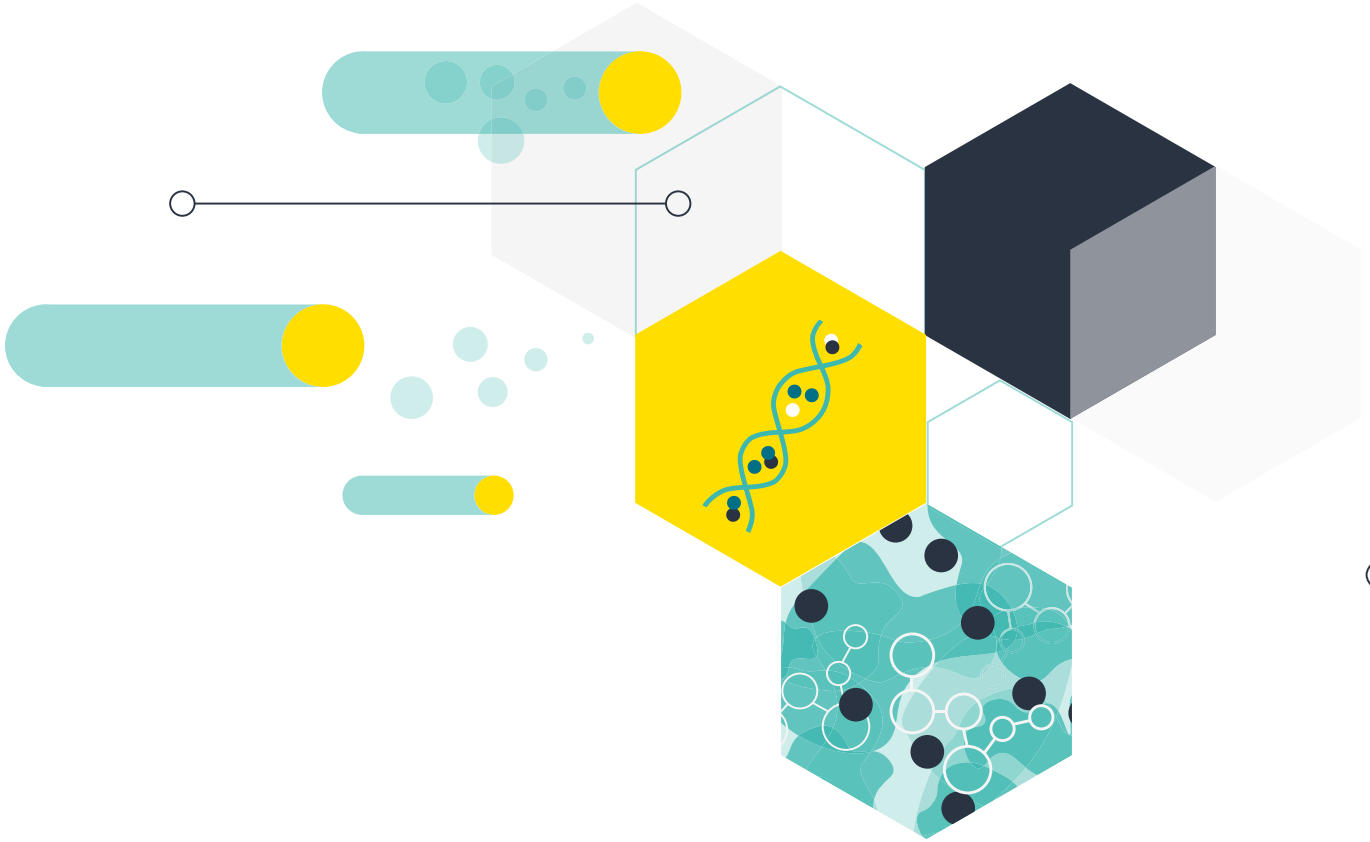
NHS Education for Scotland

Medical Directorate

RESEARCH & INNOVATION GROUP

Annual Report 2020



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The aim of this report is to build on what was reported last year:
2019 Annual Report

2020 is posing challenges that question and stretch us. Research and innovation are key to finding solutions to the difficult problems that face us as an organisation, as teams and as individuals and particularly those resulting from the Covid-19 pandemic. Members of MedRIG are engaged in developing new ideas to strengthen and enable Scotland's healthcare workforce and develop supportive learning environments in which people wish to work.

The essence of MedRIG is collaboration, with its focus around the activities of Scottish Medical Education Research Collaborative (SMERC), Safety, Skills & Improvement Research Consortium (SKIRC) and groupings involving primary care, pharmacy and the Medical Directorate Workstreams.

Several people merit special mention. Professor Jennifer Cleland has been the Director of SMERC for several years and led the collaboration to become an international force in medical education research. Prof Cleland left us in January to take up the position of Director of the Medical Education Research and Scholarship Unit (MERSU) at Lee Kong Chian School of Medicine, Singapore. We record considerable gratitude to Prof Cleland for the quality, rate of production and volume of the work SMERC has produced under her leadership and for the impact that work has had locally and internationally. Our stalwarts continue to deliver excellent work across the organisation, specifically, Professor Jean Ker and Professor Paul Bowie (SKIRC), Dr John McKay (SKIRC, Primary Care), Suzanne Stirling, Dr Judy Wakeling and Dr Julie Ferguson (Specialist Research Leads, Medical), Dr Ailsa Power (Pharmacy) and Leon Zlotos (Pharmacy). Niall MacIntosh has driven production of this report effectively working alongside the NES Design Team.

Professor Peter W Johnston
Depute Postgraduate Dean, Interim Director SMERC and Chair MedRIG

SMERC was established in 2011 as a collaboration between NES and the five Scottish Medical Schools.

It is core funded by NES and aims to conduct high quality and important medical education research in Scotland and beyond, build capacity within Scotland, influence Scottish Government policy and develop collaborations with leading international researchers.

SMERC has built a critical mass of experienced researchers and is developing emerging researchers who have a deep understanding of medical education and training, to understand, foresee and develop the new knowledge, skills and workplace behaviours essential for addressing current and future healthcare challenges.

SMERC activities include:

- The establishment and support of 18 PhD studentships, four of which have been core funded by NES and the others funded by external sources, including the only Intercollegiate Surgical Curriculum Programme (ISCP) Fellow in the UK.
- The SMERC-funded and other PhDs due for submission since the publication of Medical Directorate's Education Research and Innovation 2019 Annual Report did so to time and to standard. Feedback from Examiners was very positive, particularly about the quality of student work and the high standard of supervision. This supervision is provided from medical schools, NES, other NHS authorities and key international collaborators.
- Most PhDs supported by SMERC are "with publication". This pathway is reflected in the high number of publications from SMERC PhD students before thesis submission. In the 12 months between the 2019 and the current report, more than 20 articles by SMERC PhD students were published in high-quality, peer-reviewed academic journals, such as Medical Education and the British Journal of Surgery Open.
- Many of our doctoral students have taken up Lecturer jobs and post-doctoral positions within Scotland, sustaining medical education research capacity, and understanding and knowledge of medical education research across Scotland.
- Those who have gone back into medical training after completing a PhD are excellent role models, acting as ambassadors and encouraging other doctors in training to consider medical education and educational research as part of their career plans.

SMERC has a well-established local, national and international reputation.

SMERC's activities are renowned for extending knowledge in several fields. Importantly, SMERC's outcomes also make a direct contribution to policy and practice, most notably in the areas of medical careers decision making, selection and widening access to medicine, surgical assessment and curriculum reform.

Safety, Skills & Improvement

SKIRC Technical Reports can be accessed here:
https://learn.nes.nhs.scot/2182/patient-safety-zone/safety-skills-and-improvement-research-collaborative-skirc/skirc-technical-reports

And we can be followed on Twitter:
@SKIRCResearch

SKIRC brings together the combined innovative capabilities, expertise and experiences of the long-established 'Safety and Improvement' and 'Clinical Skills' research and development teams within NES. The key purpose of SKIRC is to research, design, innovate, implement and evaluate complex educational interventions that focus on facilitating individual, team, organisational and national learning and upskilling of the NHS Scotland workforce.

The goal is to improve overall healthcare system performance (e.g. safety, efficiency, productivity, effectiveness) and the wellbeing (e.g. health & safety, experience, joy, satisfaction) of patients, carers and staff groups. Building on extensive previous research and development activity, SKIRC continues to contribute to the national and international safety, skills, simulation, improvement and human factors evidence bases via wide-ranging practical outputs and impacts which make a direct contribution to national policy, organisational service delivery and the clinical training environments.

Theme 1
Developing the Workforce

01 Selection / Widening Access

1.1 Selection into Medical School

SMERC has a 10-year programme of work that is led by Professor Jennifer (Jen) Cleland, Aberdeen, in collaboration with a number of UK universities and international colleagues, and attracting external funding from, for example, the General Medical Council (GMC) and Medical Schools Council (MSC).

Outputs from this work have informed Scottish, UK and international policy, guidance and practice on how best to select at the point of entry into medical school and widen access to medical school.

This work has examined and extended the evidence on the best selection tools (e.g. prior attainment, interviews, aptitude tests, assessment of personal attributes and values), how these tools should be combined and weighted, and how changes in selection processes impact on the diversity of medical students.

In addition, this programme is leading edge in terms of gathering the evidence on how best to attract applicants and support students from diverse backgrounds in medicine. There is increasing evidence, mostly from SMERC projects, that medical students from more diverse backgrounds are more likely to work in under-served areas and in primary care on qualification. These students may need extra support because structural educational discrimination means they are less prepared for medical school than more "traditional" applicants. At the time of writing this report Professor Cleland, in collaboration with colleagues from the USA and Europe, has just had a definitive guide to the "Do's, Don't and Don't knows" of remediation at medical school accepted for publication.

SMERC projects have identified how best to use highly-accessed sources of information (e.g. medical school websites) to attract applicants; how to support teachers in encouraging their able pupils to consider medicine; the evidence base for, and utility of, different types of contextual evidence (e.g. postcode, school) in medical school admissions; how best to combine different selection tools to ensure fairness; the cost-effectiveness of selection processes; and importantly, how medical students from widening access backgrounds perform at medical school and in the Foundation Programme in comparison with their more traditional counterparts[1]. This work promotes best practice and transparency by opening up data held by the sector, informing choice and promoting social mobility. Professor Cleland's expertise in these areas is widely recognised in the postgraduate sphere and internationally.

1.2 Selection into Foundation Training

The aim of this area of research is to examine the relationships between a broad range of sociodemographic variables (including pre-entry performance and medical school attended) and performance on the UKFPO selection process measures. Much of this work was carried out as part of a SMERC-funded PhD project in collaboration with the University of Aberdeen with additional work funded by, for example, the UK Foundation Programme Office.

Data held in UKMED data has allowed us to identify what factors, prior to entering medical school and during medical school, affected foundation programme outcomes[2].

The findings have been used by medical school, training boards and workforce planners to inform recruitment and retention strategies.

1.3 Exploring factors that influence the workforce

Alisdair Smithies has been awarded a PhD in 2019 by the University of Dundee for his in-depth study on transitions in postgraduate medical training, A multi-perspective qualitative exploration of early career trainees experiences of rotational transitions.

The initial shadowing week at the beginning of the Foundation Programme was consistently reported as invaluable. However, the main findings across both stages identified that trainees often struggle with their new responsibilities and are often unclear about where and from whom to request support. Other challenges included coping with the logistics of transferring between one rotation and the next and becoming a member of a new team, as the rules of engagement were often variable. There were reports of having to learn complex unwritten rules in successive rotations. The perceived constant change of rotations every four months was reported to be isolating, creating a transience in terms of establishing both personal and professional relationships. Instead of a steady progression in the development of their professional and personal identity as they moved through rotations trainees' actual experiences were of fluctuating levels of responsibility across their rotations. One of the main recommendations is that there should be fewer rotations across the Foundation Programme with more adaptive induction and orientation programmes for each transition.

Output Exploring factors that influence the workforce

Smithies A, A multi-perspective qualitative exploration of early career trainees' experiences of rotational transitions (2019) PhD award University of Dundee

Smithies A, Transitions in Postgraduate Medical training, A multi-perspective qualitative exploration of early career trainees' experiences of rotational transitions (2018) NES SMERC Final Technical Report.

1.4 Selection into Specialty Training

A recent focus for SMERC has been to examine the relationships between performance on surgical selection and performance on surgical training. This work was the basis for the SMERC-supervised PhD of Mr Duncan Scrimgeour, inaugural Intercollegiate Surgical Curriculum Programme (ISCP) Fellow. Mr Scrimgeour's work has already has much influence in terms of changing the advice about the best time to sit Surgical membership examinations[3].

Professor Cleland has been invited to present on this work to the Royal Australian College of Surgeons (RACS) at their 2020 meeting, Melbourne, Australia.

This forms part of a wider programme of SMERC work exploring and examining the delivery of modern surgical training, including how educational innovation and curricula can help surgical trainees develop the competencies necessary for independent practice[4].

02 Career Decision Making

2.1 Career Preferences

This work is led by Professor Jennifer (Jen) Cleland and Professor Peter Johnson (Aberdeen) who have looked at topics including:

- The value medical students, Foundation Doctors and trainees place on factors relating to their careers
- The central importance of the clinical working and learning environment in recruitment and retention
- How best to support medical students, trainees and staff, and hence help recruit and retain trainees, and ensure NHS Scotland has the right staff, in the right places, to meet healthcare needs.

SMERC research has identified that improving working conditions and the culture of the learning and working environment are likely to have sustainable and long-term impact on recruitment and retention.

SMERC has a long-term collaboration with the Chief Scientist's Office (CSO) funded Health Economics Research Unit (HERU), University of Aberdeen. This work focuses on developing and utilising Discrete Choice Experiments (DCE) to identify career preferences and socio-demographic characteristics affecting career choices for medical students, Foundation doctors and doctors in training. This programme of work was featured in a keynote presentation at the 2019 Scottish Medical Education Conference, May, Edinburgh. Professor Cleland and Professor Johnston have been working with Dr Suzanne Stirling, NES, to examine the association between responses on the UKFPO Destination Survey and behaviour, identifying that a high proportion of doctors who had the intention to go directly into a training post at the end of the second year of foundation training (F2) did not do so.

SMERC (Cleland, Walker, Johnston) were funded by the UKFPO to explore the differences between doctors who apply for core/general practice training in Foundation Year 2 (FY2), and those who take time out of training before applying for higher training. This work is submitted for publication.

The most recent project in this workstream looks at the factors influencing the retirement decisions of consultants, SAS doctors and general practitioners in Scotland. This work is co-funded by the British Medical Association (BMA [Scotland]) and the University of Aberdeen Development Trust.

2.2 Foundation Programme Destination Survey

The UKFPO aim to publish two key reports each year; The Annual Report and The Foundation Trainees Destination Report. The Scotland Deanery in NES is instrumental in the production of both of these documents.

Each year on behalf of the UK Foundation Programme Office (UKFPO), NES gathers data from all the UK Foundation Schools and compiles an Annual Report which summarises:

01 The size of foundation schools, staffing levels and foundation programme fill rates.

02 The Male and Female demographic of foundation doctors, doctors training less than full-time (LTFT) and those in supernumerary posts (the breadth of this gender demographic is being reviewed for future reports, with a view to provide the best possible workforce data).

03 A measure of how Foundation Training is Delivered which covers local matching to programmes, programme configuration and specialty exposure.

04 A description of Outcomes and Career Destinations. This includes the number of foundation doctors successfully signed off at the end of their foundation year. It also includes those who did not successfully complete the F1/F2 training year. For those doctors who met the requirements for satisfactory completion at the end of the training year there are also details included of the next stage of their career. For doctors who did not successfully complete the training year, the reasons for non-completion are provided. The number of appeals against non-progression at the end of the year is also given.

05 Recruitment information including; Units of Application and Recruitment Processes (this section in the report is completed by UKFPO).

This draft report is then passed to UKFPO for quality assurance, branding and publication.

The UKFPO also commissions a survey of all end of year 2 Foundation Trainees which aims to determine their career aspirations and destinations. The Scotland deanery also plays a key role in helping to produce this this report each year. In 2019 the Scotland Deanery supported the design and analysed the results in order to write the draft "UKFPO 2019 Destination Survey Report". The 2019 Destination Survey Report is the tenth publication of this document. This report uses data collated from all 20 UK foundation schools.

The UKFPO Destination Survey Report, summarises the data collected from this survey and includes:

- Next career destinations
- The proportion of doctors progressing into psychiatry and general practice (GP) specialty training
- Doctors who undertook Medical Royal College exams during F2
- The numbers of specialty training and service posts being taken outside the UK
- The percentage of doctors leaving the UK and those intending to return within five years
- Doctors who intend to work less than full-time

The Foundation Trainees Destination Report has consistently (year on year) shown that the percentage of foundation trainees remaining in the UK to work as a doctor either in service or training posts is around 55% upon completion of the foundation programme.

Since 2011 there has been a continuing trend showing a decline in the number of F2 doctors moving directly from the foundation programme into specialty training in the UK. Work continues, analysing the free text comments from this survey to understand new doctors long term aspirations for career destinations post Foundation Training. The 2019 survey has included additional questions intended to explore the reasons for doctors not directly entering specialty training following Foundation Training. These new questions include exploration around issues like:

- Work life balance
- Attitudes to applying to specialty if there was greater flexibility in specialty training working patterns
- The opportunity to defer starting
- Multiple start dates
- Support for out of programme experiences

The Foundation Trainees Destination Report is analysed at a UK national level for UKFPO but the data can also be presented from a Scotland perspective, for presentation within NHS Education for Scotland and its stakeholders.

The UKFPO Annual Report and Trainee Destination Report information is used by key stakeholders including medical schools, health boards and the devolved governments to inform future workforce and training policy frameworks.

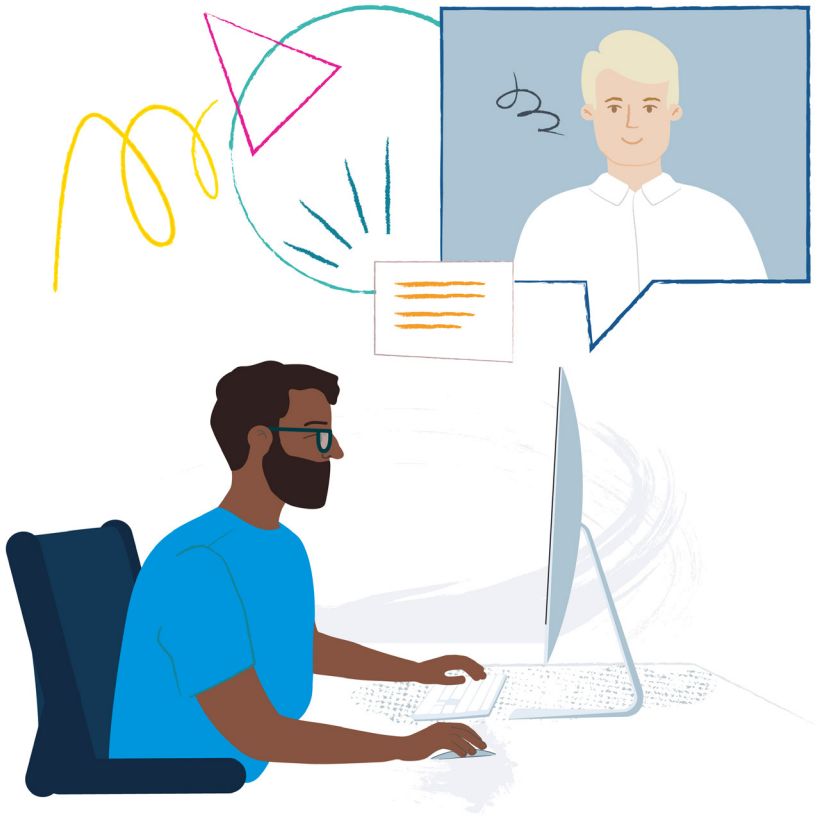
2.3 Broad Based Training (BBT)

Broad Based Training (BBT) is a new core training programme for Scotland. It offers trainees a firm broad foundation in four specialties with direct entry into year two of any of these four specialties. The programme includes six months in each of the following specialties:

- Internal Medicine Training
- General Practice
- Paediatrics
- Psychiatry

During each of the four attachments, 10% of training time is spent in one of the other three specialties. The programme allows time and confidence to develop before having to progress to a further career choice. The first cohort of eleven BBT trainees began their training in August 2018.

A qualitative evaluation is underway, taking a 360 degree perspective — i.e. exploring the views and experiences of trainees, Educational Supervisors, Associate Deans and other key stakeholders. This is a longitudinal evaluation and the results will be available in 2022.



2.4 Internal Medicine Training Simulation Boot Camp Evaluation Study

Background

In response to recommendations set out in the Shape of Training Report and other drivers, the GMC has developed a new model for future physician training. Internal Medicine Training (IMT) now forms the first three years of post-foundation training and replaced Core Medical Training in August 2019. With the support of the Scottish Government Health Department, the implementation of the new curriculum was seen as a unique opportunity to offer enhanced simulation training to IMT trainees in Scotland. A novel simulation-based training package was designed by the NES Medicine Simulation Collaborative, in conjunction with the Medicine STB simulation subgroup. The IMT1 simulation boot camp aims to embed evidence-based practice to enhance skills, improve efficiency and augment patient safety.

All IMT trainees in Scotland starting in August 2019 have been given the opportunity to attend the three-day simulation boot camp. Trainees from all regions of Scotland attend in groups of 18. The IMT boot camp is delivered at the Scottish Centre for Simulation and Clinical Human Factors at Forth Valley Royal Hospital, in Larbert. The training uses high fidelity simulation methodology to meet the needs of the new Internal Medicine Training curricular requirements. The curriculum mandates a range of procedural skill competencies, with evidence required at simulation-laboratory level. Approximately one third of the IMT1 boot camp is dedicated to immersive simulation scenarios, with the other two thirds being dedicated to challenging communication scenarios, and mastery learning of procedural skills.

Evaluation

The over-arching aim of the three-year study is to evaluate the impact of all aspects of the IMT simulation strategy from the perspectives of the learner, the faculty and the service.

This will be done through a variety of methods:

01 Evaluation of the boot camps using pre- and post-questionnaires.

02 Interviews with a purposive sample of boot camp attendees c3 months after they have returned to the workplace.

03 Interviews with members of the boot camp faculty and programme architects.

04 Examination of clinical errors made by IMT trainees by reviewing recorded simulated scenarios.

05 Review of recorded workplace errors involving IMT trainees.

Current work

So far, a total of 104 trainees have attended the IMT1 boot camp, which has been delivered six times. Preliminary analysis of pre- and post-boot camp questionnaires has been undertaken and follow up interviews are being arranged.

Questionnaire analysis has shown high levels of satisfaction with the boot camp training, with trainees noting in free text that the simulations were at an appropriate level and provided invaluable training and helpful feedback. The trainees also highlighted that the non-technical skills training in aspects such as communication, leadership and team working was useful and interesting. Pre-course questionnaires suggested that for most trainees the key motivation was to improve their procedural/technical skills, but post-course questionnaires showed that improvement in non-technical skills (such as leadership, communication, general confidence) had formed a more important part of the learning than trainees had anticipated.

The interviews currently being organised will allow exploration of the longer-term effects of the boot camps and explore how the skills practiced have translated into actual practice. The complete evaluation data will also help to measure the cost benefit analysis for this project which is continually monitored through funding applications to the Scottish Government Health Department.

03
Developing Staff

Primary Care and General Practice with reference to clinical and safe staffing issues

This work stream focuses on work in Primary Care and General Practice with reference to clinical and safe staffing issues. Several projects have resulted in publication and others are on-going.

3.1 Homelessness

Due to the barriers faced by those experiencing homelessness when accessing healthcare, designing with service user involvement is recognised to be especially important. In this population, the Always Events approach can be used to allow patients to drive Quality Improvement initiatives[5].

3.2 Managing sepsis

Understanding the complex work systems that exists in healthcare and involving those working in these systems is crucial for designing successful improvement interventions. Working with a regional health board, this study used the Functional Resonance Analysis Method to model and explore the complexity of the existing system for identifying and managing patients with possible sepsis. Multiple perspectives on possible system improvements were sought that were then reconciled with the system model to co-design a multicomponent improvement intervention[6].

3.3 Continuing professional development in primary care

This large survey of four professions in primary healthcare identified which learning methods and resources were used by each profession. It showed that there were differences between professions, e.g. GPs tended to learn in the evenings whereas practice nurses and NHS employed Pharmacists and Pharmacy Technicians wanted to learn during the working day. These results have significance in the design of future CPD provision for both uni- and interprofessional learning[7].

3.4 GP specialty trainee (GPST) targeted recruitment

A survey assessed the awareness and influence of a Targeted Enhanced Recruitment Scheme (TERS) payment to GP specialty trainees accepting a targeted post in a remote, rural area, or hard to fill GP post. Almost two-thirds (65.3%) were aware of TERS at the time of application but only 21% of GPSTs were influenced by it in their choice of training location. The locations of family, spouse or partner, and of pre-existing geographical preferences were more influential than TERS. These results help to inform the debate on enhancing recruitment in these areas and the benefit of financial incentivisation[8].

3.5 General Practice Specialty Training (GPST) in deprived areas

This study aimed to identify the perceptions and experiences of recently-qualified GPs who had trained in Deprived Area Practices (DAP). GPs were very positive about their training experiences in DAPs and appreciated their trainer and training practice. Training authorities should encourage and support practices in deprived areas to become training practices and encourage GPSTs recruitment to these posts[9].

Ongoing projects:

3.6 GP Returner and Enhanced Induction programmes

NES operates two educationally supported programmes for Trained General Practitioners (GPs). This survey showed that the GP Returner and Enhanced Induction programmes have successfully enabled returning or internationally trained GPs entry to the Scottish GP workforce. Those completing these programmes make an ongoing contribution to clinical care for patients in Scotland after safe introduction or reintroduction to general practice in an educationally supported environment.

3.7 Implementing generic professional capabilities in GPST

The GMC want a consistent approach to training that prioritises patient safety / safeguarding, quality improvement, health promotion, leadership and team working. To this end they published a framework describing essential generic professional capabilities (GPCs) to be completed during specialty training. Super-condensed curriculum guides (SCCG) were created with stakeholder input to signpost GP trainees in GP placements to opportunities to cover nonclinical GPC topics. These four new SCCGs were seen as a useful addition to existing curriculum-based teaching tools, to aid placement planning, workplace-based training, and learning outcomes.

3.8 Development of a generic Quality Improvement feedback template

NES operates a well-established system for the peer review of two types of Quality Improvement (QI) methods: Significant Event Analysis (SEAs) and criterion-based audit. This project aimed to develop and validate a template that could be used to provide feedback on a broad range of QI methods. A literature review of published templates was followed by iterative adaptation by ten subject matter experts. A Content Validity Index exercise and inter-rater reliability testing were used to validate the template. The agreed template can be used to structure educational feedback from review of a number of QI methods as part of trainee development and continuing professional development.

3.9 Evaluation of the NES General Practice Clinical Pharmacist (GPCP) Competency & Capability Framework

The General Practice Competency & Capability Framework was launched in September 2016 to support practice and development for pharmacists working in these roles in all Health Boards across Scotland and employed with new Primary Care Funding (2015–18) and subsequently General Medical Services (GMS) Funding (2019–21). The first credentialing of pharmacists completing the Framework occurred in March 2019 and consisted of portfolio review and a viva. External reviewers were commissioned for this purpose and guidance for pharmacists going forward was developed. Credentialing of pharmacists will continue on a bi-annual basis.

Prior to the launch of the Framework for all pharmacists working in General Practices across Scotland, researchers at the School of Pharmacy, University of Strathclyde have been commissioned to undertake a piece of work to ascertain if the GPCP Competency and Capability Framework is fit for purpose for this group of practitioners to include delivery and development of new Pharmacotherapy services, as a part of the new GMS contract. This work is expected to report in November 2019.

3.10 Pharmacists Working in General Practice Educational Evaluation

NES Pharmacy has produced a national Learning Pathway for pharmacists employed to work in General Practice across Scotland with Primary Care Funding (2015–18) which was launched in September 2016. The pathway consists of direct learning events — 3 days (DLEs), e-learning, completion of a Competency and Capability Framework and national webinars.

An external independent researcher was commissioned in 2016 to evaluate the learning from the first 3 cohorts of pharmacists (n=135), the aim of which was to assess the educational support provided for these pharmacists to inform an educational support framework for this new career role going forward. The pharmacists were followed up one year after attending the initial DLE and self-assessed measures of competence and confidence were evaluated over the initial 18 months.

This work completed in 2018 and found that the Learning Pathway met practitioner needs, however patient facing skills development was maximised for pharmacists where there was initial support from Health Boards and General Practices. There were significant perceived improvements in competence and confidence in this new role over time and being an independent prescriber was essential for development of competence.

3.11 An exploration of the cross-sector Pharmacy Foundation Vocational Training Programme: is the programme fit for purpose?

This research explores the cross-sector Pharmacy Foundation Vocational Training Programme using a longitudinal approach following up cohorts of Foundation Pharmacists (FPs) from across Scotland and South East England who started training in September 2017 (Cohort 1) and from Scotland who started training in February 2018 (Cohort 2).

A mixed-method study including qualitative research using the conceptual frames of social cognitive and situated learning theory has been adopted to assess development of transferable behavioural skills and professional attitudes. This is supplemented by analysis of baseline and exit questionnaires, and routine assessments, completed by the Foundation Pharmacists. Miller's triangle (knows, knows how, shows how and does) will be used the framework for analysis.

The ultimate objective of this evaluation is to provide an assessment of the success of the Vocational Training (VT) Programme in enabling participants to acquire the necessary competence and confidence in clinical skills, cognitive domains, behavioural and attitudinal areas. To date, preliminary analyses confirmed that the programme is meeting an identified need, as expressed by both Foundation pharmacists and their tutors.

Self-assessment scores of perceived competency suggest development of competences across the two year training period. The report was based on Cohort 1 only, and limited numbers prevent analysis by subgroups. Once all cohorts have completed (total sample 111) and final outcome scores are available more complex analyses are planned. These will look longitudinally at the data and synthesise the qualitative and quantitative components to identify areas where programme modifications could be made, and the factors which contribute to successful programme completion.

3.12 An exploration of the cross-sector Pharmacy Technician Vocational Training Foundation Programme (PTVTFP): is the programme fit for purpose?

The Pharmacy Technician VT Foundation Programme (PTVTFP), which takes approximately 1000 days to complete, is undertaken by qualified pharmacy technicians after they have registered with the General Pharmaceutical Council. The Programme is believed to be the first of its kind developed specifically for pharmacy technicians. The first cohort of trainees was limited to those based in general practice/primary care, with later cohorts providing options for all of the above sectors. Six months prior to the first cohort of training, primary care technicians were invited to attend a boot camp.

This research is exploring the Programme using a longitudinal approach following up cohorts of Foundation Pharmacy Technicians (FPTs) from across Scotland who started training in September 2018 (Cohort 1: primary care) or February 2019 (Cohort 2: hospital).

A mixed-method study including qualitative research using the conceptual frames of social cognitive and situated learning theory has been adopted to assess development of transferable behavioural skills and professional attitudes. This is supplemented by analysis of baseline and exit questionnaires, and routine assessments, completed by the Foundation Pharmacy Technicians. This data will be presented based around Miller's triangle (knows, knows how, shows how and does).

The ultimate objective of this evaluation is to provide an assessment of the success of the Programme in enabling participants to acquire the necessary competence and confidence in clinical skills, cognitive domains, behavioural and attitudinal areas. Interim analysis of cohort 1 for the baseline focus groups and questionnaires on perceived competences was completed. The excellent response rate for both of these reinforces the enthusiasm for taking part in the Programme, identified at the boot camp and base line focus groups.

As these participants are solely those based in the general practice setting this may not be transferable across other sectors of practice. As more data becomes available as the cohorts progress through the Programme, as further cohorts are recruited to include community pharmacy, and as routine assessments are completed, a more comprehensive evaluation will be possible.

3.13 A qualitative study exploring the key determinants of information gathering to inform the management of over-the-counter (OTC) consultations in community pharmacies

Gathering relevant patient information during over-the-counter (OTC) consultations increases the likelihood of safe, effective and person-centred outcomes. The aim of this study was to explore the key determinants to information gathering during consultations for non-prescription medicine requests in community pharmacies in Scotland. This study was conducted as part of the TRiaDS programme of research (www.triads.org.uk) and was funded by NHS Education for Scotland.

Semi-structured interviews using the Theoretical Domains Framework (TDF), with community pharmacy teams across Scotland were undertaken. Interviews explored participants' knowledge of current guidance, skills required to elicit information and barriers and facilitators associated with this behaviour. Theory-based content analysis was undertaken to identify key determinants and map them to salient domains. Salience was determined by prominence or variation in views. Comparative analysis was undertaken by professional role.

Eight salient domains were identified: environmental context and resources (privacy); beliefs about consequences (patient safety); skills (communication, decision-making); social influences (patient awareness of pharmacist role); knowledge (awareness and use of standard operating procedures); social professional role and identity (perception of own role); behavioural regulation (training) and intention (to gather information). Similar domains were salient for pharmacists and MCAs; however, different beliefs were associated with different roles. Overarching themes were identified: best practice; health literacy; decision-making; and, professionalism.

Multiple influences and complexities affect the effective management of OTC consultations. While similar factors impact upon both pharmacists and MCAs at a patient, professional and environmental level, subtle differences exist in how these influence their management of OTC consultations. This study has highlighted the importance of tailoring interventions to reflect different roles, functions and responsibilities of community pharmacy personnel[10].

3.14 Supporting Remote and Rural Practitioners

1. Realist Evaluation

Susan Somerville has been analysing data collected from a number of Mobile Skills Unit (MSU) field visits, reports, and interviews using a realist approach. This forms part of her PhD to explore what influences the impact of the complex intervention of the MSU as part of the CSMEN national strategy for skills and simulation. The results will inform the future development of the deployment of the MSU in terms of both effectiveness and efficiency.

She was funded by a Scottish Medical Education Research Consortium (SMERC), Travelling Fellowship Award, to attend the CARES Summer School for Advanced Training in Realist Methodology, in 2018 at the University of Liverpool. This has led to her leading the development of a process of dissemination using workshops and showcases on the use of this research approach throughout Scotland.

Outputs

9th National Scottish Medical Education Conference Workshop Somerville S., (2019) A showcase of Realist Synthesis, Realist Evaluation and Critical Realism research in health and social care and medical education in Scotland: what, why, and how, Edinburgh International Conference Centre.

The Society for Simulation in Europe (SESAM) 25th Annual meeting E Poster presentation; Somerville S., Howden S., Schofield S., Ker J., (2019) Exploring simulation on a countrywide scale: a realist evaluation of the mobile skills unit., Glasgow Caledonian University.

2. Portfolio Project

The aim of the Portfolio Project which was initially funded by the Scottish Rural Medicine Consortium run by British Association for Immediate Care (BASICS) in association with Scottish Multiprofessional Maternity Development Programme (SMMDP) and Clinical Skills Managed Education Network (CSMEN) is to provide flexible training in prehospital emergency care for all health care practitioners. A detailed post evaluation survey was undertaken over the 12 events held in 2018–19 with over 171 delegates attending a variety of venues including Isle of Mull, Campbelltown Benbecula and Skye in 2018 and Nairn, Arran, Shetland, Islay and Orkney in 2019.

Outputs

The evaluation of the portfolio approach was positive. 56% of attendees were nurses, 38% doctors and 6% paramedics. The scenarios were clear and easy to follow for the preparation for the face to face learning. The clinical skills videos were useful in enhancing learning and setting standards and although the MSU was sometimes cold the participants were very positive about its standards.

The teaching was reported by 99% as being knowledgeable, consistent and supportive. The varied experience within the faculty from different backgrounds was reported to be very useful and brought added value.

3. Surgical training on the MSU

The Dundee Institute of Healthcare Simulation developed and delivered a two day course on minor surgery in primary care and ran this in Shetland in May 2019. This is accredited by RCGP. This is to run again in South West Scotland as well as other remote and rural venues.

Outputs

BBC and STV news coverage of the training on the MSU in Shetland.

Island medic programme coverage 2019.

3.15 Supporting the Scottrauma Network

CSMEN has been contributing to the development of the Scottrauma Network Education Group over the past year and contributed to the annual Scottrauma Conference on Saving Lives — Giving Life Back in June 2019. A joint poster developed by The Scottish Centre for Simulation and Clinical Human Factors (SCSCHF), SMMDP and BASICS shared how the MSU has trained both members of the public in remote and rural Scotland as well as healthcare practitioners using the portfolio programme funded by the Scottish Rural Medicine Collaborative to train in a variety of emergency scenarios.

Outputs

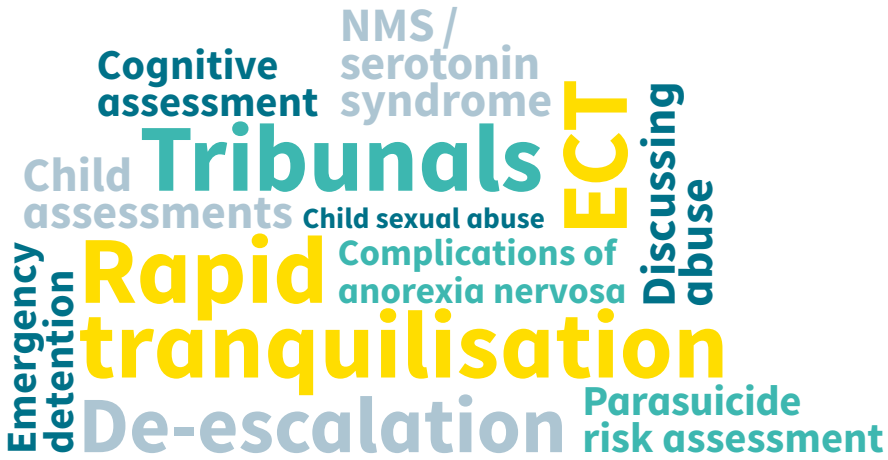
Ker J., Price B., Moneypenny M., Baker A., Marshall H., Laird C., Hardie L (2019) Sustainable and reliable simulation based education for remote and rural practitioners poster, Scottrauma Conference Edinburgh.

BASICS Scotland (2019) dissemination in relation to the opportunities for training.

3.16 Enhancing Mental Health Training in Scotland

Several initiatives have been undertaken in relation to upskilling the health and social care workforce in relation to mental health illness by NES and by CSMEN through SCSCHF and the Short Life Working Group (SLWG) in Psychiatry.

Carla Schmoll and Alex Mclean have undertaken a snapshot survey of training needs amongst educators and trainees in 2019 across central Scotland to inform the CSMEN and SLWG in Psychiatry in relation to priorities.



Outputs

Phillips EC, Neagle G, Cameron B, et al. It's okay to talk: suicide awareness simulation. Clinical Teacher 2019;16:373–377. doi:10.1111/tct.13044 (SCSCHF).

Psychiatry Training Needs Analysis report identified common areas such as de-escalation rapid tranquilisation and tribunals practice as outlined in the wordle (left).

Core trainees requests for simulation based education.

3.17 Developing Ultrasound Guided Regional Anaesthesia (UGRA) capability through the use of simulation

As part of SKIRC the £69,970 funded research project (Royal College of Anaethetists UK and British Journal of Anaesthesia) is a collaboration between NES, NHS Tayside and the University of Dundee. At the completion of year 1 the project has identified valid and reliable metrics for translation of regional anaesthesia performance from cadavers to patients. This will enable the next stage of the project to identify which simulation approach is more effective the use of Thiel cadavers or pork shoulder for training. This could have both safety and training efficiency impacts in the future.

Outputs

McLeod G., McKendrick M., Taylor A., Lynch J., Ker J et al (2019) Validity and reliability of metrics for translation of regional anaesthesia performance from cadavers to patients British Journal of Anaesthesia published online 4/19.

3.18 Launch of Human Factors Scotland Online Community of Practice

The new online community of practice and national learning resource functions as a repository for SKIRC related human factors research and educational development outputs, but also as a hub for sharing educational materials and issues of interest to the community in Scotland and beyond.

Online resource and community of practice:
http://www.knowledge.scot.nhs.uk/hfe.aspx

Twitter:
@NES_HuFactors

To join the Network email:
humanfactors@nes.scot.nhs.uk

3.19 Team-based Quality Reviews

As part of the SKIRC contribution to the Scottish Government Openness and Learning agenda and the work of the Scottish Mortality and Morbidity Programme, an ambitious goal has been set to develop and integrate a generic, more rigorous and meaningful approach to team-based safety reviews, based on systems thinking, across health and social care SKIRC has also led with our partners the co-development of guiding principles based on the latest safety science thinking to oversee this development work.

Bowie P., Kumar M, McNab D, Ker J et al, *Systems thinking in team-based learning from events: a comprehensive guide.* SKIRC Technical Report: Edinburgh, 2019

Theme 2
Developing the Clinical Learning Environment

04 The Learning Environment

4.1 Factors that affect the Learning Environment

The clinical learning environment has been a focus of SMERC research for a number of years.

SMERC is currently working in collaboration with the GMC on a project called “Departments in need of support”, to examine if routine data (e.g. NTS data) can be used to predict and prevent problems in training programmes.

Professor Cleland and her long-term collaborator from the USA were invited to write an article on the tension between education and training, for the journal Medical Education’s State of the Science annual issue[11]. This follows from work done in analysing the factors that contributed to training and relational difficulties in a general surgery department in the UK.

The surgical learning environment is an increasing area of interest for SMERC. One new work stream, funded in part by the Royal College of Surgeons of Edinburgh, will use the unique opportunity of the “Improving Surgical Training” (IST) pilot to explore how curricular change influences phenomena such as trainer-trainee relationships, feedback, the formation of professional identity, and integration into the surgical community of practice.

SMERC is also increasingly supporting projects looking at the individual, cultural and organisational factors that influence how medical students, doctors in training and fully-qualified colleagues engage with educational and organisational innovation and change.

4.2 Scottish Trainee Survey (STS)

Introduced in 2013, the Scottish Trainee Survey (STS) is completed by all Scottish medical trainees in foundation, run-through, core and specialty programmes annually and at the end of each training post. The driving aim of the survey is to produce robust indicators for quality management. A further aim of the survey is to capture data about each post, rather than just once a year. The survey collects both quantitative and qualitative data. Quantitative data allows for the production of RAG (Red, Amber, Green) reports. The RAG reports are a means of summarising the responses to the survey that gives a single reference statistic which provides an indication of the units that are most likely to be examples of best practice or have issues that require intervention, such as a visit.

The qualitative questions ask the trainee to comment on any particularly good or poor aspects of their post. These comments are reviewed by Associate Postgraduate Deans (Quality) in order to see where specific comments can be acted upon to improve particular trainee placements. They are also analysed more broadly by a dedicated NES researcher in order to see what they can tell us about overall good and bad experiences, what can be learned and what are the recurring messages.

A detailed report of the free text comments, where the findings are analysed by training grade, Specialty Training Board and specialty, is circulated to quality management teams and specialty leads for their consideration. Each Specialty Training Board can therefore identify any important messages for their training programmes. The data is also being looked at with a view to dissemination through peer reviewed journal publication.

4.3 Simulation based educators' development

The simulation based educator national framework developed by CSMEN using an action research approach including a modified Delphi identified three tiers for high level outcomes:

http://www.csmen.scot.nhs.uk/quality-assurance/development-of-sbe-qa-system/

The framework has been matched to the Association of Simulated Practice in Healthcare (ASPiH) standards, the Academy of Medical Educators (AoME) standards and the GMC and Nursing and Midwifery Council (NMC) trainer standards so can be used by educators whatever their professional clinical background. The development of the framework has been disseminated through presentations and workshops.

Outputs

To maximise the impact of the framework in practice a database of educators has been established to enable faculty to learn from each other and to support the MSU visits to remote and rural areas and to recognise the different course available for training simulation based educators.

Moneypenny M. Being a better trainer. GAT conference, Association of Anaesthetists of Great Britain and Ireland, Glasgow, 2018 (SCSCHF).

The Simulation technicians national capability framework launched as part of the **http://www.csmen.scot.nhs.uk/quality-assurance/development-of-sbe-qa-system/** has also been written up and submitted to BMJ Simulation and Technology Somerville T., Baker A., Moneypenny M., Ker J.

4.4 Improving the quality of skills education using e-learning

E-learning resources for skills were developed by CSMEN from the priorities of the Scottish Government 2020 Vision for Health and Social Care to provide both prepared practitioners for face to face simulation-based events and as reinforcement to minimise skill decay.

In this descriptive study we aimed to:

- analyse the use of the resources over the past five years
- identify challenges to learning from feedback; and,
- explore new technological bridges to disseminate and support learning.

Data such as how each resource was accessed, completion time, location and job / role were gathered over 5 years to analyse and improve the use of the resources in a blended approach to learning. Lessons learned in improving the quality of the e-learning resources include balancing local ownership with the incorporation of international evidence.

Outputs

Brown G, Baker A, Willey K, Hardie L, Ker J (2019) Improving the quality of skills education — lessons learned from 5 years of e-learning data, SESAM Conference, Glasgow.

4.5 Identifying the learning needs for Confirmation of Death Procedure

CSMEN has been working with Lesley Whyte and Anne Moffatt from NES NMAPH to identify the learning needs of practitioners who are now being asked to confirm both expected and unexpected deaths. This has involved analysing practices across the health boards undertaken by Anne Moffat at NMAPH and discussing with leads and experts from the territorial health boards as well as NHS improvement Scotland what best practice is. The variation that has been uncovered in practice has identified the need to develop a resource to support those undertaking this procedure. This has been achieved through the development of an agreed storyboard of the procedure.

In parallel with this development has been work undertaken in relation to improving the documentation of the cause of death by medical practitioners in which simulation may have a role.

Outputs

Moffat A., Whyte l., Ker J., 2019 Consensus on confirmation of death procedure NES Workshop.

Moneypenny M. Reducing Errors in the Medical Certificate of Cause of Death (MCCD). Scottish Medical Education Conference, Edinburgh, 2019. (SCSCHF)

4.6 The Medical Simulation Collaborative

The Improved Surgical Training (IST) programme led by Mr Graham Haddock is now in its second year. It is supported by CSMEN. A boot camp is provided for all first year core surgical trainees in Scotland following the national UK Surgical Curriculum. The research undertaken in the original bootcamp was funded by CSMEN. An in depth evaluation of the programme is being led by Professor Cleland from the University of Aberdeen. All first year trainees also receive monthly training days, a CRISP course and are issued with an EO Sim box for their own training practice.

Internal Medicine Training (IMT) for core medical trainees is starting in 2019 with a boot camp, a comprehensive and informative evaluation of its impact on all stakeholders has been undertaken jointly led by Dr Vicky Tallentire (APGD for IMT simulation) and Suzanne Stirling (Specialist Research Lead — Medical).

Pre and post course questionnaires assessed aspects of experience, confidence and motivation. A purposive sample of trainees will be contacted post course for in-depth interviews about their experience of boot camp and its impact on their subsequent training and experience of working as an IMT. The resultant analysis will not only help to improve the educational impact of IMT boot camp, but also allow us to better understand how IMT trainees conceptualise their role and navigate personal learning opportunities.

4.7 Building Research Capability and Capacity

A CSMEN simulation research group has been established as a subgroup of SKIRC with a focused interest on the use of Virtual Reality both for the development and maintenance of non-technical skills and for enhancing learning through engagement at the scenario briefing and transferring learning to the workplace stages of the process.

Outputs

One of the supportive outputs from CSMEN to support research has been the development of a simulation bulletin which is released three times a year, which identifies relevant articles published and provides a focused review on a paper or policy document.

An example is provided below:
http://www.csmen.scot.nhs.uk/news/simulation-bulletin-july-2019/

Moneypenny M, Hardie l., Brown G (2019) Decision making scenario, Workshop MSU, SESAM Glasgow (SCSCHF).

Phillips EC. Simulation experiences of doctors training in Scotland: perceived benefits, barriers and potential solutions. Presentation TASME Spring Meeting, Newcastle, 2019.

4.8 Virtual Reality in Magnetic Resonance Imaging

In January 2019, NHS Highland in partnership with NHS Education for Scotland SKIRC was awarded £75,000 funding by the Health Foundation, an independent charity, to be part of its Innovating for Improvement programme.

The joint project aims to investigate the use of virtual reality headsets to relieve anxieties in paediatric and adult patients undergoing MRI scans, potentially decreasing the need for general anaesthetic, increasing scan compliance and reducing motion artefact. The SKIRC research team will provide advice on human factors design principles, implementation and improvement science and contribute to the evaluation process.

4.9 Meet MoRISS — A User-Designed Safety Checklist for Scottish General Practice

Unreliable checking of safety-critical processes can compromise care quality in general medical practice (e.g. the unsafe management of controlled drugs). Adopting a systemic, methodical approach may lead to improved standardisation and reliability of task performance and the safety systems concerned. SKIRC, worked with NHS Ayrshire and Arran and Healthcare Improvement Scotland as partners, to critically review and update the relevance and content of a previously validated safety checklist to the current general practice context, implement and test it with users in a 'real-life' regional setting and solicit further feedback for improvement.

A multi-method study informed by human factors-based participatory design principles was undertaken in Scottish general practice. Phase 1 involved consensus building workshops to review, re-design and validate the original checklist content by users and experts. Phase 2 involved financially-incentivised implementation of the checklist in 55 general practice sites across a regional health authority followed by a cross-sectional online usability survey of users. A redesigned safety checklist tool consisting of eight themes and 61 items was prioritised, agreed and validated.

The MoRISS (Monitoring Risk and Improving System Safety) checklist was re-designed by users as a practical safety monitoring and improvement tool for general medical practice. Testing demonstrated high levels of compliance with checklist items. The checklist can be contextualised for use in family practice settings internationally and potentially other primary care areas.

The MoRISS safety checklist, guidance and evidence rationale can be accessed here: https://learn.nes.nhs.scot/1032/patient-safety-zone/patient-safety-tools-and-techniques/moriss-checklist

Bowie P., Crickett T., McCulloch J, Young P et al, *User re-design and testing of the Monitoring Risk and Improving System Safety (MoRISS) checklist for general medical practice*. SKIRC Technical Report. NHS Education for Scotland, Edinburgh:, 2019.

4.10 Guidance on Reporting of QI Projects and Journal Publication

Based on previous and ongoing SKIRC work, we are leading the development of 'expert' consensus with international partners on the design of "Guiding Tips" for clinical educators on how best to embed QI project activity in healthcare curricula and Human Factors science can add value.

Bowie P, McNab D, Vosper H, Lang A et al, *12 Tips for Embedding Quality Improvement Projects in Healthcare Education and Practice.* NHS Education for Scotland, SKIRC Technical Report: Edinburgh, 2019.

4.11 Serious Patient Harms and Organisational Losses

A further SKIRC output has led to the development of practical guidance and a training programme for the clinical risk, patient safety and quality improvement advisory workforce on conducting a barrier management technique known as BowTie Analysis (BTA).

Outputs

Bowie P, McNab D, Carson-Stevens A , Ross A . *The Problem with "Medical Error".* SKIRC Thought Paper. NHS Education for Scotland, Edinburgh:, 2019.

Bowie P., and McNab D. *Thinking Differently about Patient Safety*. SKIRC Thought Paper. NHS Education for Scotland, Edinburgh:, 2019.

Bowie P, McNab D, Carson-Stevens A, Ross A. Is the "never event" concept a useful safety management strategy in complex primary healthcare systems? SKIRC Technical Report. NHS Education for Scotland, Edinburgh, 2019.

NHS England's Healthcare Safety Investigation Branch

SKIRC has provided expert advice to on the highly complex issue of 'wrong blood in tube incidents' and how healthcare organisations can seek to better understand this problem and re-design the care system to support everyday performance in this area.

Ministry of Defence Healthcare Regulator

SKIRC have been commissioned to undertake a Human Factors-based critique of their incident reporting and learning system. This involves applying well-established international usability design principles to the technical IT system and reviewing processes for reporting, learning and improvement in line with modern safety science thinking. The outputs of this research will strongly inform developments to support the NHS Scotland workforce engage with the Openness and Learning agenda.

4.12 NES Safety Culture Discussion Cards

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:
https://learn.nes.nhs.scot/6036/patient-safety-zone/patient-safety-tools-and-techniques/safety-culture-discussion-cards

4.13 NES Systems Thinking for Everyday Work Cards

The principles contained in these cards can be used to frame team discussions to encourage a systems approach to exploring and improving safety in healthcare.

They can help to:

- Understand the current system
- Analyse incidents (with both wanted and unwanted outcomes)
- Identify improvement priorites
- Develop change ideas and their implementation into current work systems
- Monitor, evaluate and spread change

https://learn.nes.nhs.scot/6025/patient-safety-zone/patient-safety-tools-and-techniques/stew-model

Outputs

Publications:
Al Salem G., Bowie P, Morrison J.,: *Hospital Survey on Patient Safety Culture: psychometric evaluation in Kuwaiti public healthcare settings*. BMJ Open 05/2019; 9(5):e028666., DOI:10.1136/bmjopen-2018-028666

Bowie P., and Shorrock S. *Safety Culture: Theory and Practice.* In G Rutherford (ed). *Human Factors applied to Paramedic Practice* [Class Professional Publishing, In Press]

McNab., D. Systems Thinking. In G Rutherford (ed). *Human Factors applied to Paramedic Practice* [Class Professional Publishing, In Press]

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Schreurs S, Cleland J, Muijtjens AMM, oude Egbrink MGA, Cleutjens K. Does selection pay off? A cost-benefit comparison for medical school selection and lottery systems. Medical Education 2018; 52: 1240–1248.
Cleland JA, Hanson M, Patterson F. Thinking of selection and widening access as complex and wicked problems. Medical Education 2018; 1228-1239.
Fielding S, Tiffin PA, Greatrix R, Lee AJ, Patterson F, Nicholson S, Cleland JA. Do changing medical admissions practices in the UK impact on who is admitted? An interrupted time series analysis. BMJ Open 2018;8:e023274. DOI:10.1136/ bmjopen-2018-023274.
Schreurs S, Cleutjens KB, Muijtjens AMM, Cleland J, Oude Egbrink MGA. Selection into medicine: the predictive validity of an outcome-based procedure. BMC Medical Education 2018;18 (1):214. DOI: 10.1186/s12909-018-1316-x.

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Kumwenda B, Cleland JA, Prescott GJ, Walker KA Johnston PW. Relationship between sociodemographic factors and specialty destination of UK trainee doctors: a national cohort study. BMJ Open 2019;9:e026961.
Kumwenda B, Cleland JA, Prescott GJ, Walker K, Johnston PW. Geographical mobility of UK trainee doctors, from family home to first job: a national cohort study. BMC Medical Education 2018:314.
Kumwenda B., Cleland J, Walker K, Johnston, PJ, Prescott, G. The relationship between socio-demographic factors and selection into UK postgraduate medical training programmes: a national cohort study. BMJ Open 2018;8:e021329. 35.
Kumwenda B, Cleland J, Greatrix R, Mackenzie RK, Prescott, G. Are efforts to attract graduate applicants to UK medical schools effective in increasing the participation of underrepresented socioeconomic groups? A national cohort study. BMJ Open 2018;8:e018946.

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Scrimgeour DSG, Brennan PA., Griffiths G., Lee AJ, Smith FCT. & Cleland, J. Does the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination predict 'on-the-job' performance during UK higher specialty surgical training? Annals of the Royal College of Surgeons of England 2018; 100: 669–675.
Scrimgeour DSG, Brennan P, Griffiths G, Smith FCT, Lee AJ, Cleland J. Does the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination predict performance during UK higher specialty surgical training.Annals of the Royal College Surgeons England 2018; 100: 669–675.
Scrimgeour DSG, Cleland J, Lee AJ, Brennan PA. Predictors of success in the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination. Annals of the Royal College Surgeons England 2018; 100(6): 424–427.

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Leighton K, Crawley J, Moneypenny M, et al P24 The influence of stress management strategies on performance in simulated medical emergencies *BMJ Simulation and Technology Enhanced Learning* 2018;4:A61-A62. (SCSCHF)

Tallentire V, Hamilton A, Kerins J, et al W16 Developing the non-technical skills of medical students: using a behavioural marker system in immersive simulation *BMJ Simulation and Technology Enhanced Learning* 2018;4:A48-A49. (SCSCHF)

May A, Boss L. Chapter 28: The debrief. Forrest K, McKimm J (eds.) 2019. Healthcare Simulation at a Glance. London, UK: Wiley-Blackwell. (SCSCHF)

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Alsalem G , Bowie P, Morrison J: *Assessing safety climate in acute hospital settings: A systematic review of the adequacy of the psychometric properties of survey measurement tools.* BMC Health Services Research 12/2018; 18(1)., DOI:10.1186/s12913-018-3167-x

Appendix 2: SKIRC Publications

Book Chapters

Paul Bowie and Gary Rutherford. Learning from Events. In G Rutherford (ed). *Human Factors applied to Paramedic Practice* [Class Professional Publishing, In Press]

Paul Bowie and Simon Paterson-Brown. *Taking Forward Human Factors and Ergonomics Integration in NHS Scotland: Progress and Challenges:* In T Toctrim (Ed). Health and Social Care Systems of the Future: Demographic Changes, Digital Age and Human Factors. Springer Nature Switzerland, June 2019

Conference Posters

Bowie P., ISQUA18-2599, *The Monitoring Risk and Improving System Safety (MoRISS) Checklist for General Practice*. International Journal for Quality in Health Care 09/2018; 30(suppl_2):35-35., DOI:10.1093/intqhc/mzy167.50

Ker J., Baker A., Brown G., Willey K., Kenny L Hardie L., (2019) Sustainable and reliable simulation based education — a national approach International Forum on Quality and safety in health care BMJ Glasgow

Conference Presentations

Ker J., Introduction to clinical skills education — the home environment — AHP Networking meeting 2019

Fettes P, Broadbent E, Valluri A, et al. Development of a National Simulation Based Mastery Learning Programme for teaching of practical procedures. International Clinical Skills Conference, Prato, Italy, 2019 (SCSCHF)

Phillips EC. Developing non-technical skills of medical students: Using a behavioural marker system in immersive simulation' workshop presentation. Association for Simulated Practice in Healthcare Annual Meeting, Southport, 2018. (SCSCHF)

MSU Showcase at the annual National Networking Sharing and Learning meeting for AHP Practice Educator leads Paramedics and hospital chaplains, Edinburgh, March 2019

Professor Paul Bowie, *Learning from Human Factors developments in NHSScotland.* South West Healthcare Science Network Conference, Plymouth, February 2019

Appendix 2: SKIRC Publications

Professor Paul Bowie, *Human Factors as a Quality Improvement Innovation.* Audit and Quality Improvement Symposium, Royal College of Surgeons of Edinburgh, March 2019

Professor Paul, *Human Factors and Ergonomics Integration in NHSScotland: Progress and Challenges,* NES Healthcare Science Event, Glasgow, June 2019

Professor Paul Bowie, *The problem with 'medical error'.* British Association of Urological Surgeons (BAUS) Annual Conference, Glasgow, June 2019

Professor Paul Bowie, *Should we teach 'patient safety'?* Queen's University Healthcare Safety and Improvement Conference, Kingston, Ontario, January 2019

Professor Paul Bowie, *Why things go wrong in complex systems.* Irish College of General Practitioners Annual Conference, Dublin, September, June 2019

Professor Paul Bowie, *Who should be trained in Human Factors: clinicians, managers or leaders?* Trent Simulation and Clinical Skills Centre, Nottingham University Hospitals, April 2019

Professor Paul Bowie, *Human Factors in Dental Education and Practice.* NES Annual Medical Education Conference, Edinburgh, May 2019

Professor Paul Bowie, *Applying Systems Thinking to Learning from Events,* International Cognitive Institute Study Tour, London, April 2019

Professor Bryn Baxendale and Professor Paul Bowie: Integrating human factors into the health and social care sector: tales from within regarding strategy, pragmatism and persistence. Annual Conference of the Chartered Institute of Ergonomics and Human Factors, Stratford-Upon-Avon, May 2019

Appendix 3: Measures of Esteem

Michael Moneypenny has led SCSCHF successful application for ASPiH accreditation in 2019

Michael Moneypenny has been elected as the next chair of ASPiH from 2019

Professor Jean Ker was invited as a plenary speaker at the inaugural meeting of the Billings Rural Healthcare Education Symposium in USA in May 2019. She also provided workshops during her consultancy. She also an invited plenary at the Society for Simulation in Europe (SESAM) Annual Conference in June 2019

Andrea Baker as lead author was short listed at SESAM 2019 for the best poster on Mobile Simulation for CS MEN

Baker A, Hardie L, Somerville S, Ker J — Mobile Simulation — Ten Years and Beyond

Professor Paul Bowie:

Awarded an Adjunct Professorship on the PhD Quality in Healthcare Programme at Queen's University, Ontario, Canada (January 2019)

Awarded Honorary Fellowship by the Royal College of General Practitioners for outstanding research and leadership on patient safety and quality improvement in primary care (February 2019)

Invited to speak to 180 GMC staff members on 'Human Factors in Healthcare: A Perspective on Why Things Go Wrong in Complex Systems'(January 2020)

Appointed Professional Lead of the Healthcare Specialist Interest Group by the UK

Chartered Institute of Ergonomics and Human Factors (November 2019)

NHS Education for Scotland
Westport 102
West Port
Edinburgh EH3 9DN

www.nes.scot.nhs.uk

This resource may be made available, in full or summary form, in alternative formats and community languages. Please contact us on 0131 656 3200 or email altformats@nes.scot.nhs.uk to discuss how we can best meet your requirements.