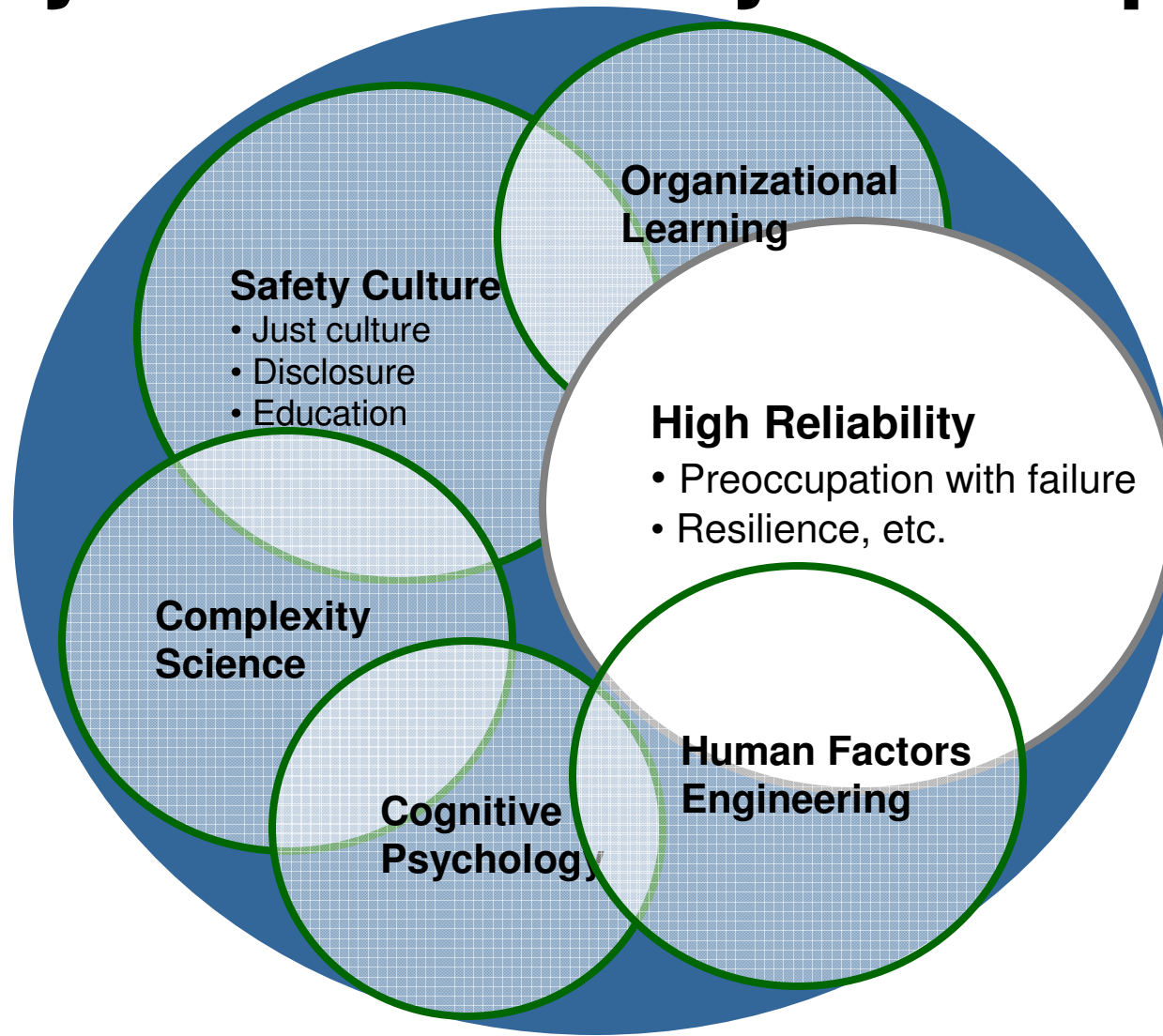


High Reliability Organizations

Key Patient Safety Concepts



HOW OFTEN DOES.....

- A key piece of admission get omitted at transfer?
- the wrong medication given?
- A key item get forgotten at the grocery store?
- a nuclear power plant have a disaster?
- a commercial plane crash?
- an MVA occur on the 401?

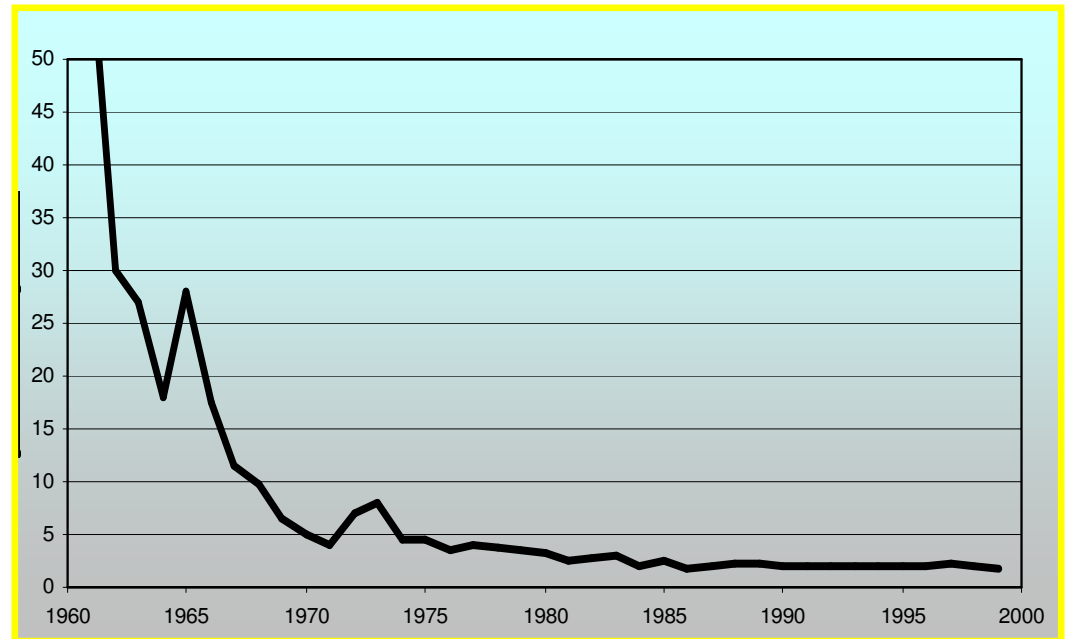
Learning from others – Human Factors Engineering

- errors are made by the best people in the best organizations
- humans are fallible
- distractions, fatigue & feeling rushed can contribute to error
- humans have limited memory



Learning from Others- Commercial Aviation

- Increased hand-offs
= increased risk
- Use of checklists
- Sterile cockpit techniques
- Team building



Convergent Knowledge Solutions, 2004

WHAT IS RELIABILITY?

Failure free operation over time

- The capability of a process, procedure or health service to perform its intended function in the required time under existing conditions.

High Reliability Organizations

- Preoccupation with failure
- Reluctance to simplify interpretations
- Sensitivity to operations
- Commitment to resilience
- Deference to expertise



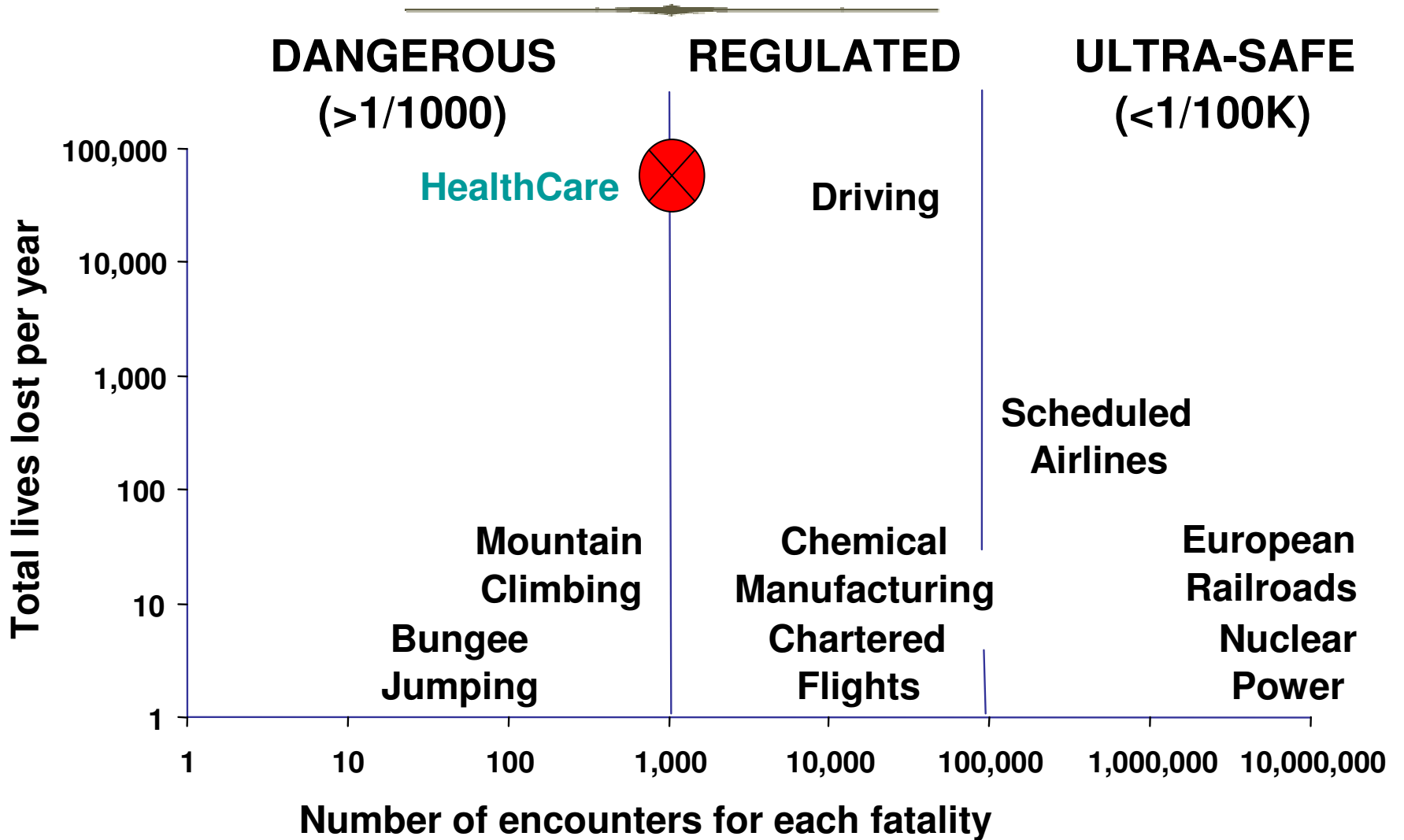
Wicks & Crotten, *Managing the Unexpected*, 2001

How do we do in healthcare?

- Preoccupation with failure
- Reluctance to simplify interpretations
- Sensitivity to operations
- Commitment to resilience
- Deference to expertise



How Hazardous Is Health Care?



 Death associated with medication error

Limitations to Reliability in Healthcare

- Process factors: eg lack of standardization, reliance on memory
- Human factors: eg fatigue, poor teamwork
- Situational factors: Patient variability, resource availability
- * Expect adverse outcomes/ complications

MEASURING RELIABILITY

RELIABILITY =

actions that achieve intended result

total # of actions taken

RELIABILITY LEVELS

Reliability

Failure Rate (1-Rel)

**~ 9
10** **Level 1**
(defect rate of 10^{-1})

**~ 1
10**

**~ 95
100** **Level 2 (10^{-2})**
(defect rate of 10^{-2})

**~ 5
100**

**995
1000** **Level 3 (10^{-3})**
(defect rate of 10^{-3})

**~ 5
1000**

The Reliability Spectrum

| Reliability | Defect rate | expressed as | Examples |
|-------------|-------------|--------------|----------------------------|
| | % | Power of 10 | |
| 0.9 | 10 | 10^{-1} | No β blocker post MI |
| 0.99 | 1 | 10^{-2} | Adverse med events |
| 0.999 | 0.1 | 10^{-3} | Gen surg deaths |
| 0.9999 | 0.01 | 10^{-4} | Anaesthesia deaths |
| 0.99999 | 0.001 | 10^{-5} | Transfn error |
| 0.999999 | 0.0001 | 10^{-6} | |

Level of Reliability Components

Level 1 (10^{-1})

**Standardization
Check Lists, Vigilance
Awareness, Feedback
= Training and reminders**

Level 2 (10^{-2})

**Decision Aids, Redundancy
Desired Action is Default
Real Time Identification
of Failure
= Human factors principles**

Level 3 (10^{-3})

**Pre-Occupation with Failure
Resilience
Standardization of Behavior
System is Visible
Process/ structure/ outcome**

The RN Checklist



SickKids Transfer Checklist

- DO NOT SKIP ANY ITEMS
- FOLLOW THE EXACT ORDER OF THE CHECKLIST
- READ BACK SHADED AREAS
- IF YOU ARE INTERRUPTED START OVER AT THE BEGINNING OF THE SECTION

Section 1 – COMPLETE FOR ALL TRANSFERS e.g. ER to unit, unit to unit, unit to other department

| |
|---|
| Name |
| MRN - medical record # required to double check patient identification |
| Age |
| Weight |
| Allergies e.g. type, past reactions, treatment needed during reaction |
| Admitting diagnosis |
| Pertinent history of present illness |
| Co-morbid conditions e.g. sickle cell, congenital anomalies, syndromes |
| Vital signs/physical findings on examination – include pain assessment/scores |
| O2 sats/O2 delivery e.g. concentration, method of delivery, patient tolerance |
| Intake & output e.g. NPO status, IVs/access, infusions, urinary output, stools, vomiting |
| Medications administered or pending e.g. medications at home or on transferring unit; time last administered, time next due, response to medications |
| Labs/diagnostics completed or pending e.g. abnormal results, tests not yet completed, results pending |
| Treatments or therapies completed or pending e.g. date, patient response |
| Isolation required on unit – based on patient symptoms & current isolation policies |
| Monitoring/level of observation required on unit e.g. continuous electronic monitoring, constant observation |
| Transport requirements e.g. who will accompany patient, monitoring during transfer |
| Transfer orders in place & reviewed |

Section 2 – COMPLETE IN ADDITION TO SECTION 1 FOR UNIT TO UNIT TRANSFERS

| |
|---|
| Past medical/surgical history including home medications/treatments |
| Consults completed and/or to be completed |
| Special needs or equipment e.g. wheelchair, splints, glasses |
| Language barriers e.g. interpreter needed/arranged |
| Psychosocial needs or follow-up required |

Achieving Reliability Day to day

1. Standardize your approach
2. Build decision aids and reminders into your systems
3. Take advantage of pre-existing habits and patterns
4. Make the desired action the default, not the exception
5. Create redundance
6. Bundle related tasks
7. Encourage teamwork, feedback and training

Elgert G. Reliability Science: reducing the error rate in your practice. Family practice management. Oct 2005.