Creating a Culture of Patient Safety: Session 2

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Objectives

- Describe the steps in performing and facilitating a Root Cause Analysis
- Develop a basic Cause Map of an event
- Explain the difference between an RCA and Cause Map

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NCPS Reporting Committee

Explanation of its purpose

How it operates

Example of events reviewed

Follow up provided to members

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Goal of an RCA

- ***What happened***
- ***Why did it happen***
- ***How to prevent it from happening again***

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The RCA Process Is:

- Inter-disciplinary, involving experts from the frontline services
- Involving of those who are the most familiar with the situation
- Continually digging deeper by asking why, why, why at each level of cause and effect
- A process that identifies changes that need to be made to systems
- A process that is as impartial as possible

From the VHA National Center for Patient Safety

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Steps in Performing an RCA

1. Gather the facts using documentation and interviews ~ develop a timeline

2. Understand what happened and why ~ construct a cause map

3. Identify root causes

4. Determine system improvements and develop a strong action plan to reduce risk

5. Evaluate the effectiveness of actions

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#1 - Gather the facts using documentation and interviews ~ develop a timeline

- ❑ Review the event timeline. Outline the story chronologically from the first known fact through the final known fact.
- ❑ Include key events that are crucial to understanding what happened.
- ❑ Stick with the facts of “what happened”

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#2 - Understand what happened and why

- Ask Why? Compare each event in the process with
  - "What normally happens?"
  - "What does policy/procedure require?"
  - "What is best practice?"
  - "What would a similar person have done? (substitution test)"
  - Ask "why" for each variation … "why…why...why?"
  - Identify opportunities or ideas about the **system** and human factors
  - Beware of hindsight bias – jumping to conclusions, thinking you know the solution before causes have been determined
  - Don't stop with "human error" – it is almost always preceded by a system cause

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Construct a Cause Map of the Event

- Why? Cause maps
  - help teams progress logically from what happened to why it happened
  - provide a visual explanation of why an incident occurred
  - connects individual cause-and-effect relationships to reveal the connection between causes and outcomes within a system
  - capture probabilistic causes (those where A increased the likelihood that B would happen). Another way to think about these is “but for" this "cause" the "effect" would not have occurred.”

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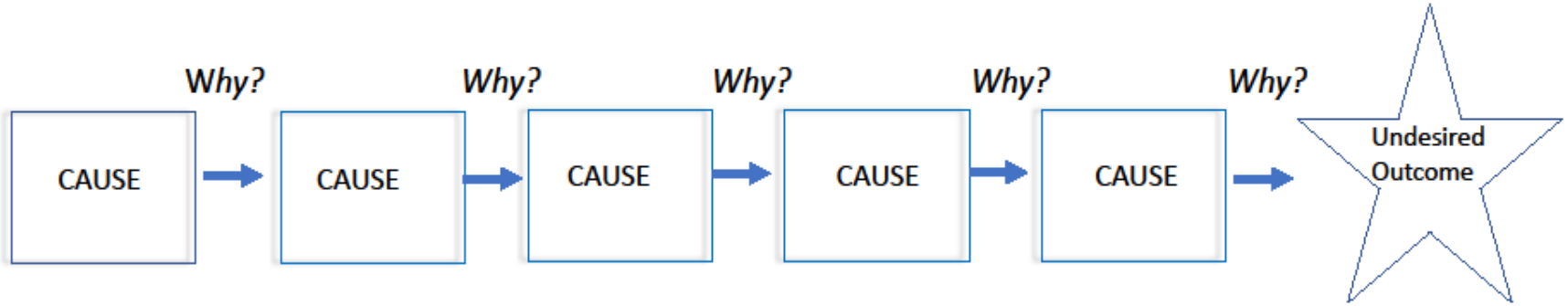
Verify You Have Correctly Identified Cause and Effect Relationships

Start on the right and read to the left saying "was caused by" in place of the arrows. In doing so you will identify errors in your thinking; it becomes apparent when a cause listed in a box to the left of another box is not the cause for the item in the subsequent box.



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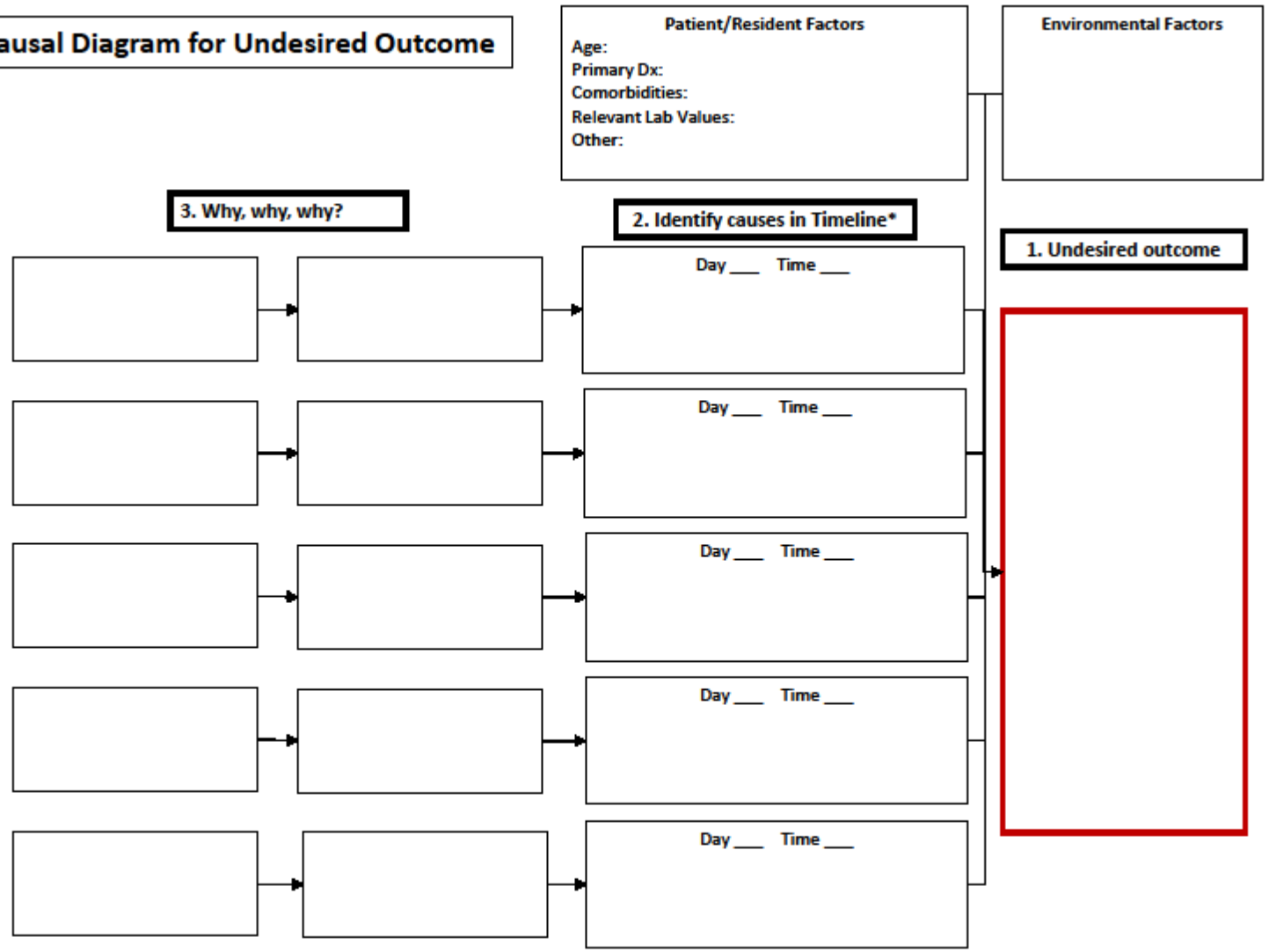
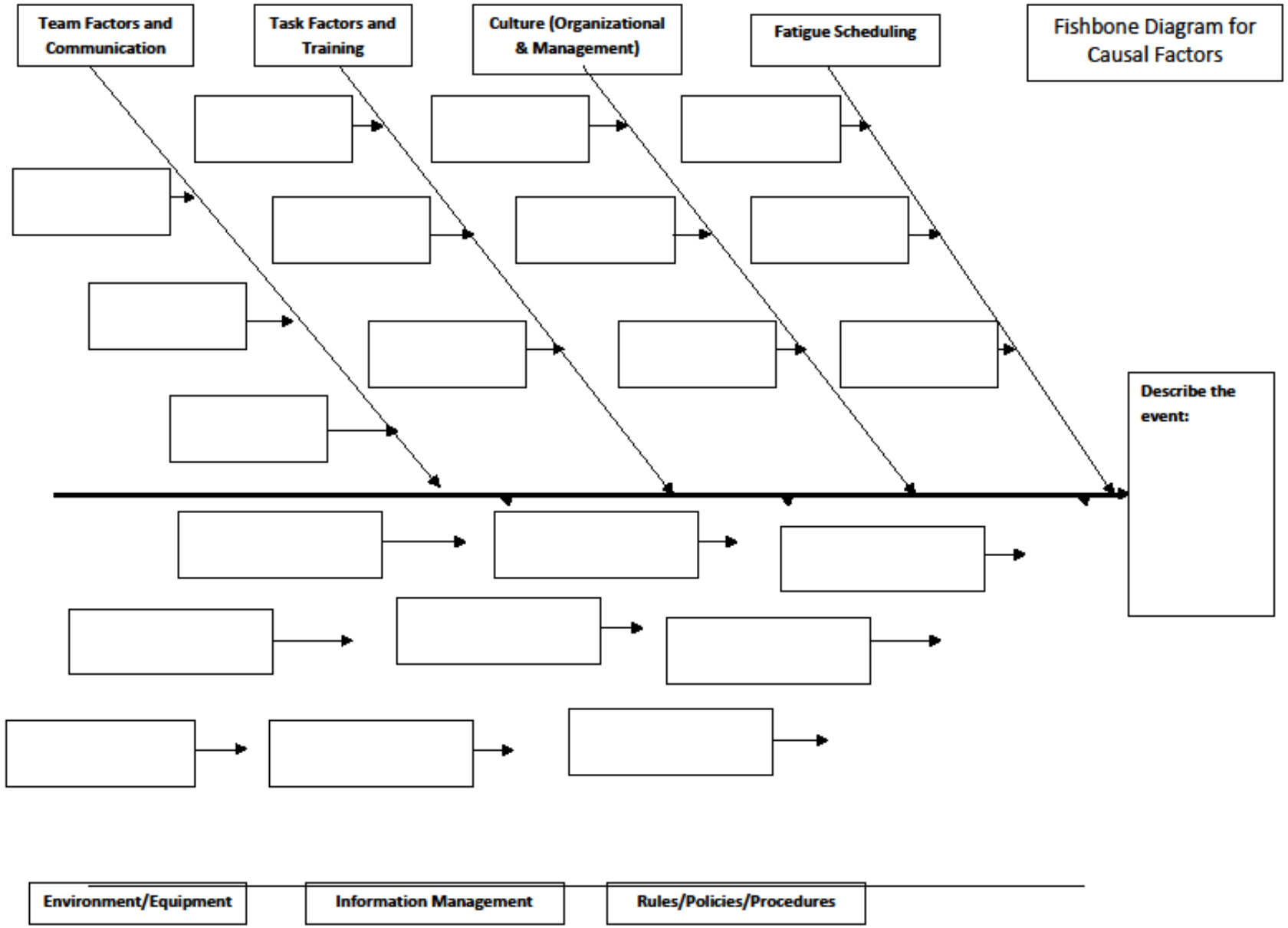
Causal Diagram for Undesired Outcome



*Events/causes in the timeline may be human errors or behavioral choices; each human error or behavioral choice should have a preceding cause that answers the question "why?"


Team Factors and Communication
Task Factors and Training
Culture (Organizational & Management)
Fatigue Scheduling
Fishbone Diagram for Causal Factors
Describe the event:
Environment/Equipment
Information Management
Rules/Policies/Procedures

How a Cause Map Differs From Fishbone Diagram

- In addition to asking why, a Cause Maps asks, "What was required to produce this effect?"
- Anything that is required to produce an effect is considered a cause.
- Provides a more complete representation of the actual issue and the interaction of the causes.
- Helps visualize the chain of events that led to the outcome. Helps identify system problems and latent conditions that were root causes of the outcome.
- Allows you to identify more potential solutions and ensure that your solutions will break the causal chain that led to the event.
- A Fishbone Diagram categorizes causes rather than mapping the chain of events that occurred to produce an undesired outcome. It can be useful in aggregate RCAs.

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#3 - Identify root causes – develop causal statements

- When you reach the end of the Whys? you should have found the root cause(s).
- A root cause is the most basic, system-related, underlying element that contributes to an undesirable event, and when removed, the condition improves.

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Differentiate between root causes and contributing factors

Ask these questions to help determine if an item is a root cause or a contributing factor:

- Would the event have occurred if this cause had not been present?
- Will the problem recur if this cause is corrected or eliminated?

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Joint Commission Top 10 Root Causes for Sentinel Events Reported 2004 - 2014

- Human factors
- Leadership
- Communication
- Assessment
- Physical environment
- Information management
- Care planning
- Health information technology-related causes
- Operative care
- Continuum of care

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#3 - Identify root causes – develop causal statements

definition: causal statement

A statement which links the causes an RCA2 identifies to the effects and then back to the main event that prompted the RCA2 in the first place.

It consists of three parts:

1. The cause: "This happened…"
2. The effect: "… which led to something else happening…"
3. The event: "… which caused this undesirable outcome."

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Casual Statement Example

Event: Patient did not receive home medications for 5 days.

Statement: The lack of a policy to reconcile home medications with the physician's admitting orders resulted in the absence of an initial order for administration of specific home medications, which increased the likelihood that the home medications were omitted for five days after surgery.

Format:

The lack of _____
resulted in _____;
which increased the likelihood that _____.

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Rules of Causation With Specific Examples

- **Rule #1**: Clearly show the "cause and effect" relationship.

  Not in compliance with rule: A resident was fatigued.

  In compliance with rule: Residents are scheduled 80 hours per week, which led to increased levels of fatigue, increasing the likelihood that dosing instructions would be misread.

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Rules of Causation With Specific Examples

- **Rule #2**: Use specific and accurate descriptors for what occurred, rather than negative and vague words.

  Not in compliance with rule: The poorly written manual increased the likelihood that a pump would be programmed incorrectly.

  In compliance with rule: The pump manual had 8-point font and no illustrations; as a result, nursing staff rarely used it, increasing the likelihood that the pump would be programmed incorrectly.

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Rules of Causation With Specific Examples

- **Rule #3**: Human errors must have a proceeding cause – system or human factors

  Not in compliance with rule: A resident was fatigued.

  In compliance with rule: Residents are scheduled 80 hours per week, which led to increased levels of fatigue, increasing the likelihood that dosing instructions would be misread

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Rules of Causation With Specific Examples

- **Rule #4**: Violations of procedure are not root causes and must have a preceding cause.

  Not in compliance with rule: The techs did not follow the procedure for CT scans, which led to the patient receiving an air bolus from an empty syringe, resulting in a fatal air embolism.

  In compliance with rule: Noise and confusion in the prep area, coupled with production pressures, increased the likelihood that steps in the CT scan protocol would be missed, which led to the injection of an air embolism from using an empty syringe.

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Rules of Causation With Specific Examples

- **Rule #5**: Failure to act is only causal when there is a pre-existing duty to act

  Not in compliance with rule: The nurse did not check for STAT orders every hour, which led to a delay in the start of anticoagulation therapy, increasing the likelihood of a blood clot.

  In compliance with rule: The absence of an assignment for designated RNs to check orders at specified times, led to STAT orders being missed or delayed, which increased the likelihood of delays for patients needing immediate

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#4 - Determine system improvements and develop a strong action plan to reduce risk

- The corrective action plan must address the following:
  - Identifying corrective actions to eliminate or reduce system hazards or vulnerabilities directly related to causal and contributory factors
  - Identifying who is responsible for implementing corrective action
  - Determining timelines to complete corrective actions
  - Developing strategies to evaluate the effectiveness of the corrective actions
  - Developing strategies to sustain the change

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#4 - Determine system improvements and develop a strong action plan to reduce risk (cont.)

- ❑ Utilize a strength of action tool to ensure you have identified strong actions that provide effective and sustained system improvement

- ❑ Identify at least one intermediate or stronger action to eliminate or mitigate system hazards or vulnerabilities identified in the comprehensive systematic analysis.

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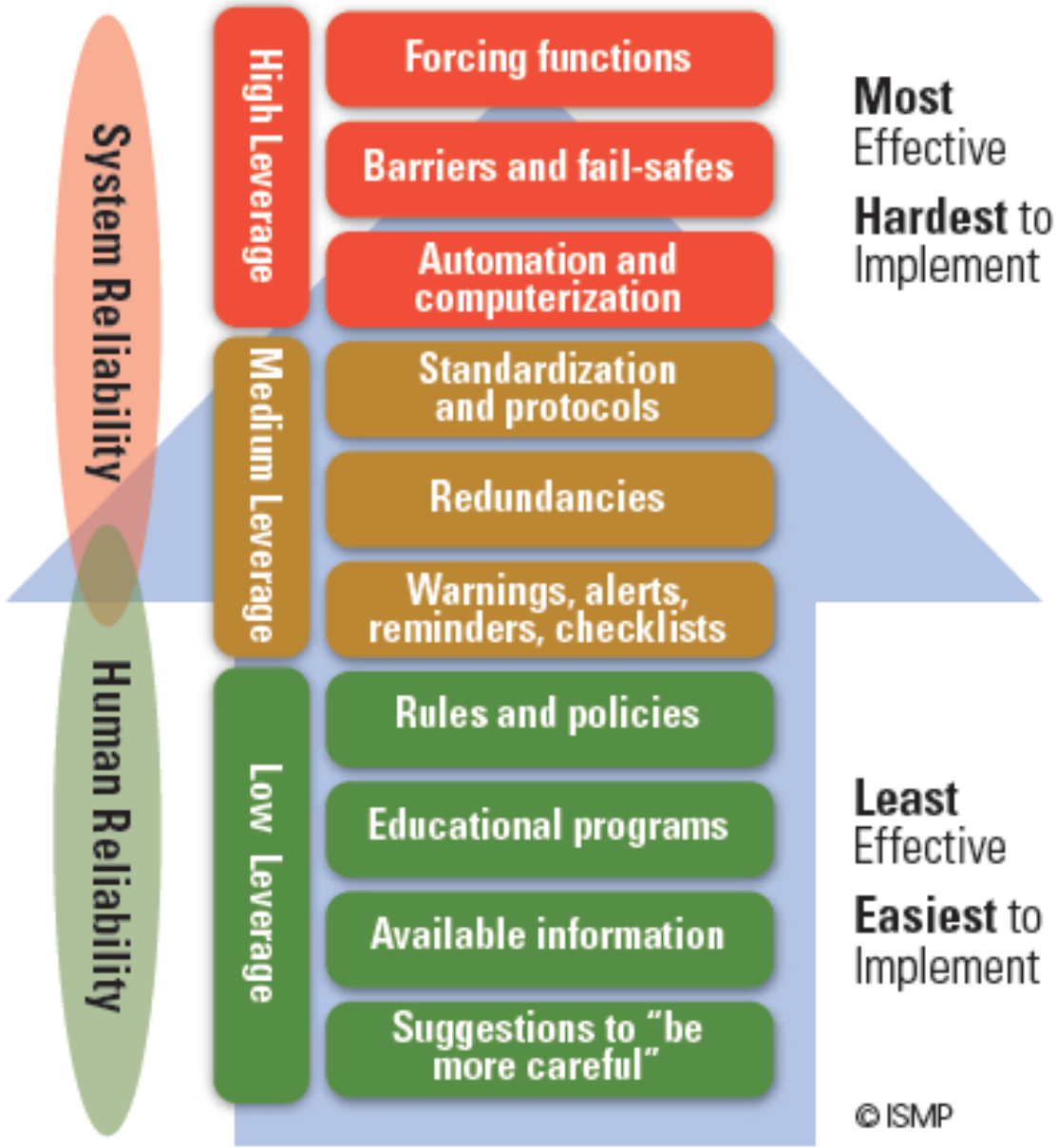
Hierarchy of Risk Reduction Strategies



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Action Hierarchy Tool

LESSER

Reliance On Humans to Perform Correctly

GREATER

	Action Category	Example
Stronger Actions	Architectural/ physical plant changes	Replace revolving doors at the main patient entrance into the building with powered sliding or swinging doors to reduce patient falls.
	Tangible involvement by leadership	Participate in unit patient safety evaluations and interact with staff, support the RCA[2] process; purchase needed equipment; ensure staffing and workload are balanced.
Intermediate Actions	Redundancy	Use 2 RNs to independently calculate high-risk medication dosages
	Eliminate/reduce distractions	Provide quiet rooms for programming PCA pumps; remove distractions for nurses when programming medication pumps
	Education using simulation-based training, with periodic refresher sessions and observations	Conduct patient handoffs in a simulation lab/environment, with after action critiques and debriefing.
	Checklist/cognitive aids	Use pre-induction and pre-incision checklists in operating rooms. Use a checklist when reprocessing flexible fiber optic endoscopes.
Weaker Actions	Double checks	One person calculates a medication dose, a second person checks their calculation.
	Warnings	Add audible alarms or caution labels
	New procedure/memorandum/policy	Remember to check IV sites every 2 hours
	Training	Demonstrate correct usage of hard-to-use medical equipment

Adapted from the Betsy Leman Center, Action Hierarchy Tool

CAUSAL STATEMENTS AND ACTION PLAN

1.	CAUSAL STATEMENT:				
	ACTION PLAN				
	WHAT (Action Item)	**WHO** (Owner)	**WHEN** (Date to be implemented/completed)	**MEASURE** (What data is to be measured, STRUCTURE, PROCESS, OUTCOME, how, when, and target goal)	**FOLLOW-UP** (When will you check to see if the action has been implemented and the data? How will you know the action is effective?)
1.1					
1.2					
1.3					
etc					

Criteria for Thoroughness – Analysis Must Include

- Determination of human and other factors
- Determination of related processes and systems
- Analysis of underlying cause and effect systems through a series of **why** questions
- Identification of risks and their potential contributions
- Determination of potential improvement in processes or systems

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Criteria for Credibility – Analysis Must:

- Be clear (understandable information)
- Be accurate (validated information and data)
- Be precise (objective information and data without internal inconsistencies)
- Be relevant (focus on issues related or potentially related to the event)
- Be complete (cover all causes and potential causes)
- Be systematic (methodically conducted)
- Possess depth (ask and answer all of the relevant "Why" questions and explain any "not applicable" findings
- Possess breath of scope (cover all possible systematic factors wherever they occur)
- Reflect diverse perspectives (include a process owner or designee, a patient or family member when appropriate, and individuals close to the process under review

From Joint Commission

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Criteria for Action Plan to Be Acceptable – Analysis Must:

- Identify changes that can be implemented to reduce risk, or formulate a rationale for not undertaking such changes
- Identify, in situations in which improvement actions are planned, the following:
  - Who (by title) is responsible for implementation
  - When the action will be implemented (including any pilot testing)
  - How the effectiveness of the actions will be evaluated
  - How the actions will be sustained
  - The point at which alternative actions will be considered if improvement targets are not met
  - At least one stronger- or intermediate-strength action

From Joint Commission

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Indications Your RCA Process May Need Review and Revision

- ❑ No contributing factors are identified, or there is a lack of supporting data or information for the contributing factor identified.
- ❑ Human error is listed as a causal factor; blame is directed at one or more individuals.
- ❑ Causal statements are not in alignment with the Five Rules of Causation.
- ❑ No corrective actions are identified.
- ❑ Corrective actions are not directed at system vulnerabilities identified by the contributing factors.

http://www.ihi.org/resources/Pages/Tools/RCA2-Improving-Root-Cause-Analyses-and-Actions-to-Prevent-Harm.aspx

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Communicate your action plan to inform all stakeholders and participants of the RCA team

- Who needs to know the action plan and system changes?
- Who will communicate the action plan and system changes?
- How will the communication occur?
- Ensure communication throughout organization focuses on system improvement.
- Report event and RCA results to Nebraska Coalition for Patient Safety (if you are a member)

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#5 - Evaluate effectiveness of actions

- When will you evaluate to determine that all improvements/actions have been implemented?
- How will you measure effectiveness?
- How will the team remain involved in the evaluation?
- Don’t give up! Keep the PDSA cycle going!

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Event #1

Case Information:
An elderly female patient with a diagnosis of osteopenia was scheduled for a total knee replacement. She had been independent at home and reported to the hospital for surgery at 4am the day of surgery. During the hospital admission process she expressed being anxious about the surgery.

Surgery went well and after a few hours in the PACU she was returned to her room on the Med/Surg floor. Hourly rounding was performed by nursing throughout the night and at 0350 the patient was found lying on the floor. Using a gait belt, two nurses assisted the patient to a recliner in the room.

The patient's RN notified the provider on duty of the patient's fall. The provider on duty saw the patient and discontinued the oxycodone.

The day shift provider notified the orthopedic surgeon of the fall and ordered x-rays. The x-ray confirmed a fracture above the surgical site, same extremity. A few hours later the patient was taken to the OR for a repair of the fracture.

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Event #1 - Additional Information from Review of Documentation and Interviews with Staff Involved in Patient's Care

- Pre-operatively patient was given oxycodone
- A spinal and femoral block were administered in the OR suite
- Patient was given Benadryl 6.25 mg in the PACU
- Scheduled narcotics were ordered
- There were conflicting activity orders on the patient's chart

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Event #1: Timeline Developed

1254	FRASS fall risk assessment performed; indicated a 9 (moderate) fall risk.
1900	Nursing shift change
2003	FRASS fall risk assessment performed; indicated a 12 fall risk (later it was discovered this was incorrect, it was 21)
2359	Tramadol administered
0200	Nurse rounding - Patient sleeping
0300	Nurse rounding - Patient sleeping
0350	Nurse rounding - Patient found on the floor
0410	RN notifies provider on duty. Two RNs assist patient to recliner with gait belt
0500	Patient family arrives. Daughter states that patient is normally confused at night
0600	Provider on duty sees patient and discontinues oxycodone
0800	Day shift provider notifies Orthopedic Surgeon and orders x-rays
	X-rays confirm a fracture above the surgical site, same extremity
13:00	Patient returned to OR for fracture repair

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Next Steps

- ❑ How would a Cause Map of this event look?
- ❑ What causal statement(s) were discovered in your analysis?
- ❑ What would you include in your corrective Action Plan?
- ❑ How will you measure the success of your Action Plan?
- ❑ How will you communicate this information to RCA team members and all stakeholders?

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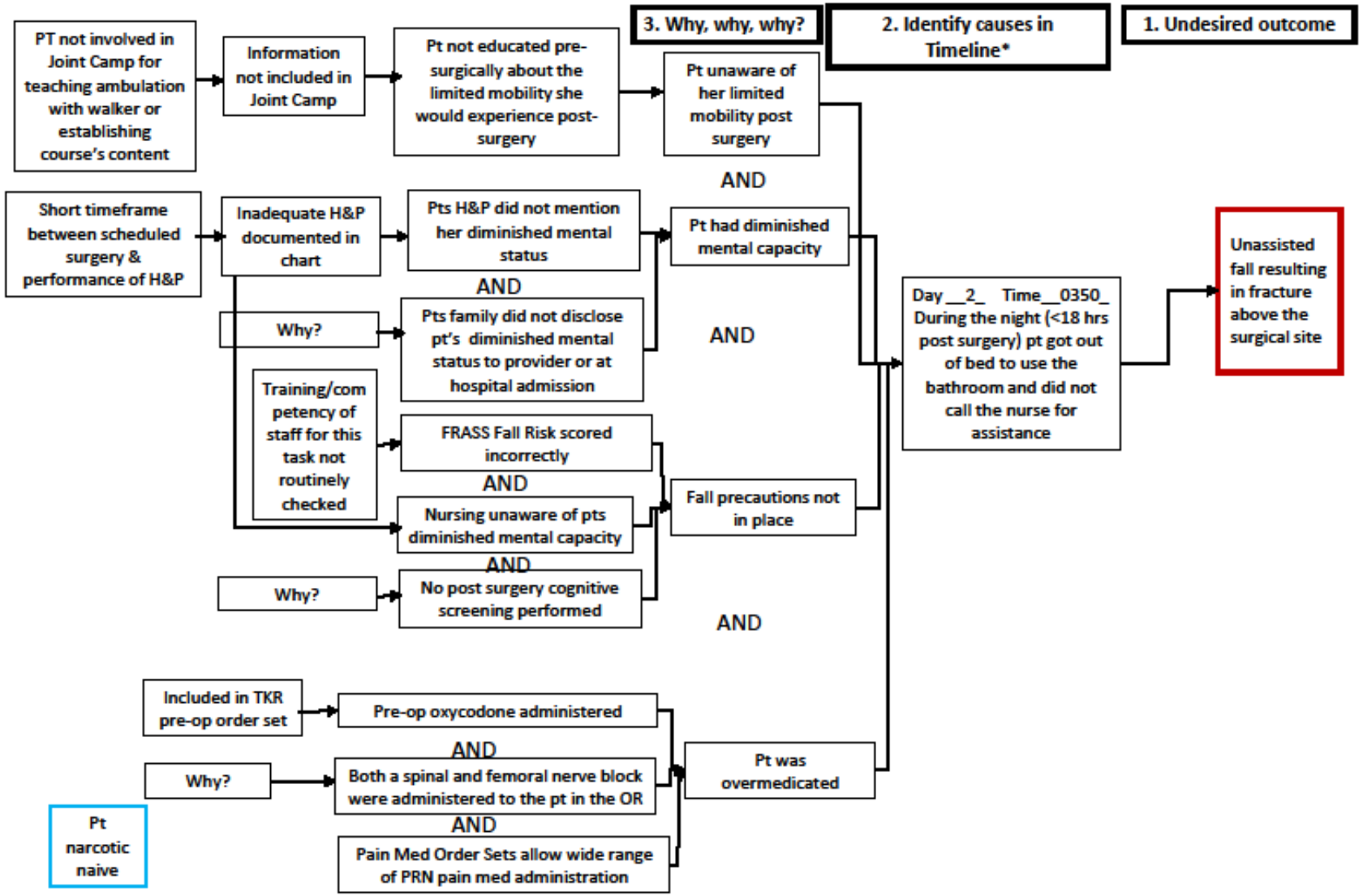
Event #1 October 2022

Patient/Resident Factors
Age: 83
Primary Dx: Total Knee Replacement Surgery
Comorbidities: Osteopenia
Relevant Lab Values:
Other:

Environmental Factors
- Lives independently in her own home
- Hospital is an unfamiliar environment for pt



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Causal Statements for Event #1

- The lack of recognition of the patient's diminished mental status resulted in the absence of adequate fall reduction strategies being implemented which increased the likelihood of a fall.
- The lack of patient pre-op education regarding the limited function and feeling she would experience post operatively resulted in the patient not asking for assistance when toileting which increased the likelihood of a fall.
- The lack of nursing's recognition of the effects of narcotic medications on a patient's mental capacity increased the likelihood of a fall.

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CAUSAL STATEMENTS AND ACTION PLAN

1.	CAUSAL STATEMENT: The lack of recognition of the patient's diminished mental status resulted in the absence of adequate fall reduction strategies being implemented which increased the likelihood of a fall.				
ACTION PLAN					
	WHAT (Action Item)	WHO (Owner)	WHEN (Date to be implemented/completed)	MEASURE (What data is to be measured, STRUCTURE, PROCESS, OUTCOME, how, when, and target goal)	FOLLOW-UP (When will you check to see if the action has been implemented and the data? How will you know the action is effective?)
1.1	H&P's to be completed one week before scheduled procedure to provide ample time to local provider's review of patient chart	CMO	Within 30 days	- 95% of pre-op H&P's completed and on patients' charts 1 week prior to scheduled surgery - Monitor weekly for first 30 days and then report quarterly for first year	In 60 days verify audits are being performed and the goal of 95% is being achieved.
1.2	Implement use of post-surgery cognitive screening tool	CNO & Therapy Services Director	Within 90 days	- 95% of surgical patients receive a post-surgery cognitive screen	In 60 days verify audits are being performed and the goal of 95% is being achieved.
Etc.					

CAUSAL STATEMENTS AND ACTION PLAN

CAUSAL STATEMENTS AND ACTION PLAN

2.	**CAUSAL STATEMENT: The lack of patient pre-op education regarding the limited function and feeling she would experience post operatively resulted in the patient not asking for assistance when toileting which increased the likelihood of a fall.**

ACTION PLAN

	WHAT (Action Item)	**WHO** (Owner)	**WHEN** (Date to be implemented/completed)	**MEASURE** (What data is to be measured, how, when, and target goal)	**FOLLOW-UP** (When will you check to see if the action has been implemented and the data? How will you know the action is effective?)
2.1	Review of Joint Camp curriculum and revision to include patient education regarding: a. Regional blocks result in reduction in ability to ambulate independently and need to ask nursing for assistance b. Receipt of post-surgery narcotics often result in confusion or increased confusion	CNO & Therapy Services Director	Within 90 days	Using "teach back" as the check, 95% of patients can state their understanding of their mobility limitations post-surgery	In 120 days, verify audits are being performed and the goal of 95% is being achieved.
2.2					
etc					

CAUSAL STATEMENTS AND ACTION PLAN

3.	**CAUSAL STATEMENT: The lack of nursing's recognition of the effects of narcotic medications on a patient's mental capacity increased the likelihood of a fall.**

ACTION PLAN					
	WHAT (Action Item)	**WHO** (Owner)	**WHEN** (Date to be implemented/completed)	**MEASURE** (What data is to be measured, how, when, and target goal)	**FOLLOW-UP** (When will you check to see if the action has been implemented and the data? How will you know the action is effective?)
2.1	Provide nursing education regarding narcotic administration onset, peak, and duration	CNO & Pharmacy Director	Within 45 days	1. 100% of staff have completed the education 2. education has been incorporated into new hire orientation	In 60 days verify 100% of staff have completed the education and the information has been incorporated into new hire orientation.
2.2					
etc					

CAUSAL STATEMENTS AND ACTION PLAN

Additional Process Improvement Opportunities for Event #1

- ❑ Information Provided to Nursing at Monthly Staff Meetings
- Order sets revised to include High Fall Precautions and Pain Management added to pre-op patient preparation
- Expectation that two RN's will be available to assist patient with activity
- Pasero sedation scale will be incorporated into nursing practice
- FRASS fall risk scale will be included in skills day to assist nursing with pe-op evaluation of all patients
- Gait belts will be used at all times by nursing personnel
- Bed alarms re-established use of
- Occuvera patient monitoring added to post-op order set for post-op total knees

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Additional Process Improvement Opportunities for Event #1

- ❑ Additional Physical Therapy modalities will be incorporated into TKR

- ❑ Pain Medication Management
  - PRN pain meds options have been reduced in the order sets
  - Range orders have been removed from order sets (Med Staff approved)
  - PRN pain med orders have parameters for administration
  - Patient to be discharged with least amount of pain meds needed unless determined otherwise by provider
  - Administration of femoral blocks has been discontinued

- ❑ Staffing
  - Minimum staffing with three RN's 24/7 is now required
  - Staffing policy updated to reflect
  - Two additional positives approved to support this change

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Reflection, Discussion, Q&A

What one thing did you learn?

How can you use the concepts we talked about today to improve your own organization's RCA process?

How can your organization increase the number of RCAs performed? Is it feasible to do one per quarter? Do you see the value of performing them on near miss events?

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References

1. National Patient Safety Foundation, *RCA2 Improving Root Cause Analyses and Actions to Prevent Harm*. (2016). Available at: https://www.ihi.org/resources/Pages/Tools/RCA2-Improving-Root-Cause-Analyses-and-Actions-to-Prevent-Harm.aspx
2. Betsy Lehman Center, *Action Hierarchy Tool*; Available at: https://navigator.betsylehmancenterma.gov/pages/action-hierarchy-tool?msclkid=3f0ae801b12711eca0a5faf77d150aba
3. Joint Commission, *Sentinel Event Policy.* (2022). Available at: https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/sentinel-event-policy/camh_24_se_all_current.pdf
4. United States Department of Veterans Affairs; *Root Cause Analysis.* (2022). Available at: https://www.patientsafety.va.gov/professionals/onthejob/rca.asp
6. Joint Commission, *Sentinel Event 60 – Developing a learning culture: learning from near misses and hazardous conditions.* (2018). Available at: https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/sea_60_reporting_culture_final.pdf

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Homework

- ❑ Begin a mini-RCA or Cause Map of an event experienced within your organization (optional due date by end of Session #5)

- ❑ Reach out to us if you questions
  carlasnyder@unmc.edu
  embarr@unmc.edu

- ❑ Send to us for our review when completed or if you get “stuck”

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Post Session Zoom Survey

Please respond to the following statements whose responses are formatted with the Likert scale of strongly disagree to strongly agree.

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Thank You

"For every effect there is a root cause. Find and address the root cause rather than try to fix the effect, as there is no end to the latter."

Celestine Chua founder of Personal Excellence

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