



# Human Factors & Patient Safety

# Objectives

- **After completing this lecture you should:**
  - Define and describe the Human Factors and its relation to patient safety
  - Recognize the importance of applying human factors in healthcare
  - Summarize the impact of Human Factors on people's health and patient safety
  - Differentiate between the different types of Medical Errors
  - Describe several specific Actions to reduce medical errors as related to Humans Factors

# What are Human Factors



- Human factors refer to **environmental, organizational and job factors, and human and individual characteristics** which influence behavior at work in a way which can affect health and safety.



## What are Human Factors?

Human factors can be defined as anything that affects an individual's performance.

# What are Human Factors

A simple way to view human factors is to think about three aspects:

1

The job

2

The individual

3

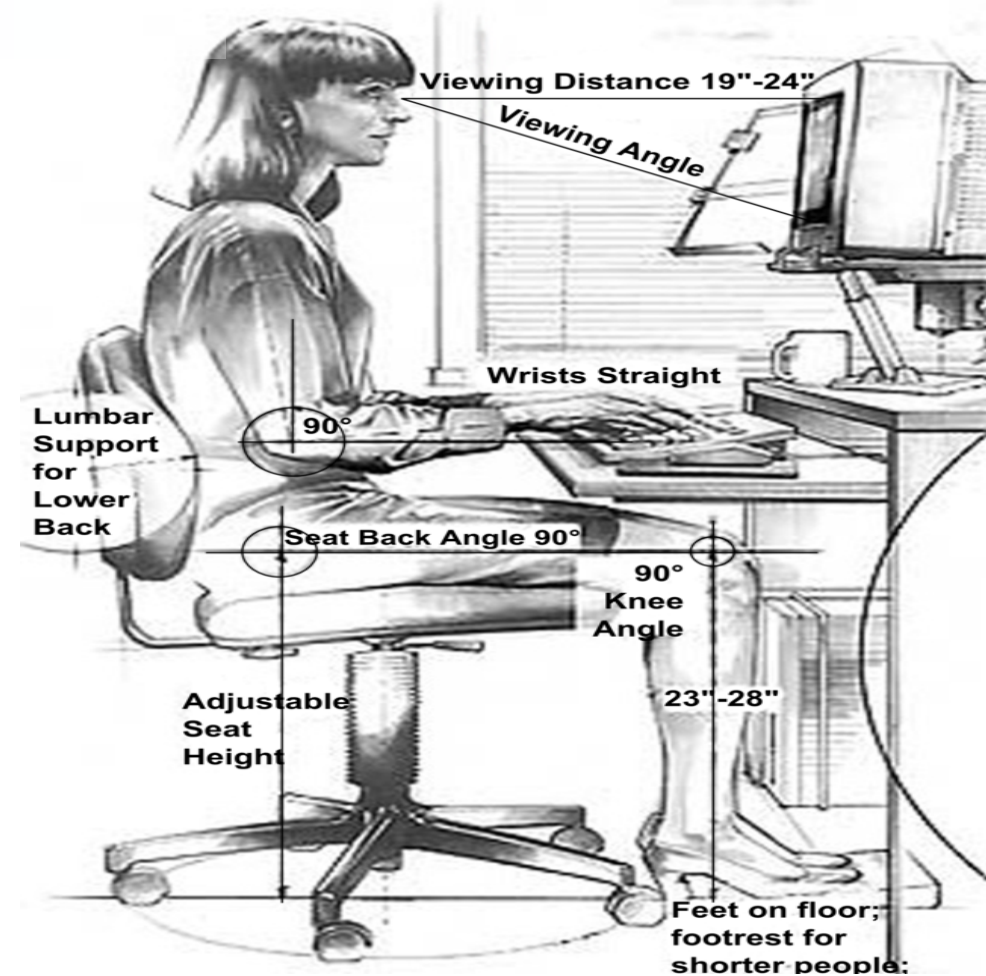
The organization

# 1

## The job

### Including :

- Nature of the task
  - Workload
  - Working environment
- ❖ This includes matching the job to the physical and the mental strengths and limitations of people.



# 2

## The individual

### Including:

- Competency
  - Skills (changeable)
  - Personality, attitude(fixed)
  - Risk perception
  - Sleep deprivation
- ❖ Individual characteristics influence behavior in complex ways.

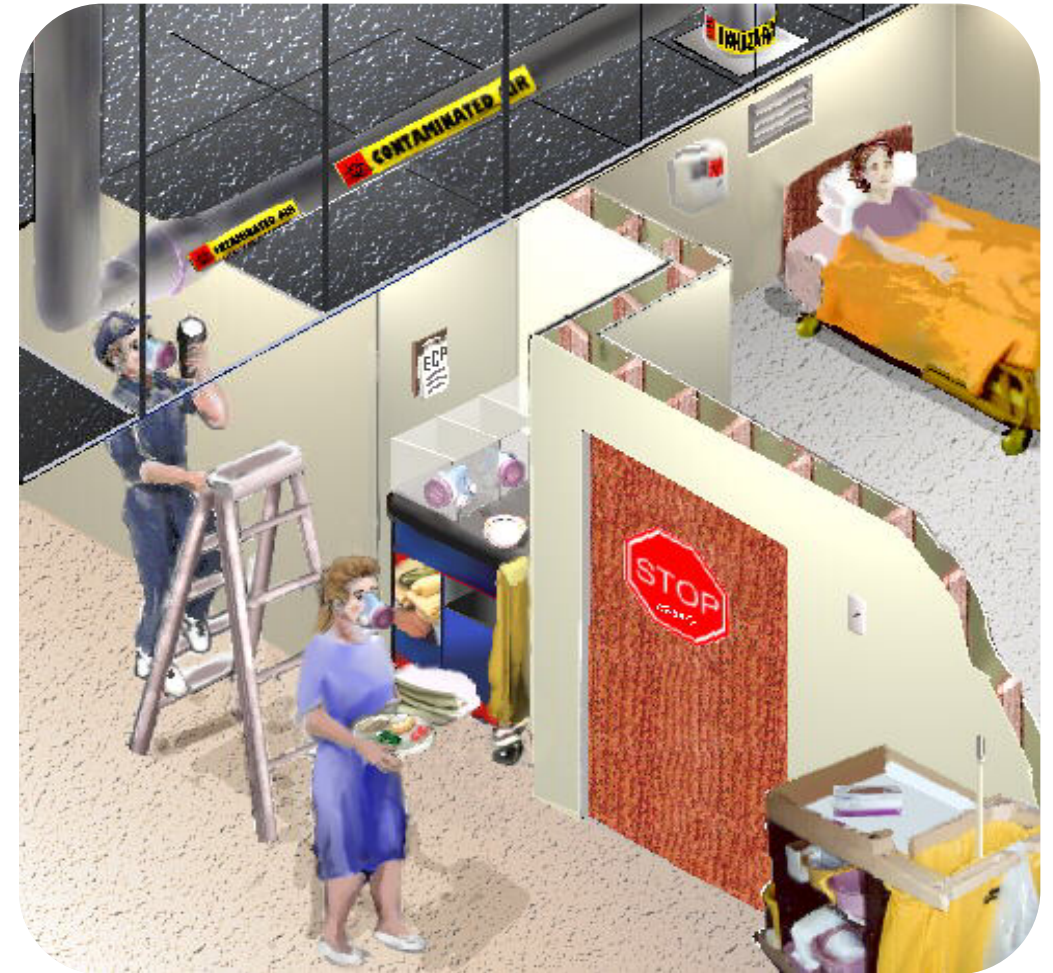


# 3

## The organization

### Including:

- The culture of the workplace, resources Communications
- Leadership and so on.





# The Benefits of Applying Human Factors in Healthcare

**Awareness of human factors can help you to:**

To prevent **Medical Errors**.

Understand why healthcare staff make errors.

Identify 'systems factors' threaten patient safety.

To prevent occupational accidents and ill health.



# Medical errors

Failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim



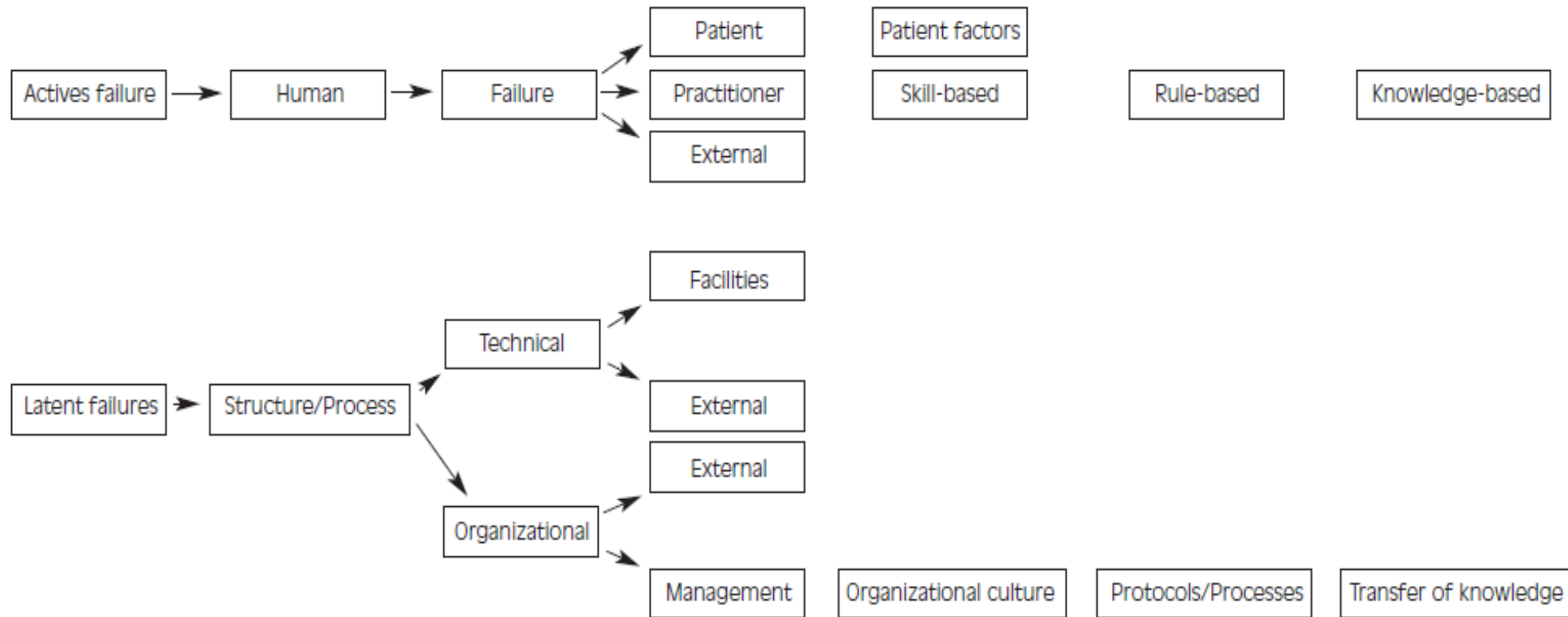


# Medical Errors

- Expired medication dispensed
- Un planned hysterectomy
- Wrong Sponge counting
- Self extubation
- Wrong patient ID , went to wrong procedure
- Wrong medication delivered
- Wrong dose administered

# Sources of Error

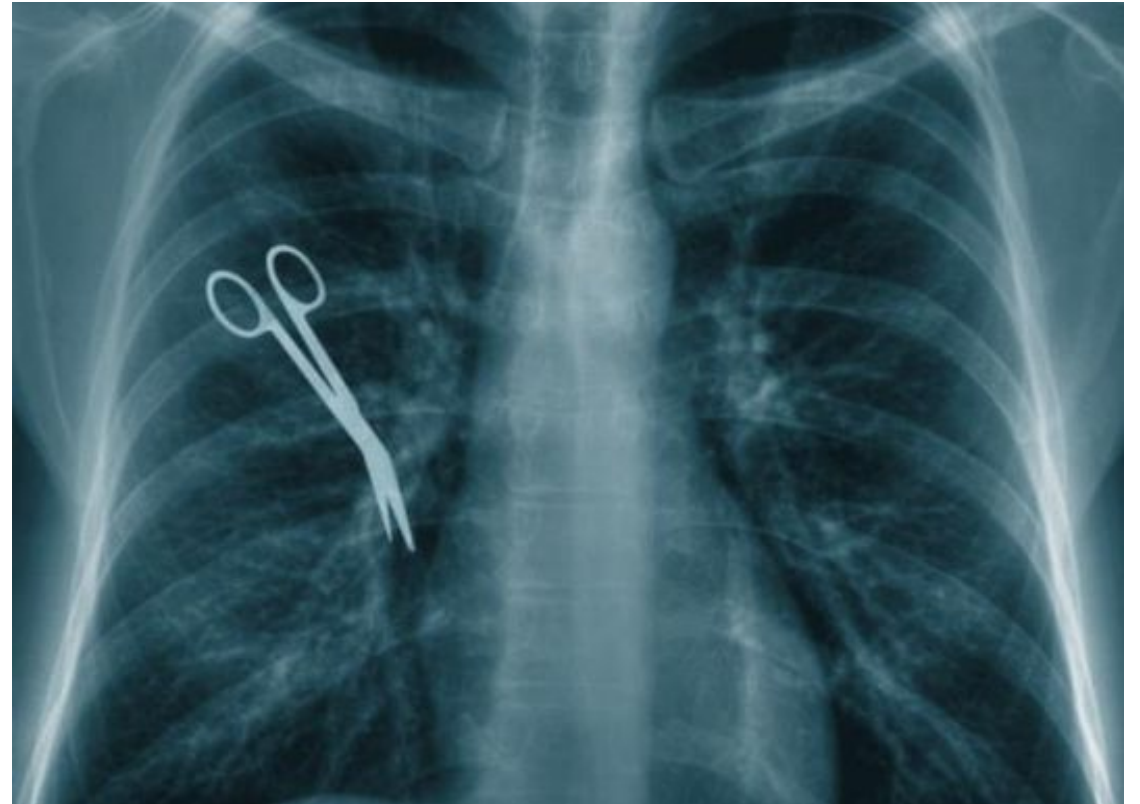
Table I. Classification of causes (JCAHO - Joint Commission on Accreditation of Healthcare Organizations).



Modified from Chang et al., 2005<sup>5</sup>.

# The Most Common Medical Errors

- Wrong site surgery (13.4%)
- Patient suicide (11.9%)
- Operative and post operative complication (10.8%)
- Delay in treatment (8.6%)
- Medication error (8.1%)
- Patient fall (6.4%)



# Burden of the Medical Errors

- How many of you know or had come cross any Medical Error?

*... And we won't charge you anything to remove our scissors from your stomach.*



# Causes of Medical Errors ?

**Healthcare  
Complexity**

**System and Process  
Design**

**Environmental  
factors**

**Infrastructure  
failure.**

**Human Factors and  
Ergonomics**



# How Does the Team Communicate?

## Causes of Medical Errors

### 1- Healthcare Complexity

Complicated technologies

Drugs interaction.

Intensive care

Prolonged hospital stay.

Multidisciplinary approach



**Healthcare  
Complexity**

## 2- System and Process Design

Inadequate communication,  
Unclear lines of authority

## System and Process Design



**Cont:**

**3- Environmental factors.**

- Over crowded services
- Unsafe care provision areas
- Areas poorly designed for safe monitoring

**4- Infrastructure failure.**

- Lack of documentation process
- Lack of continuous improvement process



**Environmental  
factors**



**Infrastructure  
failure.**

Cont:

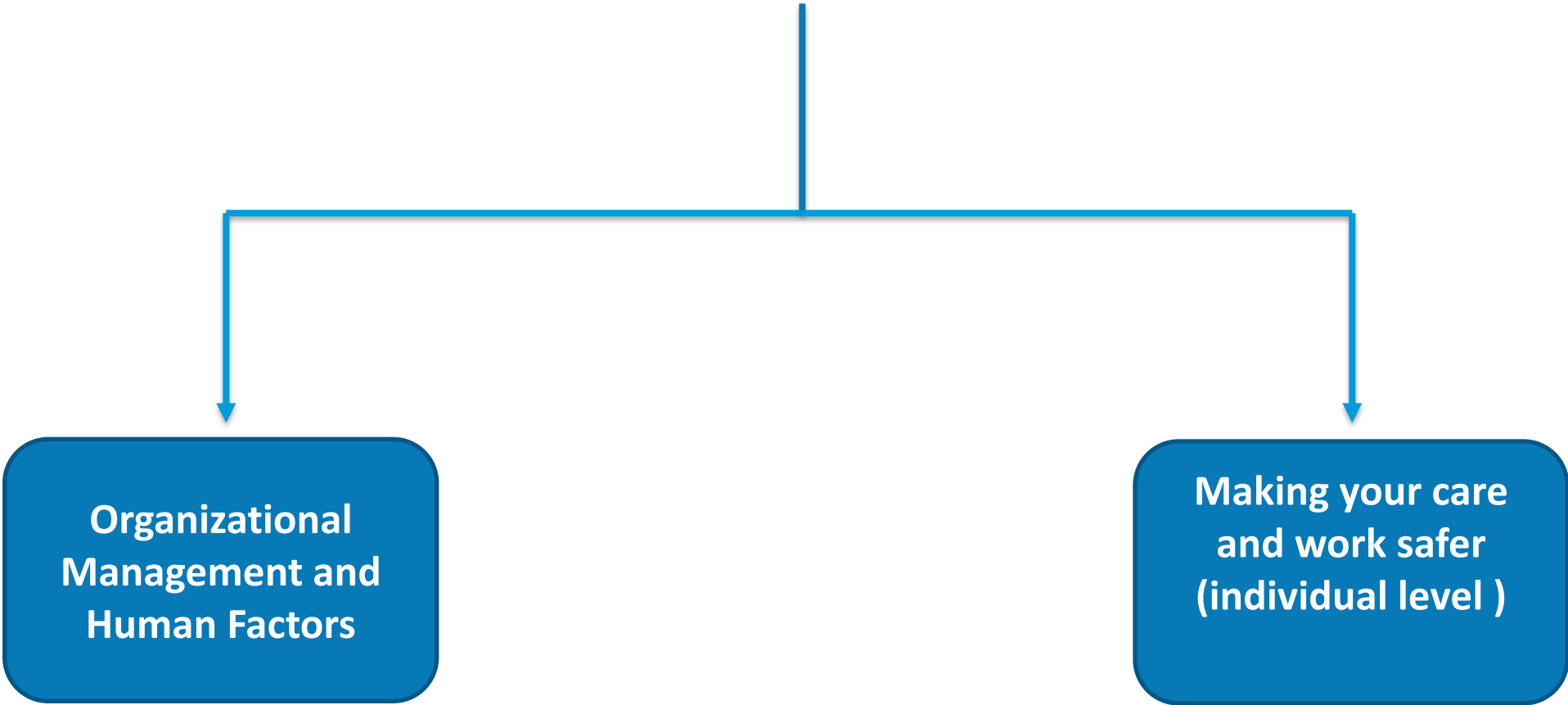
## 5- Human Factors and Ergonomics

- Hungry
- Angry/ Emotions
- Late/ lazy
- Tired/fatigue/sleep less
- lack of skilled workers.
- Lack of training.

## Human Factors and Ergonomics



# Actions to Reduce Medical Errors as Related to Humans Factors



## Organizational Management and Human Factors

## Making your care and work safer (individual level )

### Developing a positive safety culture

Just culture

Reporting culture (e-OVR Reporting system)

Learning culture (Morbidity and mortality review process)

### Stress

- Focus first on the tasks that are high risk or where it is particularly important
- In emergency situations : use algorithms and protocols
- Quickly allocate a clear leader
- Consider if there is a way of running a simulation with your team

### Human factors training in healthcare

### Complex calculations

- Find out if there is a pre-calculated list available in your area
- Before you start the task, think about ways of managing or avoiding distractions. For example, ask a colleague to take your bleep for a minute
- Look at the dose strengths of ampoules in your drug cupboard
- Double check with your colleague

Develop Clinical Practice Guidelines , protocols , algorithms.. etc

Organizational Management and Human Factors	Making your care and work safer (individual level )
	<p><b>Storage</b>            Look at the products you use and have stored. E.g Look-alike packaging</p>
	<p><b>Physical demands</b>            Physical tiredness :get enough sleeping before your duty            Demands exceeding capability : Most people at some time overestimate their abilities or underestimate their limitations.</p>
	<p><b>Teamwork</b>            Briefing and debriefing can help teams develop a shared mental model of a planned procedure or a patient’s clinical status            SBAR (Situation, Background, Assessment, Recommendation)</p>
	<p><b>+</b>            Poor lighting: Look at the lighting in the areas where you need to            +perform detailed or complex tasks</p>

**Watch the video**

<https://www.youtube.com/watch?v=aGZz3w5Hy8Y>





# Case Study

## **A child with a known penicillin allergy was prescribed and administered an intravenous dose of an antibiotic of the penicillin class2**

A child was due to have a pacemaker fitted. On pre-admission an allergy to penicillin was recorded. This was noted on both the nursing admission assessment form and the anesthetic record chart. Prior to operation, the allergy was discussed with the specialist pediatric cardiology registrar, the consultant pediatric anesthetist, anesthetic specialist registrar and the cardiology consultant. However, following the procedure the patient's plan included intravenous and oral penicillin.

# *How did this happen?*



- There was no up-to-date protocol on what other antibiotics should be used if a pediatric cardiac patient has a penicillin allergy
- There was no clear record of the allergy in the medical
- No system was in place to prevent penicillin prescription when a known allergy was recorded.
- A number of appropriate checks were not followed prior to administration of the antibiotics.
- During independent checks, neither nurse checked allergy status, and both were under pressure to complete tasks.
- The patient's allergy band was on the same side as their identity band, both of which were covered with a bandage for an intravenous drip.

- **Do you think** the outcome could be quite different if human factors had been taken into account?
- **How we can prevent** such error by applying human factors in healthcare?



# OVR(Occurrence Variance Reporting) or IR(Incident Reporting)

- **Occurrence** :An Occurrence is defined as any event or circumstance that deviates from established standards of care & safety.
- **OVR** :an internal form/system used to document the details of the occurrence/event and the investigation of an occurrence and the corrective actions taken.

# OVR Sample :

- [http://medicinequality.ksu.edu.sa/ContentData/QualityPolicies/en\\_2044-37-689042734-OVR%20Annual%20Report%202012.pdf](http://medicinequality.ksu.edu.sa/ContentData/QualityPolicies/en_2044-37-689042734-OVR%20Annual%20Report%202012.pdf)



THANK YOU  
FOR LISTENING

ANY QUESTIONS ?

NO?

GREAT!