Dr. Israa Al-Rawashdeh MD,MPH,PhD
Faculty of Medicine
Mutah University
2025

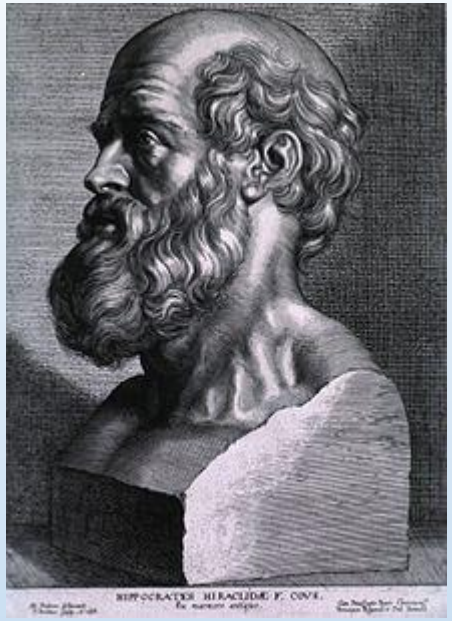
Risk Management in Healthcare

First, Do Not Harm

- Primum non nocere
- **Hippocratic Oath**

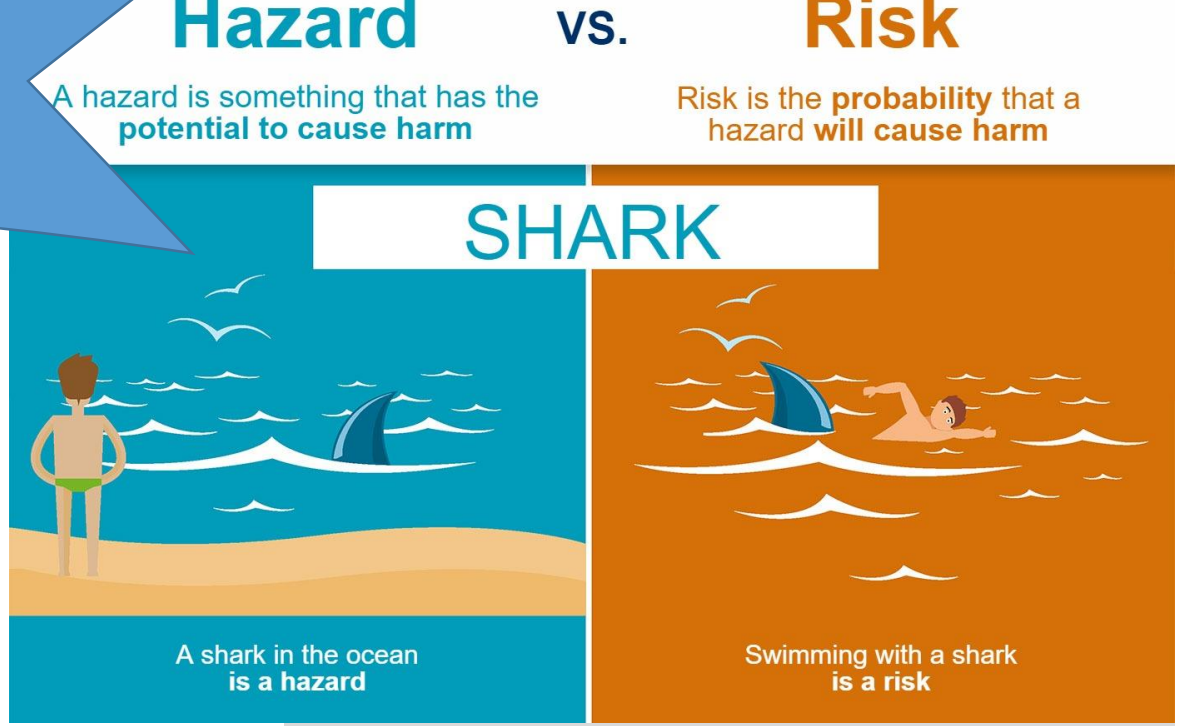
BUT….

Things can go wrong sometimes!



Definitions

- **Probability:** is the measure of the likelihood that an event will occur.
- **Hazard:** potential source of harm.
- **Risk:** "is a threat that any event or action will adversely affect the ability to achieve the desired goals , it may be avoided through preventive action/s".



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)

Risk management

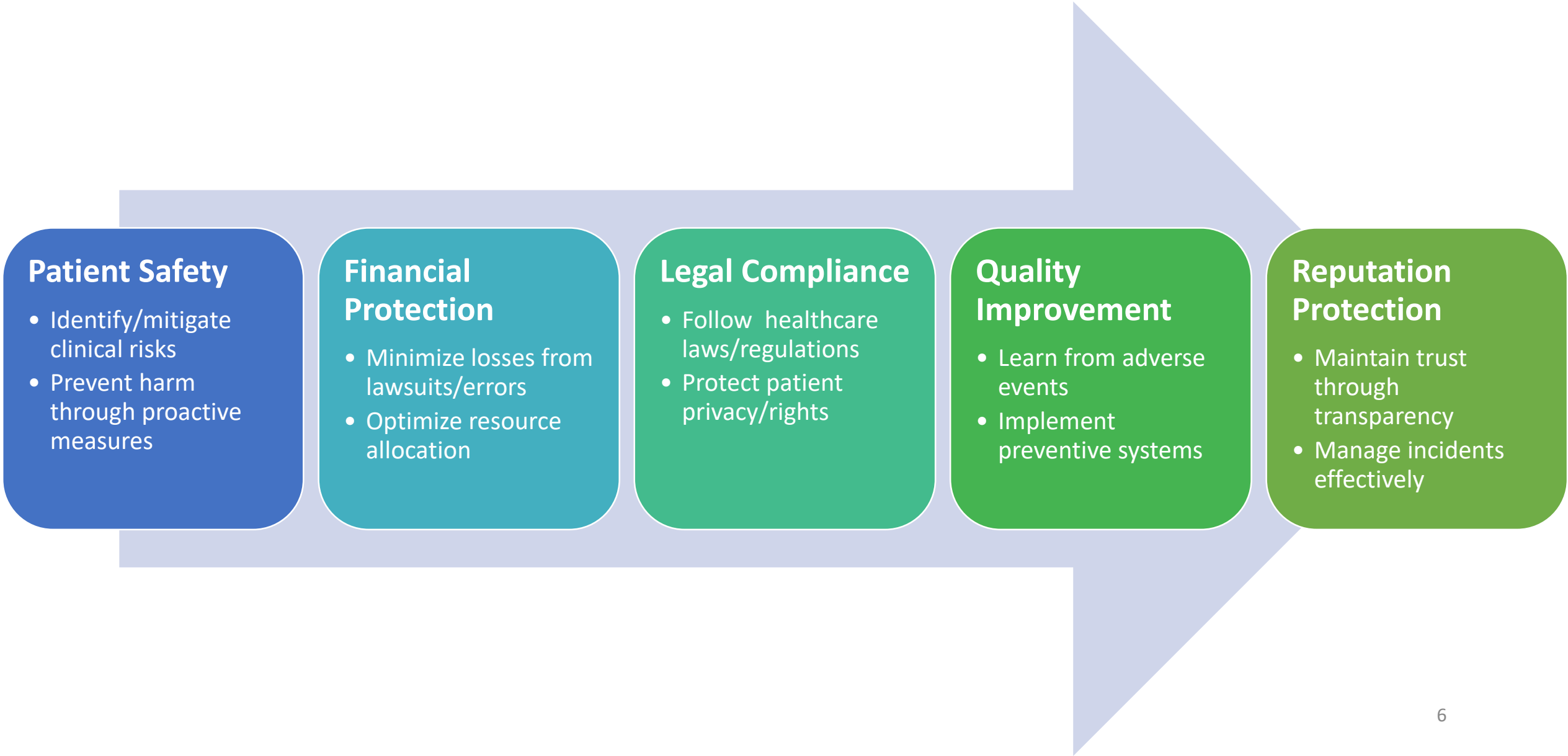
- Organized strategies to ***identify, assess, and reduce*** negative impacts of risk.
- There are two ways :

Reactive vs proactive

1. Reactive: strategy is **a response-based** approach to **risk**. A plan that specifies what actions should be done after harm occurred.
2. Proactive : a plan to **prevent** harm before it happens.

Reactive strategies should be studied to assess whether a proactive approach can be developed to prevent this specific outcome from happening again.

Objectives of Healthcare Risk Management



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

- It is done by an evaluation of the external and internal factors:

✓**External risks :** result from conditions that the health system usually cannot influence

✓🌍 *Market trends* | *Competitors* | *Geopolitical shifts*)

✓**Internal risks :** (Can control) including the health system operations and its objectives;

- ✚ *Organizational goals* | *Legal compliance* | *Structure/roles*

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

Establish The Context

Step2: Identify Risks

- Risk identification is the Proactive detection of potential harms by the healthcare professional in the health care services and environment.
- The risks identified are entered in the Risk Management Tool (RMT) ***(See next slide)***

Risk Management Tool in healthcare

Department

System/Process

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

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		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		
						0								0		

Figure 2: Risk Management Tool in healthcare.

Healthcare Risk Categories

1. Clinical Risks
2. Operational Risks
3. Financial Risks
4. Legal and Regulatory Risks

1. Clinical Risks

- Risks impacting *direct patient care* and safety.
- **Top Examples**:
- Medication errors
- Surgical complications
- Hospital-acquired infections
- Patient falls

2. Operational Risks

- *Day-to-day process* failures.
- **Examples:**
- Staffing shortages
- Equipment failures
- Supply chain disruptions
- Scheduling errors
- Facility maintenance issues

3. Financial Risks

Threats to the financial stability, sustainability, and viability of healthcare organizations.

- **Examples:**

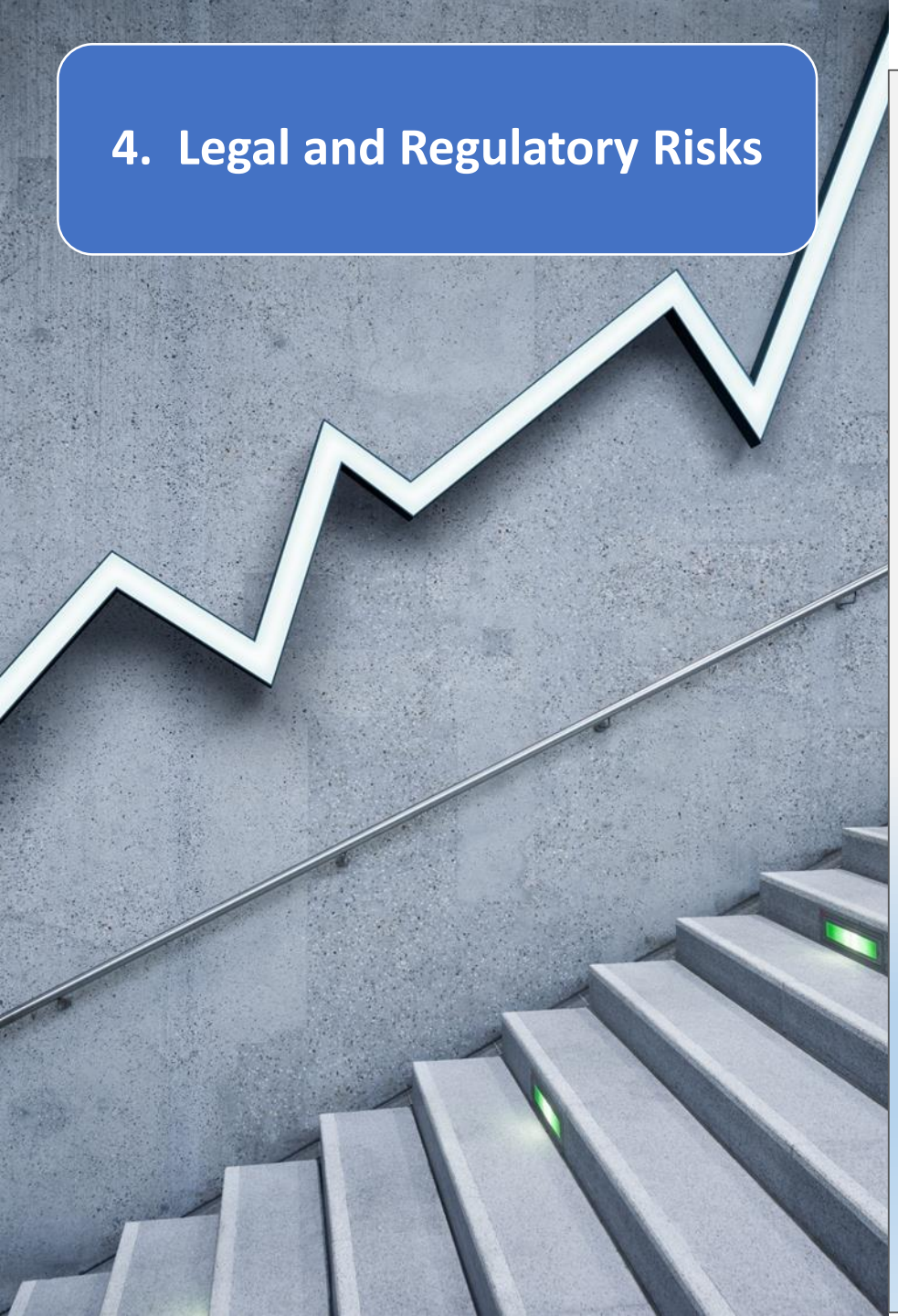
Revenue losses due to low patient volumes or payer reimbursement cuts

Billing errors or fraud

Budget Deficits

Inadequate cash flow management (Payment delays)

Increasing healthcare costs.



4. Legal and Regulatory Risks

The potential for non-compliance with laws, regulations, standards, and ethical guidelines of healthcare delivery and operations.

- **Examples:**

Violations of patient privacy laws

Failure to meet accreditation standards, Malpractice claims, lawsuits, and penalties for regulatory non-compliance.

"Which risk scares you most as a future doctor?"

Step2: Identify Risks

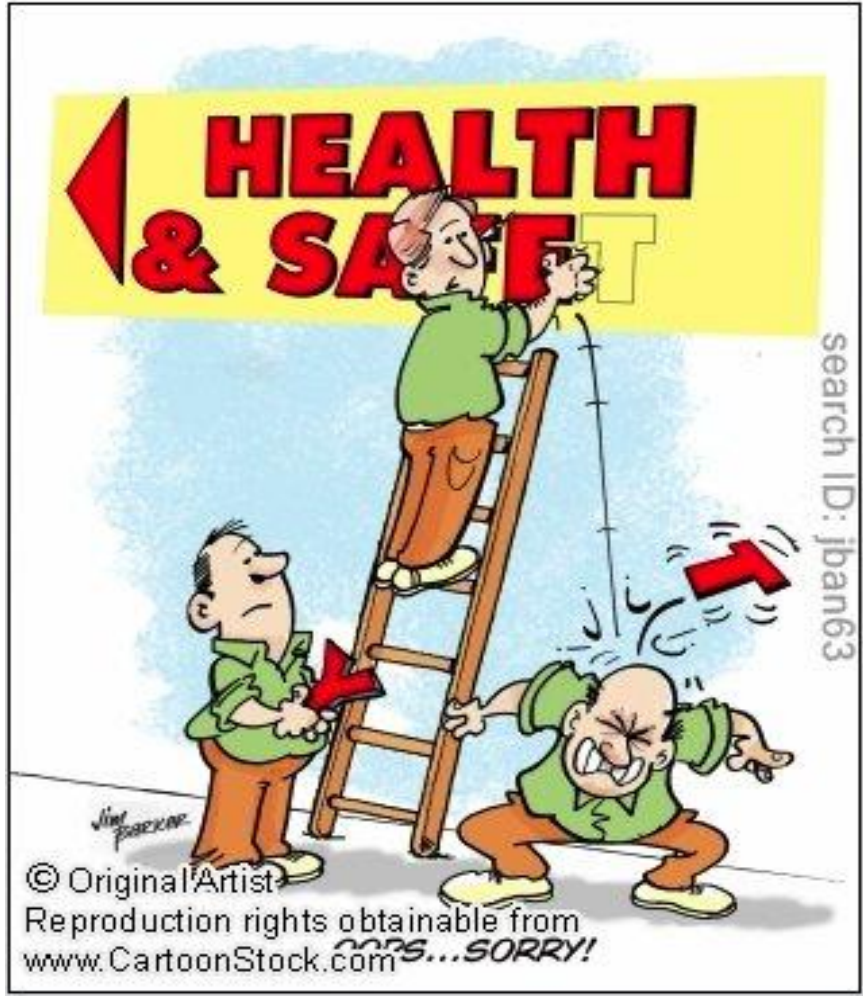
(what can go wrong?)

- **Identify why and how can it happen**

- Consider the possible *causes and scenarios* of each risk identified.

❑**Cause** - The underlying triggers that could lead to a risk event. These may be singular or multiple in nature, and one cause might relate to several different risks.

❑**Consequence** - The potential outcomes if the risk occur. A single risk event may have a specific consequence or multiple possible consequences. A consequence may be common across multiple risks



Step2: Identify Risks

Sources & Methods for Risk Identification

Healthcare organizations use multiple approaches to detect risks:

- **Risk Assessments & Audits**
  - Systematic evaluation of processes/environments
- **Incident Reporting Systems**
  - Staff-reported incidents/near-misses
- **Root Cause Analysis (RCA)**
  - Investigates adverse events to find underlying causes
- **Stakeholder Feedback**
  - Patient complaints
  - Satisfaction surveys
  - Staff input

"Which method would be most effective for catching medication errors?"

Step 3: Analyse & Evaluate Risks

- **Analyse Risks:** developing an understanding of the risks identified. It includes the following:

1. Risk Level Assessment

- Score inherent risk (pre-controls)
- Example: "High risk" = frequent falls in geriatric ward

2. Root Cause Investigation

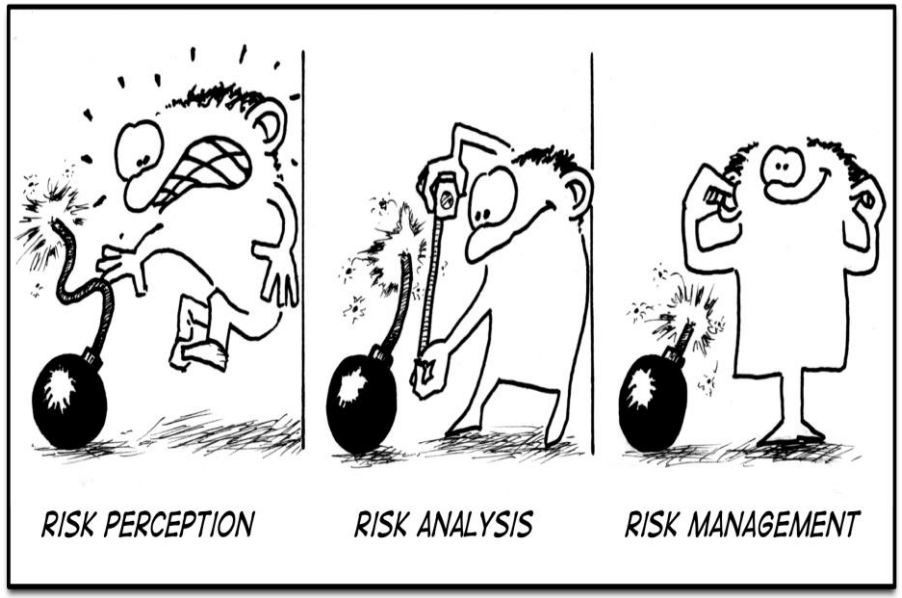
- Identify underlying systemic factors

3. Control Evaluation

- Assess existing measures:
  - Policies/protocols
  - Engineering controls
  - Staff training programs

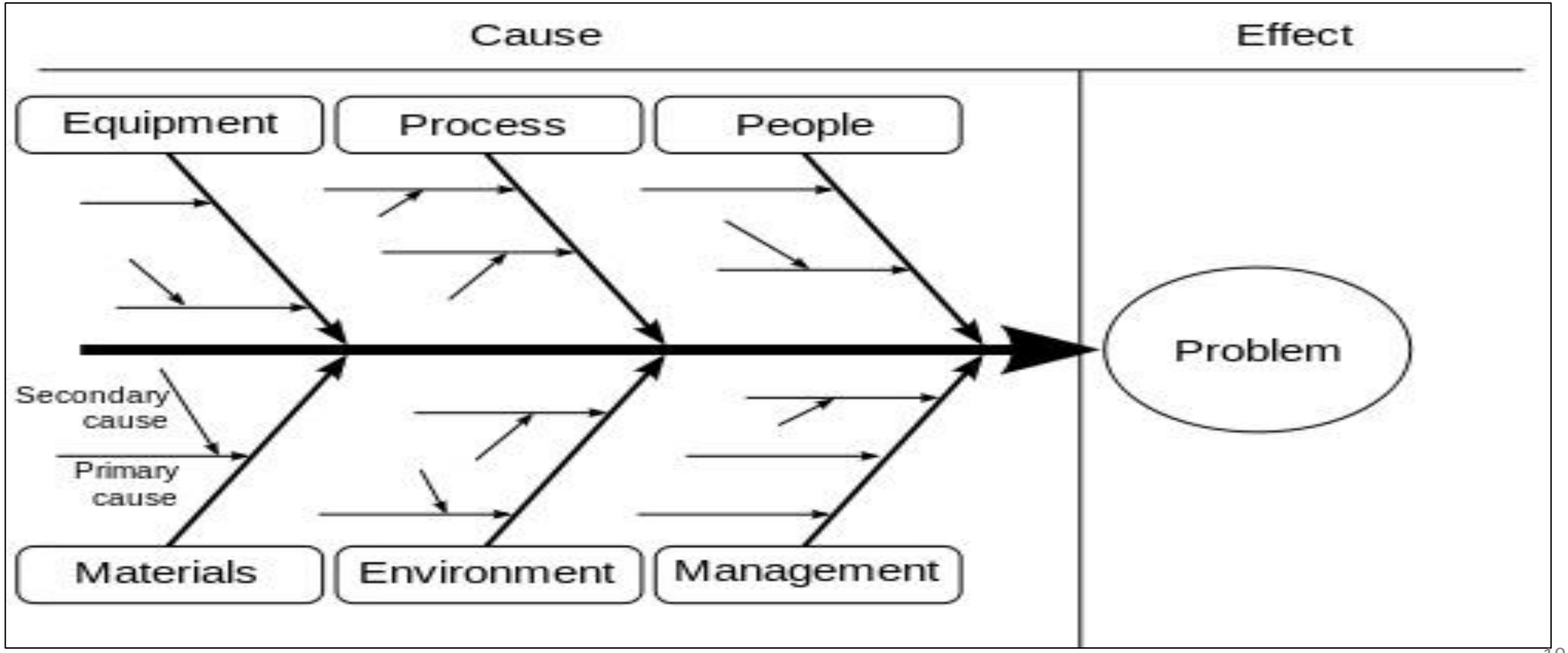
4. Residual Risk evaluation

- Calculate remaining risk after controls

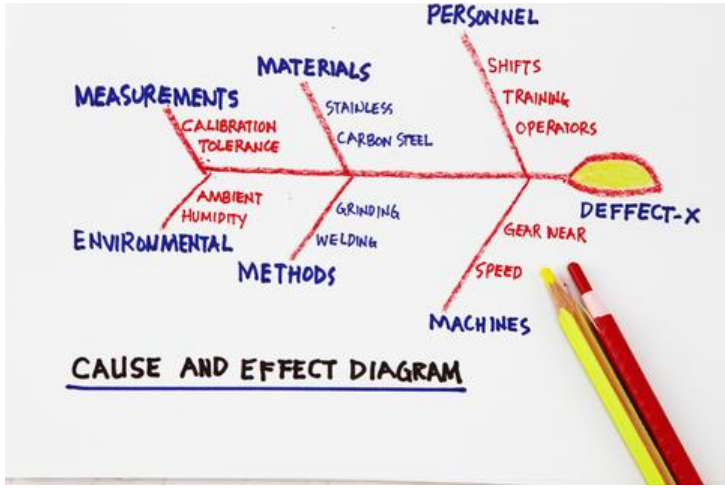


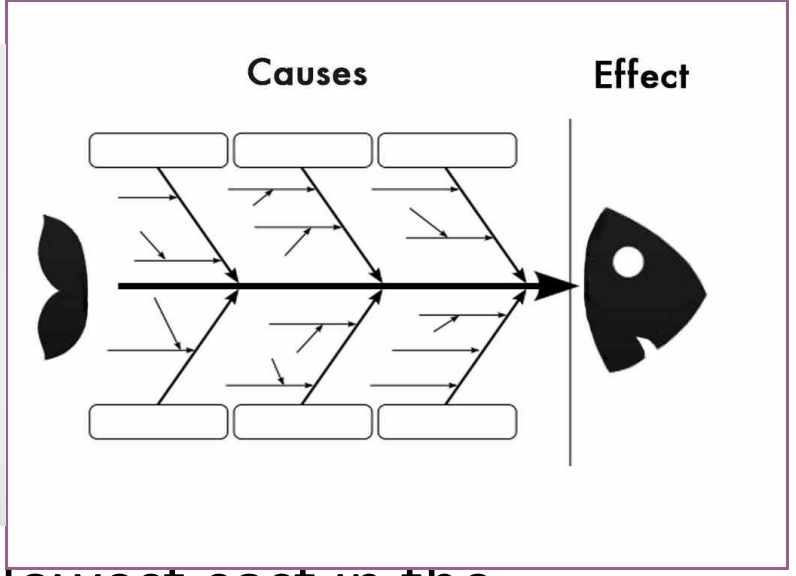
Step 3: Analyse & Assess Risks

Risk analysis can be done using Root Cause Analysis (RCA)



Root Cause Analysis RCA

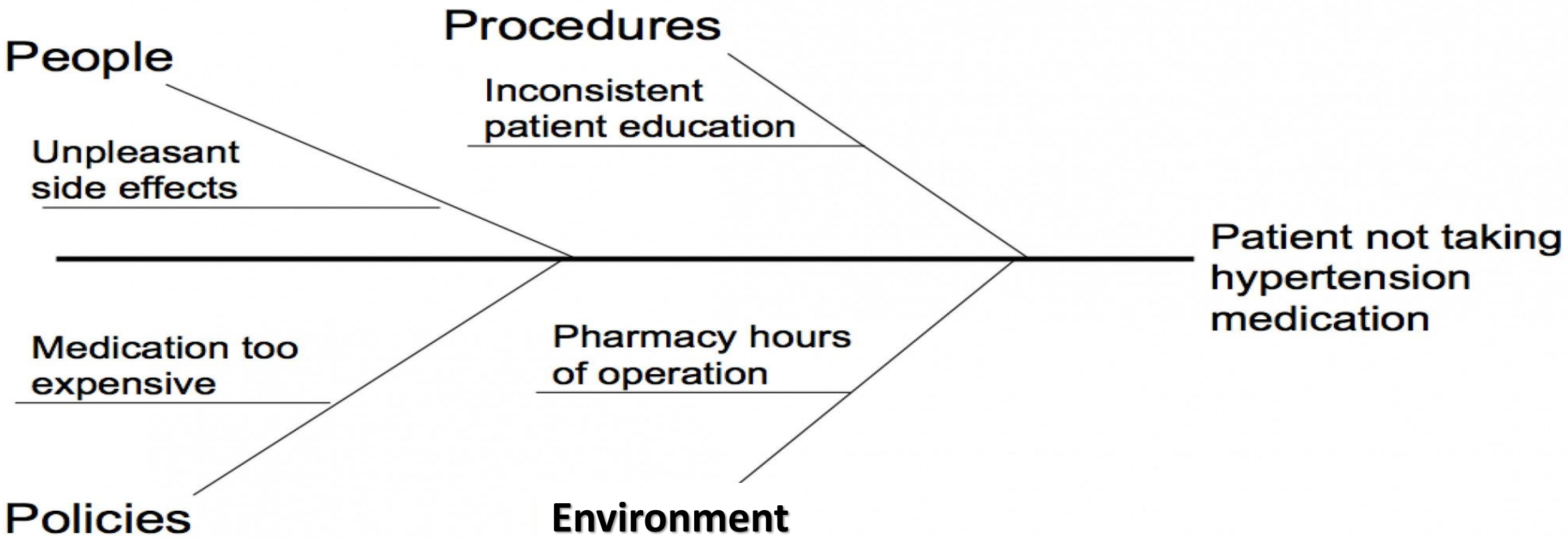




- 🐟 **Tool**: Fishbone diagram
- **Systematic Approach**
- 🔍 **Purpose**: Prevent recurrence of adverse events at lowest cost in the simplest way.S
- **Best Method**: brainstorming

  A root cause : is a fundamental factor that, if removed, can prevent the recurrence of the final undesirable outcome. *Example*: Faulty alarm system → Patient fall
- **A causal factor** elements that contribute to an event's outcome but may not be the primary underlying 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**

Simple Fishbone Diagram Example



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

Step 3: Analyse & Evaluate Risks

Risk assessment:
Determine the Risk Level

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

Risk Assessment:

Quantitatively or Qualitatively

- In **Quantitative Risk Assessment** **(QRA)** a numerical estimate is made of the probability that a defined harm will result from the occurrence of a particular event.
- Numerical estimation of harm probability
- **Requirements**:
  - Measurable data (e.g., incident rates, costs)
  - Statistical models
- More accurate
- Difficult to implement
- Large scale complex organizations

Quantitative risk assessment example

EVENT	LIKELIHOOD (A)	IMPACT (B)	RISK FACTOR (A x B)
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
Hurricane	0.4	0.9	0.36
Water leak	0.3	0.5	0.15
Employee forgot to log off	0.8	0.3	0.24

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

- Qualitative risk assessment:
- Categorization of the risks
- Based on the risk assessor’s experience and knowledge (subjective rating system)

Categories:

- **Low risk**
- **Medium risk**
- **High risk**

"When might qualitative assessment be better than quantitative?"
→ *Answer*: When data is limited or rapid triage is needed.

Likelihood

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

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

LIKELIHOOD

The probability of risk occuring, 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

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

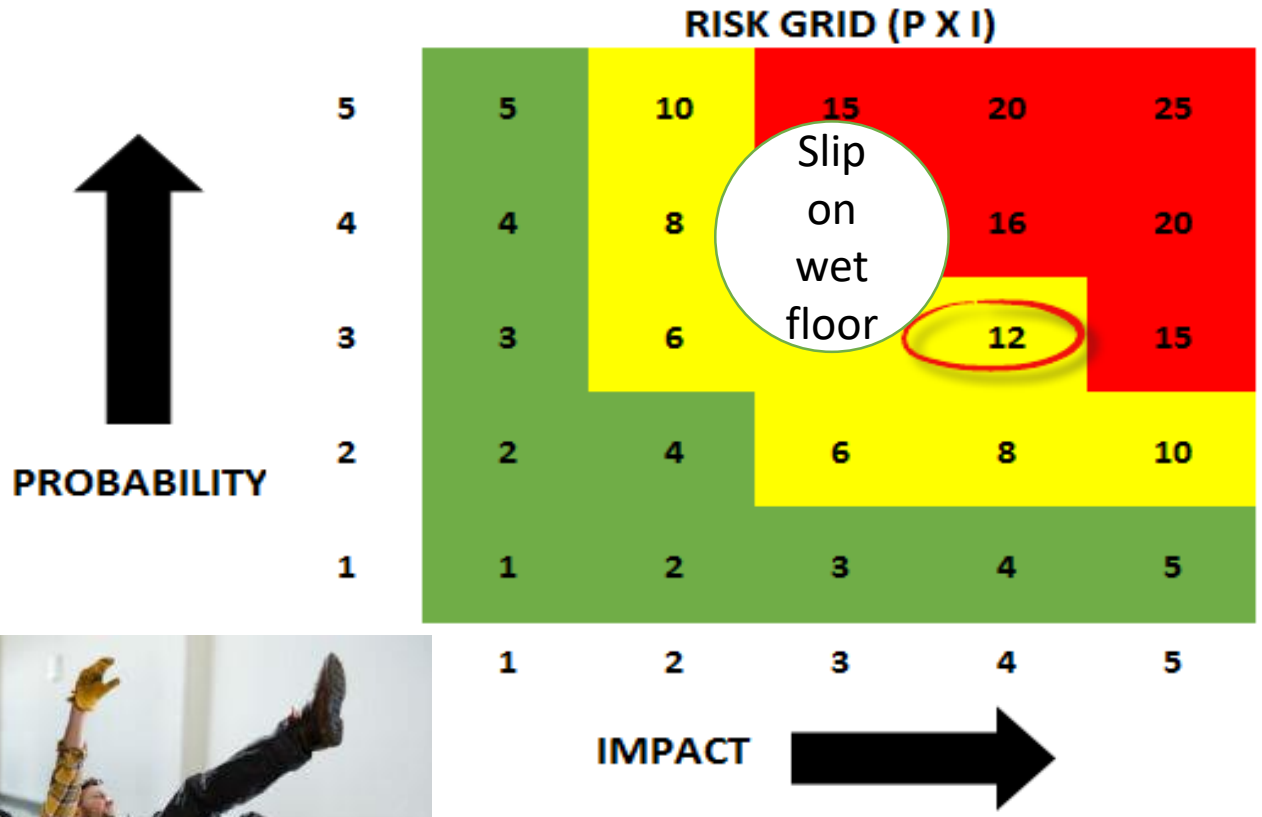
The scoring ranges from 1 (Negligible impact) to 5 (Extreme impact).

Risk Impact Areas:

People
Economic
Information
Property
Reputation
Capability

Risk Assessment matrix

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



LEGEND

HIGH (15-25)
MEDIUM (6-12)
LOW (1-5)

Risk: Description of the Risk

Probability	3
Impact	4
Risk Value	12

Risk is classified as MEDIUM.

Step 3: Analyse & Evaluate Risks

The purpose of risk evaluation is To prioritize risks based on their likelihood × severity score and determine appropriate management strategies.

Step 4: Treat risk

Determine the action

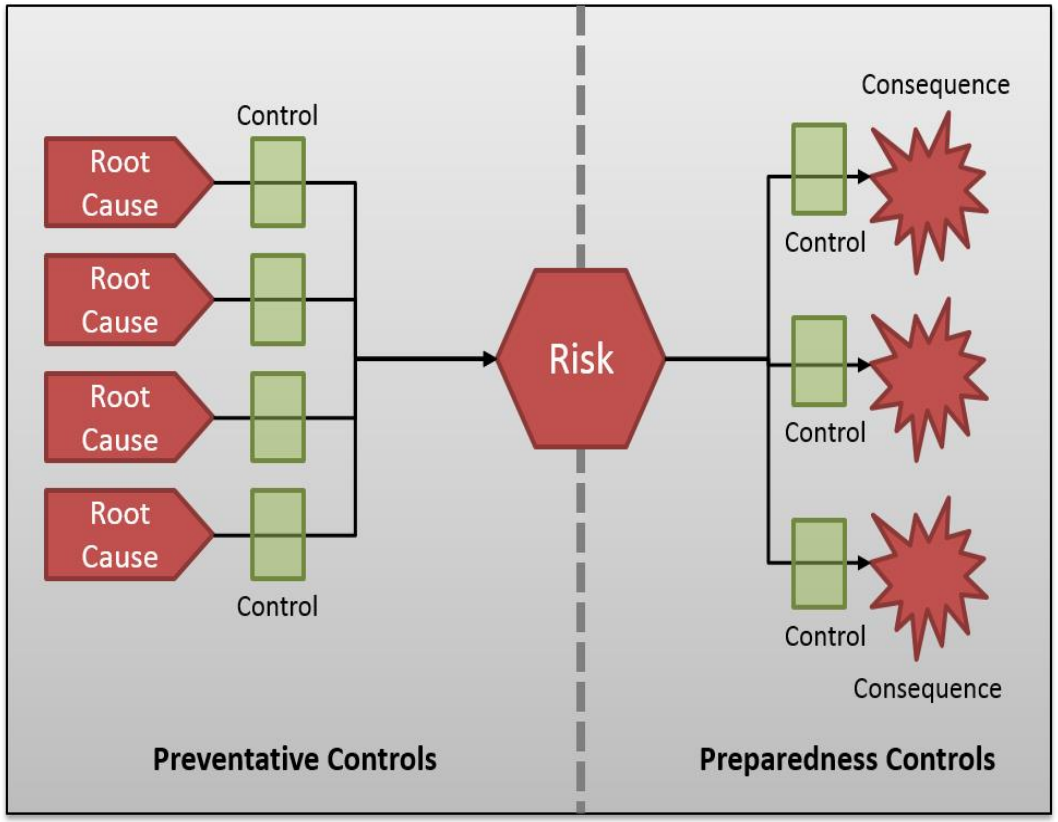
Controlling Risk

1. Risk Avoidance

Eliminate the risk entirely **Example**: Replacing hazardous chemotherapy drugs with safer alternatives

2. Risk Reduction (mitigation /Control):

Implement controls to reduce likelihood/impact to an acceptable level. 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.



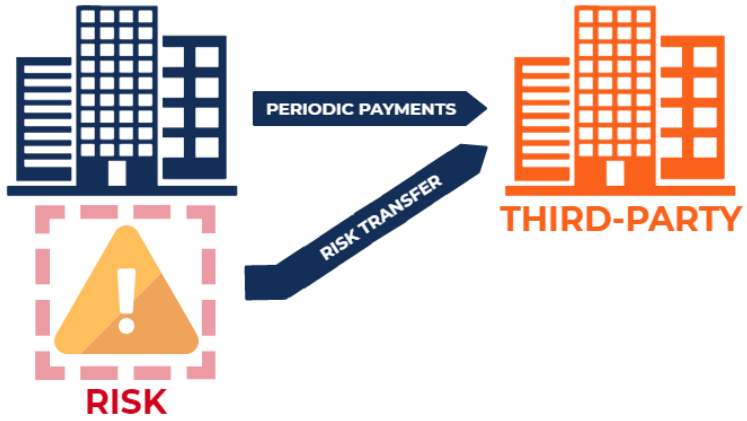
Step 4: Treat risk

Determine the action

3. Risk Transfer – Shift financial burden to another party

Example:

- Malpractice insurance
- Outsourced diagnostic services



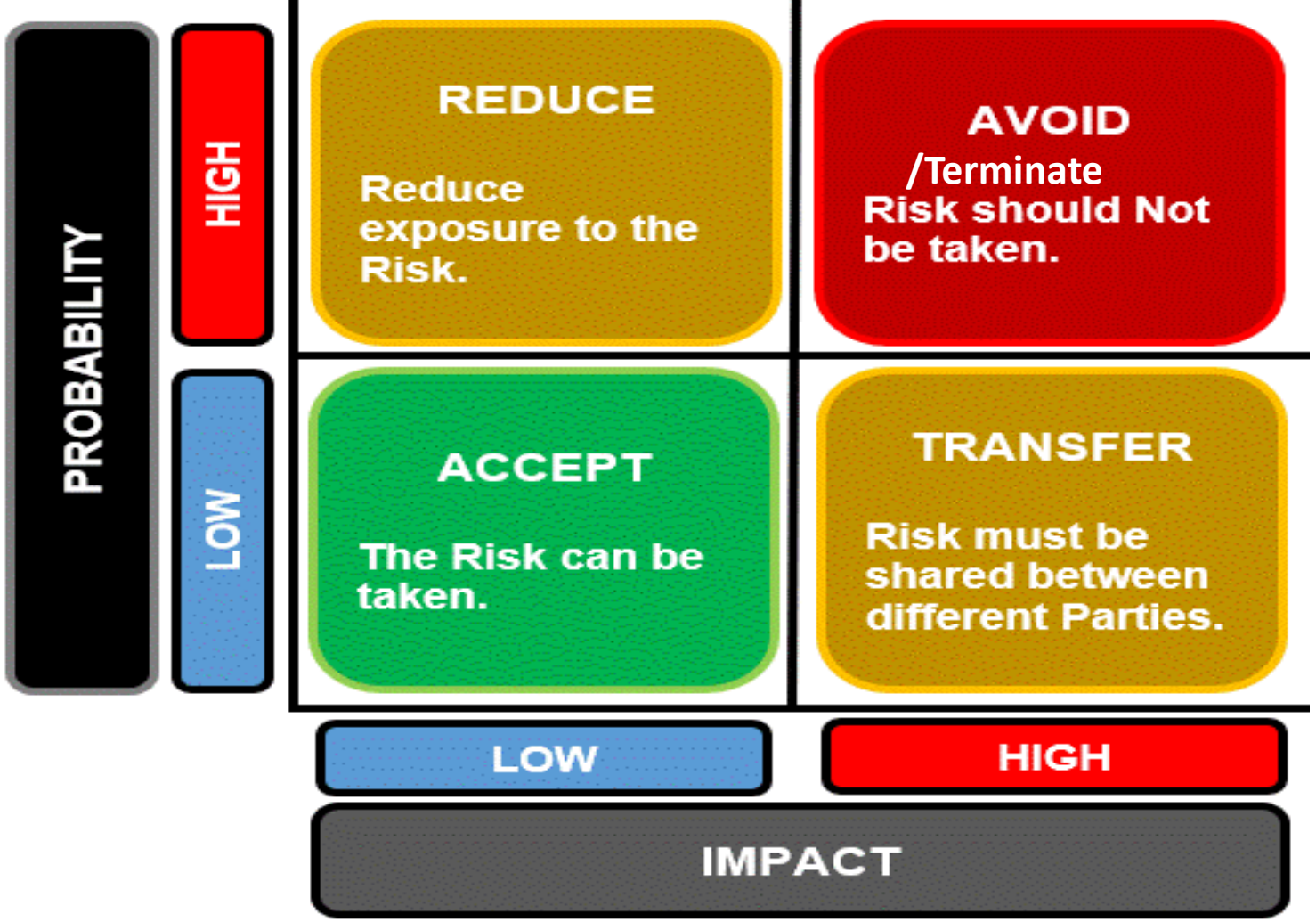
4. Risk Retention – **Accept the risk** when:

- 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 feasible to eliminate all the risks. Instead, we take steps to reduce the risk to an acceptable level.
(**Management**: Monitor and review periodically)



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

"Think Like a Risk Manager"
Scenario: You notice a nurse skipping hand hygiene.
Question: What's the risk? How would you address it?

- https://survey.charteredaccountantsanz.com/risk_management/small-firms/context.aspx
- https://pdfs.semanticscholar.org/d57e/c1af8951cf441643fccfbea7c28807cfa5cd.pdf?_gl=1*1ucq4og*_ga*ODAxNzUzNzkxLjE2ODM2NTcxODU.*_ga_H7P4ZT52H5*MTY4NDY2MDU2OC4yLjAuMTY4NDY2MDc0MS42MC4wLjA.