

Human Factors Capability and Capacity, and Workforce Safety

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IEA is an Association of 54 HF/E Societies across the Globe



What is Human Factors/Ergonomics?

Human Factors/Ergonomics is ...

...the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and

the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance

Poor Human Factors/Ergonomics in Healthcare is a Consistent Factor in Adverse Health Care Events

Most Frequently Identified Root Causes of Sentinel Events Reviewed by The Joint Commission by Year

*The majority of events have multiple root causes
(Please refer to subcategories listed on slides 5-7)*

2012 (N=901)		2013 (N=887)		Jan to Jun 2014 (N=394)	
Human Factors	614	Human Factors	635	Human Factors	290
Leadership	557	Communication	563	Leadership	269
Communication	532	Leadership	547	Communication	248
Assessment	482	Assessment	505	Assessment	208
Information Management	203	Information Management	155	Physical Environment	53
Physical Environment	150	Physical Environment	138	Care Planning	38
Continuum of Care	95	Care Planning	103	Information Management	36
Operative Care	93	Continuum of Care	97	Continuum of Care	33
Medication Use	91	Medication Use	77	Operative Care	29
Care Planning	81	Operative Care	76	Health information technology-related	27



The reporting of most sentinel events to The Joint Commission is voluntary and represents only a small proportion of actual events. Therefore, these root cause data are not an epidemiologic data set and no conclusions should be drawn about the actual relative frequency of root causes or trends in root causes over time.

Office of Quality Monitoring - 8

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Limits to the Development of Human Factors/Ergonomics

The lack of sensitivity to ergonomics and the human factor in health care contrasts with the attention and interest in this science, which other highly complex organizations have had, such as: aviation, power plants, oil platforms, etc.
(Robert Wears, 2002)



Hazards of Inadequate Attention to HF/E...

- Healthcare and work systems that are:
 - Poorly designed
 - Disjointed
 - Not tailored to context, people
 - Error-prone
 - Inflexible
 - 'Brittle'
 - Stress- and/or injury-producing

Add to these:

- Inadequate HF/E education of healthcare workforce
- Physical and psychological hazards for healthcare workers
- Poor risk management
- Unfamiliar or confusing technology
- Culture of individual blame ----->

..... -> Preventable patient and workforce harm

- Unsafe or inadequate
 - Medication delivery
 - Infection protection including sepsis
 - Surgical care
 - Injections practices
 - Diagnoses
 - Transfusion practices
 - Radiation exposure
 - Protection against venous thromboembolism
 - Care in mental health settings
- Patient harm due to adverse events is probably one of the top 10 causes of death and disability in the world (WHO Director General Report)

Commonly Identified Root Cause Categories and Subcategories

Human Factors

Staffing levels, staffing skill mix, staff orientation, in-service education, competency assessment, staff supervision, resident supervision, medical staff credentialing/privileging, medical staff peer review, other (e.g., rushing, fatigue, distraction, complacency, bias)

Leadership

Organizational planning, organizational culture, community relations, service availability, priority setting, resource allocation, complaint resolution, leadership collaboration, standardization (e.g., clinical practice guidelines), directing department/services, integration of services, inadequate policies and procedures, non-compliance with policies and procedures, performance improvement, medical staff organization, nursing leadership

Communication

Oral, written, electronic, among staff, with/among physicians, with administration, with patient or family

Assessment

Adequacy, timing, or scope of; assessment; pediatric, psychiatric, alcohol/drug, and/or abuse/neglect assessments; patient observation; clinical laboratory testing; care decisions

HF/E Capacity and Capability for Patient and Healthcare Workforce Safety

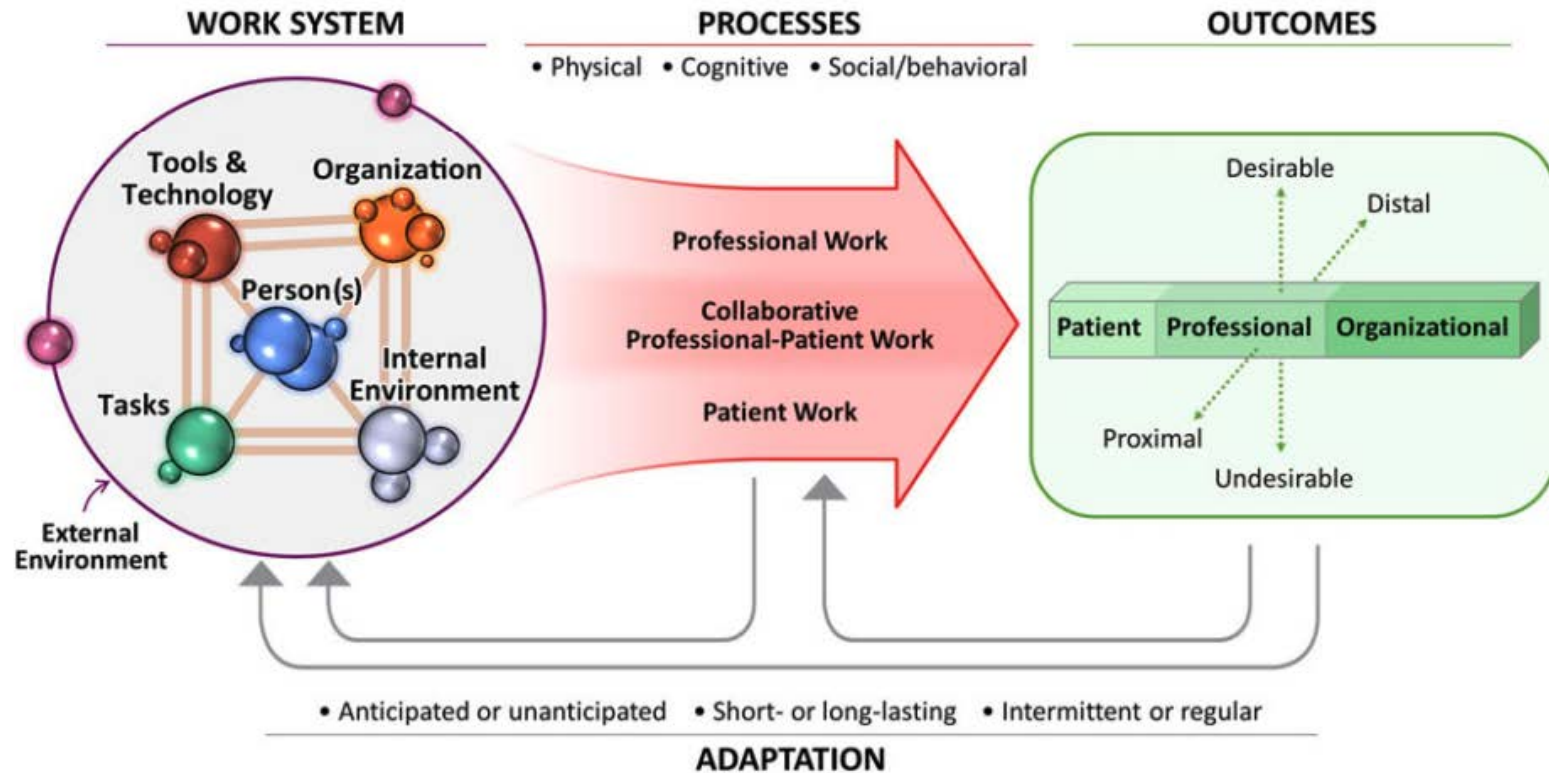
- Person centered approach – support human performance, effectiveness, well-being in the healthcare context
- Participatory approach – engage stakeholders in the HF/E process to ensure appropriate and workable solutions
- Design-driven approach – focus on whole system design and identify gaps and danger points
- Systems approach – look at systemic factors, holistic perspective, risk, resilience to ensure continuous learning and refinement
 - *Resilience is the ability of an organization (system) to keep, or recover quickly to, a stable state, allowing it to continue operations during and after a major mishap or in the presence of significant stresses*

HF/E Systems Approach

Systems approach – HF/E looks at the person embedded in a socio-technical context

- Healthcare workers in work environment
- Patient on journey

HF/E Systems Approach for Patient Safety



Systems Engineering Initiative for Patient Safety (SEIPS) 2.0 Model. Holden et al., 2013

HF/E Systems Approach

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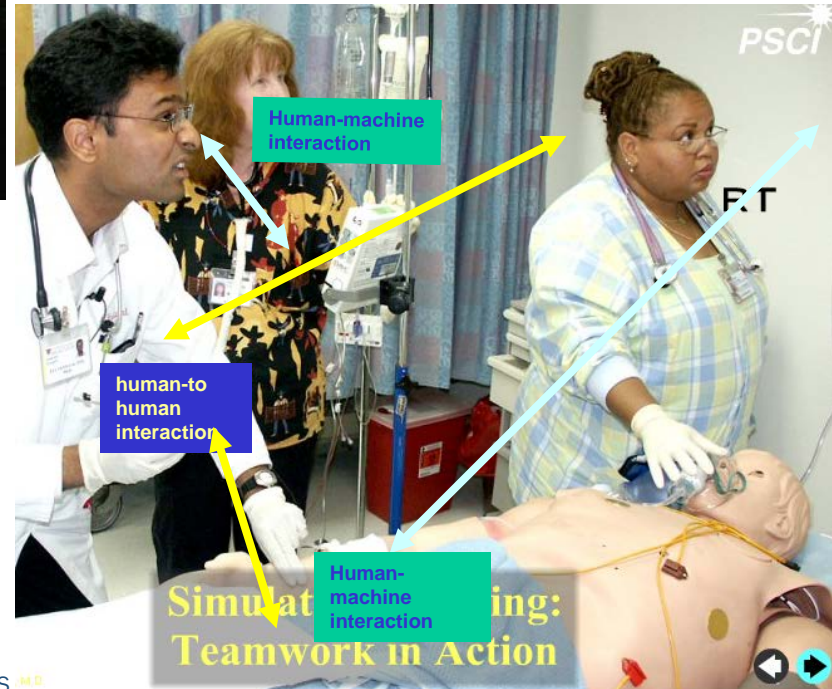
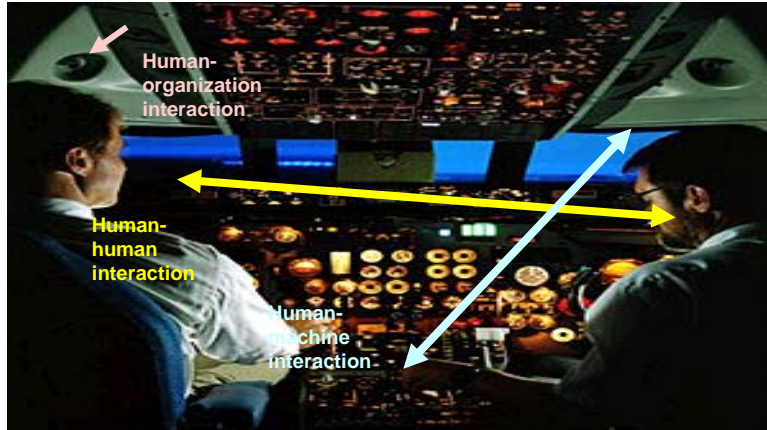
- **Iterative**

- **Interaction-focused – complexity in interaction**

- **Integrative**

- **Where are the gaps in the system?**
- **What are the needs?**

Complexity in Interaction

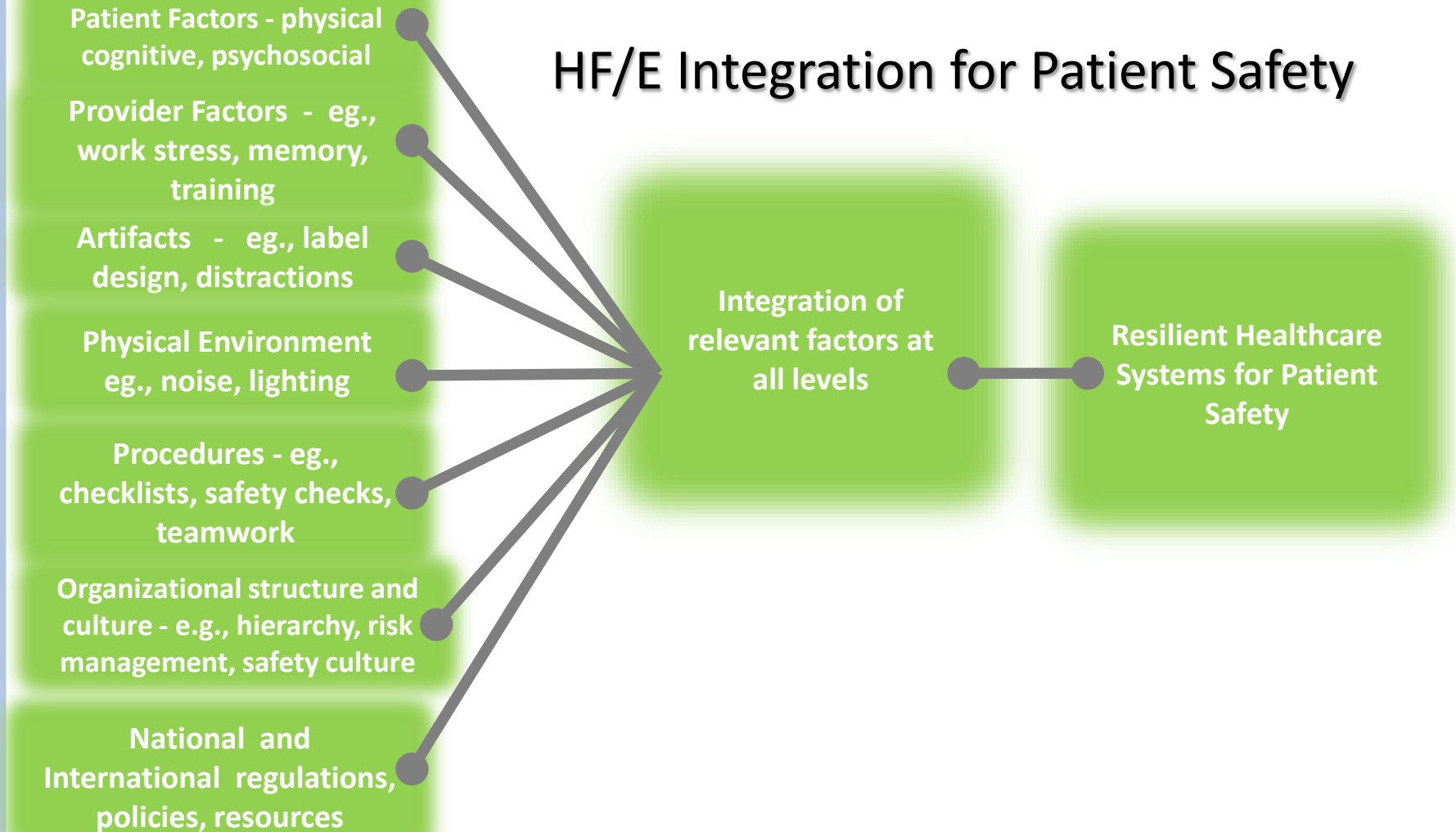


(Edwards, 1972; Bagnara et al., 1998)

HF/E Systems Approach

- **Considers multiple levels:**
 - **Individual (micro)**
 - **Organizational (macro)**
 - **Meso (interaction among individuals, organizations, and sociotechnical systems)**

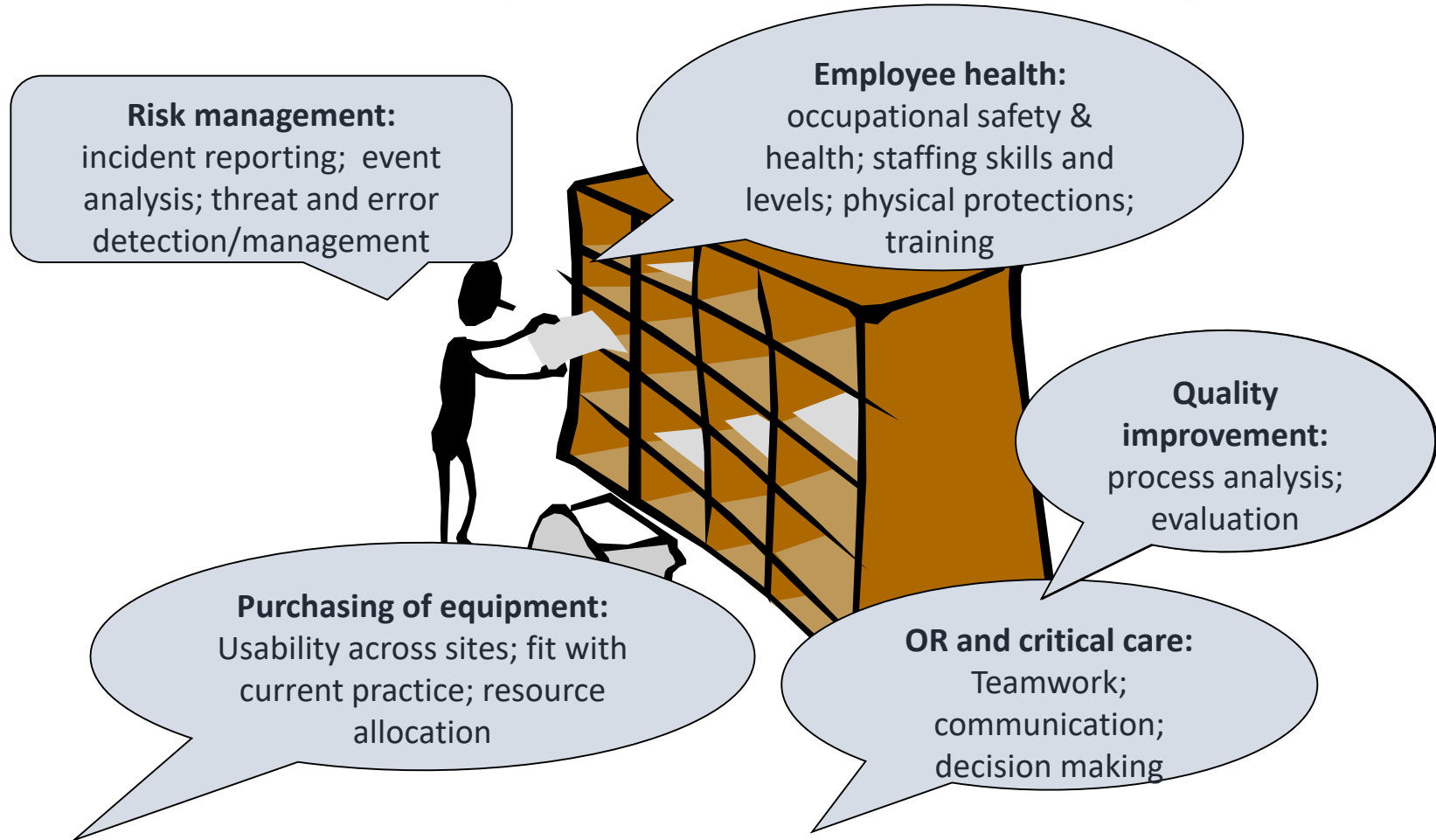
HF/E Integration for Patient Safety



Building HF/E Capacity and Capability in the Healthcare System

- **Education and training of healthcare workers**
 - **Equip the workforce with the fundamental knowledge and skills of HF/E**
 - **Support, promote and embed the discipline in the practitioner's professional training and development**
 - **Empower participation in HF/E initiatives**
 - **Draw on existing expertise**

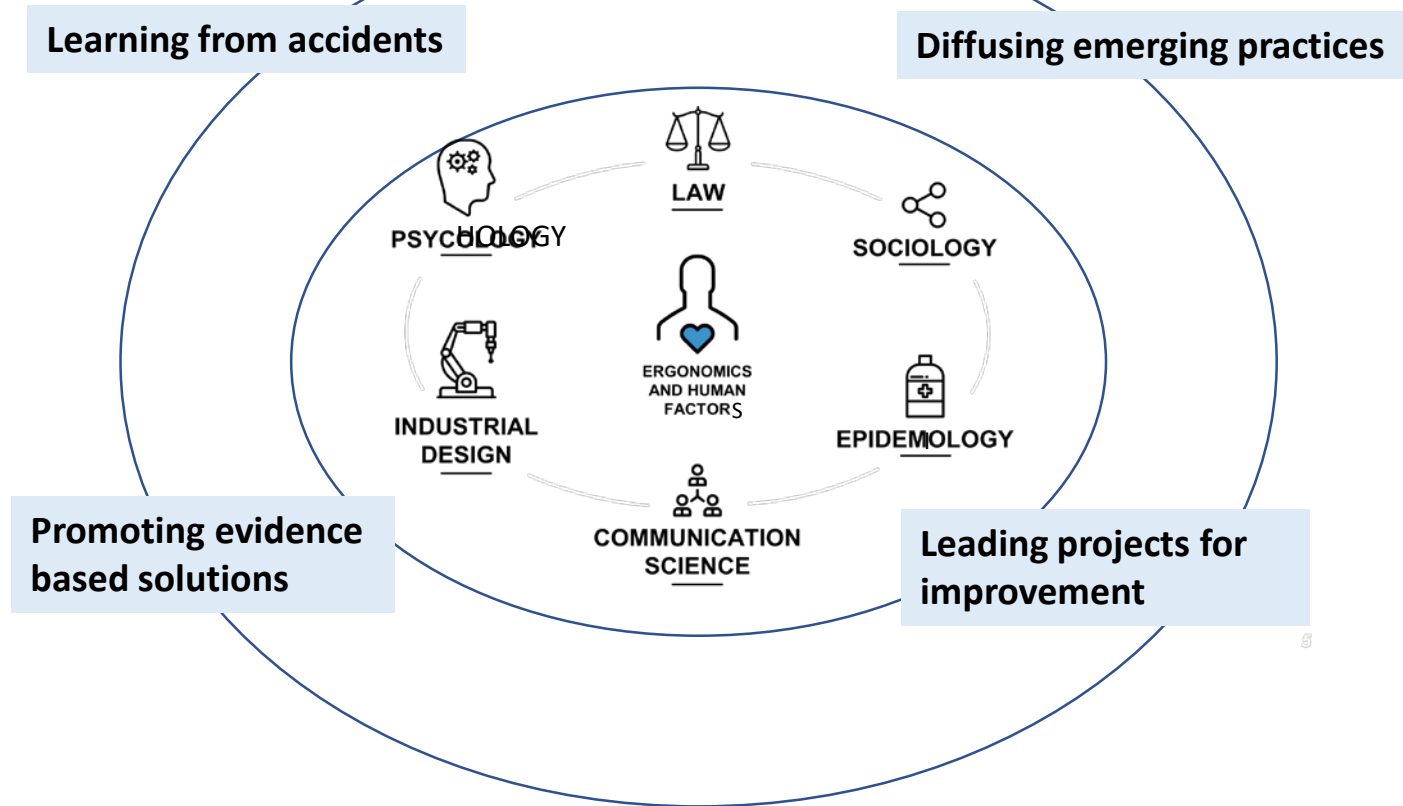
Potential HF/E Expertise in Healthcare Organizations



Building HF/E Capacity and Capability in the Healthcare System

- Education and training of healthcare workers
 - Equip the workforce with the fundamental knowledge and skills of HF/E
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 - Empower participation in HF/E initiatives
 - Draw on existing expertise
- **Organizational commitment**
 - **Comprehensive, resilient, proactive patient safety program**
 - **Safety culture (not punitive to individual)**
 - **Risk management system**
 - **Program evaluation, meaningful and informative indicators, continuous learning and improvement**

Multidisciplinary and Multimodal Approach



Multidisciplinary centre for safety and quality improvement: learning from climate changing science (Vincent C, BMJ QSHC, 2010)

Istrasburgo, 2008 - Oviedo, 2011 - Taipei, 2014

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- Education and training of healthcare workers
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 - Support, promote and embed the discipline in the practitioner's professional training and development
 - Empower participation in HF/E initiatives
 - Draw on existing expertise
- Organizational commitment
 - Comprehensive, resilient, proactive patient safety program
 - Safety culture (not punitive to individual)
 - Risk management system
 - Program evaluation, meaningful and informative indicators, continuous learning and improvement
- **National and international support**
 - **Government policies, priorities, regulations**
 - **WHO recommendations**
 - **Development of safety infrastructure**

THANK YOU

Resources

- *Hollnagel, E., Woods, D., & Leveson, N. (2006). Resilience engineering: Concepts and precepts. UK: Ashgate*
- *Carayon, P. (2010). Human factors in patient safety as an innovation. Applied Ergonomics, [online] 41(5), pp.657–665. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2873106/> [Accessed 9 Feb. 2020].*
- *WHO Global Action on Patient Safety (2019). Report by the Director-General.*
- *Seventy-second World Health Assembly Wha72.6, Global action on patient safety, 2019*

Extra slide

Patient safety topics in WHO curriculum

- 1. What is patient safety?
- 2. Why applying human factors is important for patient safety
- 3. Understanding systems and the effect of complexity on patient care
- 4. Being an effective team player
- 5. Learning from errors to prevent harm
- 6. Understanding and managing clinical risk
- 7. Using quality-improvement methods to improve care
- 8. Engaging with patients and carers
- 9. Infection prevention and control
- 10. Patient safety and invasive procedures
- 11. Improving medication safety