Masterclass:
Human Factors in Healthcare

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Session Purpose

- Rapid high level overview & challenge:

  - Human Factors (HF) Science & Practice

  - Myths: What it's Not!

  - Case Studies: Why HF Integration is Needed

  - HF and System Safety

  - Response to COVID-19

  - SEIPS

  - Challenge Cards

  - Safety Culture

  - Signposting

Mentimeter

What do you understand by Human Factors AND Ergonomics?

Defining Human Factors/Ergonomics (HFE)

- "Ergonomics (or human factors) is…concerned with the **understanding of <u>interactions</u> among humans and other elements of a system…**in order to optimize human **well-being** and overall **system performance**…" (IEA, 2000)

In simpler terms:

- *Applying human factors ensures that systems, products and services are designed to make them easier, safer and more effective for people to use*

- ***Designing for people to make things easier and safer***
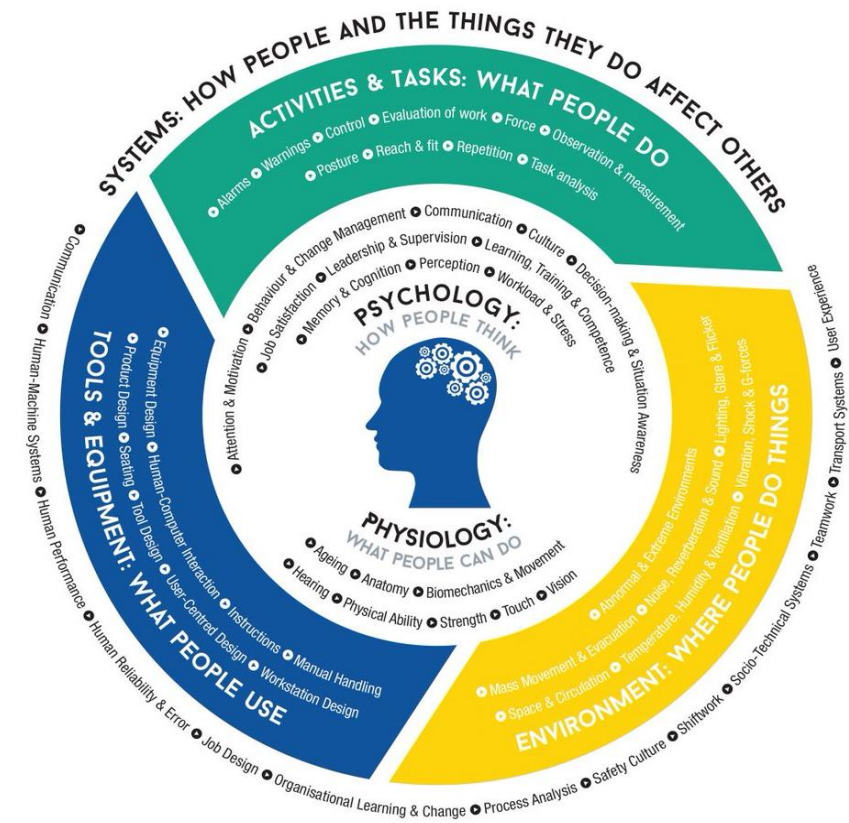
Who is Improving Human Work in Healthcare?

- Improvement Advisor
- Clinical Risk Advisor
- Patient Safety Officer
- Clinical Governance Manager
- Organisational Development Professional
- Occupational Health & Safety Professional
- Clinicians, leaders, managers, scientists, ancillary, admin etc.

- Human Resources
- Health services researcher
- Regulators & Accreditors
- Implementation Scientist
- Industrial / Work Psychologist
- User Designer / UX Researcher
- Ergonomist / Human Factors Specialist (very rare!)

# Distinguishing Features of Human Factors & Ergonomics

1. **It ALWAYS takes a Systems Approach** (holistic)

2. **It is ALWAYS Design Driven** (to take account of human characteristics, needs, capabilities and preferences)

3. **It focuses ALWAYS on two closely related outcomes: System Performance** and **Human Well-being** ("Twin Aims" = "Joint Optimisation")
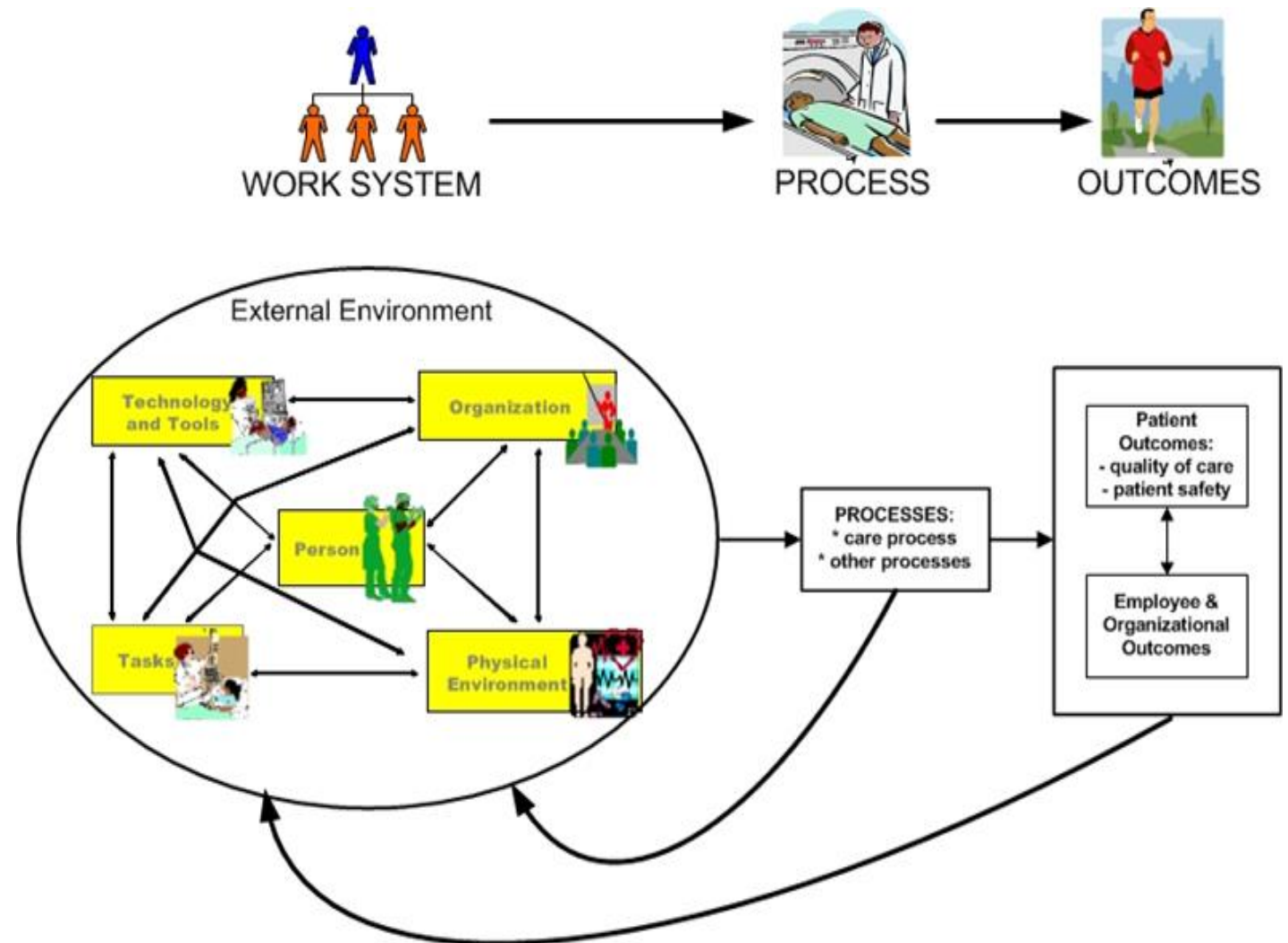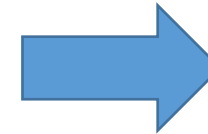
Human Factors Science…

- **Draws on important principles derived from Human, Engineering & Management Sciences:**

  - Anatomy
  - Biomechanics
  - Physiology
  - Anthropometrics
  - Engineering
  - Psychology
  - Sociology
  - Interaction design
  - Organisational management
  - User experience
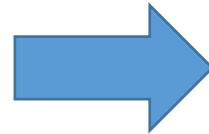
- **Human-Centred Design of:**
  - Tasks
  - Work systems
  - Technology
  - Products
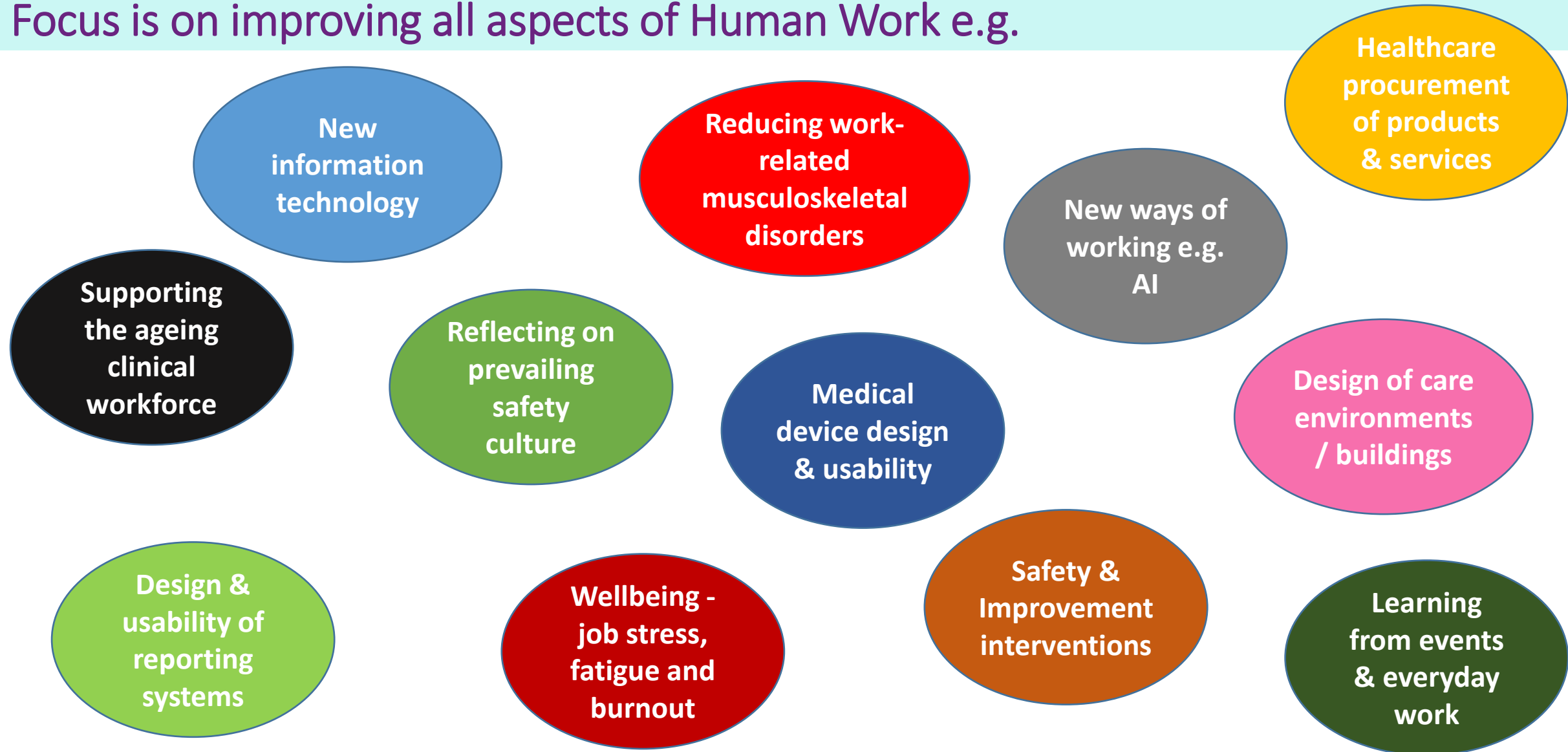 - Services
  - Anatomy

- **Organisational Performance**
  - System safety
  - Efficiency
  - Effectiveness
  - Reliability
  - Productivity

- **Human Wellbeing**
  - Health & Safety
  - Satisfaction
  - Experience
  - Comfort
  - Enjoyment

Wide ranging discipline -
Focus is on improving all aspects of Human Work e.g.

New information technology

Reducing work-related musculoskeletal disorders

New ways of working e.g. AI

Healthcare procurement of products & services

Supporting the ageing clinical workforce

Reflecting on prevailing safety culture

Medical device design & usability

Design of care environments / buildings

Design & usability of reporting systems

Wellbeing - job stress, fatigue and burnout

Safety & Improvement interventions

Learning from events & everyday work

Examples of Fundamental HUMAN FACTORS Principles

The Human Factors discipline promotes a fundamental rejection of the notion **that humans are primarily at fault when making "errors"** in the use of a complex sociotechnical system

Participatory Design

Systems Approach

Applying Design Knowledge
(ISO…)

Mismatches
(Identification & Understanding)

Interactions are Key
(micro, meso, macro)

Closing the Gap
(Work-as-Imagined v Work-As-Done)

HFE Principles

Can *This* Person (worker, team, patient)...

..With *This* Training (or information)...

......Do *These* Tasks...

.........Using *This* Equipment or Service...

...........To *These* Standards (performance)...

..............Under *These* Conditions?

[Sue Hignett, 2019]

Other High Risk Industries

Human factors is a scientific discipline, with scientific methods, highly established in other safety critical industries:

- Nuclear
- Maritime
- Military
- Aviation
- Rail
- Surveillance
- Offshore industries
- Energy

Aviation versus Healthcare Comparison!!!

- EUROCONTROL c7500 employees (40 professionals)
- UK Health Service c1.3m employees (<10 professionals)
- Urgent need to build capacity & capability
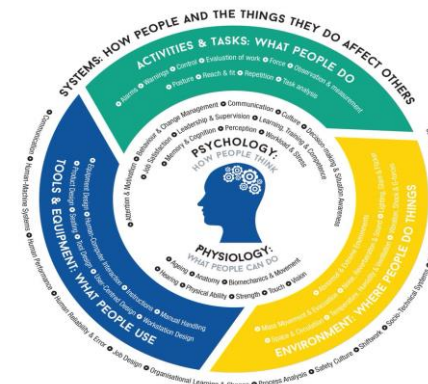
Tackling Myths & Misunderstandings

VIEWPOINT

OPEN ACCESS

The science of human factors: separating fact from fiction

Alissa L Russ,[1,2,3,4] Rollin J Fairbanks,[5,6,7] Ben-Tzion Karsh,[*8]
Laura G Militello,[9] Jason J Saleem,[1,2,3,10] Robert L Wears[11,12]

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*This article is in recognition of Dr Ben-Tzion Karsh and includes a tribute in the acknowledgements.

ABSTRACT
Background Interest in human factors has increased across healthcare communities and institutions as the value of human centred design in healthcare becomes increasingly clear. However, as human factors is becoming more prominent, there is growing evidence of confusion about human factors science, both anecdotally and in scientific literature. Some of the misconceptions about human factors may inadvertently create missed opportunities for healthcare improvement.
Methods The objective of this article is to describe the scientific discipline of human factors and provide common ground for partnerships between healthcare and human factors communities.
Results The primary goal of human factors science is to promote efficiency, safety and effectiveness by improving the design of technologies, processes and work systems. As described in this article, human factors also provides insight on when training is likely (or unlikely) to be effective for improving patient safety. Finally, we outline human factors specialty areas that may be particularly relevant for improving healthcare delivery and provide examples to demonstrate their value.
Conclusions The human factors concepts presented in this article may foster interdisciplinary collaborations to yield new, sustainable solutions for healthcare quality and patient safety.

INTRODUCTION

"Human error in medicine, and the adverse events that may follow, are problems of psychology and engineering, not of medicine.[1]"

Medicine is devoted to human health and healing, but the science behind why errors occur, and how to reduce the likelihood of preventable harm to individuals, are well described in human factors literature. Human factors—a science at the intersection of psychology and engineering—is dedicated to designing all aspects of a work system to support human performance and safety. Human factors, also known as ergonomics, uses scientific methods to improve system performance and prevent accidental harm.[2] The goals of human factors in healthcare are twofold: (1) support the cognitive and physical work of healthcare professionals[3] and (2) promote high quality, safe care for patients.[4]

Human factors knowledge has been suggested as a promising mechanism with which to improve healthcare delivery,[5–7] yet this body of knowledge remains largely untapped. The reasons for this are not fully known. Gurses et al[8] posit that safety efforts have been sluggish due to the inadequate integration of human factors principles and methods into healthcare. Their article provides valuable recommendations to accelerate the uptake of human factors. In addition, we believe that common misconceptions about human factors may slow the integration of human factors into healthcare and hinder healthcare improvement. The term 'human factors' itself can be misleading and may result in fundamental misunderstandings. It appears that several misconceptions about human factors science are beginning to take root in peer-reviewed medical literature.[9–16] For example, some papers refer to 'human factors', yet point to the 'failures' of people as the underlying cause of adverse events or broken healthcare delivery processes,[17–19] a stance that is contrary to human factors science and counterproductive for advancing patient safety.[20 21] Other literature describe the application of human factors for specific applications or select healthcare audiences.[22 23] The goal of this paper is to provide a general introduction to human factors literature. Human factors—a

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EDITORIAL

Spreading human factors expertise in healthcare: untangling the knots in people and systems

Ken Catchpole

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INTRODUCTION

Human factors (HF) is a term many involved in healthcare delivery are now familiar with, even though a decade ago most had never heard of the concept. The majority of clinicians and healthcare improvement specialists have learned of HF through a particular branch of practice that derived from aviation and arose from the need to address error, teamwork and communication issues. This behavioural safety approach, while entirely legitimate and increasingly well evidenced, is limited. Yet, it has dominated perceptions of what constitutes HF and shaped the application of HF principles in healthcare. Frequently espoused by well meaning clinicians and aviators, rather than academically qualified HF professionals, it has led to misunderstandings about the range of approaches, knowledge, science and techniques that can be applied from the field of HF to address patient safety and quality of care problems.

In this issue, Russ et al[1] seek to redress some of the consequences of this misappropriation. They articulate the problems succinctly and expand on earlier calls[2 3] for greater integration of HF expertise in healthcare. Repeatedly encountering recurrent misunderstandings and misuse of HF undoubtedly concerns academic experts. However, rather than feeling frustration over the 'fictions' discussed by Russ et al,[1] HF professionals should be encouraged by the tremendous progress made in recent years—from a state in which clinicians had little exposure to HF work, and even fewer saw its value, to widespread acknowledgement of the value of human-centred systems thinking in healthcare.

Yet, the origins of the misunderstandings of HF discussed by Russ et al[1] warrant reflection, as they may signal deeper problems in healthcare and the ways in which HF experts have worked in healthcare. One simple reason for misunderstandings about HF arising so commonly in healthcare may be that the spread of HF principles and activities in healthcare has involved many non-experts. A second, deeper source of the misunderstandings of HF in healthcare relates to the dominance of particular HF practices largely as applied to aviation. The remainder of this commentary explores this history of the importation of aviation-focused HF into healthcare.

In the context of the discussion by Russ et al[1] about fictions and misunderstandings about HF among non-experts, this editorial aims to move beyond lines of demarcation about what does or does not constitute legitimate HF principles or practices, with the intention of creating a more bidirectional discussion between HF experts and clinicians about how to more productively advance an agenda that many of us regard as fundamentally important for the future of healthcare.

Before proceeding further, though, let me state that my beliefs in the value of HF expertise and human-centred systems design are highly partisan. I value tremendously engaging the clinical community in understanding human fallibility and applying high-quality HF practices and behavioural safety to improve healthcare systems. In part as an apology to those clinicians and HF practitioners whom I may have offended in attempting to achieve these goals, this editorial became a personal and professional imperative. Clinicians and HF professionals should be collectively proud of what has already been achieved. But, harnessing the true potential of HF in healthcare demands that we address the problematic ways in which their principles and techniques have been applied in healthcare to date and the ways in which HF professionals have tended to work with clinicians.

Human Factors Myths & Misunderstandings in Healthcare

Viewpoint

Time to accelerate integration of human factors and ergonomics in patient safety

Ayse P Gurses,[1] A Ant Ozok,[2] Peter J Pronovost[1,3]

EDITORIAL

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VIEWPOINT

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The science of human factors: separating fact from fiction

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1. Human Factors ≠ **Factors of the Human**

2. Human Factors ≠ **Cause of failure**

3. Human Factors ≠ **Team Training**

4. Human Factors ≠ **Non-Technical Skills**

5. Human Factors ≠ **Crew Resource Management**

6. Human Factors ≠ **QI**

7. Human Fac**tors** ≠ **Clinical Skills**

8. Human Factors ≠ **Simulation**

Healthcare Human Factors – **Five Fallacies**

1. **Human Factors addresses workplace problems by teaching people to modify their behaviours X**

2. **Human Factors is about eliminating 'human error' X**

3. **Human Factors is focused only on individuals X**

4. **Human Factors is just 'common sense' X**

5. **Human Factors consists of a limited set of principles that can be learnt during brief training X**

Brief Q&A

How does this compare with your initial understanding and roles of HFE?

The Challenge – Patient Safety *Differently?*

"…the patient safety movement itself has gotten things wrong. Its understandings … of concepts such as safety, harm, risks and hazards are incomplete and simplistic and, as a result, its work has been grounded in assumptions and generalisations that are either wrong or lacking in context'

(Wears & Sutcliffe, 2020)

Why we need Human Factors Integration at ALL levels in Healthcare

- Hard Truths
- Complexity
- Case Studies

Brace Yourself! 'Hard Truths'

1. Most healthcare publications (academic, policy and grey literature) misunderstand and misrepresent Human Factors

2. Most healthcare education and training curricula misunderstand and misrepresent fundamental Human Factors/Safety Science principles and methods

3. Despite the rhetoric, we don't have 'strong systemic barriers' against 'never events'

4. Our obsession with 'medical error' is educationally backward and self-harming

5. We talk about taking a 'systems approach' to learning from events or designing improvements but we don't really understand what this actually means or entails

6. We adapt simple methods from much less complex industries to try and solve our, often unique, highly complex problems – 'pseudo-innovation fads and fashions'

Do we really treat healthcare as a Complex System?

- Improvement projects often fail to take a 'systems approach'

- 'Systems approach' in Quality Improvement differs from HF – similar language but different methods, misunderstood or misapplied

- Improvement interventions often target single components (e.g. individuals, training, protocol, new tool)

- Domination of limited linear, cause-and-effect thinking and methods (e.g. Fishbone diagrams, PDSA, RCA/5-Whys).

- Complexity needs different, more in-depth thinking and methods

Understanding Systems
(A group of interacting elements with a purpose)
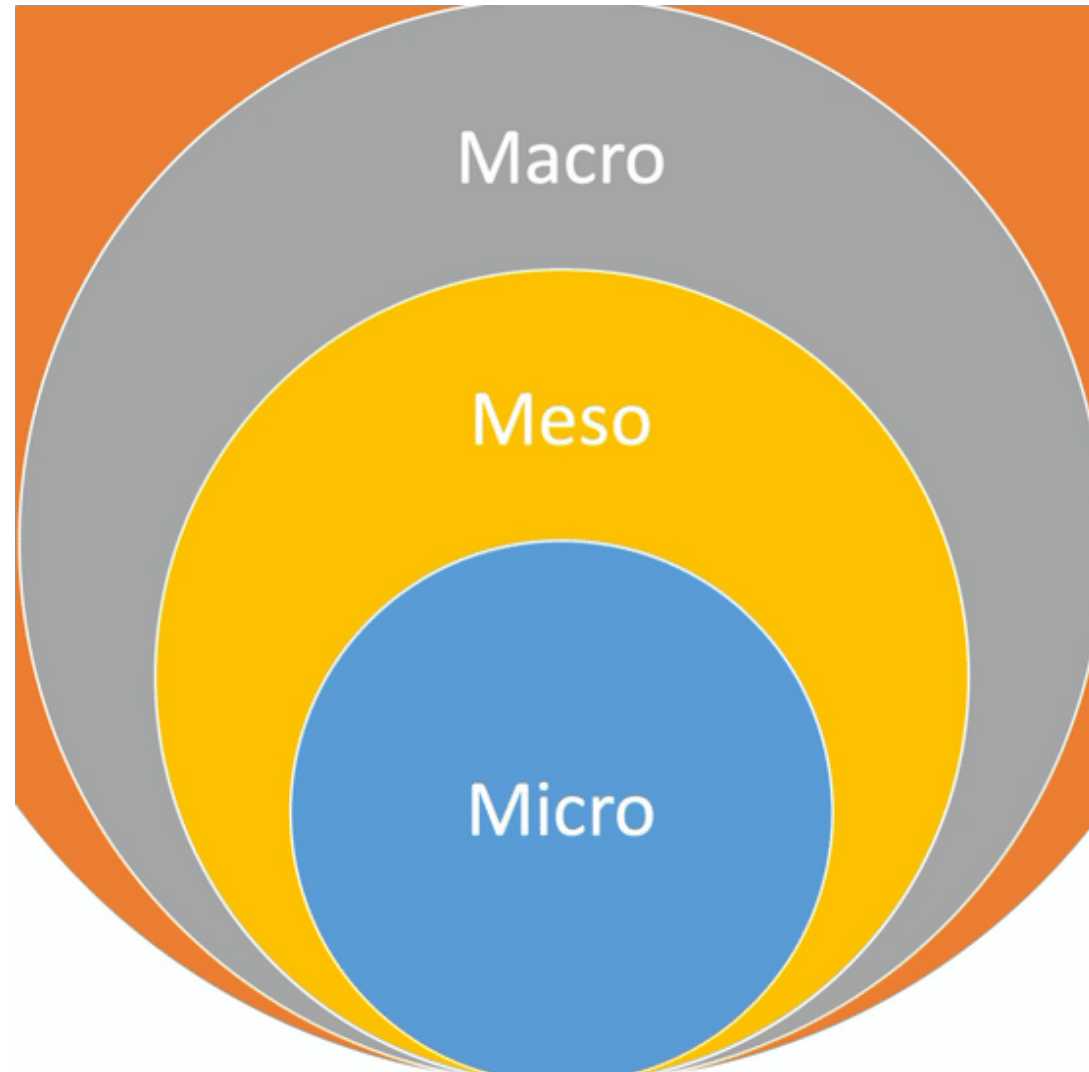
Understanding System Complexity

Linear

Complicated
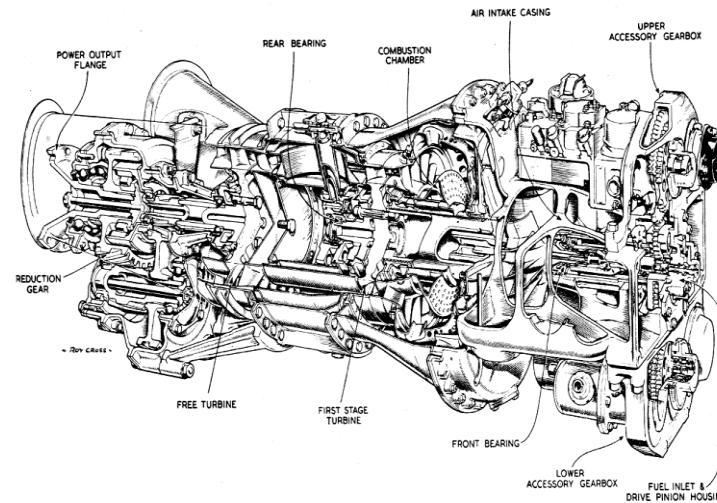
Complex

"Simple" Act of Taking Blood?

Decide to take blood

Assemble equipment

Take blood

Label blood and complete form

Send to lab

Linear?

Complex?
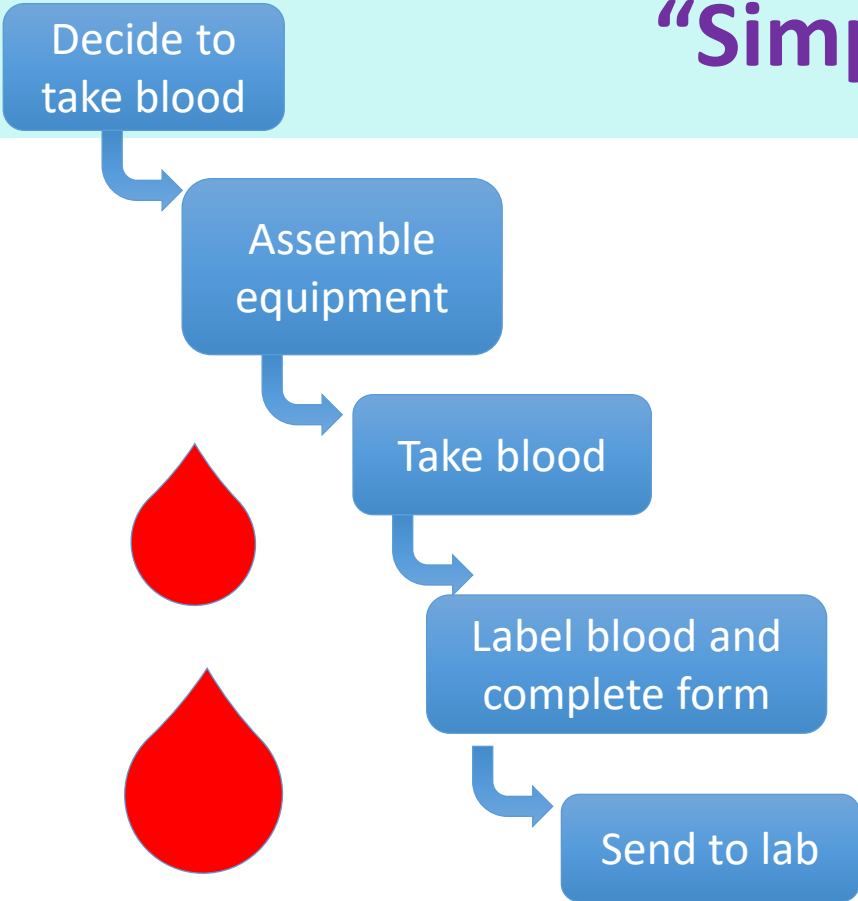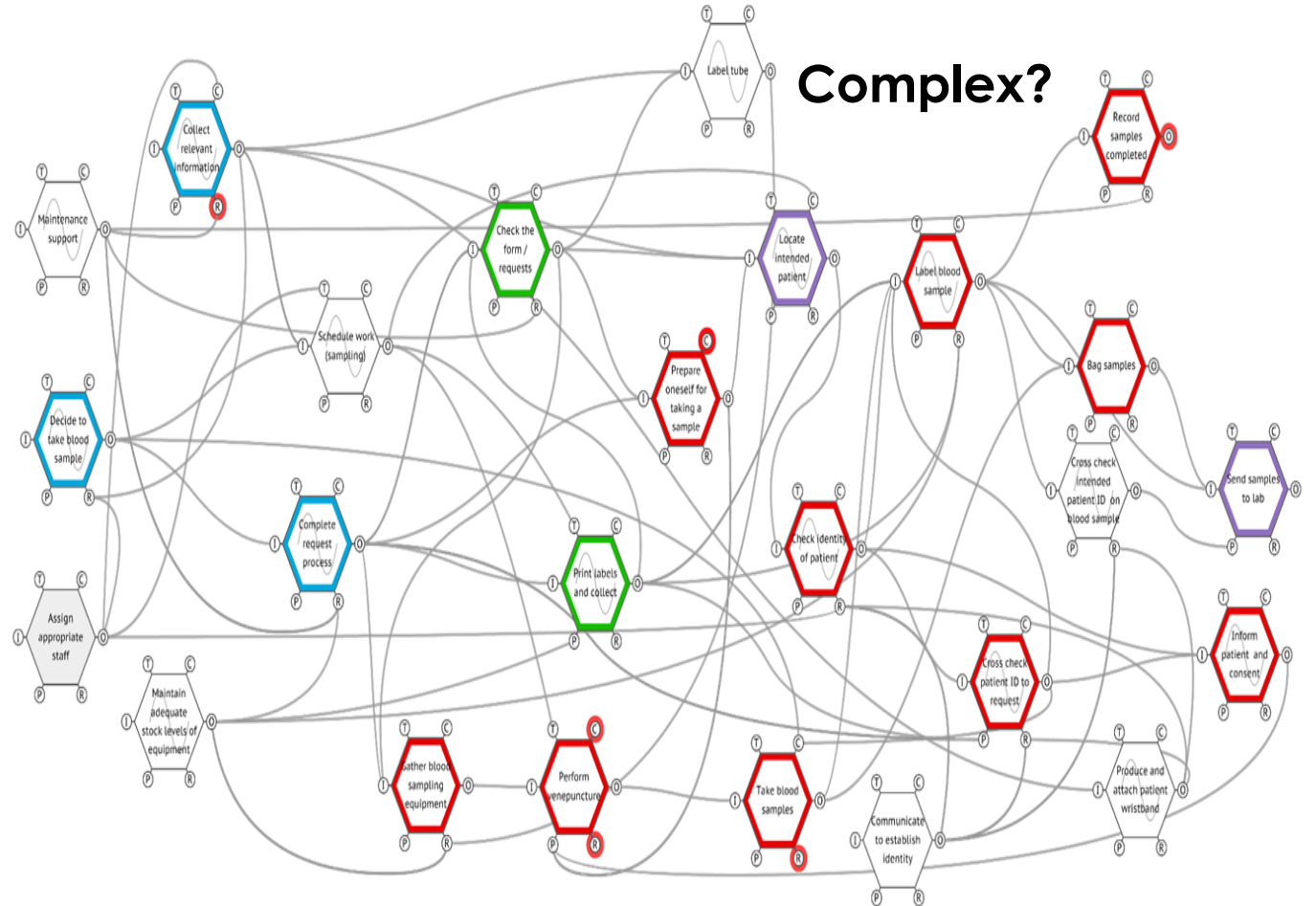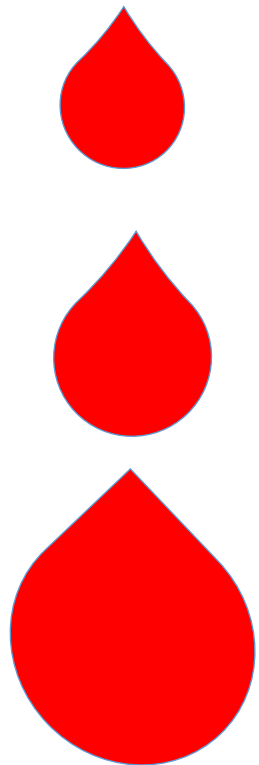
Pickup L, Hollnagel E, Bowie P *et al.*
Blood sampling - Two sides to the story. *Applied Ergonomics*. 59. 2017; 234–242

Policies on Learning from Adverse Events

- Critical review of policy documentation from HF perspective

- High level findings:

  - **Clarity and consistency - nomenclature and interpretation**

  - **'Near misses' – afterthought**

  - **Confusing messages – why things go wrong**

  - **Assumes 'causes' can always be found and fixed – promotes 5-whys?**

  - Lack of **systems thinking/methods/local rationality/Risk ALARP**

  - Limited attempts **to understand 'normal everyday work'**

  - Performance management – '…**to you, not with you**…'

  - **No Participatory Design** – policy written by leaders/non-specialists

WHO Patient Safety Curriculum Guide

- Lots of **positives**, but:
  - **Conflation** of Human Factors terms/concepts
  - **Systems thinking** is separate
  - **Limited understanding** of why things go wrong in complex systems
  - **Arguably over reliance** on team working, benefits of QI, aviation CRM model etc
  - Limited recognition that **all sections of the guide relate to Human Factors**

Patient Safety Curriculum Guide

Multi-professional Edition

Our Obsession with "Medical Error"

It is not 'medical' – inaccurate and misleading

Error is ubiquitous, necessary and largely inconsequential

It is erroneously viewed as a 'cause' – system induced

Ubiquitous in media, judiciary, healthcare research, regulation, education, wider society

Encourages focus on individuals, not systems

It self-harms the profession – why hate yourself?

Surely it's now time to put 'medical error' to bed?

It is both ambiguous and alogical

It is educationally backward

Hindsight judgement = social construction

Ill-defined with no shared understanding

Leads to error reduction strategies to minimise human variation but this is essential

Things going wrong is normal in a complex system

Review of Incident Investigation Approaches

- Our high level findings and recommendations:

  o Investigation **team lacked in-depth knowledge and experience of systems approaches/complexity theory** and related methods

  o **Domination of linear 'cause and effect' thinking** and 'find and fix' methods – severely limited understanding, learning and action

  o **Multiple** process, technology and design recommendations made

  o Likely **most healthcare organisations would have reacted similarly**

  o National policy promotes a systems approach, assumes this is understood and can be implemented - but arguably **recommends methods often incompatible or limited within a complex sociotechnical system**

Brief Q&A

How does this compare with your own experiences and approaches in NZ?
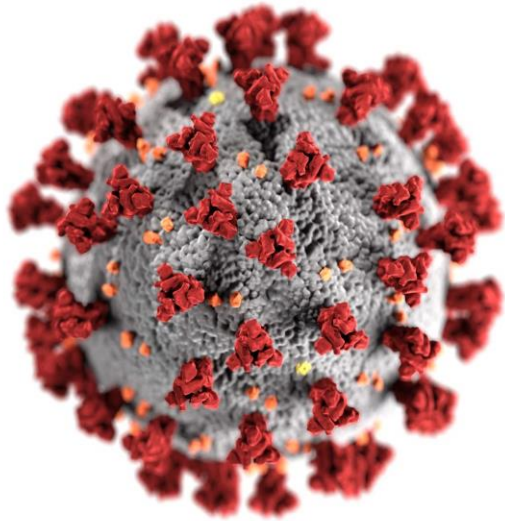
Brief Examples of HFE Response

COVID-19: Ventilator Design, Usability Testing & Procedures

Human Factors in the Design and Operation of Ventilators for Covid-19

Guidance from the Chartered Institute of Ergonomics and Human Factors

Formative Usability Testing of Rapidly Manufactured Ventilator Systems by Chartered Ergonomist and Human Factors Specialists (C.ErgHF)

Bedside Guide Routine Tracheostomy Care

Guidance from the Chartered Institute of Ergonomics and Human Factors

Bedside Guide Ventilator Emergency Care for COVID-19 patients

Guidance from the Chartered Institute of Ergonomics and Human Factors

Design of Personal Protection Equipment (PPE)
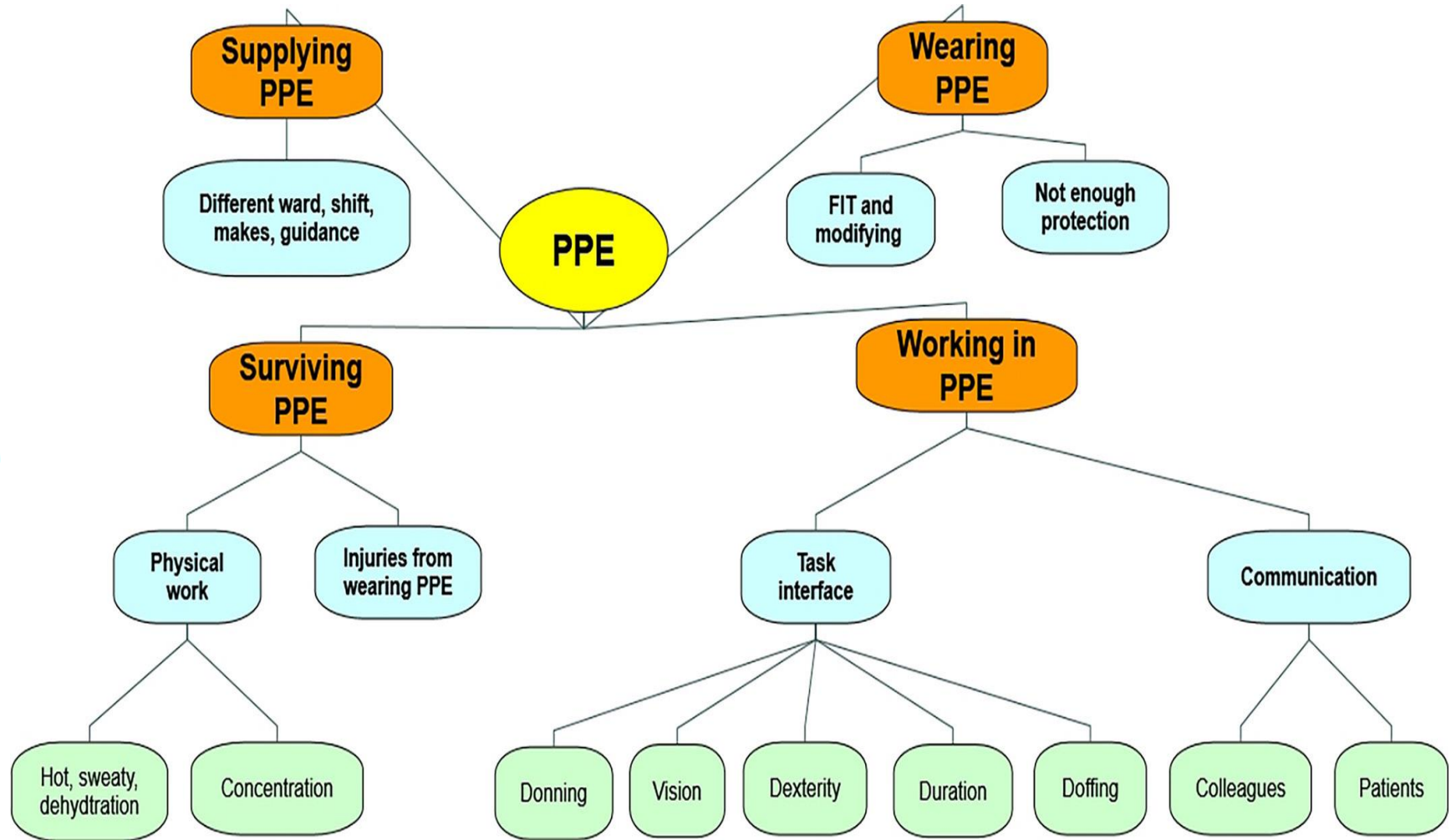
User-Centred Design of Work Procedures
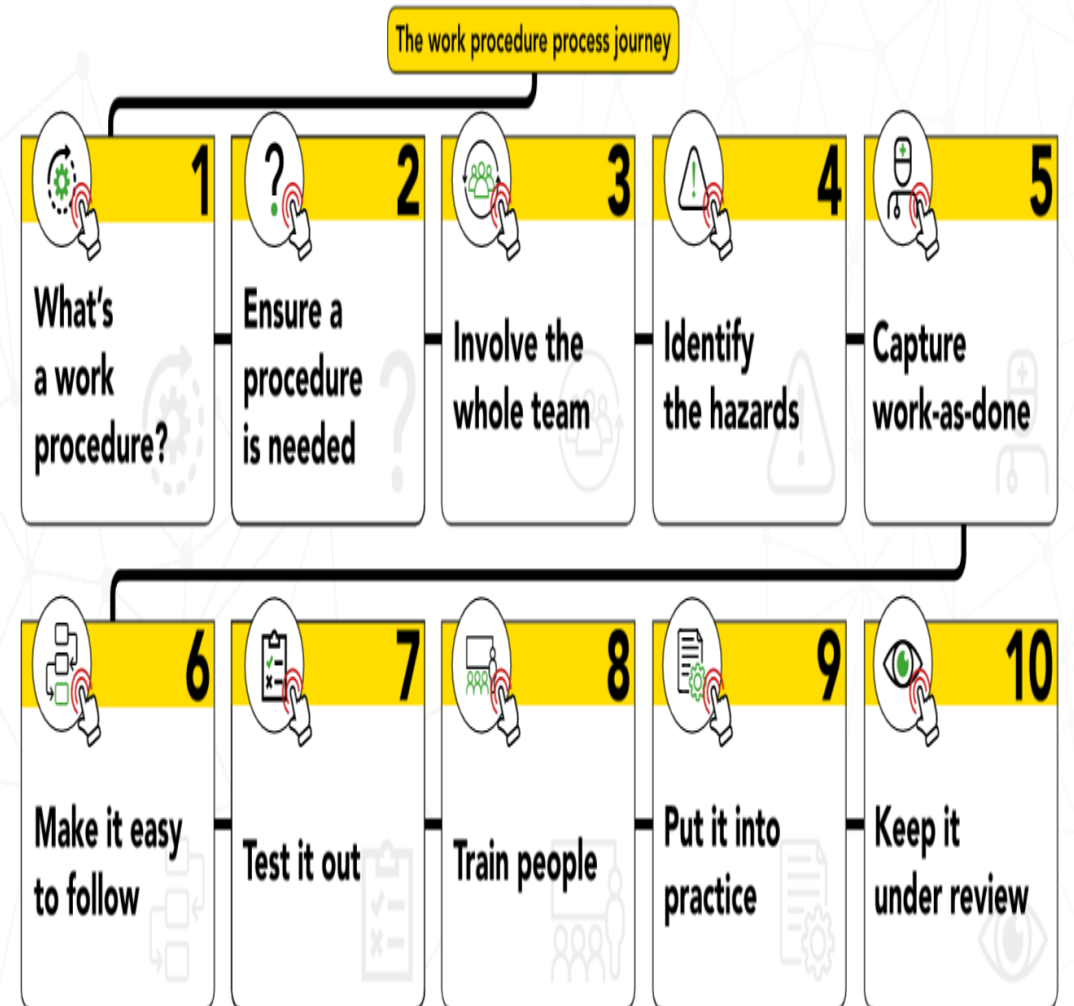
Capturing Lessons from COVID-19 and Beyond

COVID-19 Risk Assessment and Control:
Guidance Package for Scottish General Medical Practices

A 5-Step Guide to Risk Assessment in General Practice Environments

THE 5-STEPS

RISK IDENTIFICATION TOOL FOR GENERAL PRACTICE

REFERENCE LIST OF CONTRIBUTORY FACTORS TO PRACTICE RISKS

PRACTICAL EXAMPLES

KEY POINTERS

+ To identify, assess and control system-wide risks, the care team should think about what could go wrong and cause harm to people and your practice

+ Risk assessment shouldn't be bureaucratic, it should be about identifying sensible measures to control practice risks (e.g. those associated with infection control or test results handling systems)

+ You will already be taking steps to identify and control risks, but a more formal assessment will help you to prioritise and decide whether you have covered all that you need to

+ Quick pragmatic definitions
Hazard: Anything that can cause harm
Risk: The chances of that hazard causing harm
Harm: Anything that you would not like to happen to your patients, your team or yourself

+ Think about Risk over time
Past: What has gone wrong in the past?
Present: What could go wrong currently?
Future: What could go wrong due to change?

+ The 5-Step Guide can help you look at risks and control measures in more detail with a view to improving these, where you think this is necessary

COVID-19: Monitoring Risk and Improving System Safety (C-MoRISS) Checklist

About the checklist

- As part of our Covid-19 response, the checklist was co-designed by many different GP team members to help practices identify and check safety-critical issues of importance to the health and wellbeing of patients, visitors and care teams during this crisis period and as we return to new ways of working.

- It is important to note that it is not fully mandatory – but is a flexible guide that you can adapt to suit your local circumstances. **Use your own judgement and apply your own common sense** when determining the content and if you're fully compliant with each checklist issue.

- As far as possible the checklist development process was informed by human factors/systems thinking to make the content relevant and understandable and to cover all possible risks across the general practice workplace.
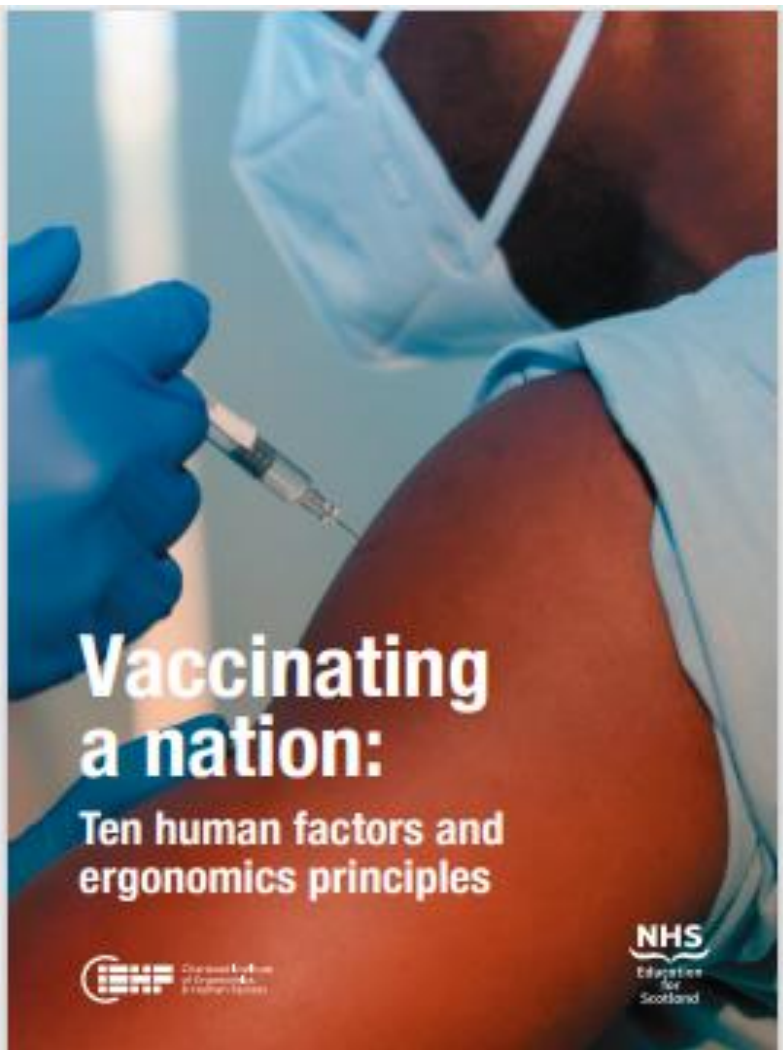
How to use the checklist

- Simply work your way through the checklist (it has been sub-divided to make it easier to follow and complete) and use a combination of checking and **your own professional judgement** to determine whether you are fully compliant with each of the issues outlined.

Definitions

- *Mandatory* – 'where a legal, professional, contractual or regulatory obligation existed for the check to take place'
- *Essential* – 'where a failure to check the item would have the potential for harm to occur to patients, GP team members, or practice visitors, or impact negatively on the performance and reputational risk of the practice'
- *Advisable* – 'where periodic checking of the item would be a voluntary demonstration of high quality safe system practice'

Category Key: Mandatory ■ Essential ■ Advisable ■

COVID-19: Vaccinating a Nation

Brief Discussion

Response in NZ and USA?

Take a Break!

Human Factors for System Safety (and Learning!)

Perrow
'Human Error'
Exercise

The Systems Thinking Mindset for Understanding Safety

Pilot study: what we did

- Analysis of the following documentation undertaken by two experienced safety researchers:
    1. Learning Summaries (n=14)
    2. Ombudsman Reports (n=10)
    3. IRLS Data (n=20)
    4. National AE Policy (n=1)
    5. Organisational AE Policy (n=1)
    6. Organisational AE Investigations (n=6)
    7. PS Curriculum (n=1)
    8. PS Syllabus (n=1)
    9. Just Culture Guide (n-=1)

- **Data extracted and themed independently**
- **Met to build consensus and agree themes**
- **Data analysed and themed holistically**

What we found

- **Pejorative Language / Blame**

'In a major departure from accepted medical practice, Dr E agreed to see Caroline and simply forgot about her.'

'Patient not bothering to book an appointment. No documented evidence to say patient was told he needed to book an appointment. Medical Record alerts not being actioned appropriately'.

'Poor administration and time management by Physio involved.'

'Poor understanding of procedure'.

What we found

- **Language of Human Failure**

'He was phoned at least three times after her discharge from the city hospital.....but failed to realize the seriousness of her condition.'	*'Not thinking ahead, not considering occupational limitations. Not following referrals up after sending them'*	*'A failure to relay information between staff and confirm assumptions, resulting in an adverse patient outcome'*

What we found

- **Counterfactual Reasoning / Lack of Local Rationality**

'…the Board should have adequate systems in place to ensure death certificates are accurate, staff should have access to medical records, amongst other more systemic focussed actions'

'On review, there were signs of sepsis at his initial presentation that should have been recognised leading to appropriate treatment at that stage.'

'If a scan had been done in A&E this may have led to an earlier diagnosis'

- The problem with counterfactual reasoning is that it prioritises an analysis of what the system did **not** do, and as a consequence, it ignores an analysis of why it made sense for the system to act the way it did when it did…because it *did* make sense to act the way it did. (Bergstrom, 2018)

What we found

- **Weak, Passive and Vague Recommendations for Improvement**

'training and guidance on use and monitoring of security doors to be provided to staff'

'collaboration and communication with social services, emergency department and children's assessment unit teams'

'All relevant clinicians should be aware of the guidance'

'Communication between staff and staff and family 'should be appropriate and timely'. 'Patients should receive appropriate medical review for their symptoms'

What we found

- **Lack of Evidence**
- **Language Framing**
- **Myth-busting**

"Error" (its synonyms) is ill-defined and viewed as a Cause and/or Outcome

Lack of Systems Thinking /Approaches

Just Culture – Guilty Until Proven Otherwise

Misunderstanding and Misuse of 'Human Factors'; 'Risk and Hazard', 'Safety-I/II', Systems Approach

"Teamwork is the best defence against system failure"

Inconsistent and Imprecise Use of Safety Language

'Old' Mindset – Simplistic, Linear, Cause & Effect

Assumption – Limited Involvement of Specialists

Foundational Principle

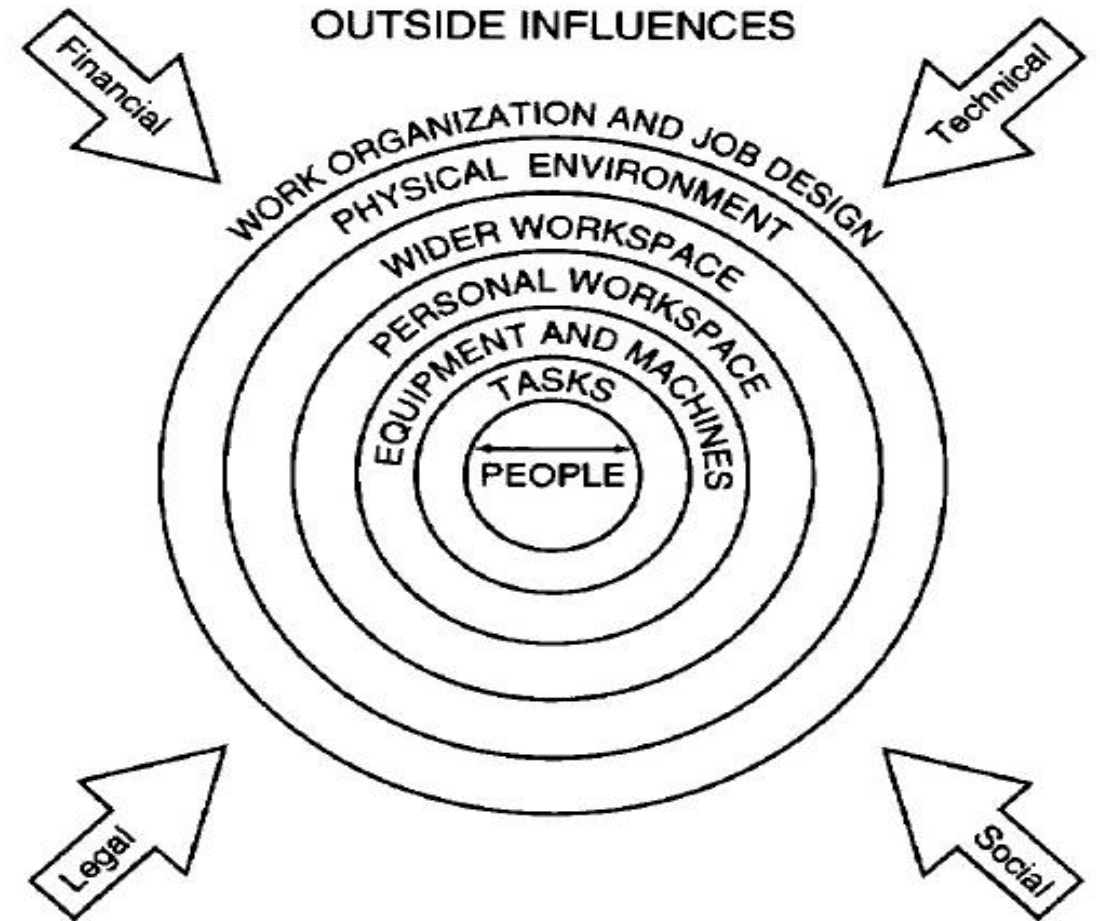**Avoid blaming individuals (departments & organisations), focus learning at the system level**

Principle No.1

Recognise that system safety is everyone's responsibility

Principle No.2

Safety incidents are caused by multiple, interacting contributory factors from across the care system
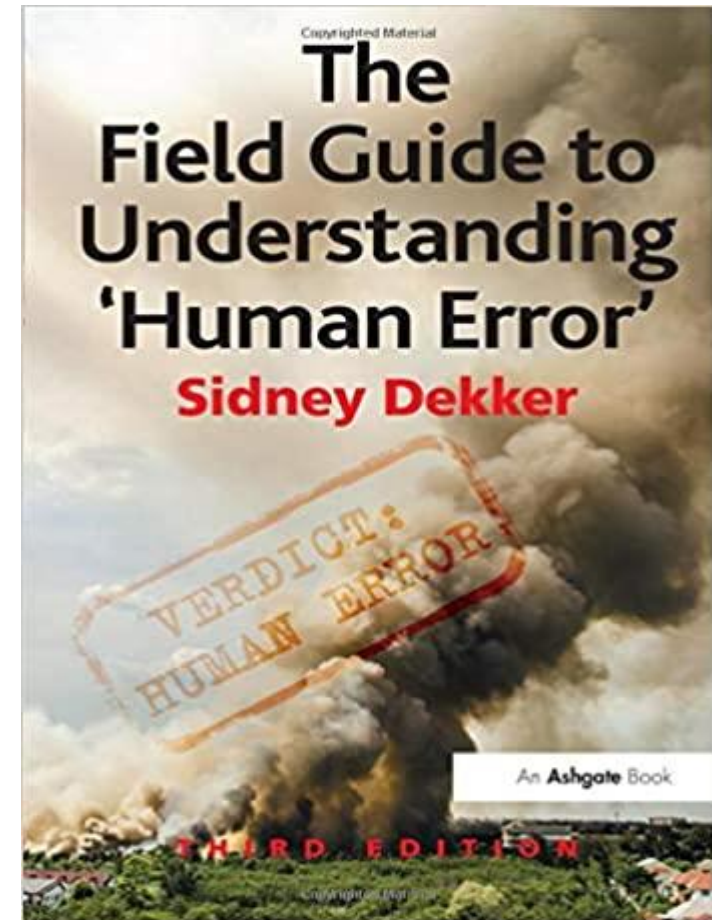
Principle No.3

Understand that safety (or lack of safety!) is an *emergent* property of complex care systems

Safety is an emergent property of systems; it does not reside in a person, device or department of an organization or system. Safety cannot be purchased or manufactured; it is not a feature that is separate from the other components of the system. This means that safety cannot be manipulated like a feedstock or raw material. The state of safety in any system is always dynamic; continuous systemic change insures that hazard and its management are constantly changing.

-Richard Cook MD

Principle No.4

**Consider 'human error' as a symptom of a system problem, not its cause**

Principle No.5

Recognise that there is no 'root cause' of a safety incident in highly complex care systems

We tend to be looking for the root cause of something, but in complexity, there's no root cause. There's no root cause of a hurricane. There's no root cause of a tsunami. There's no root cause in nature. There are just many forces that interact together to get you a particular effect. Similarly, there's no root cause of trust. There's no root cause of leadership. These are all a series of things that happen together.
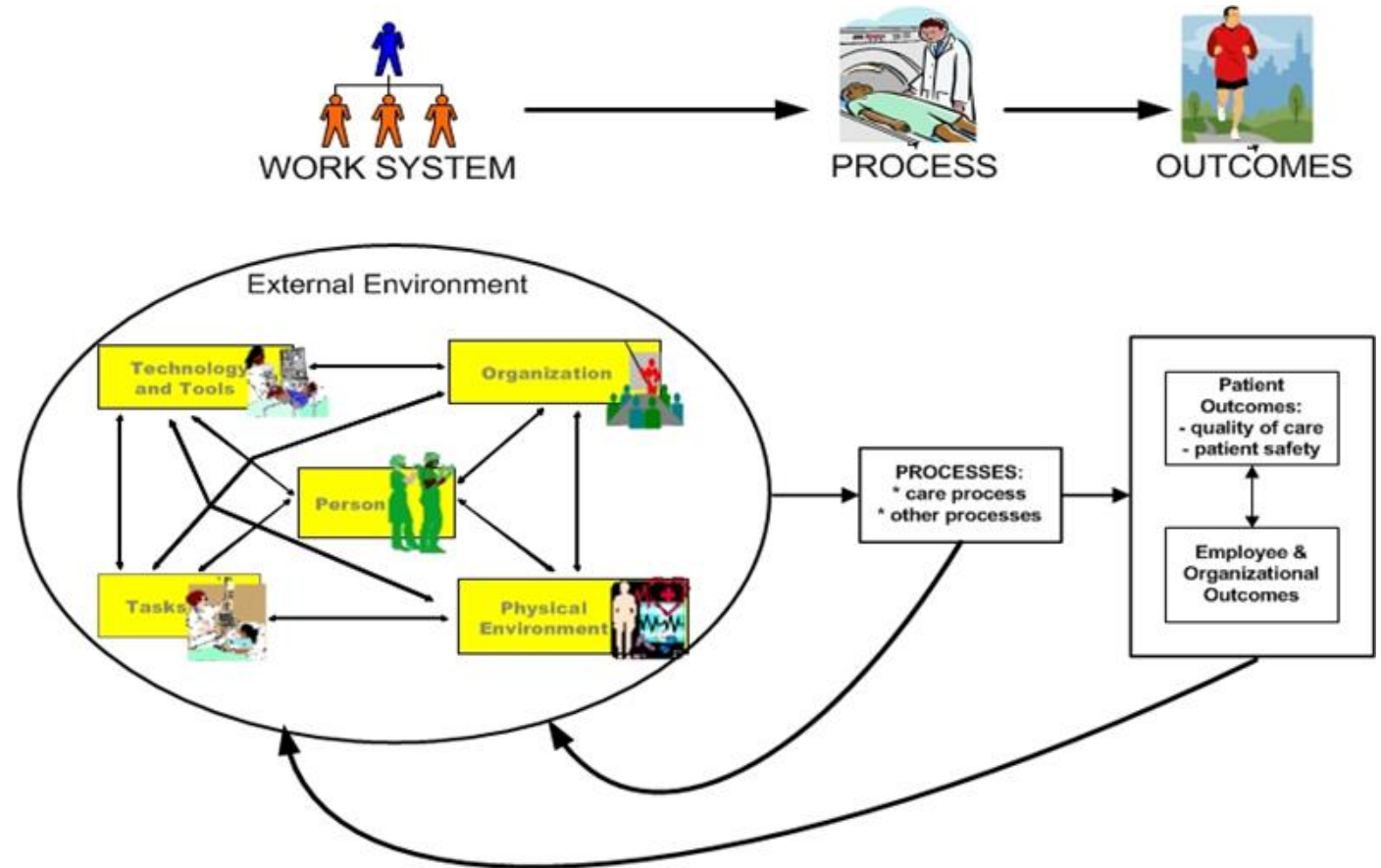
Principle No.6

Recommendations for improvement should focus on systemic change and redesign, rather than individual performance
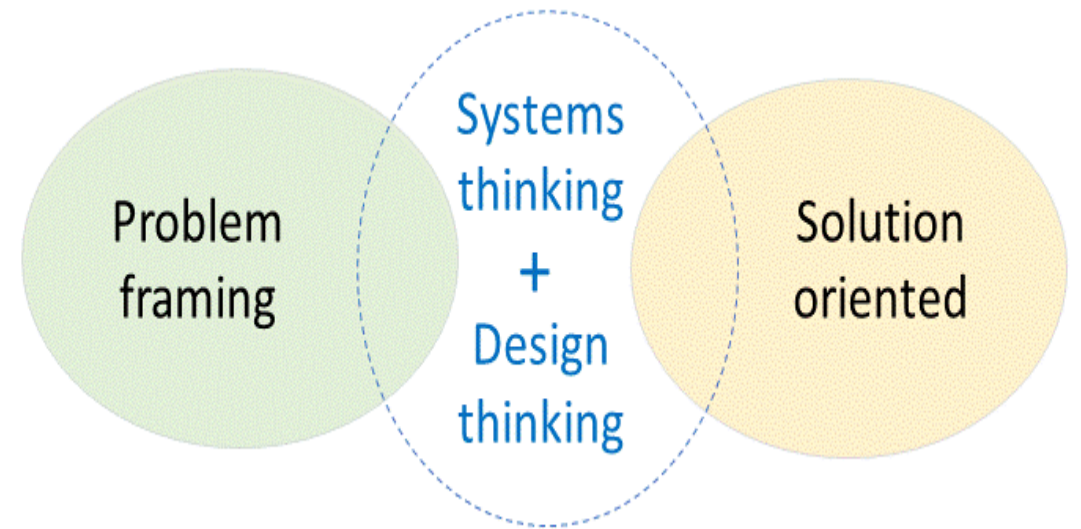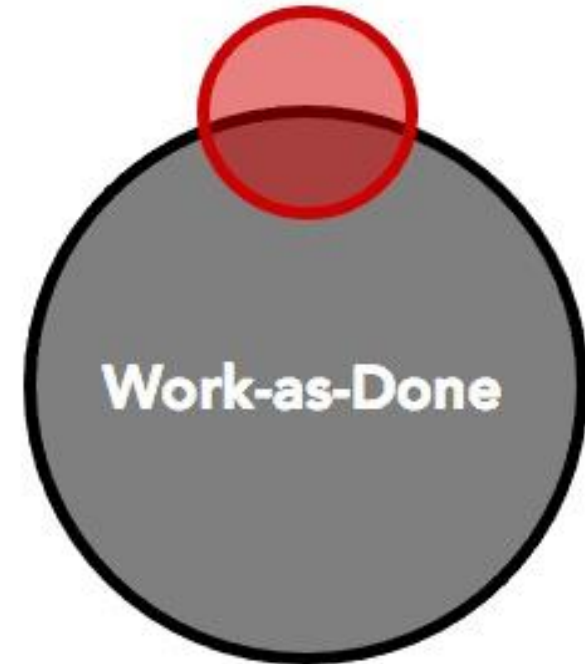
Principle No.7

Adopt a recognised systems approach to investigation, learning and improvement

Principle No.8

It is critical to explore and reconcile 'work-as-imagined' and 'work-as-done'

Work-as-Imagined

Work-as-Done

Principle No.9

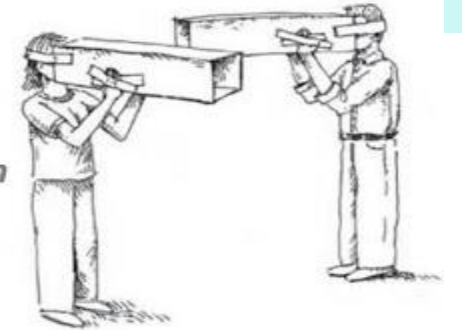Seek multiple perspectives when attempting to understand and improve system safety

Principle No.10

Consider Local Rationality when learning from previous safety incidents

Understanding Local Rationality

People do things that make sense to <u>them,</u> given their goals, understanding of the situation and focus of attention <u>at that time.</u>

...and avoiding counterfactual reasoning!

The WOULDA, COULDA, SHOULDA Effect

"Counterfactual thinking is a concept that involves the human tendency to create possible alternatives to life events that have already occurred; something that is contrary to what actually happened. Counterfactual thinking is, as it states: "counter to the facts".
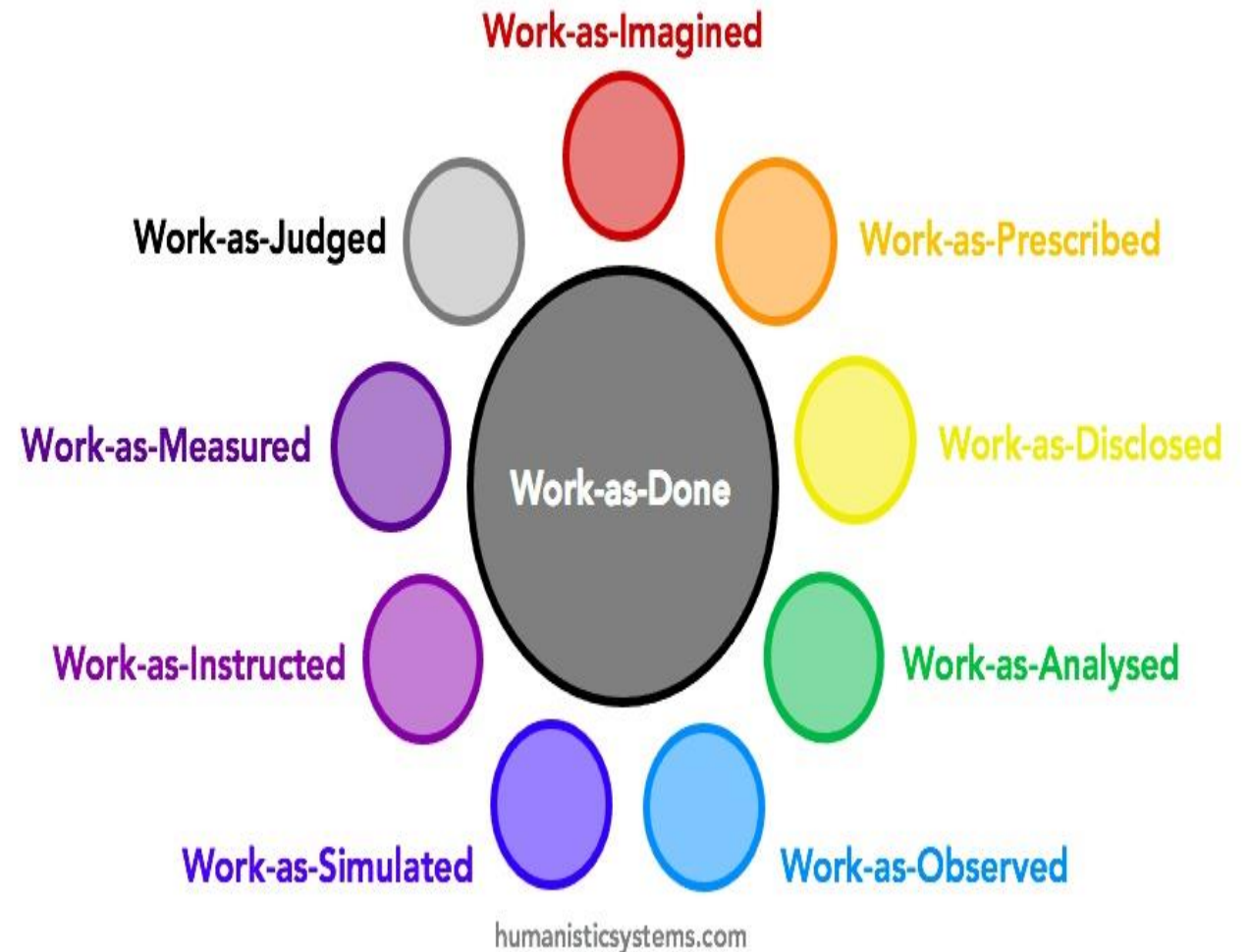
Principle No.11

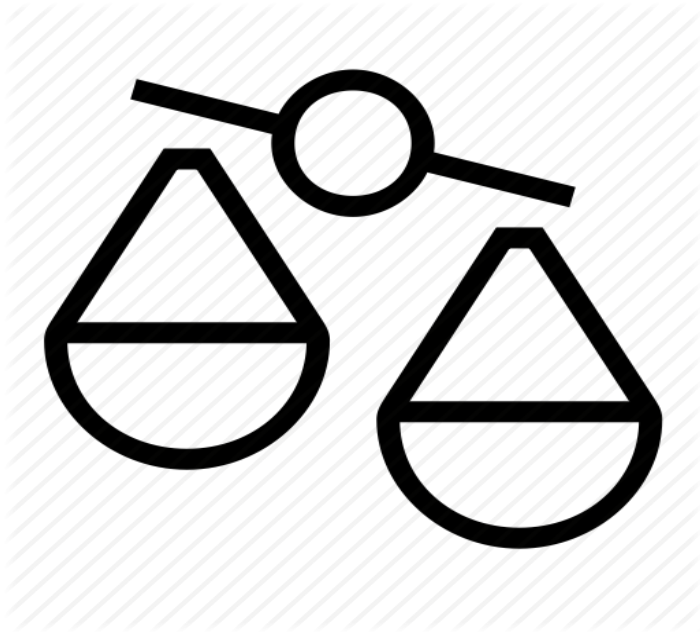**Explore performance variability (trade-offs and adaptations etc)**
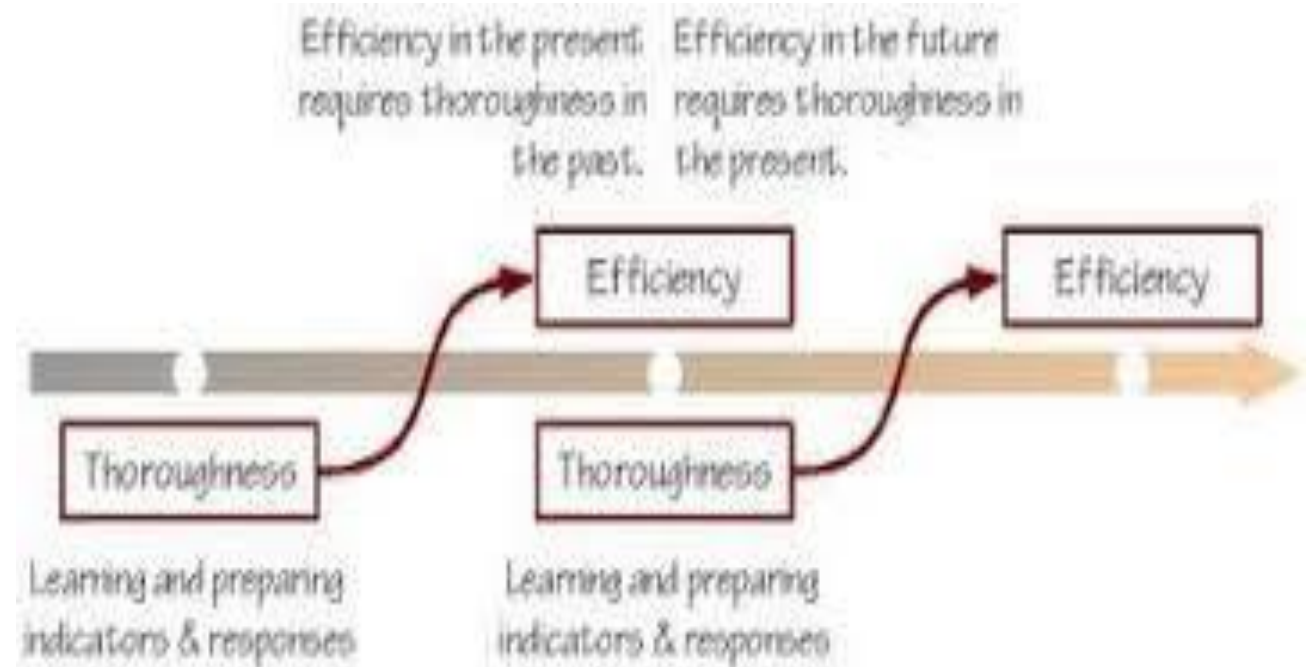
Principle No.12

Recognise the need to learn from everyday work as well as past safety incidents

Brief Q&A

To what extent are these principles incorporated within your own safety learning approaches in NZ?

How useful are they?

Prototype Challenge Cards

Take a Break!

Safety Engineering Initiative for Patient Safety (SEIPS)

Safety Engineering Initiative for Patient Safety (SEIPS 1.0) Model
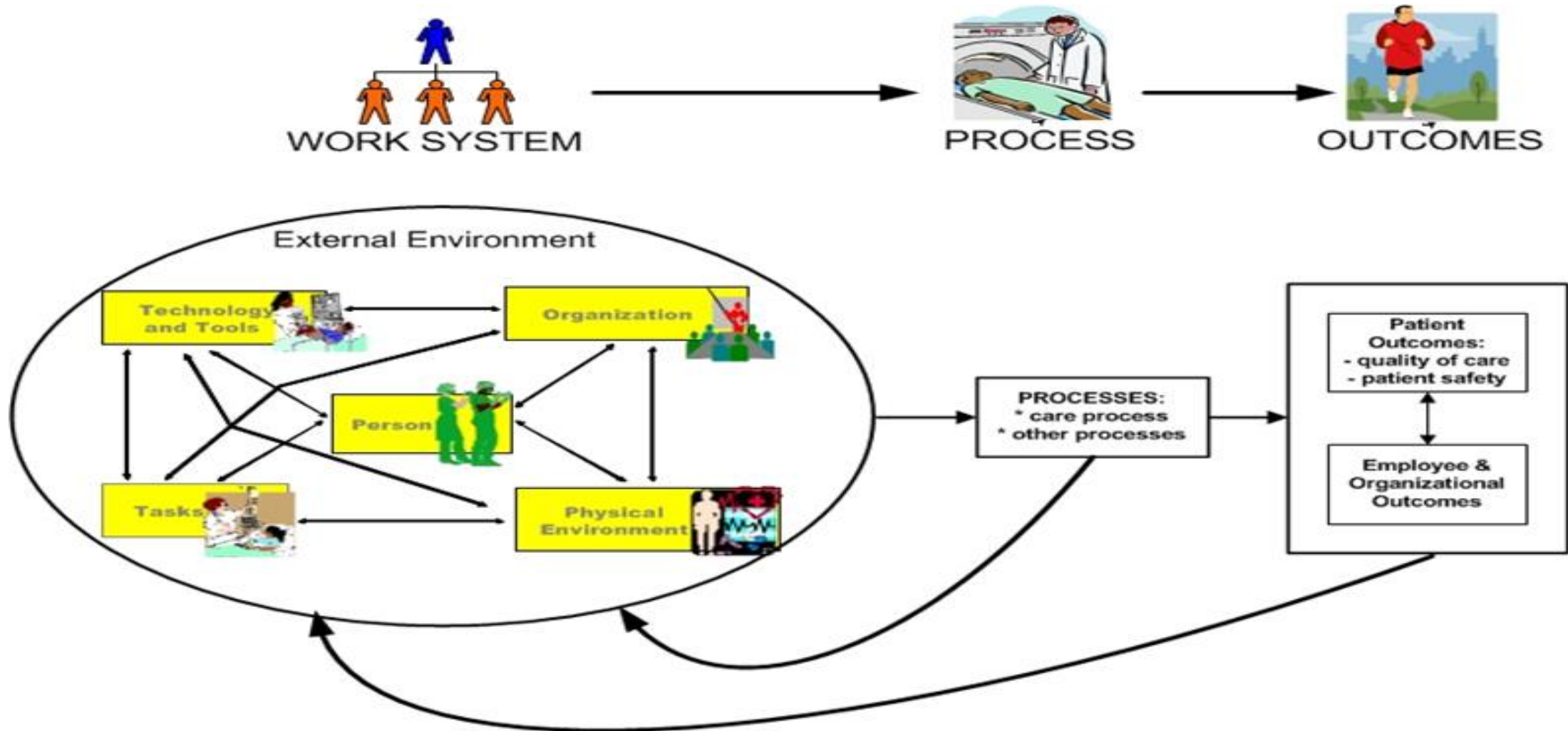
SEIPS 2.0
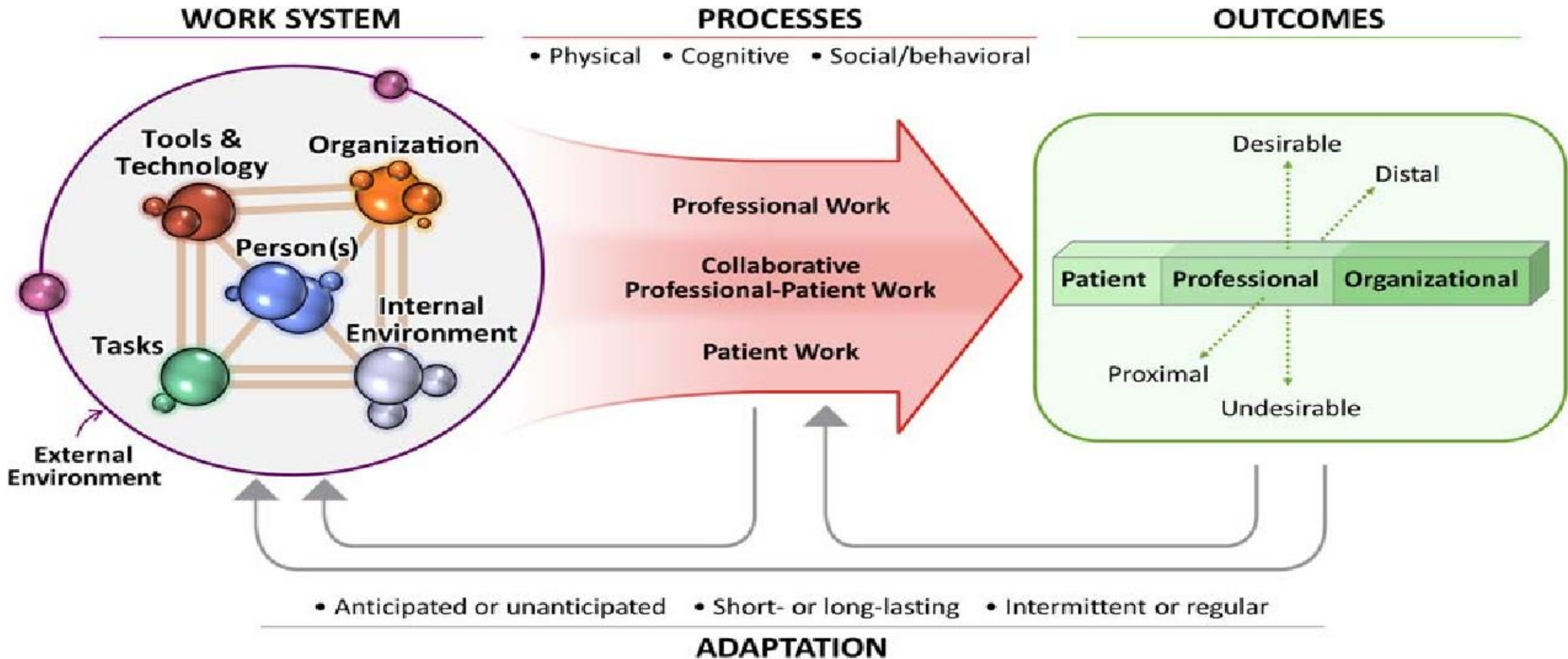
SEIPS 3.0
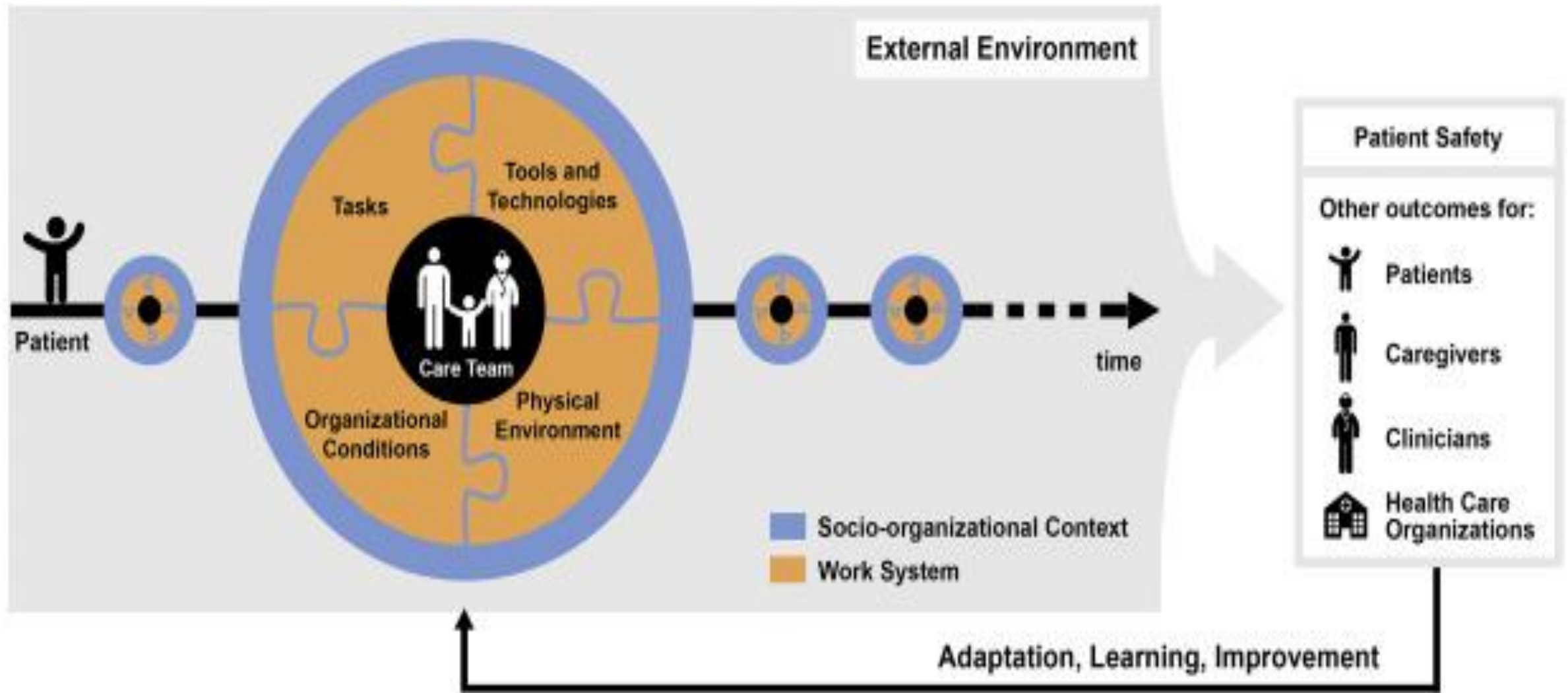
SEIPS: Multi-functionality

- Significant untapped potential to be used by any practitioner, team, risk or safety advisor, educator etc in any care or educational setting e.g.
    - Incident reporting and data collection
    - Process mapping and systems analysis
    - Care system designs and redesigns
    - Design of simulation scenarios
    - Hazard identification, risk assessment and control
    - Team-based learning from incidents, complaints and everyday work
    - Consideration of workforce wellbeing issues
    - Problem solving everyday hassles and irritations
    - Teach fundamentals of the HF Systems Approach
    - Tell a System Story

Systems Engineering Initiative for Patient Safety (SEIPS) Worksheet

Work System

Care Process

Outcomes

External Influences

Technology and Tools

Organisation of Work

Person Factors

Job Tasks

Physical Environment

Care and Other Work Processes

Wanted / Unwanted Outcomes

System Performance:

Human Wellbeing:
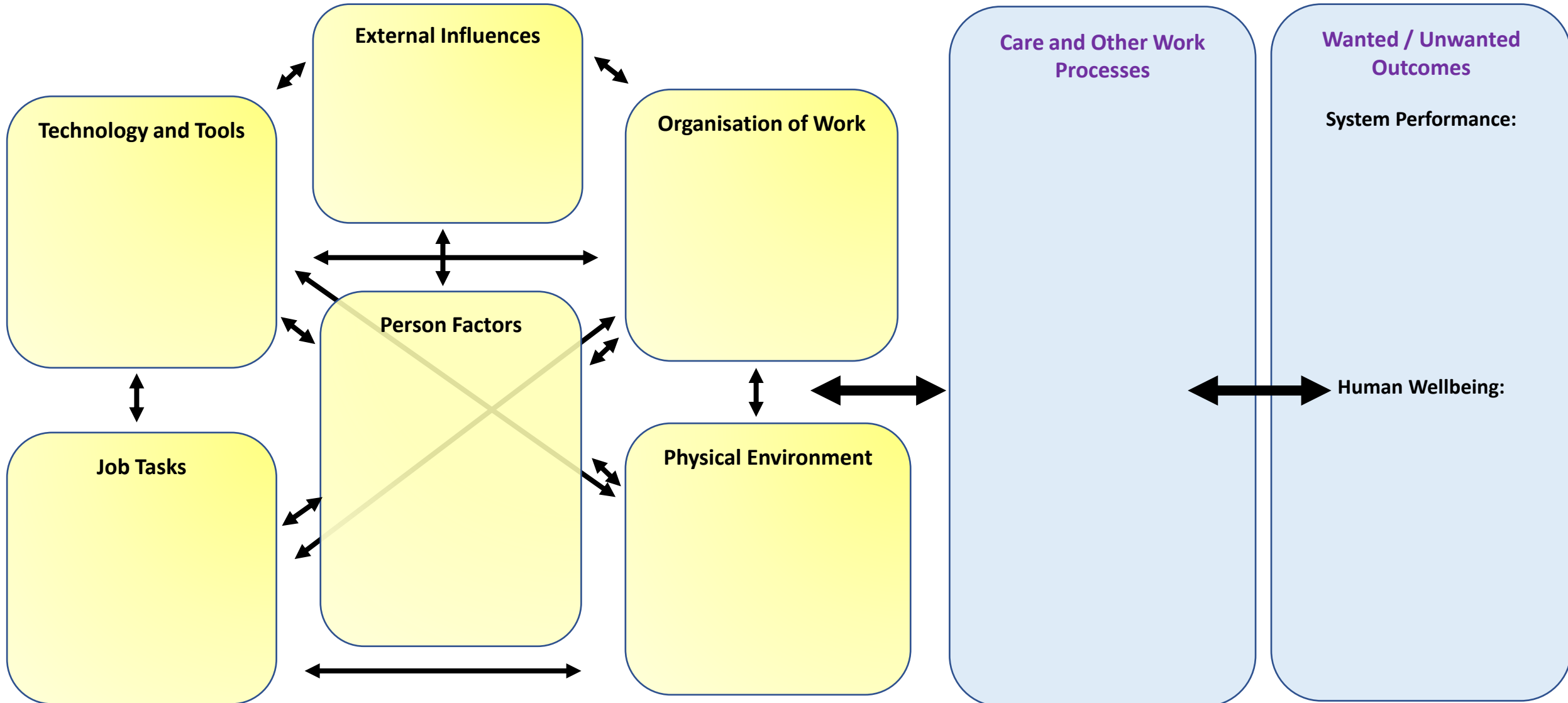
SEIPS Explained

- SEIPS is the Safety Engineering Initiative for Patient Safety.
- It is based on a Human Factors systems approach to understanding care systems, processes and outcomes to inform better design and improvement.
- SEIPS can be used by anyone as a general systems analysis and problem-solving tool e.g. incident investigation; hazard identification; incident reporting & data collection; simulation design; protocol & checklist development; research design and data analysis..

Guiding Step

1. As a team, use the worksheet as a prompt to highlight the system-wide factors that contribute to the issue at hand
2. Seek to understand how these factors influence processes and interact to produce outcomes (wanted or unwanted)
3. Link this new knowledge to making improvement recommendations

Examples of Performance Influencing Factors (PIFs)

Person Factors
e.g. Physical, psychological capabilities, limitations and impacts (frustration, stress, fatigue, burnout, musculoskeletal, satisfaction, enjoyment, experiences, job control); personality or social issues; cognitive ; competence, skills, knowledge, attitudes; risk perception; training issues; personal needs and preferences; psychological safety; performance variability; personal goals; adaptation to work conditions.
Care team e.g. roles, support, communication, collaboration, supervision, management, leadership
Patient/client e.g. complexity of clinical condition, physical, social, psychological, relationship factors
Others e.g. families and carers, and other health and social services colleagues

Tools & Technology
e.g. design interaction and usability issues; positioning; availability; access; mobility; operational/calibrated; device usability; various IT design issues; electronic records, barcoding.

Task Factors
e.g. level of task complexity; time taken; hazardous nature; capacity and demand match/mismatch; distractions; interruptions; variety of tasks; job content, challenge and utilization of skills; autonomy, job control and participation; job demands (e.g. workload, time pressure, cognitive load, need for attention)

Physical Environment
e.g. Layout; Noise; Lighting; temperature; humidity and air quality; design of immediate workspace or physical environment layout; location; size; clutter; standardisation, aesthetics; crowding

External Influences
e.g. Societal, government, cultural, accreditation and regulatory influences e.g. funding, national policies and targets, professional bodies, regulatory demands, legislation and legal influences, other risks and influences

Organisation of Work Factors
e.g. Coordination, collaboration and communication; organizational culture and safety climate; work schedules and rota design; social relationships; teamwork; supervisory, management and leadership style; performance evaluation, rewards and incentives; organisational strategy, work priorities/targets; conflicting goals; structure and hierarchies; staffing levels; rewards and incentives; risk assessment; **education, training and development environments e.g.** supervision, competence, protected time, professional development, physical and social learning environment

Outcomes

Outcomes – System Performance
e.g. Safety; productivity; resilience; efficiency; effectiveness; care quality

Outcomes – Human Wellbeing
e.g. Health and safety; patient satisfaction and experience; enjoyment; staff turnover; staff welfare; job satisfaction

Small Group Exercises

1. Identify the range of system conditions that can contribute to clinician burnout/work-related stress in family practice

2. How can we optimise the design of a hospital ward to support hand-hygiene performance?

3. Describe some of the systemic issues with the supply, design and fit of PPE identified during COVID-19

4. What system factors are key to informing the safe and efficient design of a COVID-19 vaccination centre or clinic?

Quick Sense-check:

Any previous experiences of considering / assessing Safety Culture?

Background – Safety Culture

- First used after Chernobyl nuclear power plant accident

- Explains everything people could not explain or otherwise understand in the safety domain!!

- Strong agreement

  - +ve – openness, commitment to learn

  - -ve – contributory factor in incidents and accidents

  - To improve care performance and staff well-being

    - **focus on the cultural context of work**

Key Differences in Organisational Safety Cultures (+ve / –ve)

Senior commitment

Thoroughly investigating priority safety occurrences

Leadership acceptance - safety culture is a long-term strategy

Regular auditing of safety systems to provide feedback

Mature, stable workforce

Good personnel selection, retention, promotion options

Regularly assessing safety culture and improving safety behaviours.

Good induction and follow-up safety training

Ongoing schemes reinforcing the importance of safety

Capturing attitudes towards incident reporting and analysis

Culture or Climate?

- **Safety Culture (more deep rooted)**

  - ...refers to individual and group "*...values, attitudes, perceptions and patterns of behaviour that determine their commitment to workplace safety management*"

  - **...***"the way things are done around here"***

- **Safety Climate (transient)**

  - The measurable 'surface' components of safety culture... a 'snapshot' of culture at a moment in time.

- **'Culture' and 'Climate'** used interchangeably.
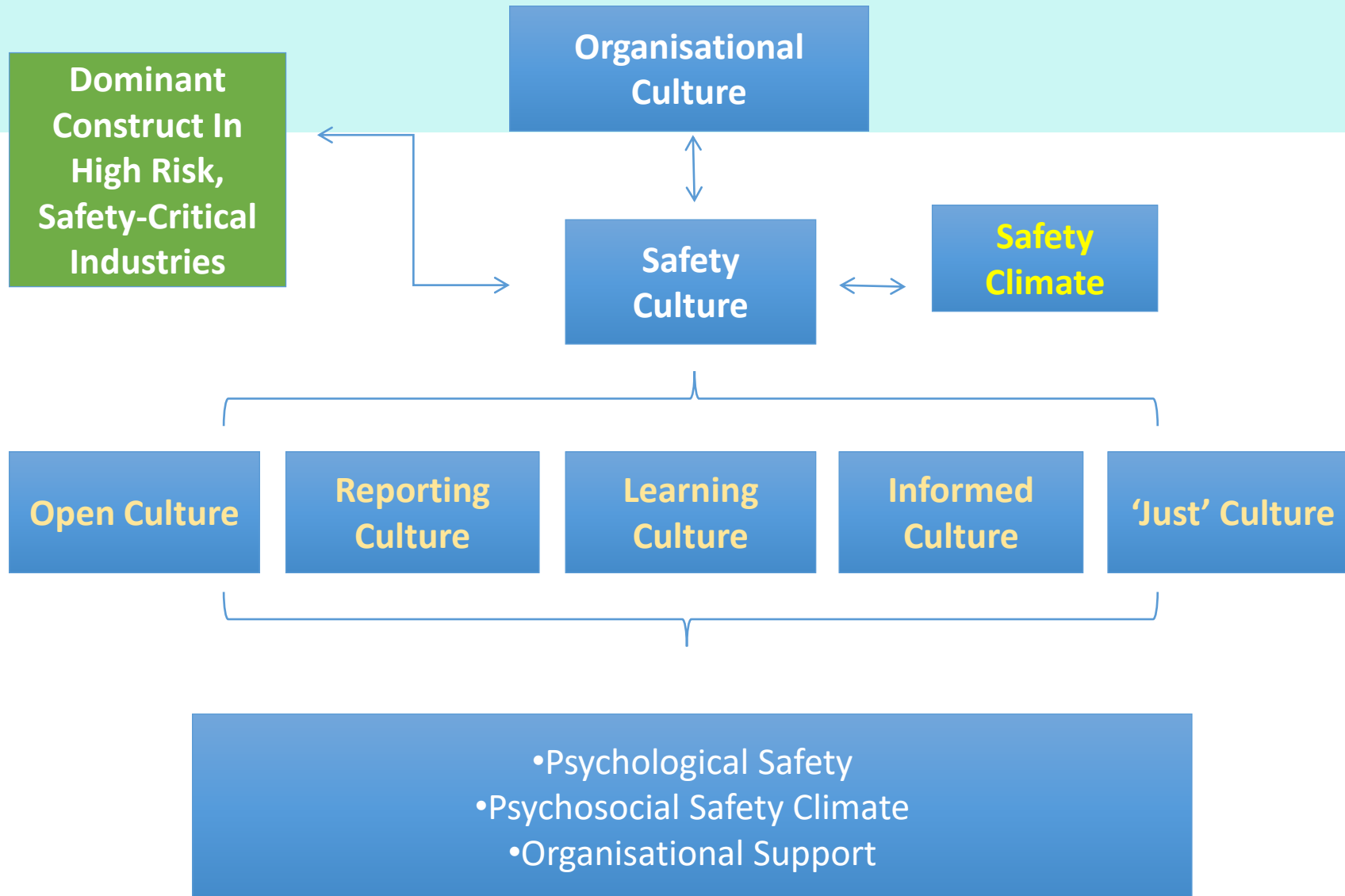
Other Definitions

"The idea of 'culture' is perhaps similar to that of 'intelligence' – everyone thinks they know what it is, but conceptual clarity is more elusive"

[Catchpole, 2014]

"...it has the definitional precision of a cloud..."

[Reason, 2007]

"What people at all levels in a team/organisation do and say when their commitment to safety is not being scrutinised"
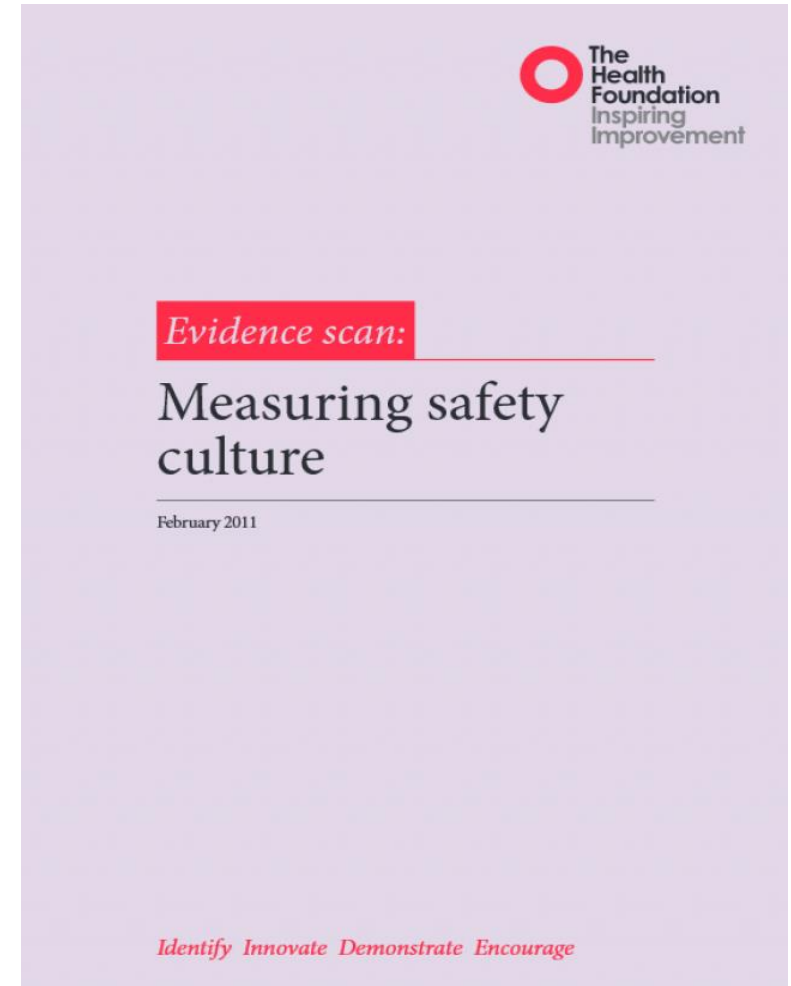
Common Safety Culture Domains

- Leadership
- Management/Supervision
- Team working
- Workload
- Safety Systems
- Communication
- Openness
- Handovers

- Staffing
- Organisational learning
- Stress recognition
- Work conditions
- Job satisfaction
- Managing risk
- etc

Promoted Benefits of Safety Climate Measurement

- Increases individual awareness of safety-related conditions and behaviours

- Enables the team/organisation to 'diagnose' their prevailing safety climate

- Identifies relative strengths and weaknesses in comparison to other practices,

- Facilitates action to build a stronger, more positive local safety culture

- Participants can compare and evaluate progress over time (e.g. 18-24 months)

The Health Foundation
Inspiring Improvement

Evidence scan:
Measuring safety culture

February 2011

Identify Innovate Demonstrate Encourage

Health Foundation Report

The most rigorously tested/well-known tools:

- Safety Attitudes Questionnaire

- Patient Safety Culture in Healthcare Organisations

- Hospital Survey on Patient Safety Culture

- Safety Climate Survey

- Manchester Patient Safety Assessment Framework

- PC-SafeQuest – NHS Education for Scotland

The Health Foundation
Inspiring Improvement

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February 2011

Identify Innovate Demonstrate Encourage

RESEARCH ARTICLE

Assessing safety climate in acute hospital settings: a systematic review of the adequacy of the psychometric properties of survey measurement tools

Gheed Alsalem[1,3*] [iD], Paul Bowie[2] and Jillian Morrison[1]

A Complementary and Different Approach?
Safety Culture Discussion Cards
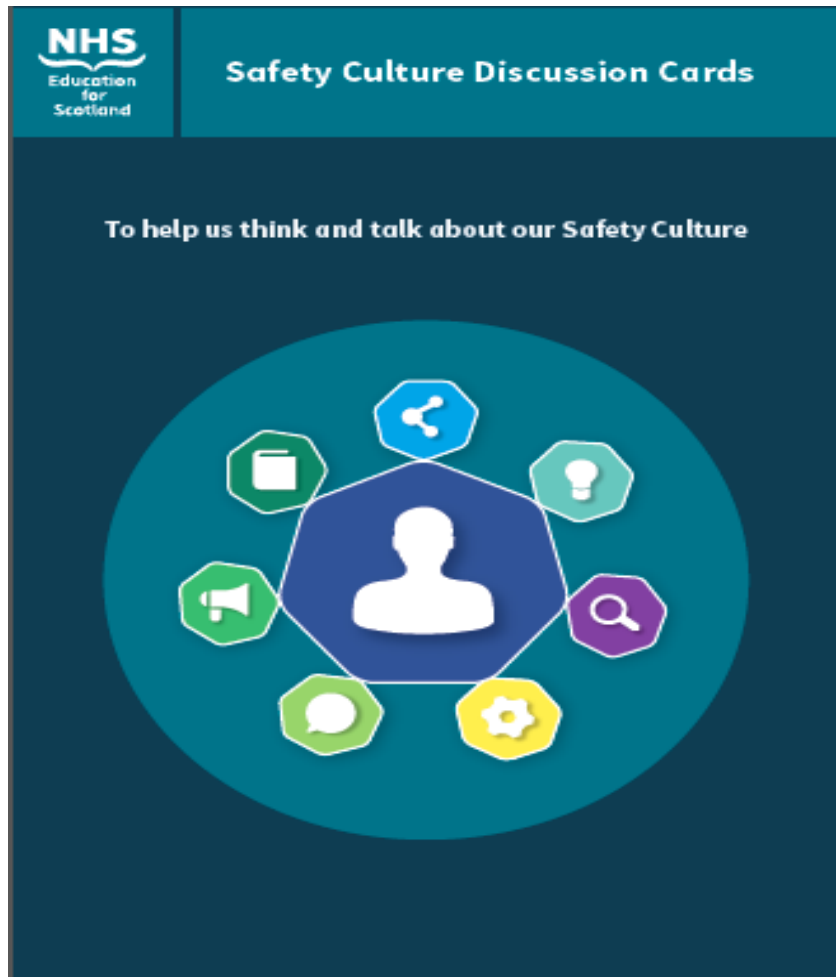
- Get people talking!

- No answers, but raise questions!

- Build on what care teams already know and experience

- Encourage discussions to learn about and improve SC

- c80 Cards, c10 guiding/explanatory, 70 discussion cards, 8 themes

- Flexibility to compare views, safety moments, choose a specific theme in-depth – highly flexible

- Aim to be straightforward and practical

Purpose / Design Utility of Discussion Cards

1. Engaging
2. Educational
3. Flexible
4. Memorable
5. Valid
6. Useful

Introduction Section for Moderator / Facilitators

NHS EDUCATION FOR SCOTLAND

Introduction

What Is Safety Culture?
Safety culture can be described as our:

1 Values
What is important

2 Behaviours
The way we do things around here

3 Beliefs
How things work

Safety culture has been shown to be a key predictor of safety performance in several industries. It is the difference between a safe organisation and an accident waiting to happen. Thinking and talking about our safety culture is essential for us to understand what we do well, and where we need to improve.

These cards are designed to help us to do this.

0a

SAFETY CULTURE CARDS

NHS EDUCATION FOR SCOTLAND

Introduction

Organisation of the Cards

There are several individual cards for each of the following 'safety culture elements'. Each card introduces a different issue for reflection or discussions by the Care Team.

- Leadership and Management Commitment
- Resourcing
- Just Culture, Reporting and Learning
- Risk Awareness and Management
- Teamwork
- Communication
- Responsibility
- Involvement

0b

SAFETY CULTURE CARDS

NHS EDUCATION FOR SCOTLAND

Introduction

How to Use These Cards

You can use these cards in any way that helps you and your colleagues to think and talk about safety culture. If you are using the cards in a group, one person may need to act as discussion facilitator. You can use as many or as few cards as you like.

Five possibilities are described in the following cards:

Option 1: Comparing views	Option 2: Safety Moments	Option 3: Focus on…	Option 4: SWOT Analysis	Option 5: Influences
Compare similar and different views between groups	Discuss just one issue for 10-15 minutes	Discuss all of the cards in a particular element	Sort the cards into Strengths, Weaknesses, Opportunities and Threats	Organise cards into patterns to show how the issues relate to one another

0c

SAFETY CULTURE CARDS

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How to use the Cards e.g.

- Brief/De-Brief
- Team meetings
- Short Workshops
- Teaching Safety Culture
- etc

Safety moments are a good place to start

Leadership and Management Commitment

Resourcing

Leadership and Management Commitment

Just Culture, Reporting and Learning

Who Cares About Safety?

Does it feel like your organisation or practice genuinely cares about safety?

Make Time for Safety

Do projects have enough time to consider safety? Is it considered from the start?

Responding to Concerns

How do managers and leaders respond to staff safety concerns?

Speak Up

Do you feel free to raise safety concerns?

Safety moments are a good place to start

Option 2: Safety Moments

Discuss just one issue for 10-15 minutes

Leadership and Management Commitment

Who Cares About Safety?

Does it feel like your organisation or practice genuinely cares about safety?

The messages within an organisation determine whether people feel that safety is a genuine concern, a bureaucratic formality, or a hindrance.

What messages about safety do you receive…and give?

Safety moments are a good place to start

Option 2: Safety Moments

Discuss just one issue for 10-15 minutes

Leadership and Management Commitment

Front-line Safety First?

Are safety issues raised by front-line care staff given appropriate priority within the organisation or practice?

Issues that they raise need to be treated as priority.

How can we ensure that issues raised get the priority they deserve?

Safety moments are a good place to start

Option 2: Safety Moments

Discuss just one issue for 10-15 minutes

Teamwork

Us, or Us and Them?

How well does your team work with other teams?
Sometimes working relationships can threaten safety.

How does your team interact with other teams?

Safety moments are a good place to start

Option 2: Safety Moments

Discuss just one issue for 10-15 minutes

Just Culture, Reporting and Learning

Speak Up

Do you feel free to raise safety concerns?

How we all react to the safety concerns of others can influence whether or not they raise them in the future.

Is voicing concerns about safety encouraged?

SIGNPOSTING RESOURCES

Team-Based Learning from Events - Safety Culture Cards - Systems Thinking Cards - HF and QI Tools - HF Teaching Resources and More

- **UK and International Community of Practice**

- **'Go To' Hub for Human Factors learning and resources to support Health & Social Care**

http://www.knowledge.scot.nhs.uk/hfe.aspx

Thank You Very Much!

paul.bowie@nhs.scot