Risk Management in Healthcare

Dr. Israa Al-Rawashdeh MBBS,MPH,PhD

Faculty of Medicine, Mutah University

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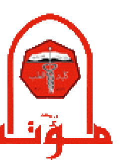
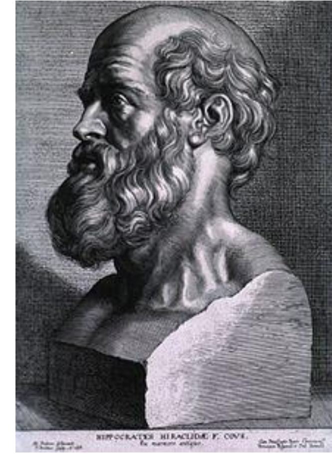


First, Do Not Harm

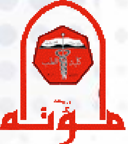
- Primum non nocere (**Hippocratic Oath**)



Yet, in real-world healthcare….

Things can go wrong sometimes!

→ Why does harm still happen?



DEFINITIONS

PROBABILITY

The **likelihood** that an event will occur.

HAZARD

A **potential** source of harm.

RISK

The **possibility** that an event or action will negatively affect the achievement of desired outcomes.

HAZARD vs. RISK

HAZARD

A hazard is something that has the potential to cause harm.

A shark in the ocean is a hazard.

VS.

RISK

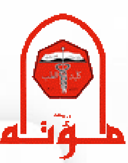
Risk is the probability that a hazard will cause harm.

Swimming with a shark is a risk.

EXAMPLE

Probability	Hazard	Risk
Wet floor	Slippery surface	Patient fall

Understanding the difference between hazard and risk is the first step in **preventing harm** and **improving patient safety**.



Factsheet

Risk of dying while travelling by airplane

= 1 in 3 million

Risk of patient death occurring due to a preventable medical accident, while receiving health care

= 1 in 300

Risk of a patient being harmed while receiving hospital care

= 1 in 10

(WHO, 2023)

Healthcare harm is a major global patient safety challenge.

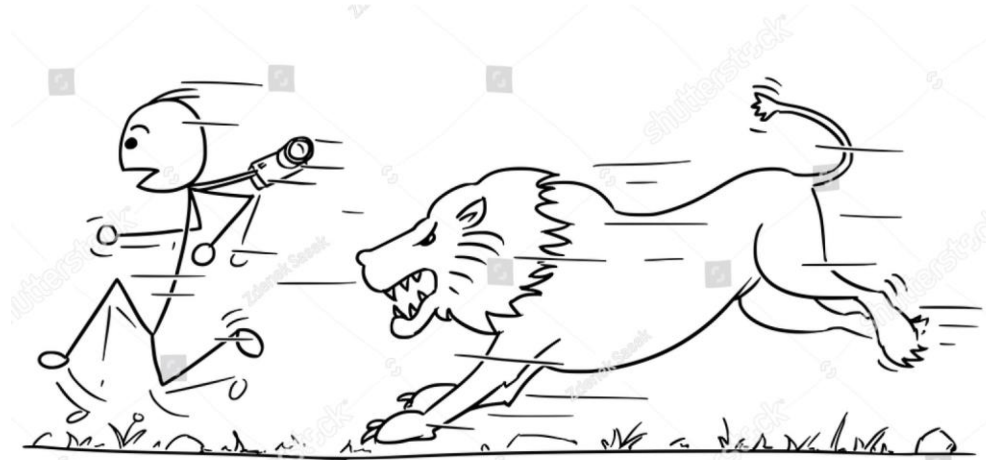
Risk management

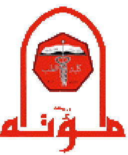
- A systematic approach to identifying, assessing, and reducing risks in healthcare.
- There are two ways :

Reactive vs proactive

1. Reactive: Responding after harm occurs, it is **a response-based** approach to **risk**.
2. Proactive : a plan to **prevent** harm before it occurs.

Effective systems shift from reactive to proactive approaches.





Objectives of Healthcare Risk Management

Patient Safety: Prevent harm and improve outcomes

Financial Protection: Reduce losses and legal costs

Legal Compliance: Adhere to laws and regulations

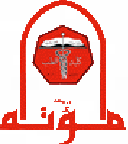
Quality Improvement: Learn from errors and improve systems

Reputation Protection: Maintain trust in healthcare services

RISK MANAGEMENT STEPS

Risk management process uses a five step management decision-making model.

Source: https://survey.charteredaccountantsanz.com/risk_management/small-firms/identify.aspx



Step 1: Establish the Context

External Factors: conditions that the health system usually cannot influence

- Market trends
- Policy changes
- Economic conditions

Internal Factors: conditions that the health system usually can control

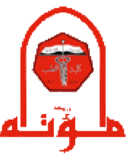
- Organizational structure
- Staffing and resources
- Compliance requirements

Strengths (Internal)	Weaknesses (Internal)
• Skilled staff	• Old-fashioned equipment
• Strong finances	• Staff shortages

Opportunities (External)	Threats (External)
• New funding programs	• Policy changes
• Tech partnerships	• Economic downturn

Why it matters? Understanding the context helps identify relevant risks and design effective strategies for your healthcare organization.

Step2: Identify Risks



- Risk identification involves recognizing potential sources of harm in healthcare settings.
- → What can go wrong?
- The risks identified are entered in the Risk Management Tool (RMT) *(See next slide)*

RISK

Risk Management Tool in healthcare

1-5	Low risk
6-12	Medium risk
15-25	High Risk

Department

System/Process

Risks Identified	Date risk identified	Causes	Current Controls in the system	Likelihood (L) (score 1 to 5)	Impact Severity (S) (Score 1 to 5)	Overall Risk Rating R= L X S (High, Medium, Low)	Risk Response Strategy (Accept, Control, Transfer, Avoid)	Actions required	Responsible person/s	Resources required	Due Date for actions	Post treatment Likelihood (L) score 1 to 5	Post treatment impact severity (S) score 1 to 5	Post-treatment Risk score (High, medium, low)	Review date	Contingency plan (What will you do if the risk really happens?)
				4	5	20						1	4	4		
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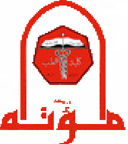
Figure 2: Risk Management Tool in healthcare.



Types of Healthcare Risks:

	Type	Description	
1.	**Clinical Risks**	**Risks affecting patient care.** (e.g., medication errors, infections, surgical complications)	
2.	**Operational Risks**	**Failures in processes and systems.** (e.g., staffing shortages, equipment failure, scheduling errors)	
3.	**Financial Risks**	**Threats to financial stability.** (e.g., billing errors, budget deficits, increasing healthcare costs)	
4.	**Legal and Regulatory Risks**	**Non-compliance with laws and regulations.** (e.g., malpractice, privacy violations, failure to meet accreditation standards, lawsuits for regulatory non-compliance)	

Which risk scares you most as a future doctor?

Step 2: Identify Risks

HEALTH & SAFETY

Understanding Risks

Cause – The underlying factor leading to a risk event.

Consequence – The outcome if the risk occurs.

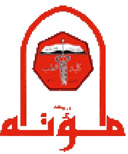
A single cause may lead to **multiple risks**, and one risk may result in **multiple consequences**.

One small mistake can lead to **serious consequences.**

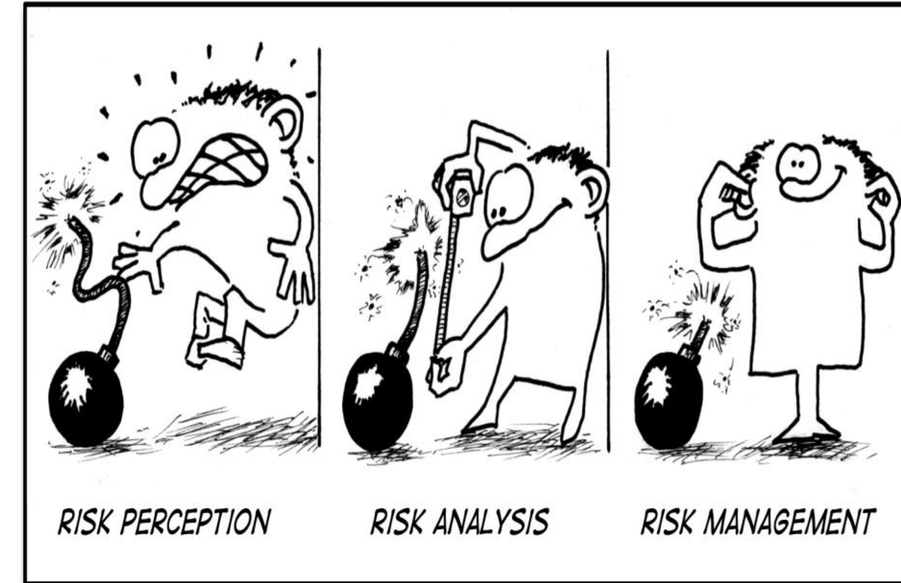
At Risk to Fall

Remember: Identifying the **root cause** is key to preventing future harm.

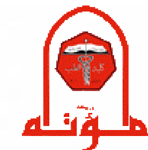
Step 3: Analyze and Evaluate Risks



1. Identify root causes
2. Assess risk level (likelihood × severity)
3. Evaluate existing controls
4. Determine residual risk (Calculate remaining risk after controls)



Step 2: What can go wrong?
Step 3: How serious is it?



Root Cause Analysis (RCA):

Tool: Fishbone diagram

A systematic method to identify the underlying causes of adverse events.

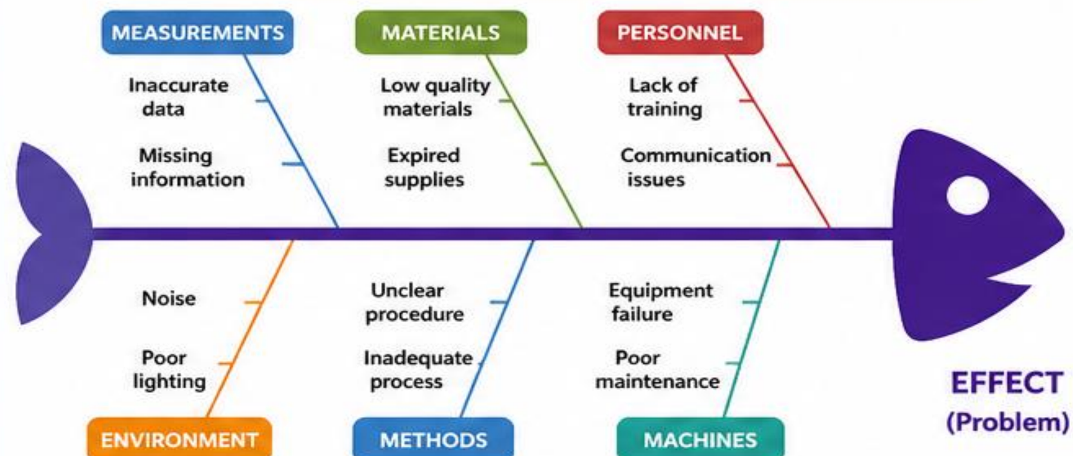
Goal: Prevent recurrence by addressing the root cause at the most cost-effective way.

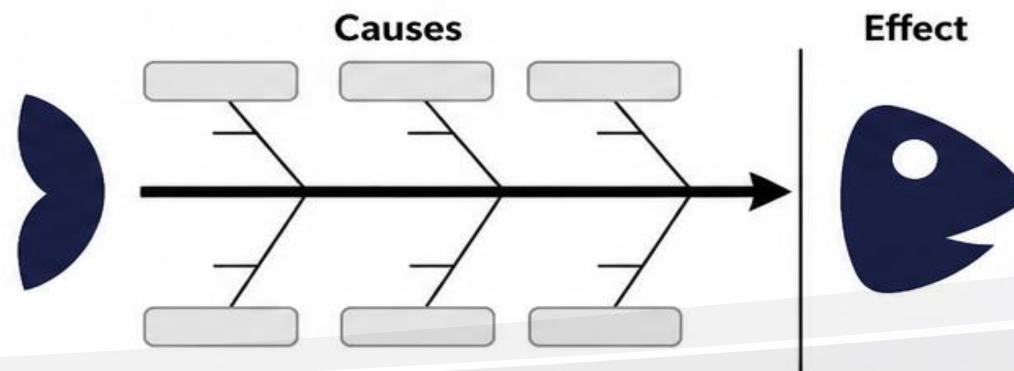
Best Method: Brainstorming

A root cause: A fundamental factor that, if removed, prevents recurrence.
Example: Broken alarm system → Patient fall

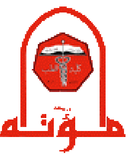
A causal factor: A contributing factor but not the main cause. Removing causal factors can still improve outcomes but may not prevent recurrence with certainty.
Example: Staff fatigue + poor lighting → Same fall event

Some problems have multiple root causes.

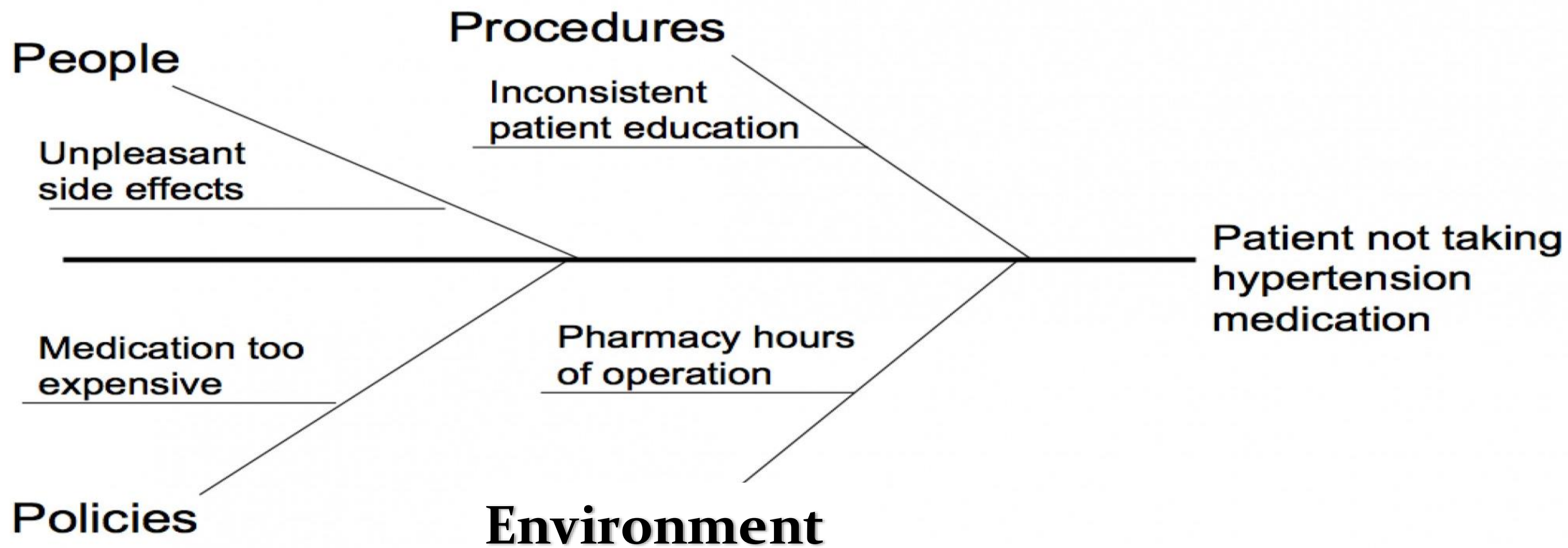




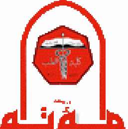
Identifying the **root cause**, not just the symptoms, is the key to **preventing future harm**.



RCA example:



Adapted from King, Q.L. (2006). *Quality Management in Healthcare* (2nd ed.).



Risk Assessment Types:

Quantitative:

- Uses numerical data and statistical models
- More accurate but complex

Qualitative:

- Categorization based on experience and judgment
- Useful when data is limited (subjective rating system)

Categories:

- Low risk
- Medium risk
- High risk

Quantitative risk assessment example

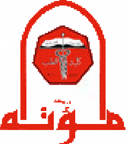
EVENT	LIKELIHOOD (0–1)	IMPACT (0–1)	RISK SCORE (0–1)
Fire in data center	0.7	0.9	0.63
Loss of power	0.5	0.8	0.40
Staff illness	0.6	0.5	0.30
Water leak	0.3	0.5	0.15
Employee forgets to log off	0.6	0.3	0.18

Risk Score = Likelihood × Impact
Range: 0 (no risk) to 1 (maximum risk)

Medication Error Risks

Risk Event	Probability	Severity (Cost)	Total Risk
Wrong dose administered	0.7	$90,000	$63,000
Missing allergy check	0.5	$80,000	$40,000
Labeling error	0.3	$50,000	$15,000

Total Risk = Probability × Severity (Cost)



Step 3: Analyse & Evaluate Risks

Risk assessment: Determine the Risk Level

Risk Score = Likelihood × Severity

Used to **prioritize risks** and guide **decision-making**.

Example

Likelihood
How likely is it to happen?
(1 – 5)

×

Severity
How severe would the impact be?
(1 – 5)

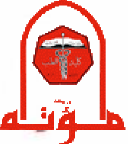
=

Risk Score
Prioritize and take action
(1 – 25)

Risk Score Guide

	Score	Level
	> 15	**High Risk** – Immediate action
	6 – 15	**Medium Risk** – Mitigation required
	≤ 5	**Low Risk** – Monitor

The higher the score, the **higher the priority.**



Likelihood

Severity of impact (S)

- Based on the expertise, knowledge!
- Generally the higher the degree of controls existed, the lower the likelihood.
- 1–5 score

Risk score (R) =
Likelihood (L) × Severity (S)

LIKELIHOOD

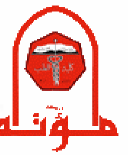
The probability of risk occurring, say within the next twelve months, that can be expressed in terms of a percentage between 0% and 100%.

Rating		Frequency	Probability	Example in Healthcare
5	Almost Certain	Monthly+	>90%	Medication errors in busy ED
4	Likely	Several times/year (bimonthly)	50–90%	Patient falls in geriatric ward
3	Possible	Yearly <2 years	10–< 50%	Wrong-site surgery (with checks)
2	Unlikely	Every 2–5 years	5–10%	MRI technical incident
1	Rare	< Once in 5 years or more	<5%	Hospital fire

Tip: Stronger controls = Lower likelihood

Severity of impact (S)

Risk score (R) = Likelihood (L) × Severity of impact (S)



SCORE	IMPACT DESCRIPTION	PATIENT CARE CONSEQUENCES	ORGANIZATIONAL IMPACT	EXAMPLE
5 Catastrophic/ extreme	Death/permanent disability	Care completely affected	Major lawsuits, accreditation loss	Wrong-patient surgery
4 Major	Long-term harm	Longer hospitalization	Significant financial losses	Hospital-acquired infection
3 Moderate	Temporary harm (>1 week)	Additional treatments	Localized corrective actions	Medication error (caught early)
2 Minor	Temporary discomfort	Minimal intervention	Department-level review	Short delay in non-urgent care
1 Negligible	No measurable harm	No impact	Documentation only	Near-miss with no consequences

The scoring ranges from 1 (Negligible impact) to 5 (Extreme impact).

Risk Impact Areas

People

Economic

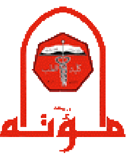
Information

Property

Reputation

Capability

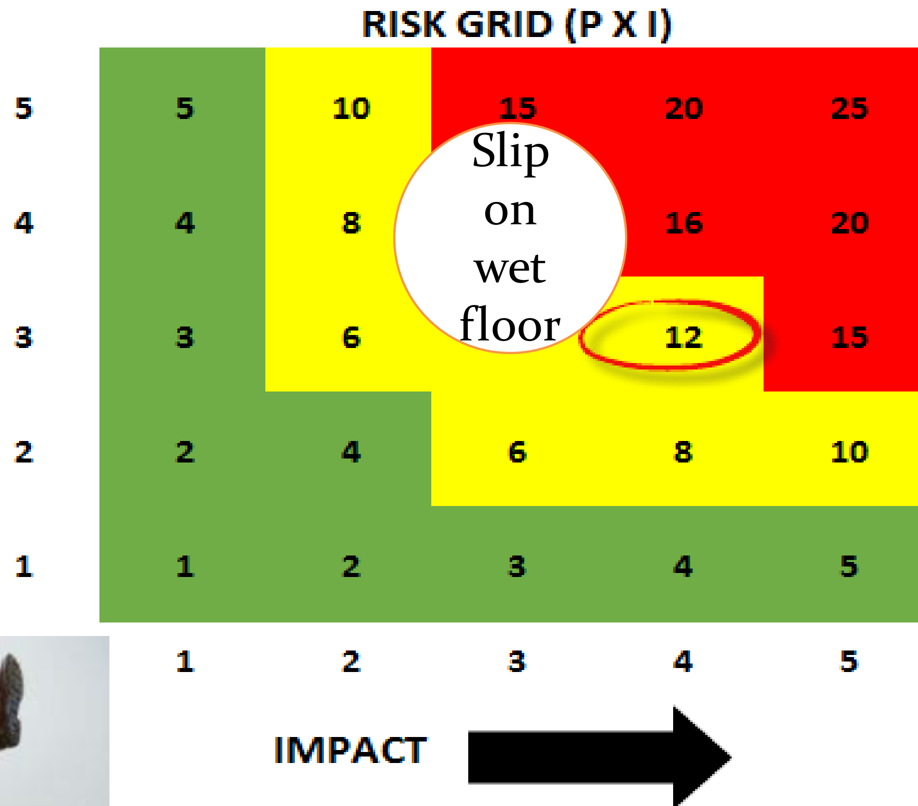
Tip: Higher severity = Higher potential impact and higher priority for action.

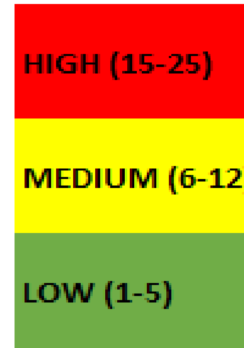


Risk Assessment matrix

Risk score (R) = Likelihood (L) × Severity of impact (S)

PROBABILITY

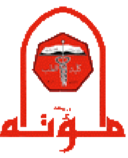




Risk: Description of the Risk

Probability	3
Impact	4
Risk Value	12

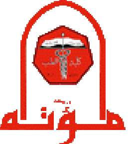
Risk is classified as MEDIUM.



Step3: Analyse & Evaluate Risks

Prioritizing risks based on their likelihood and severity to determine appropriate actions.

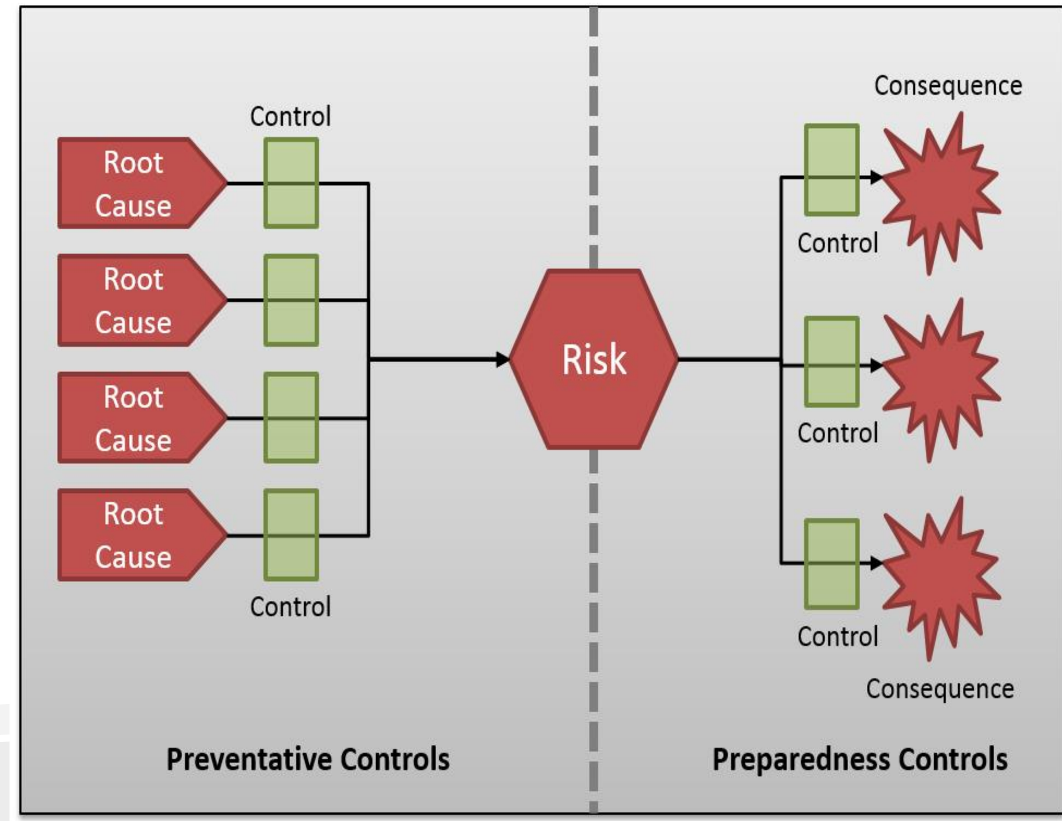
Step 4: Treat risk



Risk Treatment Strategies:

1. **Risk Avoidance**: Eliminate the risk <u>entirely</u> **Example**: Replacing hazardous chemotherapy drugs with safer alternatives

2. **Risk Reduction/mitigation:** Implement controls to reduce likelihood/impact <u>to an acceptable level</u>. This occurs when risk avoidance is considered to be difficult to do because of time or expense. **Example**: Barcode scanning → Reduces medication errors by 50%, Fall alarms → Decreases patient falls.



Step 4: Treat risk

3. Risk Transfer – Shift responsibility

Example:

- Malpractice insurance
- Outsourced diagnostic services

4. Risk Retention **– Accept the risk** when:

- Cost of treatment > potential loss
- Risk level is acceptable
- No management option exist
- Residual risk will remain after management options done

Example: Minor paperwork errors. No further action is taken to treat the risk. However, ongoing monitoring is recommended.

Residual Risk: *"The remaining risk after controls are applied"*. Residual Risk = Total Risk – Controls
It's not always practical to eliminate all the risks. Instead, we take steps to reduce the risk to an acceptable level.
(**Management**: Monitor and review periodically)

PROBABILITY	IMPACT: LOW	IMPACT: HIGH
HIGH	**REDUCE** Reduce exposure to the Risk.	**AVOID /Terminate** Risk should Not be taken.
LOW	**ACCEPT** The Risk can be taken.	**TRANSFER** Risk must be shared between different Parties.

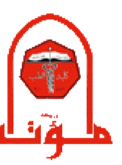
"Think Like a Risk Manager"

A nurse skips hand hygiene.

- What is the risk?
- How severe is it?
- What action would you take?

- **>15: Immediate action**
- **6-15: Plan mitigation**
- **≤5: Monitor**

Healthcare risk management is not about avoiding all risks, but about managing them safely and effectively.



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"If you fail to prepare, you prepare to fail"