



An Stiúirthóireacht um Ardchaighdeán
agus Sábháilteacht Othar
Oifig an Phríomhoifigigh Cliniciúil

National Quality and
Patient Safety Directorate
Office of the Chief Clinical Officer

Human Factors in Irish Healthcare 2018-2023

A snapshot of education,
research and publications
related to Human Factors
activity in Irish healthcare over
the past 5 years.

About National Quality and Patient Safety Directorate

The National Quality and Patient Safety Directorate (NQPSD) was established in mid-2021 as a result of the HSE Central Reform Review. The NQPSD is part of the HSE Office of the Chief Clinical Officer, and is led by Dr Orla Healy, National Clinical Director, Quality and Patient Safety.

Purpose

Our vision for patient safety is that all patients using health and social care services will consistently receive the safest care possible by:

- Building quality and patient safety capacity and capability in practice
- Using data to inform improvements
- Developing and monitoring the incident management framework and open disclosure policy and guidance
- Providing a platform for sharing and learning; reducing common causes of harm and enabling safe systems of care and sustainable improvements.

Teams

In line with the “Patient Safety Strategy 2019-2024”, the NQPSD delivers on its purpose through the following teams:

- **Office of the National Clinical director:** Working in partnership with HSE operations, patient partners and other internal and external partners to improve patient safety and the quality of care.
- **QPS Improvement:** Using of improvement methodologies to address common causes of harm.
- **QPS Intelligence:** Using data to inform improvements in quality and patient safety.
- **QPS Incident Management:** Working with people to identify, understand and share safety learning, advocate for open disclosure and develop the national incident management system in the HSE.
- **QPS Education:** Enabling QPS capacity and capability in practice.
- **QPS Connect:** Communicating, sharing learning, making connections.
- **National Centre for Clinical Audit:** Supporting Clinical Audit service providers locally and nationally.

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Abbreviations

CHI	Children’s Health Ireland
HFE	Human Factors Ergonomics
HSE	Health Service Executive
HSELand	HSEs portal for online learning
ICAPSS	Irish Centre for Applied Patient Safety and Simulation
IEA	International Ergonomics Association
NCAD	National College of Art and Design
NMH	National Maternity Hospital
NQPSD	National Quality & Patient Safety Directorate
QPSE	Quality & Patient Safety Education Team
RCPI	Royal College of Physicians Ireland
RCSI	Royal College of Surgeons Ireland
SJH	St James’s Hospital Dublin
TCD	Trinity College Dublin
UCD	University College Dublin
WHO	World Health Organisation

Introduction

The Irish health service faces many challenges to the delivery of safe, efficient and effective care to patients. The application of the science, practices and principles of Human Factors Ergonomics (HFE) can support a systematic investigation and understanding of these challenges in order to identify appropriate interventions to address these issues.

HFE is an applied science which aims to enhance human and system performance in complex systems. The International Ergonomics Association (IEA) defines HFE as ‘ 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 optimise human wellbeing and overall system performance (IEA, 2000). Healthcare HFE involves the rigorous application of multiple academic disciplines (e.g. engineering, psychology) with the aim of improving patient safety, quality of care, efficiency, and staff wellbeing.

The HSE in its Patient Safety Strategy (2019-2024) under Commitment 2, “Empowering and Engaging Staff to Improve Patient Safety” commits to enhancing “the capacity and capability of health and social care services and staff to improve patient safety by designing and delivering safety information and training to include patient safety and reliability science, systems thinking, audit, quality improvement methodologies, change management, human factors and multidisciplinary team working for safety” and also to ensuring that each staff member has an understanding of HFE in order to work effectively with others for safety (HSE, 2019). The WHO in its Global Patient Safety Action Plan 2021-2030 (WHO, 2021) similarly recognises that HFE is essential “to the creation of high-reliability, resilient health care systems and organizations” (WHO, 2021p.24). WHO would also argue that despite interest for some years now in HFE in healthcare, implementation of the approach has so far been on a very limited scale (WHO, 2021). The international literature would also suggest that the need for HFE in healthcare has been recognised since the inception of the profession and discipline, but development and growth have been slow (see e.g. Hignett et al., 2013).

Development of the HFE collaborative research group and research questions

Since the publication of the *Introduction to Human Factors for Healthcare Workers* (HSE, 2021) the HSE National Quality & Patient Safety Directorate (NQPSD) have been linking with individuals and groups across the health system with an interest in HFE. National Conversations, bringing together these stakeholders in person (n=23) and online (n=9), about building HFE capacity and capability in the health service took place during Oct 2022. A human-centred approach was used with a clear purpose, intended outcomes and process (PIP), and underpinned by the collaboration, inclusion and participation (CIP) principles of person-centred facilitation (McCormack & McCance, 2017).

From this national conversation, three questions emerged that provided the basis for a research collaboration made up of 21 individuals from 10 organisations who are researchers, academics, patient partners and practitioners in the area of HFE and patient safety in the Irish healthcare system. The 3 questions were:



1. Who is out there, doing HFE already in the Irish health service?
2. What does good HFE look like in practice?
3. What do leaders need to know about HFE?

Survey to gather information

To explore what HFE work has been carried out in Ireland over the past 5 years, an Excel based survey tool was co-designed with some members of the research collaboration with the aim of capturing a snapshot of activity in relation to the following:

1. Education: People were invited to add details of any HFE in healthcare education they had been / are involved in delivering over the last 5 years. Education is defined here as theoretical learning in the classroom about HFE and its application either at undergraduate or postgraduate level.
2. Training: Details of any HFE in healthcare training they had been / are involved in delivering over the last 3-5 years. For the purposes of the survey we defined training as sharing and instilling specific HFE skills to healthcare practitioners.
3. Dissemination: Details of any HFE in healthcare dissemination activity they had been / are involved in giving over the last 3-5 years.
4. Details of any HFE in healthcare research they are / have been involved in over the last 3-5 years.

Please note that the results presented here are what the members of the research collaboration were aware of and may not be fully inclusive of all the HFE activity happening in the healthcare system. A further survey is being developed to send to the alumni of various HFE masters to capture aspects of HFE that they may be implementing in practice.

Results

The results are presented here across three main areas

- Education, training and dissemination
- HFE funded research
- Academic and other publications

1. HFE education, training and dissemination

1.1 Education programmes

Table 1 summarises the education programmes available in 2023. For the purpose of the survey education is defined as theoretical learning in the classroom about HFE and its application either at undergraduate or postgraduate level.

Table 1: HFE Education programmes available in 2023

Programme Provider	Programme Link
Masters programmes in Human Factors	
RCSI	PG Dip / MSc Human Factors in Patient safety
TCD	PG Certificate / Diploma /MSc Managing Risk & System Change
University of Galway	PG Dip / MSc. Patient Safety and Simulation
TU Dublin	MSc Environmental Health & Safety with stream in Health Safety and Human Factors
Postgraduate programmes where HFE is a component	
RCSI	PG Masters in Surgical Science and Practice Module on HFE
	MSc Quality & Safety in Healthcare Management
RCPI	PG Cert in Essential Leadership for New Consultants Module on HFE
	Situation Awareness for Everyone collaborative (S.A.F.E.) for Clinical Teams
	PG Certificate in Quality Improvement Leadership Module on Patient Safety & HFE
TCD	MSc Pharmacy Modules in HFE in industrial pharmacy and introduction to HFE
University of Limerick	MSc in Design for Health and Wellbeing
NCAD	MSc in Medical Device Design
NCAD	MA in Service Design
University of Galway	Occupational and Environmental Health and Safety
UCD/CHI	PG Graduate Diploma in Emergency Nursing
Undergraduate programmes where HFE is a Module	
University of Galway	Undergraduate Medical Students Module on HFE
RCSI	Undergraduate Programmes Nursing, Physio, Pharmacy Module on HFE

1.2 Below is an example of a table Training events

Table 2 summarises a range of training courses developed to meet a need in the Irish healthcare system for training in HFE. For the purposes of the survey we defined training as sharing and instilling specific HFE skills to healthcare practitioners. Again, these are courses that the members of the research collaboration were aware of, there may be more.

Table 2: Some HFE training events from 2018-2023

Some HFE training events between 2019-2023	
HSE	<ul style="list-style-type: none"> • Introduction to HF (20 minute eLearning module on HSELand) • Foundation in HF (1 day programmes for teams) • Incident Management Systems Analysis Training: Principles of Situational Awareness, Just Culture & Human Factors (2 day programme)
University of Galway Irish Centre for Applied Patient Safety and Simulation (ICAPSS)	<ul style="list-style-type: none"> • PG Healthcare Practitioners - Half-day course on HF and simulation • PG Intern Doctors Nontechnical skills - 2 hour course x 5 times a year • HF workshops 2019-2022 - 1 day per year x 80 healthcare staff
RCSI	<ul style="list-style-type: none"> • Various courses and training days as part of the CPD programmes for NCHDs and consultants • Human Factors in Patient Safety training programmes delivered to all Surgical, Emergency Medicine, Radiology and Ophthalmology trainees
TCD	<ul style="list-style-type: none"> • HF Masterclass Programme for healthcare practitioners. Funded by Co-operation and Working Together (CAWT) A pilot and four masterclass trainings delivered in 2021 (192 participants) • Systemic Risk Management. On-line short course (6 weekly sessions) for those responsible for managing risk, safety, improvement change, etc. 2 pilot courses run (2021, 2022), to be 2 per year from Oct 2023.
Children's Health Ireland (CHI)	<ul style="list-style-type: none"> • 1 day HFE training for staff (c 40 attendees) and 1-day training for CHI Exec and board members on HFE (c 40 attendees) 2019 • Connolly Induction training covering HFE & Just culture 2019
UCD	<ul style="list-style-type: none"> • Introduction to Human Factors in Patient Safety. Masters in Forensic Medicine, University College Dublin, 2022, 2023
National Maternity Hospital	<ul style="list-style-type: none"> • TeamSTEPPS mandatory training (5 modules) for clinical and non-clinical staff 2018/2019. • TeamSTEPPS now part of clinical and non-clinical induction and orientation.

1.3 Dissemination events

For the purposes of the survey we defined dissemination as spreading ideas about HFE in a formal setting e.g. conferences or online or in-person talks, webinars, reports, books, journal articles, etc. The events mostly consisted of training days held for particular staff cohorts at a national level, HSE, Department of Health or at hospital level.

For example, some of these included:

- HSE QPS Symposium. 1 hour workshop on HFE
- HSE National Programmes Day Conference 2022:
- HSE Clinical Director Executive Skills Programme - Introduction to Human Factors 2020
- HSE QI training for dentistry programmes Just Culture 2019
- HSE Hospital Sterile Services Departments (HSSD) programmes Just Culture 2019
- RCSI Annual Human Factors in Patient Safety Academy Conference
- Department of Health Chief Nurse Symposium 2020. Talk Building Resilience in Nurses & Midwives post COVID19 - A System's Approach.
- Children's Health Ireland (CHI) Temple Street Lunch and Learn Just Culture 2019
- St Vincent's Hospital Seminar 2020 "It's your fault" - Just Culture's shifting "line in the sand".
- NMH - TeamSTEPPS information and resources presented at meetings internally e.g. QRPS Committee of the Board, Grand Rounds, Clinical Governance Committee and externally e.g. TCD STAMINA HFE and Safety Management System Training Conference (2020).

Table 3 presents a selection of webinars, podcasts, public reports and white papers (with links) to give a snapshot of HFE being presented in public forums.

Webinars
HSE QPS Talktime
HSE Open Disclosure Webinar Series
CIEHF Healthcare
ISQua webinar
IHFES monthly webinar https://ihfes.org/
Ireland East hospital Group (IEHG) / NDPT UCD Virtual Grand Rounds
Podcasts
Human Factors: Designing for People NQPSD Walk and Talk Podcast Series:
Are you ok? A healthcare worker special (2020) Eva Doherty RTE radio.
Managing stress and burnout Eva Doherty British Orthopaedic Association 2017
Safe & Sound podcast Eva Doherty & Fardod O'Kelly, RCSI HF
Guides / reports / white papers
HSE Guide for Human Factors (2021)
Human Factors in Healthcare AI
HSE Just Culture Guide and supporting documentation
HFE input into the Breast Check Expert Reference group report

2. HFE funded research

Table 4 summarises the HFE funded research activity in Ireland over the past number of years.

Table 4. HFE Funded research

Research Lead	Dates	Project title	Funder
University of Galway Irish Centre for Applied Patient Safety and Simulation (ICAPSS)	2016-2020	A moment for hand hygiene in the Intensive Care Unit: How can compliance be improved	HRB
	2018-2021	A number of related research projects on improving the training of junior doctors, Framework adopted by HSE National Doctors Training and Planning (NDTP) and Irish Medical Council	
	2019-2022	Unlocking the potential of healthcare complaints to improve hospital care	HRB
	2020-2023	Tools4Teams Research training to design and implement tools supporting safe teamwork in healthcare.	EU Horizon 2020
	2023-2025	Identifying and Addressing the Barriers to Home Haemodialysis	HRB-ILP
		PhD funded positions	
SJH/TCD	2022-2024	TS4TIC: Translational Simulation for Trauma Informed Care	HRB/HSE/RCPI Research Collaborative in Quality and Patient Safety (RCQPS)
SJH/UOG	2023-2024	An exploration of best practice in Human Factors Ergonomics implementation in healthcare.	HSE National Quality and Patient Safety Directorate
TCD/DCU/UCD/SJH/Beacon Renal/Dublin Fire Brigade	2021-2024	Access Risk Knowledge (ARK) ARK Virus and ARK Platform Projects	Enterprise Ireland, SFI Ireland and HEA
TCD/SJH	2023-2027	PhD funded positions on Co-designing Human Factor and IT Solutions for Optimal Clinical Team Working	SFI Advance
TCD Centre for Innovative Human Systems (CIHS)	2016-2020	Reducing the Risk of Retained Foreign Objects across Surgical and Maternity Settings (FoR-RaM)	HRB/HSE/RCPI RCQPS
	2018-2021	Midwives' Views of an Evidence-Based Intervention to reduce Caesarean Section Rates in Ireland (REDUCE)	HRB Funded
	2023-2024	Learning from incidents	HSE funded
UCD Centre for Interdisciplinary Research,	2017-2018	SUAS: Speaking Up About Safety	HRB KEDS
	2015-2024	Collective Leadership and Safety Cultures (CO-LEAD)	HRB

Education and Innovation in Health Systems (IRIS)			
UCC	2020-2023	PROTECT Safety Huddle Performance: The effectiveness of an interdisciplinary, PROficiency-based, TEam simulation programme to improve Communication and reduce patient harm (PROTECT). https://protectstudy.ie/	HRB/HSE/RCPI RCQPS
University of Limerick	2022	Design and sustainability strategies for feminine hygiene products	University of Limerick Strategic Sustainability Grant
	2022	Design to enhance the User Experience of Clinical Stakeholders when performing Transcatheter Aortic Valve Implantation (TAVI) procedures through optimisation of Trans-caval deployment devices using Human Factors and Usability tools	Irish Research Council's (IRC)
	2021	Use of 3D printing in the design and manufacture of bespoke sealing devices for ascitic drains for palliative care epithelial ovarian cancer patients	Irish Research Council's (IRC)
	2020	Rapid Advanced Production Responses to Frozen Supply Chains in Hospitals	SFI
	2019	Rapid Innovation Unit : Point of Care and manufacturing of medical devices	SFI

3. Academic publications

A sample of publications by members of the research collaboration are presented in [Appendix 1](#) along with details on how to access them. The publications are from the last 5 years and are categorised along the themes of:

- General patient safety research (5)
- Patient experience feedback and safety (4)
- Simulation in healthcare (6)
- Measurement and monitoring of safety (3)
- Systems analysis / systems improvement (7)
- HFE tools and approaches in healthcare (11)
- Medical device design (43)
- Digital health technology, AI and HFE (4)

Discussion

Despite the interest in HFE in healthcare in recent years, education has been focused at the post graduate (PG) level with limited courses at undergraduate level. Similarly, there has been limited funding for research in HFE in healthcare in Ireland. The HSE and healthcare practitioners interested in the area have invested in courses for healthcare staff including PG courses and introductory masterclasses. The HSE has begun to address the gap in recent years by developing a short eLearning 'Introduction to Human Factors' programme and an in-person one day workshop for healthcare teams to build a foundational knowledge in HFE. Implementation of HFE in healthcare has so far been in a piecemeal fashion. We aim to explore and build an evidence base to inform how to **best implement HFE strategically and sustainably in the Irish healthcare system.**

Next steps include a systematic review of HFE implementation in healthcare and studying how HFE can positively influence organisational design and strategy and support different areas of clinical practice.

References

International Ergonomics Association, 2000. <https://iea.cc/about/what-is-ergonomics/>

Global Patient Safety Action Plan 2021-2030, WHO, 2021, <https://iris.who.int/bitstream/handle/10665/343477/9789240032705-eng.pdf?sequence=1>

HSE Patient Safety Strategy 2019-2024, HSE 2019, <https://www.hse.ie/eng/about/who/nqpsd/patient-safety-strategy-2019-2024.pdf>

Introduction to Human Factors for Healthcare Workers, HSE, 2021. <https://www.hse.ie/eng/about/who/nqpsd/qps-incident-management/incident-management/a-guide-to-human-factors-in-healthcare-2021.pdf>

McCormack, B. and McCance, T. (2017) Person-centred Practice in Nursing and Health Care: Theory and Practice. Chichester: Wiley-Blackwell.

Hignett S, Carayon P, Buckle P, Catchpole K. State of science: human factors and ergonomics in healthcare. Ergonomics. 2013; 56 (10):1491–1503.

Norris BJ. Systems human factors: how far have we come? BMJ Quality and Safety. 2012; 21 (9):713– 714.

Carayon, P., Wooldridge, A., Hoonakker, P., Hundt, A.S., Kelly, M.M., 2020. Seips 3.0: Human-centered design of the patient journey for patient safety. Appl. Ergon. 84, 103033. <https://doi.org/10.1016/j.apergo.2019.103033>

Ward ME, Daly A, McNamara M, Garvey S, Teeling SP. A Case Study of a Whole System Approach to Improvement in an Acute Hospital Setting. International Journal of Environmental Research and Public Health. 2022; 19(3):1246. <https://doi.org/10.3390/ijerph19031246>



Appendices

Appendix 1 [Healthcare Human Factors Ergonomics - Academic Publications by Irish Authors from 2018-2023](#)

