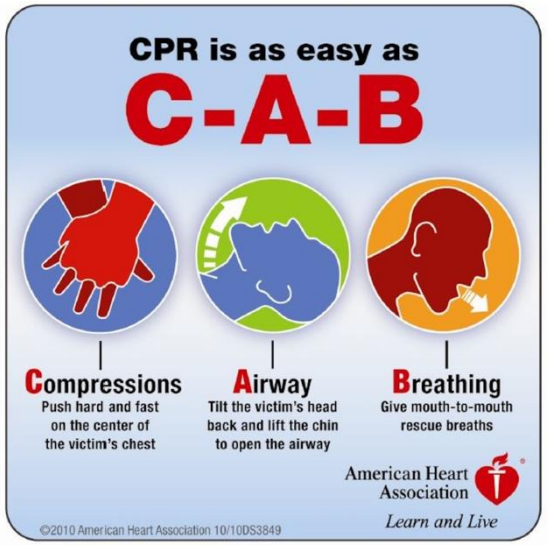
Common Errors Types:

- Not knowing the correct rule (knowledge gap)
- Knowing the correct rule, but applying the wrong rule
- Knowing and intentionally ignoring the correct rule

Error Rate:

- Approximately 60% of all errors that reach a patient

2. Rule-based Errors



WRONG RULE > Educate!

Knowledge deficit

- Erroneously assuming a wrong rule is correct
- e.g. applying the outdated "ABC" mnemonic for CPR

MISAPPLIED RULE > Double-check!

Thinking becomes confused (Pattern bias/Cognitive bias)

- Knowing the correct answer, but applying the wrong rule



NON-COMPLIANCE > Coach!

Intentional choice to ignore a rule

- e.g. not wearing seatbelt while driving

3. Knowledge-based Errors

Root cause:

- New or unfamiliar situation / Lack of knowledge / Out of scope
- Don’t know the rule or no rule exists

Common Errors Types:

- Attempt to “cobble together” an answer (trial & error)
- Breaking the problem into smaller manageable pieces
- Risk of a wrong decision is >50% (flip a coin)



Error Rate:

- Approximately 15% of all errors that reach a patient

3. Knowledge-based Errors

Prevention Strategies for Knowledge-based Errors:



- Transition your knowledge-based gap (error) into someone else's rule-based success!
- Find an expert source who can provide the correct rule
- Physician's established success strategy: **Call for a consult!**





Non-Technical Skills = Universal Skills!

Stahel *et al. Patient Safety in Surgery* (2022) 16:8
https://doi.org/10.1186/s13037-022-00317-w

Patient Safety in Surgery

REVIEW Open Access

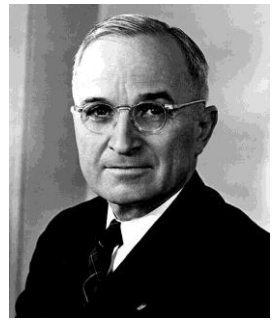
The role of teamwork and non-technical skills for improving emergency surgical outcomes: an international perspective

Philip F. Stahel[1,2*], Lorenzo Cobianchi[3], Francesca Dal Mas[4], Simon Paterson-Brown[5], Boris E. Sakakushev[6], Christine Nguyen[2], Gustavo P. Fraga[7], Steven Yule[5], Dimitrios Damaskos[5], Andrew J. Healey[5], Walter Biffl[8], Luca Ansaloni[3] and Fausto Catena[9]

Be S A F E

Be One Team!

"It's amazing how much we can accomplish when it doesn't matter who gets the credit."
Harry S. Truman



- Aviation "Wingman" Analogy
- Accountability Partners ("200% Accountability")
- **Cross-Check and Coach!**
- Be willing to check others and invite others to check you!
- Reduce risk to **1 in a million!**

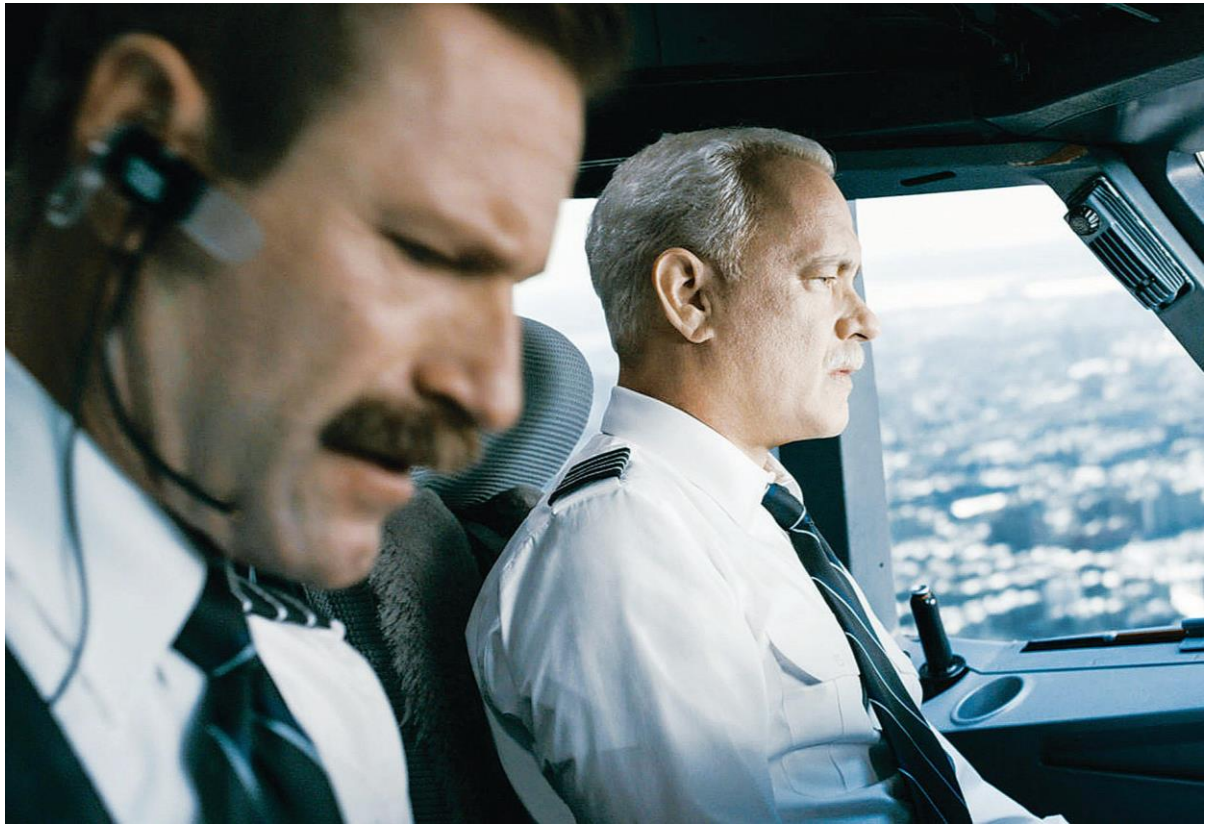
Multiply your error probability:

$0.001 \times 0.001 = 10^{-6}$

Be S A F E

Be One Team!





Be S A F E

Speak Up!

Empower all Team Members to **Speak Up** whenever something doesn't look right!





Be S A F E

Speak Up!

C **CONCERN**
State your concern

U **UNCOMFORTABLE**
State why you are uncomfortable

S **STOP**
Identify the safety/quality/ service issue that requires action

S **SUPERVISOR (Chain of Command)**
Request assistance from a supervisor, if needed

HRO Safety Phrases:

- I have a clarifying question…
- May I offer a cross-check?
- Before we do this, let's think patient safety!
- I have a concern… **(CUSS Mnemonic)**
- Please **STOP!**



Be S A F E

Speak Up!





When a team member says,
"I have a concern!"
– the proper response is to pause, listen, assume positive intent, and thank them for speaking up.

Four stages of psychological safety

Inclusion Safety	Learner Safety	Contributor Safety	Challenger Safety
Satisfies our basic human need to connect and belong	Satisfies our basic human need to grow and learn	Satisfies our basic human need to contribute and make a difference	Satisfies our basic human need to make the world better
• Feeling accepted, included, and validated	• Asking honest and engaging questions	• Making meaningful and confident contributions	• Asking questions without fear of retaliation • Being respected when questioning the status quo



Be S A F E

Authority gradients



The ***perceived*** gradient steepness as seen by the ***subordinate.***



Avianca Flight 052 (Bogotá – JFK) crashed over Long Island, New York, after running out of fuel on January 25, 1990.



Be Aware!

"Fastest reader challenge" – Read the sentence below once and count the number of F's!

FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF YEARS.



Be Aware!

"Fastest reader challenge" – Read the sentence below once and count the number of F's!

FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF YEARS.

Be S A F E

Be Aware!

One second can save a life!

"STAR" reduces your risk of a slip or lapse by a factor **10x**!

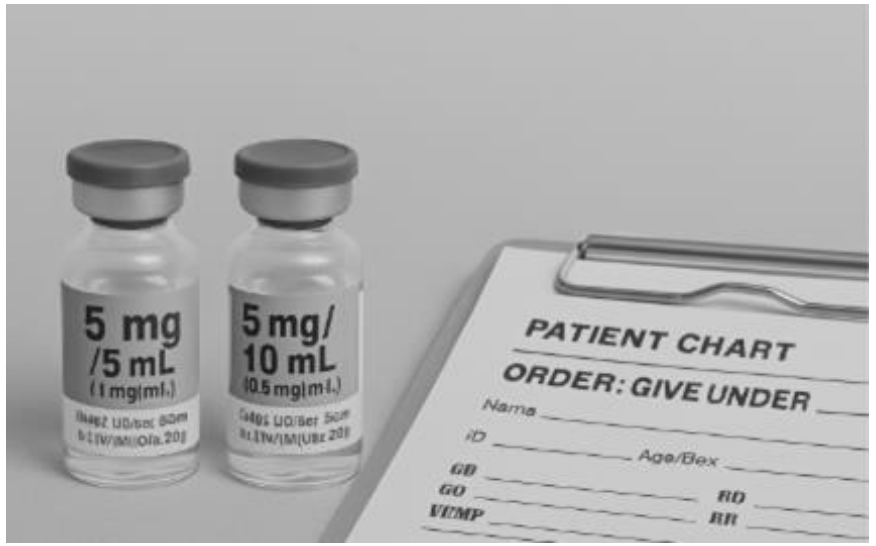
- When multi-tasking
- When distracted
- When fatigued
- When under time pressure
- Before a safety-critical act

S **STOP**
Pause for one second

T **THINK**
Think about the act

A **ACT**
Perform the act

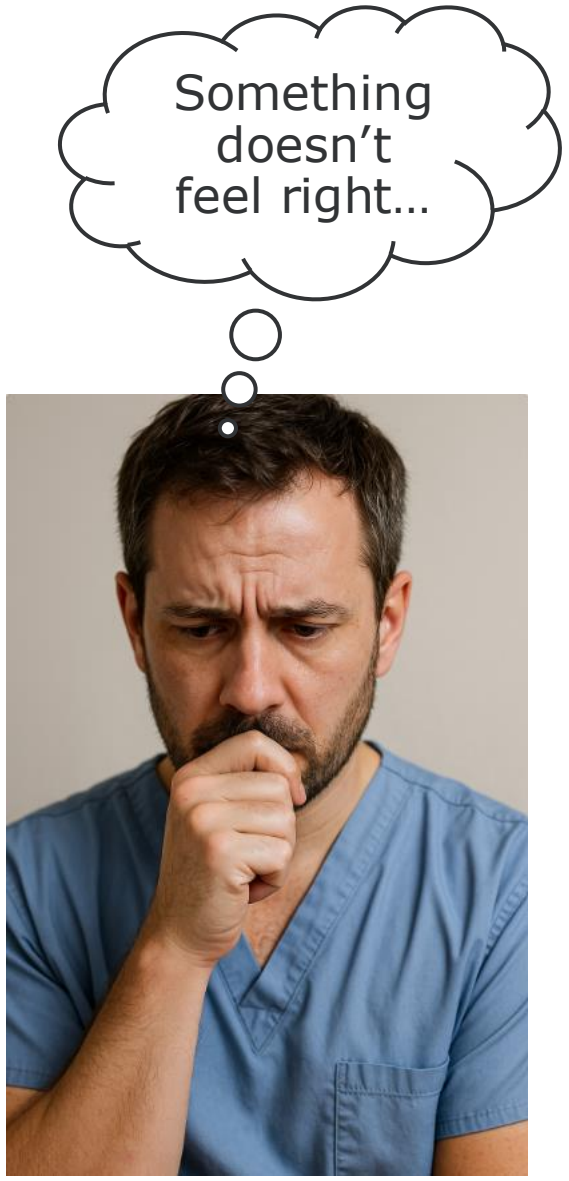
R **REVIEW**
Check for result



Be S A F E

Get the Facts!

Have a curious mind and questioning attitude!



1. Validate: Internal self-check

- **Validate with "your gut"** – something doesn't feel right!
- When you are unsure – **STOP!**

2. Verify: Check with an external source

- **Verify with "shoe leather"** – it takes an effort!
- **"It's OK not to know – it's not OK not to find out!"**

Be S A F E

Get the Facts!

The "B.S." Detector System:

Source

Is the source reliably accurate?

Sense

Is the information consistent with what we would anticipate?

Second (opinion)

Obtain verification with a second independent source.



Be S A F E

Effectively Communicate

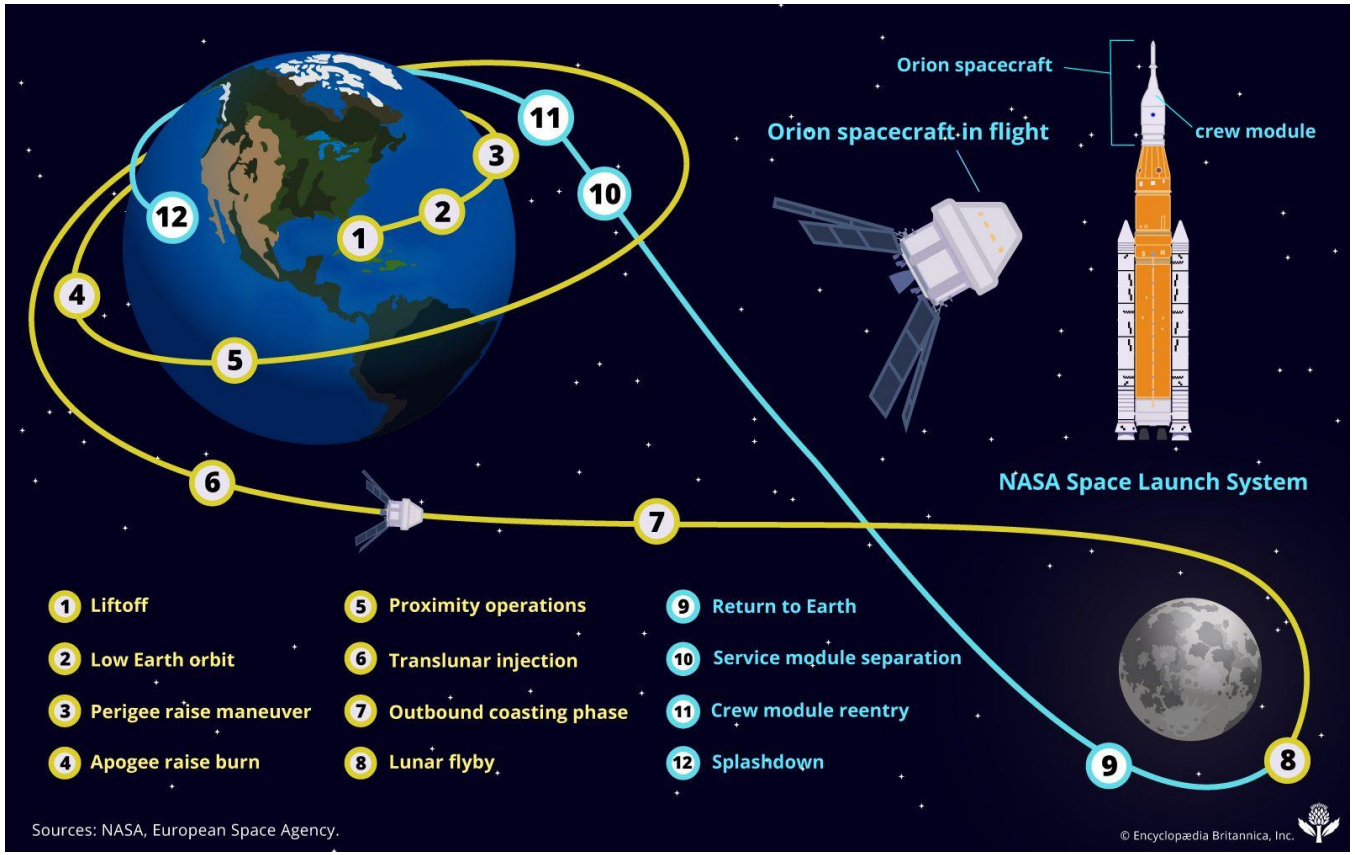
>90% of preventable complications leading to patient harm originate from a communication breakdown!



Be S A F E

Effectively Communicate

"Communication is not what you say, it's what other people hear!"



- **SBAR**
- **3-way Repeat Back**
  (Closed loop communication)
- **NATO Alphabet**
- **Sound alikes!**
- **AIDET**

Be S A F E

Effectively Communicate

3-way Repeat Back (Closed Loop Communication)



- **Mission Control (CAPCOM):** "Apollo 13, Houston. Stand by for mode I Bravo."
- **Astronaut (Jim Lovell):** "Roger. I Bravo. I Bravo." (Lovell repeats the command back to verify understanding)
- **Mission Control (CAPCOM):** "Copy that." (Confirming the read-back is correct)

Structured closed-loop communication prevents dangerous misunderstandings by proving the recipient heard exactly what was transmitted before executing.



Effectively Communicate

Context helps understanding!

"A newspaper is better than a magazine. A seashore is a better place than a street. At first it is better to run than to walk. You may have to try several times. It takes some skills but it's easy to learn. Even young people can enjoy it. Once successful, complications are minimal. Birds seldom get too close. Rain, however, soaks in very fast. Too many people doing the same thing can also cause problems. One needs lots of room. If there are no complications, it can be very peaceful. A rock will serve as an anchor. If things break loose from it, however, you will not get a second chance."

Be S A F E

Effectively Communicate

Context helps understanding!

"A newspaper is better than a magazine. A seashore is a better place than a street. At first it is better to run than to walk. You may have to try several times. It takes some skills but it's easy to learn. Even young people can enjoy it. Once successful, complications are minimal. Birds seldom get too close. Rain, however, soaks in very fast. Too many people doing the same thing can also cause problems. One needs lots of room. If there are no complications, it can be very peaceful. A rock will serve as an anchor. If things break loose from it, however, you will not get a second chance."



Be S A F E

What we permit, we promote!



H·R·O
High Reliability Organization

Always safe, always caring, every person, every time

Our safety behaviors and high reliability tools are designed to prevent all types of human error.

Together we strive to Be SAFE to ensure safety, quality and extraordinary service.

Be

Be One Team. Ask others to cross-check you when you are unsure, have never done something before or something just doesn't feel right.

S

Speak up. Use **CUSS** to raise a concern when safety, quality or service is compromised. Involve a supervisor if needed.

- **C** - "I have a **concern**."
- **U** - "I am **uncomfortable**."
- **S** - "Please **stop**, this is a safety/quality/service issue."
- **S** - "If we disagree, let's ask a **supervisor** before we proceed."

A

Be aware. Use **self-checking with STAR** to check yourself before moving from thought to action, even for routine tasks.

- **S - Stop.** Pause to confirm the right patient, action, supplies
- **T - Think.** Does this make sense? What should I check first?
- **A - Act.** Be focused on each part of the process.
- **R - Review.** Check the patient, process and surroundings for issues.

F

Get the facts. Use a **questioning attitude with Validate and Verify** to be certain, especially if there is a change in plan, if you are unsure, or if something doesn't seem right.

- Does this make sense? Does this seem right? Are we missing anything?
- **Ask clarifying questions of others** with insight or expertise. At times, the patient may be the expert!

E

Effectively communicate. Use 3-way repeat-back, phonetic/ numeric clarification and SBAR. A **SBAR** communicates key information quickly and recommends a clear course of action.

- **S - Situation.** Describe the immediate situation.
- **B - Background.** Briefly share what happened before this situation.
- **A - Assessment.** Share an assessment of the patient or problem.
- **R - Recommendation.** Suggest what should be done or request action.

To learn more, visit the High Reliability Organization Page on Banner Connect

Banner Health

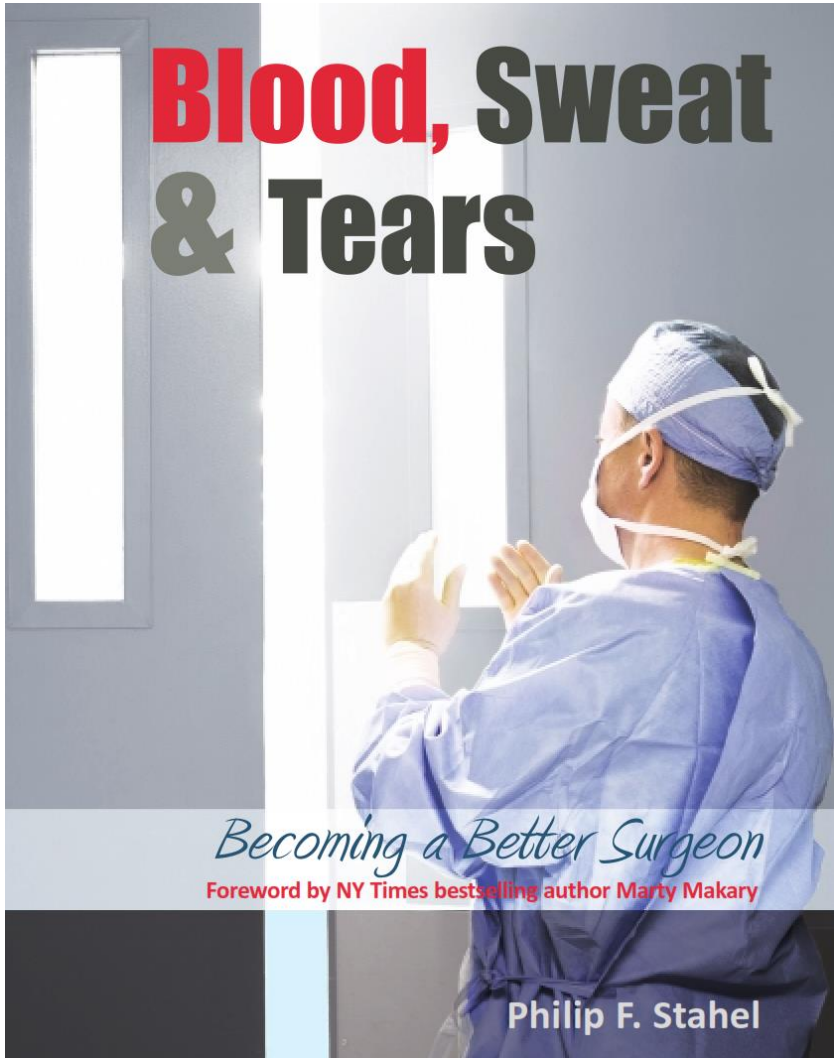
Be S A F E



"I never make exceptions. An exception disproves the rule!"



What are your Questions for my Answers?





Mobile: 303-653-6463