



TAKING THE HUMAN FACTOR OUT OF CODES

1

Module 7 Lesson 1
2 Hours

TIME ON TARGET

-03:00:00

0¹

3



Terminal Enabling Objective

3

Students will use checklists to take the human factor out of performing a codes inspection procedure during the routine daily duties of a fire fighter's job performance.



Cognitive Enabling Objectives

4

Cognitive Objective # 1

Students will discuss the history of checklists

Cognitive Objective # 2

Students will discuss factors that lead to code inspection errors while performing inspections during performance of their duties.



Cognitive Enabling Objectives

5

Cognitive Objective # 3

Students Will integrate evidence based research related to the development of code inspection checklists during the lab session of creating a checklist.

Cognitive Objective # 4

Students Identify the necessary components of a codes inspection Checklist during the lab session of designing a codes inspection checklist.



Cognitive Enabling Objectives

6

Cognitive Objective # 5

Students will compare and contrast the do-confirm and Re-do check and when to use each in the Fire Service Setting.

Cognitive Objective # 6

Students will compare and contrast ignorance and ineptitude and why errors happen and apply it to using a codes checklist during the inspection process in the fire service setting.



Cognitive Enabling Objectives

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Objective # 7

Students will discuss different types of checklist used in the fire service

Objective # 8

Students will discuss why checks can be an important component of better life safety procedures during the lecture presentation on creating the Codes inspection checklist



Cognitive Enabling Objectives

8

Objective # 9

Students discuss the role of responsibility in providing life safety inspections in the fire service.

Objective # 10

Students will discuss the different components of a successful checklist and how to design a checklist for code enforcement.



Cognitive Enabling Objectives

9

Objective # 11

Students will describe the importance of the validation process and making a code inspection checklist while practicing during the lab session of creating a codes inspection checklist.

Objective # 12

Reserved for future use



Affective Enabling Objectives

10

Students will value the importance of using a checklist and increasing building owner compliance with New York State fire and life safety codes after the presentation on taking out the human factor.



Psychomotor Enabling Objectives

11

Objective # 1

Students will design their own checklist during the lab session, after a discussion on how to design a checklist and implement it into life safety of a real inspection.

Objective # 2

Students will model checklist implementation on an inspection of a food service truck scenario, after a lecture on the creating of a checklist.



Psychomotor Enabling Objectives

12

Students will document fire and life safety inspections as a code enforcement provider after learning checklist features after the lecture on taking out the human factor codes.



THIS SESSION IS ABOUT ERRORS

17



This session is about errors

18

**What happens
when the
code provider
makes a
mistake on a
code
inspection?**





This session is about errors

19

- **How are errors counted by code inspections?**
- **What happens when the code inspector misses something on an inspection?**
- **What happens when the code enforcement misses something on reading a design plan?**





This session is about errors

20

- **Who is checking the code official to make sure nothing is missed?**
- **How many errors do code officials make?**





Fire & Life Safety Features

21

- **Where do you start an inspection?**
 - **Is there an alarm system?**
 - **When was it tested?**
 - **Is there a commercial Ansel system?**
 - **Smoke detectors?**
 - **CO2 Detectors?**





Fire & Life Safety Features

22

- **Does everybody do it the same?**
 - **Does the building meet its current occupancy?**
 - **Occupancy load?**





HUMAN FACTORS

23





Sully

25

- **9,000 US Airways pilots**
- **Had never flown together**
- **Co-Pilot had never flown the aircraft**
- **After bird strike, first thing that happens is pulls out the checklist**
- **Skips steps because checklist is designed for on the ground**
- **FAA tries to say they could have made it back to an airport**



Why do Error's Happen

26

Ignorance

WE MAY ERROR BECAUSE
SCIENCE HAS GIVEN US
ONLY A PARTIAL
UNDERSTANDING OF THE
WORLD AND HOW IT WORKS.

Ineptitude

BECAUSE THE KNOWLEDGE
EXISTS, WE FAIL TO APPLY
IT CORRECTLY



Boeing Flight Test Model 299 (B-17) 1935

28





Human Factor

The term can be used to denote

30

The course of something

The event or action that occurred

The outcome of the action

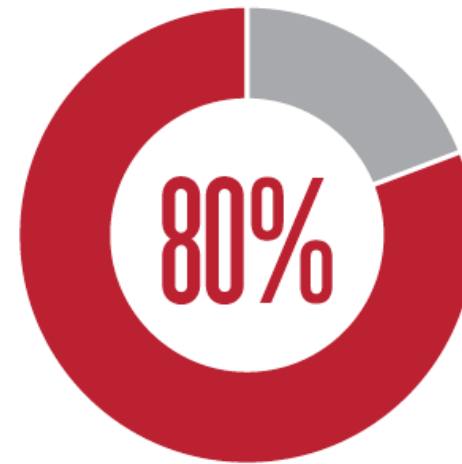




Why do health care errors happen

31

- **Airline accidents large number die makes national news**
- **Three mile island nuclear reactor**
- **In health care more people die but one at a time**
- **Less news worth**



Percentage of serious medical errors due to miscommunication between health professionals during transfers of care.



Types of Human Factors

32

- **The human factors**
 - **Most colloquial**
 - **person-centered approach**
 - **Unwanted events such as accidents**
- **Factors of humans**
 - **Human characteristics**
 - **Reducing people and systems to ‘components’**
 - **Examples: cognitive functions**
 - **(memory, decision-making)**
 - **Levels of performance**
 - **(skill-based, rule-based, and knowledge-based)**



How to prevent errors

33

- **Understand the current system we are working in**
- **Analyze incidents**
- **Identify improvement priorities**
- **Develop “change ideas” and implement them**
- **Change idea**
- **Creation and implementation of checklists**





Why are we applying Checklist?

34

NY State Building code
NY State Property Maintenance code
NY State Fire Code
NY State Energy Code
NY State Plumbing Code
MRL Law
Other codes may be involved





Boeing History of the Checklist

35



- **Boeing has 200 different checklists for every aircraft**
- **To cover different situations**
- **Apply to code inspections:**
 - **Mercantile**
 - **Residential**
 - **Business**



Airlines Air Medical

36





Dr. Atul Gawande

The Checklist Manifesto

37

- **Thought he was good**
- **Wrote the safe surgery checklist**
- **When implemented found 3 to 4 errors every week that would have been missed in his own operating room.**







Human Factors

The Killer Show

40

We need to recognize that people can make mistakes

The purpose here is to build a system where errors will be reduced or eliminated and provide for fire and life safety inspections





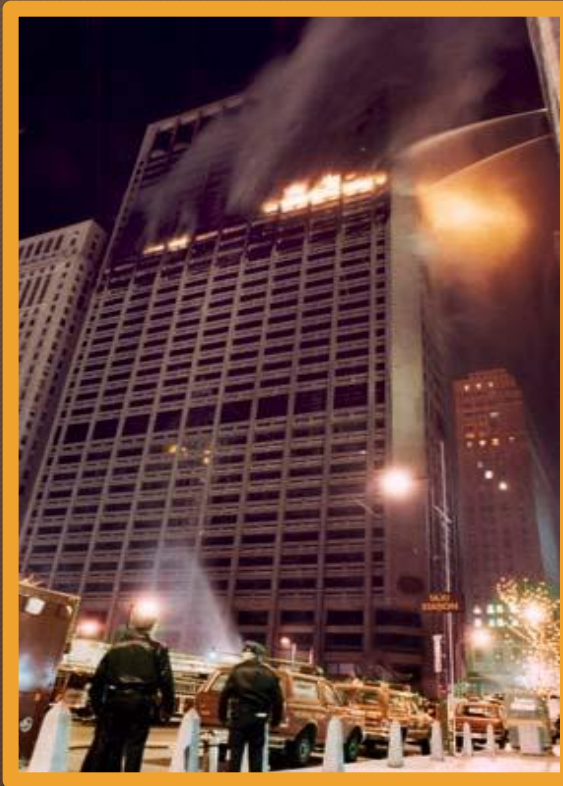
Why are we applying checklists to life safety inspections

41

Important part of life safety

The human factor is a major contributor to adverse events in the life safety setting

All Fire Service should have an understanding of human factor principals





Science

How are Errors made?

42

How are errors made?

Why are errors made?

Most of the time its not the fault of the individual but of the system in place



6/25/2026



Why use a checklist during a fire and life safety Inspection?

43

a checklist is not a recipe card for a novice but to confirm that work has been done by experts



No matter how expert you may be, well-designed checklists can improve outcomes.

— *Steven Levitt* —

AZ QUOTES



Examples of codes checklist living document

44

Fire Code Inspection *are you ready?*

Fire Extinguishers:

- Is there a properly mounted fire extinguisher near every exit at minimum? They should be visible and accessible.
- Are the fire extinguishers up to date on their inspections, with current tags from a fire protection company?

Emergency Evacuation:

- All exits are marked with the proper signage?
- Exit signs are illuminated?
- Emergency lights are intact and turn on when tested?
- The building fire escape route is posted visibly in rooms without direct access to the outdoors, with exits clearly marked?

Restaurants:

- The kitchen fire suppression system has a current inspection tag from a fire protection company?
- The fire system manual pull station is visible and easily accessible?
- The kitchen exhaust hood has a sticker indicating your last hood cleaning?
- There is a Class K extinguisher in the kitchen with a current inspection tag?



FIRE SAFETY INSPECTION CHECK LIST

- Checked every 1st day of the month

• Checked By: _____ Date: _____

SPRINKLER & FIRE DETECTION SYSTEMS				
	Pass	Fail	Procedure	Corrective Action Taken
Sprinkler Pumps			Check automatic start and pressure	
Fire Detection System			Random Test of call points and smoke detectors	
Sprinkler Valves			Valves are locked in the open position, no leaks, corrosion, or other defects noted	
Sprinkler water flow alarm			Open test valve and ensure manual alarm bell functions and sprinkler pumps start	

FIRE ALARM FACILITIES				
	Pass	Fail	Procedure	Corrective Action Taken
Location Signs			Check all signs are in place and legible	
Alarm Panels			Check that all alarm panels are functioning correctly and are unobstructed	

LIFTS				
	Pass	Fail	Procedure	Corrective Action Taken
Lifts			All lifts "home" to ground floor during fire test, doors open and lift stops	
Fans			All lift fans operate correctly	
Firemans lift			Firemans lift can be keyed to operate during fire alarm test	

STAIRWAYS				
	Pass	Fail	Procedure	Corrective Action Taken
Obstructions			All stairways free from any obstruction	
Flammable Material			No flammable material stored in the stairways	
Pressurisation Fans			Staircase pressurisation fans operate correctly during fire alarm test	

Page 1 of 4



It's operating on the same standard every time

45

- **Development of stand operating procedure for fire and life safety inspections**
- **Doing the same inspection every time**
- **Doing the same inspection by every provider**

Alert EMS LLC

TOP TEN FIRE CODE VIOLATIONS

- Street address must be clearly marked and visible (in contrasting color) from the street fronting the property. A minimum of 6" high, 1/2" stroke, do not mount on glass or doors.
- Fire hydrants located on your property must be visible and accessible at all times, with three feet of clearance on all sides and no parking within 10 feet.
- Exit doors must open easily from the inside. Locking mechanisms on doors shall not require special knowledge or keys. The only exception is a main storefront door with a sign above that reads, "This door to remain unlocked when building is occupied."
- Aisles, walkways, stairways, and paths leading to exits must be clear of storage and obstructions.
- Emergency lights and exit signs (that are lighted from within) must work properly and function in both normal and emergency power modes. Lighted exit signs must be lit at all times.
- Electrical outlets, junction boxes, and circuit breaker panels must be covered, and outlets and junction boxes must have the appropriate cover plate.
- Electrical extension cords cannot be used as a substitute for permanent wiring. Extension cords are only approved for "temporary use" (operating a vacuum cleaner, powering a tool while making a repair, etc.). Multi-outlet power strips, with built-in circuit breakers may be used to protect computers and related equipment.
- Fire extinguishers must be visible, readily accessible, and serviced every 12 months.
- Fire sprinkler systems must be serviced and tested every 12 months by a licensed fire protection contractor.
- Fire suppression systems for commercial cooking operations (hood systems) must be serviced and tested every 6 months by a licensed fire protection contractor.



2 Types of checklist

46

Do-Confirm - Team members perform their jobs from memory and experience and then check the checklist

Read-Do - Team members carry out the tasks as they check them off - its more like a recipe



DEVELOPING OUR OWN CHECKLISTS

48

“

CHECKLISTS PROVIDE REMINDERS OF ONLY THE MOST CRITICAL AND IMPORTANT STEPS—THE ONES THAT EVEN THE HIGHLY SKILLED PROFESSIONAL USING THEM COULD MISS.



—
ATUL GAWANDE
QUOTED ON THE TEACHING IN HIGHER ED PODCAST #078



Developing checklists

49

**Do we have
clear,
concise
objectives
for our
checklist?**





Development Is each item

50

A critical safety step and in great danger of being missed?

Not adequately checked by other mechanisms?

Actionable, with a specific response required for each item?

Designed to be read aloud as a verbal check?

One that can be affected by the use of a checklist?



Development Have you considered

51

**Adding items
that will improve
communication
among team
members**

**Involving all
members of the
team in the
checklist
process?**





Development Drafting - Does the checklist?

52

**Utilize natural breaks
in workflow?**

**Use simple sentence
structure and basic
language**

**Have a title that
reflects its objectives**

**Have a simple,
uncluttered and
logical format**

Fit on one page

**Minimize the use of
color**





Development Drafting- Is the font?

53

Sans serif?

**Upper and lower
case text?**

**Large enough to
be read easily?**

**Dark on a light
background?**

Serif

SAMPLE TEXT
sample text

Aa Bb Cc Dd Ee Ff Gg Hh Ii
Jj Kk Ll Mm Nn Oo Pp Qq Rr
Ss Tt Uu Vv Ww Xx Yy Zz

This paragraph text color is black, which is easy to read because the light that hits each word and letter isn't reflected, but absorbed.

This paragraph text color is white, which is harder to read because the light that hits each word reflects and scatters into each other.



Development Drafting

54

Are there fewer than 10 items per pause point?

Is the date of creation (or revision) clearly marked?

Drafting Checklist

- Capital Letters:**
Do you have capital letters at the beginning of each sentence and the beginning of proper names of people, places and things?
Are there any capital letters where there shouldn't be?
- Direct Speech:**
Have you remembered speech marks at the beginning and end of any direct speech?
Remember to include punctuation before you close your speech marks, for example use a ? , ! , ...
- Apostrophes:**
Have you used apostrophes correctly - Where a letter missing or if an object belongs to someone?
Are there any where there shouldn't be?
- Quotations:**
Anything taken direct from a source needs to be shown by inverted commas or quotation marks - Just like speech marks
- Paragraphs:**
Is your work organised into paragraphs? Is the start of each one indented while all other lines start by the margin line?
Remember you need to start a new paragraph when talking about a different subject, person, time or place and when using speech marks.
- Spelling:**
Are all your spellings correct? Check your word list, source, with a friend or a teacher if you are unsure.
- Punctuation:**
Do you have full stops at the end of each sentences, a question mark for a question and an exclamation mark for an exclamation? Have commas been used to separate words in lists?
- Always** re-read your work **before** submitting it to your teacher





Development Validation - Have you?

55

**Tried the
checklist with
front line users
(either in a real
or simulated
situation)?**

**Modified the
checklist in
response to
repeated trials?**





Validation

Does the checklist

56

Fit the flow of work?

Detect errors at a time when they can still be corrected?

Validation





Development Validation

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**Can the checklist
be completed in
a reasonably
brief period of
time?**

**Have you made
plans for future
review and
revision of the
checklist?**

“

Time is your greatest
adversary.

PETE





Pause Points

Moments in a process to catch a problem

58

Pause Points

Fire Service code chapters

Outside property

Inside property

Individual features





KEY POINTS

61



What is a checklist

62

**It's a reminder
of key points
that get
forgotten or
missed**



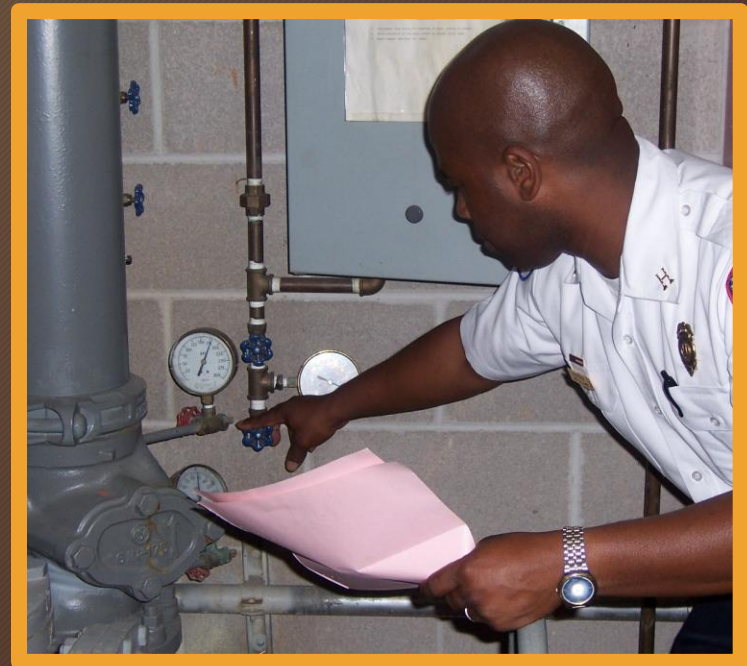


“Pilot not flying”

63

**A person not doing
the inspection
starts the checklist**

**Give the checklist
to a non codes Fire
personal**





Dispersing the responsibility

64

Dispersing the responsibility sends the signal that everyone – not just the person in charge of the inspection responsibility for the inspection

Responsibility
Leads to
Great
Success!

 *A Debt Free Mess Free Life.com*



Team Conversations

65

**Everyone must
by in and speak
up and say
what is needed
for the fire and
life safety
inspection to go
well as possible**





WHAT COULD THEY
LOOK LIKE?

68



An example of Life Safety checklist

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SAFETY INFORMATION

- SMOKE ALARMS - one in every room/floor
- CARBON MONOXIDE DETECTORS- one on every floor
- FIRE EXTINGUISHERS - one on every floor
- ALARM SYSTEM - know how to use it
- LIGHTBULBS - replace and have extras on hand
- ELECTRICAL OUTLETS - not overloaded
- ELECTRICAL CORDS - no fraying
- WINDOWS- open easily from the inside
- WATER HEATER- check on annual basis
- 72 HOUR KITS - one for every family member
- PRESCRIPTION MEDICATION - extra meds on hand
- FAMILY EMERGENCY PLAN - plan and practice
- FAMILY BINDER - all important documents
- FIRST AID KIT - complete kit & have a designated place
- EXTRA KEYS TO NEIGHBORS/FRIENDS
- EMERGENCY PHONE #S - keep up to date & visible

@30DAYSPRO



An example of Life Safety checklist

70

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FIRE ALARM FACILITIES

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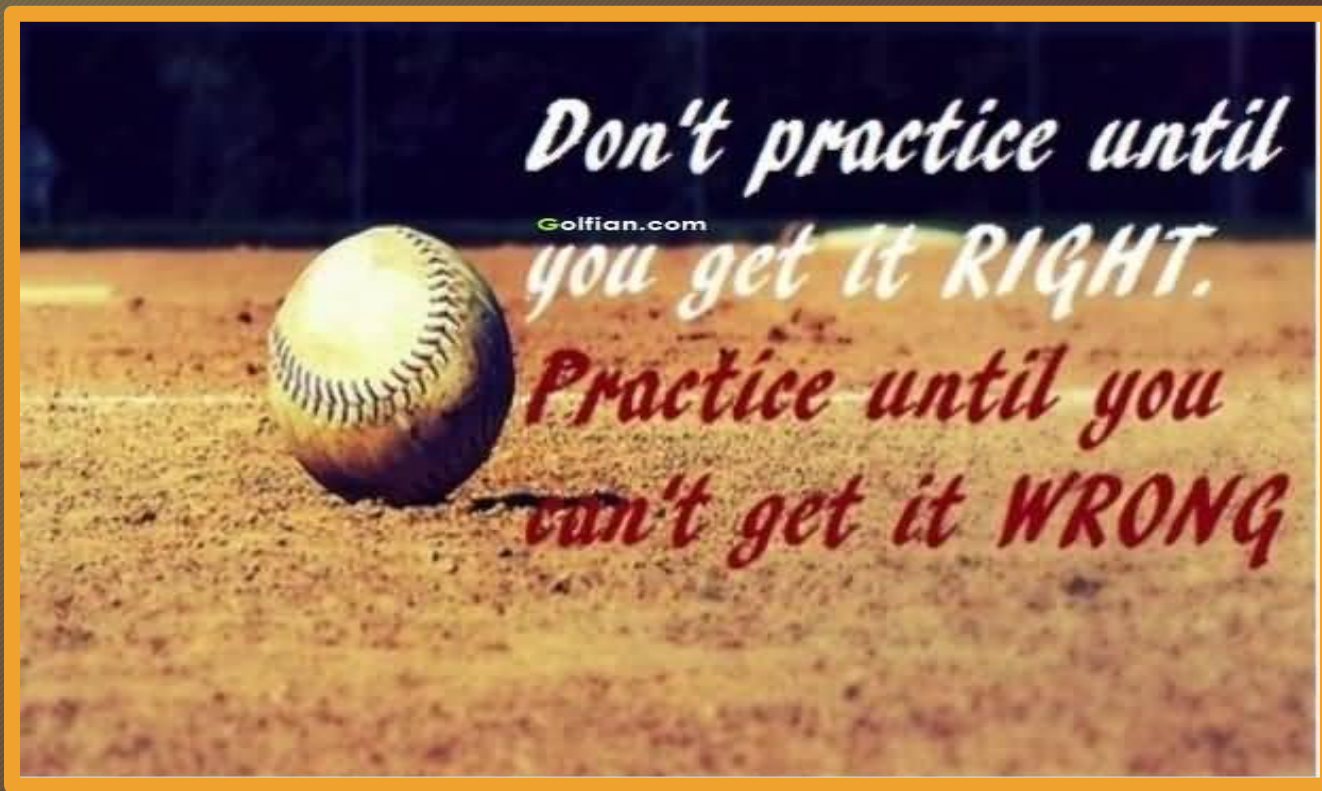
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Human Factors

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Checklists

73

**“Its not the list
itself that is so
effective”**

**“The list is simply
a way to focus
individual
attention toward
group goals”**





How are we going to use checklists?

75

First, we are going to have to develop a checklists for use

Who are we going to give them to?

When are we going to implement them

For Experts to follow a receipt for success

Too much for our memory to remember in the heat of a situation







Documentation

77

- **How are we going to document the inspection?**
- **What are we going to document?**
 - **What records does the facility have?**
 - **What did we see?**
 - **Did we take a pics?**
 - **What did the faculty representative say?**
 - **Status upon arrival, what did it look like when we arrived?**
- **Study to ask are we successful?**



CLOSING

80



Closing

81



You'll make mistakes. Everyone does.



Just learn from them.



Closing **A checklist Should be**

82

- **Can not be lengthy**
- **Keep between 5 and 9 items**
- **(limit of working memory)**
- **Wording should be simple and exact**
- **Familiar language of the profession**
- **Should fit on one page**
- **Should use both upper and lower case letters**



LEADERSHIP THOUGHTS

83



Leadership thoughts Same Malone

85

As the owner and bartender, Sam demonstrates a charismatic and often flawed leadership style. He is known for his charm, ability to connect with people, and his role as a mentor for some, like Woody Boyd. However, he also exhibits traits of a "people pleaser," as he struggles with responsibility and sometimes lacks discipline.





Leadership thoughts Coach

86

While not a formal leader, Coach's character exemplifies "service-oriented leadership." He provides advice and support to others, especially Sam and Diane, and demonstrates a willingness to listen and offer guidance.





Leadership thoughts Regular Charactors

87

▪
The regulars at Cheers, despite their varying personalities, exert a significant influence on the bar's culture and the individuals within it. Their interactions and collective behaviors, often highlighted by Norm's simple yet consistent presence, demonstrate the power of "group dynamics".







Resources

95

Emscrit.org

EMS Crit Podcast # 40

EMS Crit Podcast # 94

EMS Crit Podcast # 104

EMS Crit Podcast # 205



Resources

The checklist manifesto

96

- **The Checklist Manifesto: How to get things right**
- **Atul Gawande**
- **Picador – New York**
- **2009**

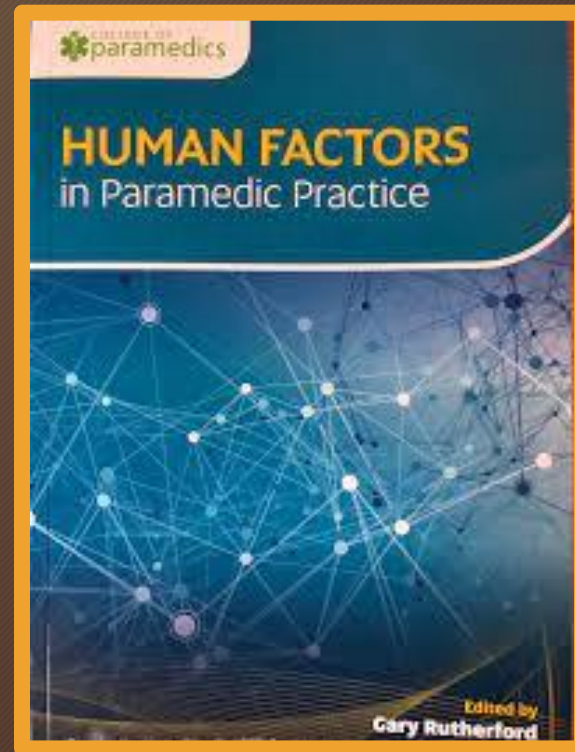




Resources

97

- **Human Factors in Paramedic Practice**
- **Gary Rutherford**
- **UK**
- **Class Professional Publishing**
- **2020**

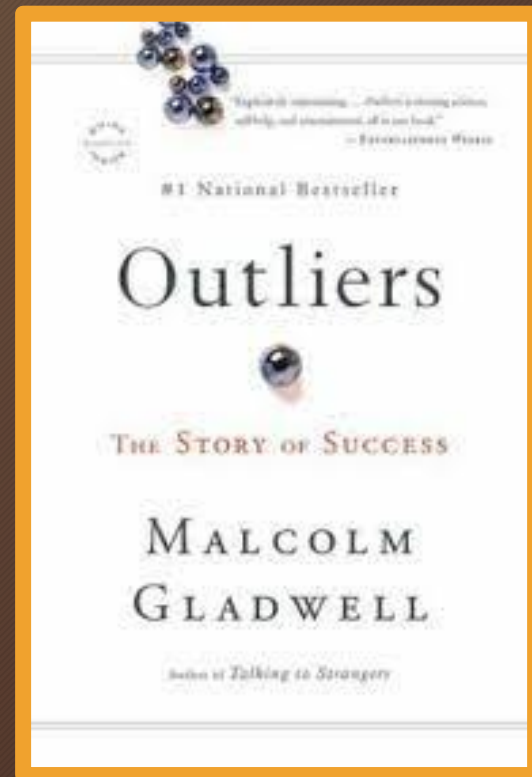




Resources outliers

98

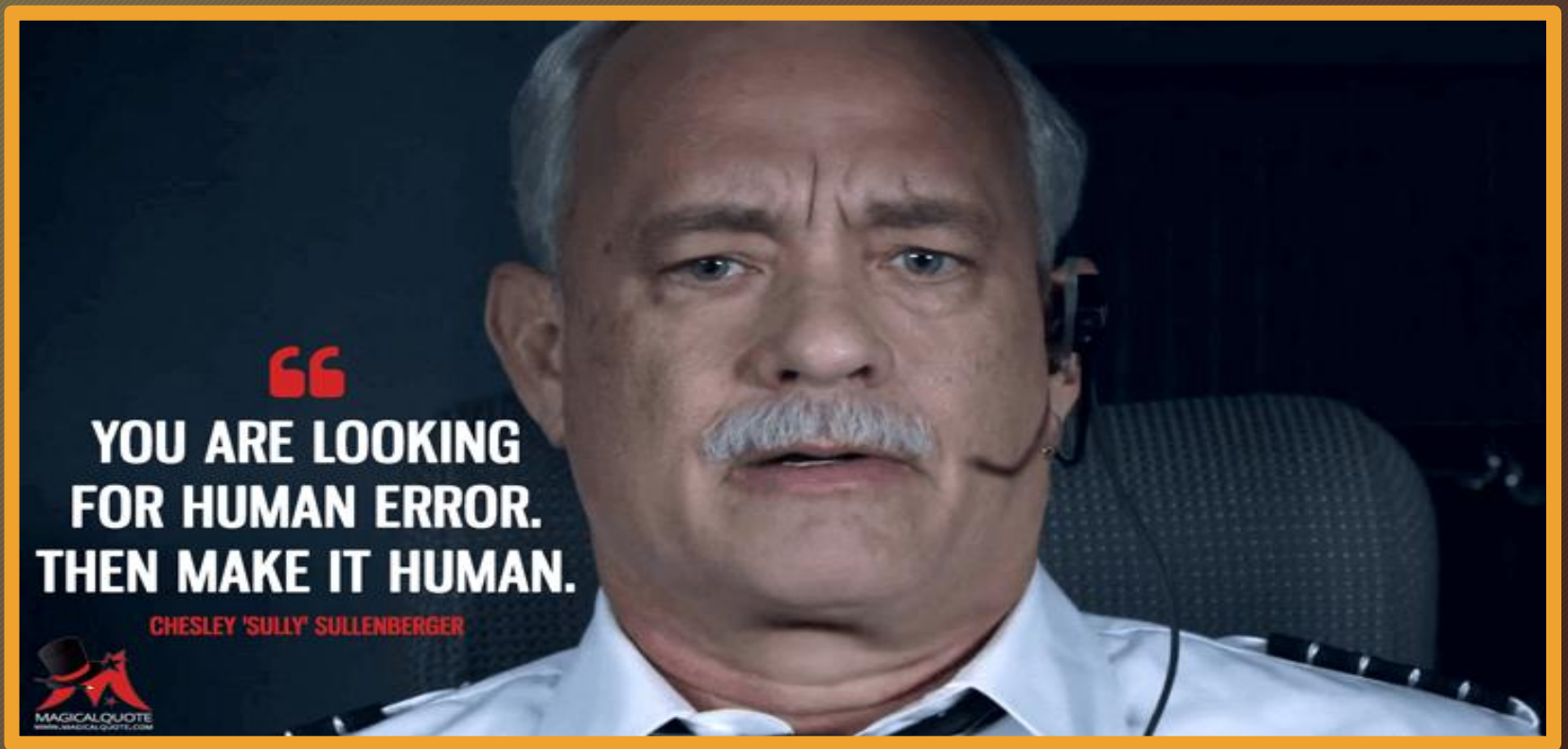
- **Gladwell, Malcolm, 1963- author.**
- **Outliers : the Story of Success.**
- **New York: Little, Brown and Company**
- **2008.**





Resources

99



THE CHECKLIST MANIFESTO HOW TO GET THINGS RIGHT · ATUL GAWANDE

2009

Challenges

Faulty memory and attention

1. ✓
 2. ✓
 3. ✓
- Skipping steps



How are Skyscrapers built?

theory + practice + aesthetics
 solve for x materials design

Master builder → specialists with checklists

Communication tasks → Who had to talk to whom, by which date, about what



The biggest cause of serious error in this business is a failure of communication.

Decentralize



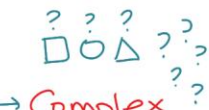
Checklists everywhere

Restaurants: Van Halen, no brown M&Ms
 Investing: Powwow



Restaurants

Investing



Verification

Checklists

Reminders

Interventions

- ✓ simple
- measurable
- ↑ transmissible benefits/ROI

antibiotic?

Cleared for Takeoff

nurse's responsibility
 scalpel

Surgery's big killers

1. infection
2. bleeding
3. unsafe anesthesia
4. the unexpected

checklists

Stop and talk through it



Becoming a team

Team huddle

Pause points

That's not my problem

Types: art critic, sponge, Prosecutor, suitor, Terminator, airline captain

Not just ticking boxes. Embracing a culture of TEAMWORK and DISCIPLINE.

Daring vs Disciplined

checklists get the dumb stuff out of the way

Normal vs "Non-normal" Good checklists: precise, efficient, short, easy to use, practical. 5-9 items, one page.

Do-Confirm vs Read-Do

- Test in the real world!
1. ✓
 2. ✓
 3. ✓

Checklists don't have to be comprehensive. Focus on the critical steps.

Getting the word out

- simple
- usable
- systematic

Good results!

Professional: selfless, skilled, trustworthy, disciplined



Final Slide – Making A check list

Last updated March 27th, 2021

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**Final Slide – Taking out the Human Factor
Last updated May 22nd, 2025**

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SEND ME YOUR CHECKLIST!!