Topic 3
Understanding systems and the effect of complexity on patient care
Learning objective

Understand how systems thinking can improve health care and minimize patient adverse events
Knowledge requirements

- Explain the terms *system* and *complex system* as they relate to health care
- Explain why a systems approach to patient safety is superior to the traditional approach
Performance requirement

Describe the elements of a safe health-care delivery system
A “system”

- Any collection of two or more interacting parts, or
- “An interdependent group of items forming a unified whole”

A “complex system”

- Many interacting parts
- Difficult if not impossible to predict the behaviour of the system based on a knowledge of its component parts
Health care is a complex system
Complexity = increased chance of something going wrong!
Two schools of thought regarding iatrogenic injury

- Traditional or person approach:
  * The “old” culture
  * “Just try harder”

- Systems approach:
  * The “new look”

You may encounter a bit of both in your “journey”
Person approach

- See errors as the product of carelessness
- Remedial measures directed primarily at the error-maker
  - Naming
  - Blaming
  - Shaming
  - Retraining
An individual failing?

Doesn’t work!

- People don’t intend to commit errors … … only a very small minority of cases are deliberate violations
- Won’t solve the problem - it will make it worse
- Countermeasures create a false sense of security … “we’ve ‘fixed’ the problem”
- Health professionals will hide errors
- May destroy many health professionals inadvertently - the "second victim"
Why investigate?

- The more we understand how and why these things occur, the more we can put checks in place to reduce recurrence

- Strategies might include:
  - Education
  - New protocols
  - New systems

- Accountability
Multiple factors:

- Patient factors
- Provider factors
- Task factors
- Technology and tool factors
- Team factors
- Environmental factors
- Organizational factors
Reason’s “Swiss cheese” model of accident causation

Some holes due to active failures

Other holes due to latent conditions

Successive layers of defences, barriers and safeguards System defences

Hazards

Losses
Reason’s - Defences

Potential adverse events

- Policy writing, training
- Standardizing, simplifying
- Automation
- Improvements to devices, architecture

Source: Veteran Affairs (US) National Center for Patient Safety
Characteristics of high reliability organizations (HROs)

- Preoccupation with failure
- Commitment to resilience
- Sensitivity to operations
- A culture of safety
Key principles from HRO theory

- Maintain a powerful and uniform culture of safety
- Use optimal structures and procedures
- Provide intensive and continuing training of individuals and teams
- Conduct thorough organizational learning and safety management
The aircraft carrier: the prototypical HRO

Carriers achieve *nearly* failure-free record despite multiple hazards

*Source: Gaba*
Health care can learn from HROs

Although health care is different from other industries (e.g. people are not airplanes) we can learn:

- From their successes:
  - What factors make them work so well?

- From their failures:
  - How do disasters occur even in typically high reliability settings?
Summary

- Health care is complex

- When things go wrong, adopting a systems approach is far more productive for patient safety than a person approach