

Educational Metrics for human factors in healthcare

Proposal of the Education Regulation sub-group of the DH Human Factors Reference Group

Aims

This proposal outlines a system-wide approach to enable the wider adoption of human factors in healthcare. It outlines key principles and practices of human factors that could be incorporated within the current NHS clinical and educational outcomes framework, to promote more effective integration of human factors into healthcare training and practice.

Concepts, principles and assumptions

This proposal outlines a set of underpinning principles and elements of the educational assessment framework that could support the effective integration of human factors into healthcare. The suggested metrics are incomplete due to deficiencies in the research and evidence base for human factors in healthcare. Compensation of such deficiencies is dependent on further research and evaluation.

This section details a series of underpinning assumptions and design principles to optimise the impact of human factors educational metrics.

There is extensive academic literature on the impact and practice of human factors in many high risk industries; specifically how human factors approaches have proved successful in improving safety and transforming operational performance. As healthcare has been slow to adopt and evaluate these approaches, the evidence base in healthcare is limited.

Interest and application to healthcare has grown in the last decade, but this is often locally championed, dispersed and fragmented in nature. There is a lack of understanding, and strategic focus on human factors in both the institutions of healthcare and healthcare education, limiting system-wide impact. Improvements in safety, and operational performance of services could be accelerated if evidence-based human factors were integral both in the clinical and educational outcomes framework of the NHS. It is contended that alignment would reduce the burden of duplication whilst further embedding human factors principles and practices within the system.

Introducing an assessment framework would assist integration.

Based on evidence-based best practice of assessment

What is measured is done!

Recognised assessment principles in education require any assessment process to meet the following six criteria*;

- Reliable – do they consistently measure what they claim to?
- Valid – does what they measure matter?
- Feasibility – are the assessments deliverable?
- Cost effective – are the assessments affordable?
- Acceptability – are they acceptable to those involved - the regulators, the commissioners, funders and providers?
- Educational impact – do they incentivise and promote the desired outcomes and behaviours?

* Van Der Vleuten, C.P.M., Dolmans, D.H., Scherpbier, A.J. 2000. The need for evidence in education. *Medical Teacher*. 22,3, 246-250

Outcomes based approach to educational metrics

An outcome-based approach to educational and service-based performance management is supported with the recommendation that direct and indirect markers are identified and validated as educational performance metrics.

Direct markers

Direct measures of education would specifically monitor actual educational performance, e.g. examination pass rates, demonstrations of learning and educational capability.

Indirect markers

Indirect measures, such as service performance metrics, are relevant to education. These metrics offer insight into the wider healthcare system. Some, such as organisational culture or safety culture, directly impact on the educational environment and educational performance. Other indirect markers include patient satisfaction data and clinical patient outcomes. There is recognised correlation between student and patient experience.

Indicative Metrics

System/network level

System - the education commissioning system and quality assurance frameworks of the regulators needs to incorporate human factors performance indicators within the clinical and educational outcomes frameworks at a national and regional level that are supportive of learning organisations and human factors based approaches at network and organisational level. System and network cultures are important in creating appropriate educational environments across healthcare systems.

The human factors approach would also offer an opportunity and approach to simplify the current multiplicity and potential non-alignment across the healthcare regulatory environment. There is evidence that better integration, coherence and alignment of

regulation is central to high reliability industries, i.e., consider the unitary function of the Civil Aviation Authority co-ordination of aviation in the UK.

As such the following systemic metrics are suggested, that:

- The human factors curriculum is integrated within training programmes and learning events;
- Mapping of NMC “Essential Skills Clusters” against provision for nursing students;
- Mapping of GMC “Tomorrows Doctors” against provision for medical students;
- Mapping of Inter-professional education provision against CAIPE “Principles of Inter-professional Education”.

Organisation level

At an individual organisational level, metrics have been be devised that describe system and process performance that create and support the development of a learning organisation. Measures such as organisational cultural and safety culture metrics are equally important in creating an appropriate educational environment.

Direct metrics

- Established member of the board with human factors responsibilities;
- Trust human factors strategy;
- There is a simulation facility with a human factors program;
- There is evidence of a human factors faculty development program – numbers trained;
- Evidence of human factors educational interventions within organisational training needs analysis;
- There is a human factors education budget commensurate with the staffing numbers;
- Human factors educational audit of practice.

Indirect metrics

- Human factors budget per head of staff;
- Identified human factors lead for trust and each dept/division;
- Number of PA’s of allocated consultant time for human factors;
- Nursing allocation of time to human factors;
- Amount of management time allocated to human factors;
- Record of change in response to reports of SUI.

Team level

At an individual level describe inter-disciplinary, team-based or ‘collaborative skills’ and at a team level describe team-based human factors capabilities and performances.

Direct metrics

- Evidence of human factors in induction program;
- Human factors educational audit of practice – numbers trained;
- Human factors research output;
- Human factors presentations at international, national and regional meetings;

Indirect metrics

- Evidence of a change in clinical practice;
- Patient outcomes;
- Patient satisfaction;

Individual level

At an individual level describe human factors capabilities and develop behaviourally anchored rating assessment scales relevant to healthcare. This needs to occur throughout the healthcare professional training continuum so that human factors are incorporated into all undergraduate, postgraduate and continuing professional development sectors.

1. Basic capabilities – In order for human factors to be incorporated into every healthcare professional curriculum, there needs to be regulator coordination so that human factors becomes core part of UG/PG training. It also needs to be in the revalidation process so that established and future workforce is captured. These human factors capabilities need to be described, integrated, assessed and quality assured as part of current educational processes.
2. Faculty capability to teach human factors – teams and individuals delivering effective training in human factors at individual organisation and system level require advanced educational skills - these need to be described, integrated, assessed and quality assured as part of current educational processes.
3. Advanced credentialing – the concept of an IEHF ‘advanced practitioner’ – to provide system leaders/experts in integration of human factors approaches is attractive, given potential to align with quality improvement work streams that exceed current paradigms. Such individuals could work at system, network or organisational level.

Direct Metrics:

1. Basic capabilities
 - Evidence of human factors in personal paperwork on curriculum;
 - Evidence of human factors in personal revalidation paperwork;

2. Faculty capability
 - Evidence of trained human factors faculty;
 - Evidence of educational attainment in human factors achieved by faculty;
3. Advanced credentialising
 - Evidence of higher level IEHF educational attainment;

Methods

In order to develop this paper a simple DELFI approach was taken with the establishment of a Focus group. There was an email group discussion, conference calls, individual calls to the chair person and one face-to-face meeting.

Conclusions

For the metrics in human factors to meet the assessment principles outlined above a more formal and critical review of the literature is required.

It should be possible for these metrics to be integrated within established clinical and educational frameworks.

An indicative set of metrics is offered at this stage.

Recommendations

1. Human factors metrics are integrated into current clinical and educational outcomes frameworks.
2. That they meet the assessment principles outlined above.
3. That they are evidence-based and represent current best practice healthcare practice.
4. Further research and characterisation is supported – specifically that the following be considered:
 - The potential of an Institute of human factors as a focus of expertise and integration for human factors within healthcare;
 - NIHR dedicated directed at human factors evaluation;

