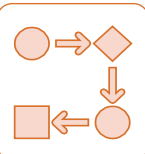


Human Factors Series: Introduction to Human Factors

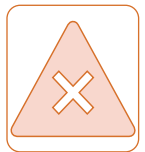
What is Human Factors (HF)?



Human Factors is defined as “the scientific discipline concerned with the understanding of interactions amongst humans with other elements of a system” (The Chartered Institute of Ergonomics and Human Factors (CIEHF), 2021)



It is important to consider other elements of a whole system including situational factors, local working conditions, organisational factors external factors and communication and culture. A failure to apply human factors principles is a key aspect of most adverse events in health care



A badly designed system or piece of equipment could be categorised as a human factors problem because it could lead to errors and incidents

Why is it important to apply human factors principles in health care?

Evidence based

- Human Factors is a broad, scientific, evidence-based discipline that can help people solve a wide range of problems that they face in what they do, every day

Improved safety

- Human Factors uses a people-centred, systems approach that can be demonstrated to lead to higher safety, to sustained cost savings over time and to better quality outputs on a sustainable, consistent basis

Resilient systems

- Applying human factors thinking is important not just in error or incident analysis, but also in designing work environment, reviewing and simplifying processes, standardising procedures and identifying simple, elegant, evidence-based solutions to problems and building resilient systems that enable people to do the right things, every time

Why is it important to consider human factors (HF) when investigating transfusion incidents?

Applying HF principles to incident investigations is key to developing a positive safety culture by examining systems and identifying elements that contribute to errors, and not just focussing on the individual(s) involved. By correcting these elements, long term sustainable improvements can be made to prevent reoccurrence and encourage an open just culture that discourages blame. Further information can be found in SHOT Bite No.1(a): Investigating Incidents: a systems-based approach. The below case illustrates where human factors have been identified during the investigation, and appropriate system level changes applied. Tools such as the SHOT Human Factors Investigation Tool (HFIT) help identify systemic factors in adverse events thus informing improvements for safer patient care. These questions are asked in the SHOT reporting database and can be downloaded from the [SHOT website](#) to help when investigating incidents. With over 80% reports submitted to SHOT annually related to errors, it is imperative that all staff are aware of HF principles and apply these in designing safer systems and investigating incidents.

Illustrative Case study



A patient required a transfusion of irradiated platelets. During the pre-administration check of the unit of platelets in the clinical area, it was noted that accompanying documentation stated that the component was irradiated. Despite this the clinical staff detected that the irradiation blue-dot indicator sticker (RadTag®) was missing from the unit. They alerted the laboratory staff; the unit was returned to the laboratory and it was confirmed that non-irradiated platelets had been issued. An incorrect transfusion that did not meet the patient’s special requirements was prevented by diligent checking.

Incident investigation identified that an upgrade to the laboratory information management system (LIMS) was required, because at the time of this event the LIMS did not have a function to stop non-irradiated components from being issued to patients known to require irradiated components. Whilst awaiting the IT change to be installed, an environmental change was implemented with a yellow tag being introduced and attached to all non-irradiated platelet units to ensure that they stood out to staff when issuing components

A GOOD SAFETY CULTURE IS NOT GIVEN,
IT IS BUILT OVER TIME



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Key Messages and recommendations

Human Factors (HF) should be incorporated into local incident investigations. Where system and organisational problems are identified, these can be translated into local improvements. Such system changes can reduce the likelihood of a similar incident recurring

Awareness of human factors within healthcare can help to understand why healthcare staff make errors and in particular which systems factors threaten patient safety. It can improve the safety culture of teams and organisations, enhance teamwork and improve communication between healthcare staff. It can also lead to improving the design of systems and equipment by recognising and identifying their influence in making errors.

Clinical and laboratory staff should be trained in fundamentals of transfusion, human factors, cognitive biases, investigating incidents and patient safety principles. Such a holistic approach will ensure safe, high-quality, patient-centred care and help embed an organisation-wide culture of learning from patient safety incidents

Staff involved in investigating incidents should be fully trained in techniques for effective investigations, including an understanding and application of human factors principles. The first NHS-wide Patient Safety Syllabus (AoMRC, 2020) supports a transformation in patient safety education and training in the NHS for all healthcare professionals. It highlights the importance of human factors principles and promotes a systems approach to patient safety.

Investigations should identify, and include, improvement actions for all the contributory factors involved

The nine key principles outlined in the white paper titled 'Learning from Adverse Events' published by the Chartered Institute of Ergonomics and Human Factors (CIEHF, 2020) should be applied to investigating transfusion incidents in order to help with understanding a human factors perspective

Recommended Resources: The SHOT website contains a wealth of information on HF, which can be accessed on the below links. In particular please view the videos "[Understanding Human Factors in Transfusion Parts 1 & 2](#)"

HF tuition package: <https://www.shotuk.org/reporting/human-factors-tuition-package/>

HF webinar 2020: <https://www.youtube.com/watch?v=ie0UK9R51bM>

HF SHOTcast (podcast) <https://www.shotuk.org/podcast/shotcast-1-human-factors-with-dr-alison-watt/>.

SHOT Bites 1a, 1b,12 and 17: <https://www.shotuk.org/resources/current-resources/shot-bites/>

UK Transfusion Laboratory Collaborative capacity planning guidance:

<https://www.shotuk.org/wp-content/uploads/myimages/Capacity-Planning-Guidance-May-2021.pdf>

Other useful sources of information include:

CIEHF 2021 Human Factors definition: https://www.ergonomics.org.uk/Public/Resources/What_is_Ergonomics_.aspx

CIEHF Learning from adverse events:

<https://www.ergonomics.org.uk/CIEHFLearningfromAdverseEvents>

Yorkshire Contributory Factors Framework:

<https://improvementacademy.org/tools-and-resources/the-yorkshire-contributory-factorsframework.html>

Academy of Royal Colleges Patient Safety Syllabus <https://www.aomrc.org.uk/patientsafety/>

