Evidence-based patient safety healthcare curriculum developments

Working document, to be updated biannually

- commissioned by NES Patient Safety Multidisciplinary Steering Group.

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## 1.0 Summary

## 2.0 Introduction to Patient Safety:
- What is patient safety and why is patient safety needed?

## 3.0 Patient safety research in the UK
1. Patient Safety Research Portfolio (PSRP)
2. Newcastle University – enhancing medical curricula with patient safety
3. Centre for Excellent in Teaching and Learning (CETL4Health)
4. Royal College of General Practitioners e-GP
5. Scottish Patient Safety Research Network
6. Aberdeen University
7. Warwick Innovative Manufacturing Research Centre (IMRC)
8. Manchester Patient Safety Framework (MaPSaF)
9. Scottish Patient Safety Research Network

## 4.0 Patient safety research in NHS Education for Scotland
1. The educational benefits and impact of significant event analysis by General Medical Practitioners and Clinical Pharmacists (Report 1)
2. The educational benefits and impact of significant event analysis by General Medical Practitioners and Clinical Pharmacists (Report 2)
3. An enquiry into the causes of errors in prescribing and/or dispensing of drugs known to be a source of significant errors
4. A pilot study of the feasibility and potential of introducing educational models of clinical audit and peer assessment to practice managers, nurse practitioners and pharmacists in the west of Scotland
5. Assessment of competence in applying the significant event analysis technique: more assessors or event analyses?
6. Decontamination in primary care: an investigation into the barriers and facilitators to dissemination and implementation of best evidence
7. Judging the quality of clinical audit by general practitioners: a pilot study comparing the educational assessments of medical peers and NHS audit specialists?
8. Clinical audit and quality improvement in NHSScotland: time for a re-think?
9. The new prescriber: the development of a tool which will quality assure the prescribing performance of Foundation Doctors and Nurse Prescriber
10. Patient safety incidents relating to the use of medicine: a preliminary investigation of educational needs arising from patient safety incidents involving the use of medicines
11. What impact are Foundation Programmes having on Foundation Doctors, the healthcare team and patient care?
12. A qualitative study of staff perceptions of complaints and related learning in primary care
13. The development and psychometric evaluation of a safety climate measure for primary care in NHSScotland
15. A review of the current evidence base for significant event analysis
### 5.0 Patient safety research internationally

#### 5.1 Australia
- 5.1.1 University of Sydney, Australia
- 5.1.2 Patient Safety Centre by the Queensland Government, Australia

#### 5.2 United States of America
- 5.2.1 Department of Veterans Affairs
- 5.2.2 Safety Task Force at the Society for Academic Emergency Medicine
- 5.2.3 University of Michigan Health System
- 5.2.4 John Hopkins University
- 5.2.5 American Academy of Orthopaedic Surgeons (AAOS)
- 5.2.6 The Institute for Healthcare Innovation (IHI)
- 5.2.7 American Academy of Family Physicians (AAFP)
- 5.2.8 University of Washington – Centre for health sciences
- 5.2.9 Duke University Medical centre online patient safety – quality improvement portal

#### 5.3 Multi-national organisations
- 5.3.1 The World Health Organisation (WHO)
- 5.3.2 European Union Network for Patient Safety (EUNetPaS)

### 6.0 Conclusions

### 7.0 Annex

#### 7.1 Annex 1 - DH established the Patient Safety Research Portfolio projects
#### 7.2 Annex 2 - Institutions in the UK carrying out patient safety research projects
#### 7.3 Annex 3 - Some patient safety organisations world wide
#### 7.4 Annex 4 - Publication of Organisation Patient Safety Incident Reports
1.0 Summary
There are many institutions researching new patient safety methodology and tools both in the UK and internationally. It is important that NES continues to be aware of this research since this should generally influence the teaching of the next generation of health care professions. However, it is also important to recognize that introducing new patient safety curricula to healthcare professionals in Scotland is not enough to reduce adverse affects on the public by healthcare professionals; all new curricula (or curricula changes) need to be fit for purpose for healthcare staff in Scotland.

In this summary, there a number of new tools described which support patient safety improvements. The universities and NES could consider using some of these methods to strengthen patient safety teaching. However, these tools need to be carefully evaluated to ensure they:

- will improve safety and quality of care for patient;
- are complementary with existing methods and tools;
- can be embedded within existing teaching methods (recommended by healthcare professionals in preference to abstract patient safety modules);
- are compliant with Scottish Government and the Department of Health Policy;
- will comply with national healthcare regulator policy and guidelines;
- are suitable for staff in NHSScotland.

As the main objective of patient safety research is to minimize adverse effects on NHS users, it is important that the public are asked what they think will improve their safety. The public also have a reasonable level of responsibility to maintain their own safety by reporting all accidents and near misses. They can also improve quality by commenting on the service they have received. This information can be used to support teaching in the future.

2.0 Patient Safety, what’s the new agenda?

2.1 What is patient safety?

Patient safety can mean many things to many people. However, for the purposes of this report, it is defined as follows:

“Methods used to reduce the risk of harm to patients”.

Patient safety initiatives include reporting and analysis of mistakes to prevent medical errors which can result in adverse events.
2.2 Why patient safety?

Over the last 10 years, in particular the media has highlighted several examples where patient safety has been compromised within the NHS. These examples include practices of Dr Harold Shipman and the abnormally high death rate of babies at the Bristol Royal Infirmary in 2001. The Department of Health (DH) investigated these cases and have now published advice (e.g. “Learning from Bristol” Report) to improve patient safety. It is hoped that by documenting and improving patient safety in the NHS, adverse incidents will reduce.

To respond to patient safety, the National Patient Safety Agency (NPSA) was established in 2001. The DH states that NPSA has a key role to improve patient safety and has been asked to run a new national system for reporting, analysing and learning from adverse incidents involving NHS patients.

For example the NPSA is now publishing NHS Patient Safety Incident Reports on a six monthly basis. By ‘tracking’ of incidents it is hoped that this will change the culture of patient safety reporting. It is also hoped that the publication of the reports will raise awareness of patient safety issues and improve the quality of reporting. It should also highlight ‘gaps’ which need to improve; this could be supported by better staff training. However individuals will not be identifiable in the reporting. The NPSA surveyed its members before reporting this data and 84% agreed it would be useful.

Over time, the NPSA will provide a baseline of the patient safety challenges within the NHS, allowing healthcare professionals to understand the extent and nature of adverse events, and support them to act on that information. For more information see Annex 4 of this report.

DH has recently also recommended that all healthcare regulators should set a professional standard which healthcare professionals need to meet regularly to continue working. This is known as ‘revalidation’ and is expected to be phased in for all health care professionals over the next few years; this has a bearing on patient safety education.
3.0 Patient Safety in the UK

There are various organisations working on the research projects and the subsequent development of teaching materials to support patient safety. Research from each institution will be discussed in detail below.

3.1 Patient Safety Research Portfolio (PSRP)

The Department of Health established the ‘Patient Safety Research Portfolio’ (PSRP) to review challenges faced to improve patient safety. These research projects followed the Chief Medical Officer's report “An Organisation With A Memory - learning from adverse events within the NHS”. PSRP contains 36 projects, is funded by the Department of Health’s Policy Research Programme and reports directly to Sir Liam Donaldson (CMO). The majority of projects are now complete and the final reports are available (online). Most of these reports are comprehensive including details of the level of research funding spent on each project. This list of individuals involved in the PSRP also provides comprehensive list of patient safety researchers in the UK. It is possible that some of this research could be used to influence curricula. Details of these projects can be found on the website below and in Annex 1.

- [http://www.pcpoh.bham.ac.uk/publichealth/psrp/](http://www.pcpoh.bham.ac.uk/publichealth/psrp/)

3.2 Newcastle University – enhancing medical curricula with patient safety

Researchers at the University of Newcastle’s, School of Medical Sciences Education Development are part of a multi-disciplinary team examining patient safety teaching and leaning for healthcare professionals. Researchers are investigating how to change the way health care professionals ‘think and respond to keep patients safe’. All medical errors are being recorded and used for learning and improving service. This study is encouraging people not to hide errors or ignore poor performance. As a consequence of the recorded errors, training programmes are being developed. The research study will examine groups from Medicine, Nursing, Pharmacy, and Physiotherapy. This is obviously a mixed group, which will learn about ‘patient safety’ in various ways. Hence an objective of the programme is to explore how patient safety topics are discussed within different clinical skills areas. In addition the research will examine patient safety teaching methods from various sources such as universities, the NHS and private clinical practice. Generally this research has two focus areas:

1. How patient safety is carried out (daily); and
2. Patient safety education and training (planning, delivery and comprehension)

This work is ongoing, and a full report is not yet available. However more information is available from:

- [http://www.ncl.ac.uk/medev/research/psrp.htm](http://www.ncl.ac.uk/medev/research/psrp.htm)
3.3 Centre for Excellent in Teaching and Learning (CETL4Health)

Newcastle University is the lead partner organisation in the Centre for Excellent in Teaching and Learning (CETL4Health). This is a consortium of Universities of Durham, Northumbria, Sunderland and Teeside with NHS partner organisations. CETL4Health has been designed to deliver innovative learning and teaching as well as in the best practice guidelines for healthcare education to deliver better patient care within the NHS. More information about this project can be found at:

- http://www.cetl4healthne.ac.uk/view

3.4 Royal College of General Practitioners e-GP

e-GP is a Royal College of General Practitioners and e-Learning for Healthcare project. Their aim is to develop a range of e-learning modules including ‘virtual consultations’ to support General Practice education, especially the RCGP curriculum. The e-GP programme was rolled out in 2008 to support continuing professional development and has a specific unit in patient safety. Unfortunately access to e-GP is restricted to GPs only, it hence this has not been evaluated, however more information about the programme can be found at:


3.5 Scottish Patient Safety Research Network (SPSRN)

April 2007 - the Scottish Funding Council provided £1.5 M towards the creation of the Scottish Patient Safety Research Network. In addition, Aberdeen, St Andrews & Dundee universities provided an additional £1 million. Project leads include Professor Rhona Flin (Aberdeen), Professor Huw Davies (St Andrews) and Professor Peter Davey (Dundee). SPSRN includes multidisciplinary research teams from all three centres. The teams are investigating adverse events in the Scottish healthcare system as well as examining both organisational and professional methods to improve patient safety. Phase 1 of the project concentrates on monitoring, systems and education. The research will involve patients, doctors, nurses, pharmacists, other allied health professionals and NHS managers. The main objectives of this research include:

1. “Determining the nature and prevalence of adverse events to patients in Scotland in both primary and secondary care”;
2. “Developing an automated reporting system for analysis of clusters and time trends relating to adverse incidents”;
3. “Investigating the organisational culture underpinning safe/unsafe health care environments, especially the role of governance and management”;
4. “Examining safety management strategies used in high risk industries in Scotland (e.g. oil & gas production, nuclear power) for possible health care applications”; and
5. “Developing and evaluating innovative training for improving patient safety”.

More information about this project can be found at:
- http://www.spsrn.ac.uk/

3.6 Aberdeen University
The University of Aberdeen has been leading in the development of patient safety curricula in Scotland in recent years. The Patient Safety Research Group at the University of Aberdeen has been sponsored by the National Patient Safety Agency (NPSA) to investigate “Teaching patient safety to medical students”. This project is based at the Clinical Skills Centre under the supervision of Dr Rona Patey. This funding from the NPSA supported the development of a patient safety course at Aberdeen University, specifically designed for 5th year undergraduate medics. This course specifically deals with error by examining cause and effect and providing skills for dealing with errors (made by self or other). This module was first introduced in 2005/06.

Aberdeen University have also rolled out “MSc in Patient Safety – A Clinical Human Factors Approach”. This course has been specifically developed to support staff in the NHS. More information on the specific curricula components can be found at:
http://www.abdn.ac.uk/prospectus/pgrad/study/taught.php?code=patient_safety

Investigators at Aberdeen have a portfolio of research and are investigating many areas of patient safety. Their current research projects include:

1. “Teaching Patient Safety in the Undergraduate Medical Curriculum”
2. “Anaesthetists’ Non-Technical Skills”
3. “Problem Solving and Cognition in Anaesthesia”
4. “Surgeons’ Non-Technical Skills”
7. “Measuring Adverse Events in Scottish Acute Hospitals”
8. “Decision Making in the Neonatal Intensive Care Unit”
9. “Team Cognition in the Intensive Care Unit”
10. “Team Leadership in the Intensive Care Unit”
11. “Organisational Culture Change in NHS Trusts”
12. “Hospital Safety Climate”
13. “Safe Supply of Non-Prescription Medicines”
14. “Medication Errors”
“Early Recognition of Critical Illness”

“Devising a Framework for Measuring System Failures in Surgery”

“Postgraduate Projects including: handovers in healthcare, safety climate in Scottish hospitals and leadership and safety in acute healthcare”

More information on these studies is available by following link:
- [http://www.abdn.ac.uk/psrg/projects.php#medicationerrors](http://www.abdn.ac.uk/psrg/projects.php#medicationerrors)

### 3.7 Warwick Innovative Manufacturing Research Centre (IMRC)

Researchers at IMRC are using Root Cause Analysis (RCA) to investigate healthcare problems within healthcare. It is hoped using this method in healthcare organisations may lead to improvements in patient safety. As part of the research, investigators will explore challenges faced by clinicians using RCA and evaluate whether this technique is useful. This could be compared to the “Adverse Events Calendar” work from the Institute for Healthcare improvement. More information this project is available at the following location:
- [http://www2.warwick.ac.uk/fac/sci/wimrc/](http://www2.warwick.ac.uk/fac/sci/wimrc/)

### 3.8 Manchester Patient Safety Framework (MaPSaF)

The Manchester Patient Safety Framework (MaPSaF) has been developed to help the NHS monitor their progress to develop a ‘safety culture’ and improve patient safety. Tools being developed will assist NHS staff to identify areas of strength or weakness as well as helping individuals to optimise resources. To assist in this process MaPSaF uses a ‘dimensions’ approach to patient safety. Each ‘dimension’ describes what an organisation would look like with five levels of patient safety (similar to the IHI model). Electronic copies of the following documents are available to download:

1. “Primary care”
2. “Primary Care chart”
3. “Acute”
4. “Acute chart”
5. “Ambulance”
6. “Ambulance chart”
7. “Mental health care”
8. “Mental health care chart”
9. “Facilitator guidance presentation”
10. “Guidance”
MaPSaF is a tool for (clinician) self-reflection of practice. This is not designed for monitoring or assessing performance management. Evaluation sheets for some key areas of this project can be found at:


### 3.9 UK Patient Safety Research Centres

Below are some links to patient safety research organisations. Some specialise in a particular area of patient safety.

#### 3.9.1 Patient Safety Research Portfolio

The Department of Public Health (Birmingham University) host a Patient Safety Research Portfolio.

#### 3.9.2 Scottish Patient Safety Research Network

Aberdeen, Dundee and St Andrews universities patient safety research collaboration.

#### 3.9.3 Imperial College London Patient Safety Unit

There is a patient safety research unit within Imperial College, London.

#### 3.9.4 National Institute for Health Research (NIHR): Research Centres for Patient Safety & Service Quality

King’s College London are funded by NIHR funds to examine new and emerging health technologies. Part of this project will investigate risk associated with the management of health services and staff.

#### 3.9.5 Patient Safety Research Network (University of Manchester)

Manchester University in examining various areas of patient safety. In addition they also coordinate the Patient Safety Research Network.

#### 3.9.6 Design for Patient Safety at Cambridge Engineering Design Centre

Cambridge University, Surrey University and the Royal College of Art (Cambridge Engineering Design Centre), are investigating how design can improve patient safety.
3.10 Patient Safety Research Workshop 2008

The National Patient Safety Agency held a second patient safety research meeting in November 2008. This meeting was entitled “Patient Safety Research into Practice” and the intended audience was for researchers, NHS staff and health care organisations. Below is a list of the presentations from some of the speakers which are all available online.

“How can we better understand local organisations”?

“How can we measure and value patient safety”?
1. “Assessment of frontline safety skills” - Nick Sevdalis, Imperial College Patient Safety and Service Quality Centre.

“How do we learn from reporting”?
1. “Rapid response into action” – Tara Lamont, NPSA.
2. “Making sense of safety incidents” – Carl Macrae.

“Moving to translate research into action”
1. “NHS funding for patient safety research now and in the future” – David King, National Institute for Health Research.

A list of institutions specialising in patient safety improvements (including contact details) can be found in Annex 2.
4.0 Patient Safety Research Programme in NHS Education for Scotland (first published in December 2008)

From 2005-2007 NHS Education for Scotland supported resourced the NES Educational Research and Development Strategy following an extensive stakeholder consultation. Numerous patient safety projects were funded at a cost of £250,426. The scope of the patient safety research studies falls within the following eight topic areas:

- Identification of the educational needs arising from patient safety incidents relating to the use of medicines
- Investigation into the causes of error in prescribing and dispensing medication
- Barriers and facilitators to implement evidence-based practice on decontamination in general dental practice
- Feedback on performance in applying quality improvement methods (significant event analysis and criterion based audit)
- Exploration of the barriers and facilitators to clinical audit effectiveness in NHS Scotland organisations
- Exploration of the impact of the new foundation programme on postgraduate medical training
- Instrument development for measuring, benchmarking and improving safety climate perceptions in primary care teams
- Collective learning from error and adverse events in primary care

Each of the specific patient safety research projects funded is now discussed in specific detail, with the main author of each project highlighted. This is only a sample of patient safety related research which is ongoing throughout NES. The main focus of this collective work is patient safety in primary care, especially supporting practitioners in the west of Scotland. All of this work is now published and more information can be found at:

- [http://intranet.nes.scot.nhs.uk/educational_development/research/project_work/](http://intranet.nes.scot.nhs.uk/educational_development/research/project_work/)

4.1 The educational benefits and impacts of significant event analysis by General Medical Practitioners and Clinical Pharmacists (Report 1)

Research Team: Paul Bowie & Ailsa Power

Background and Aims

To investigate the effectiveness of significant event analyses (SEA) undertaken by Pharmacists as judged by a new system of independent peer feedback. The audience of this research is pharmacists working in primary care, secondary care and academic settings in the NHS Scotland.
Methods
Preliminary study involving the content analysis of Pharmacists’ SEA reports and written feedback generated by professional colleagues were analysed using a validated peer review instrument. The content of reports and feedback letters were systematically coded and categorised. Data collected included the range and severity of significant events identified; the reported reasons for the events occurring; types of learning needs identified; action(s) taken; and learning issues raised by peer feedback.

Discussion
A total of 37 pharmacists submitted 43 SEA reports during the study timescale. All events submitted were classified as having a negative impact on the quality and safety of patient care. Most events related to prescribing, dispensing, administration, communication and patient/relative-centred issues. Patients reportedly came to harm in 13% of cases. 63% of reported learning needs related to personal awareness/responsibilities when undertaking work tasks, and 58% of implemented change involved amending existing protocols or introducing new procedures. 70% of SEAs were judged to be ‘satisfactory’ after peer review. The effectiveness of change implementation and providing a clear description of an event were highlighted as key issues which required improvement in those event analyses judged ‘unsatisfactory’.

Conclusion
The study findings demonstrate that most Pharmacists in this study may be able to apply SEA in a satisfactory manner by demonstrating reflective learning, undertaking insightful analyses and implementing necessary change. SEA and peer feedback may have a potential role to play in enhancing the quality and safety of Pharmacy practices. Based on this evidence and the more established evidence base in general practice, NHS Education for Scotland is now keen to promote this learning method across the Pharmacy profession and pilot with all other clinical groups, both as part of vocational training and continuing professional development.

4.2 The educational benefits and impact of significant event analysis by General Medical Practitioners and Clinical Pharmacists (Report 2)
Research Team: Paul Bowie, John McKay, Ailsa Power

Background and Aims
Patient safety dominates the agenda in most modern health care systems. One improvement method that may facilitate learning from patient safety-related incidents is significant event analysis (SEA). The technique is promoted as a team-based approach to
enhancing safety, managing risk and facilitating the reporting of safety incidents. The National Patient Safety Agency (NPSA) recommends that primary care teams should analyse those significant events which have resulted in “minor” or “moderate” harm to patients, or had the potential to do so. The aim of this study was to review the contents of SEA reports submitted by GPs to a peer feedback model co-ordinated by NHS Education for Scotland. In doing this we will identify the range of quality and safety issues analysed, the types of learning needs that were raised and the actions implemented by health care teams.

Discussion
SEA reports reviewed were voluntarily submitted in a standard format to NES between July 2005 and February 2007 for the external peer review of a significant event analysis. Reports considered ‘unsatisfactory’ excluded from the study. Each SEA report was analysed for content independently by two researchers. To enhance validity, a third researcher (PB) independently analysed one-in-five reports and the associated coding before final agreement was reached. Data were collected using a pre-designed proforma and entered into a Microsoft Excel spreadsheet for descriptive statistical analysis. Differences in proportions between GP groups were calculated along with 95% confidence intervals.

Results
191 SEA reports were reviewed. 163 significant events (85%) had a ‘negative’ impact on the quality and/or safety of patient care. 48 reports (25.1%) described incidents which led to patient harm. The most prevalent cause of events identified was that of individual health care professionals ‘errors’ relating to their knowledge and skills. 104 SEA reports (54.5%) described the direct or indirect involvement of other health and social care agencies in the significant event. 164 reports (85.9%) demonstrated that change(s) had been agreed and implemented as a result of the SEA.

Conclusion
The study findings justify further exploration on the role of SEA as a technique to enhance patient safety in general practice. In particular much work needs to be done to explore ways in which learning and change can be disseminated to the wider general practice environment. The role of SEA in local or national patient safety reporting systems should also be elucidated. As part of its patient safety strategy, NHS Education for Scotland in conjunction with its Partners should aim to ensure that SEA remains part of the educational agenda and mechanisms to assure SEA quality and effectiveness are put in place.
4.3 An enquiry into the causes of errors in prescribing and/or dispensing of drugs known to be a source of significant errors
Research team: Ailsa Power, Murray Lough, Hannah Hesselgreaves

**Background and Aims**

This project aimed to identify and investigate the causes of events and disseminate advice on good practice in prescribing and dispensing drugs known to be of high risk. This objective, proposed in the funding bid and ethics application has been achieved. The project was funded for one year, and was completed on time. This report details the objectives, the study, its findings, and the implications for training and the role of NES.

The study, being a qualitative project, evolved over the course of the research, based on the findings. Therefore, an in-depth exploration of the perceptions of support staff (dispensing technicians and general practice receptionists) emerged as a valuable part of the project. The following three topics have been submitted for peer review to journals:

1. Exploring the perceived causes of errors in the prescribing and dispensing of seven high risk drugs: a pilot study
2. The perceptions of pharmacists and dispensing technicians about the causes of medication error in community pharmacy
3. The perceptions of reception staff in general practice about the causes of medication errors

Part of the work forms an impact assessment of the project, detailing the rationale, evaluation, and feedback. The feedback part in particular provides guidance for NES training activities, or other changes recommended to the service, based on evidence, partially provided by data from three focus groups.

4.4 Validating learning and change: a multi-professional pilot study of independent feedback on clinical audit performance
Research team: Paul Bowie, Pat Quinn, Lindsey Pope, Ailsa Power

**Background and Aims**

Clinical audit is widely recognised as a key improvement method and an important continuing professional development activity for all clinicians. However, there is strong evidence that health care professionals struggle to engage with clinical audit and when they do their attempts to improve the quality and safety of patient care can often be ineffective. It is assumed that they intuitively understand audit methods and have the necessary skills and attributes to apply these to a satisfactory standard. A whole range of factors have been identified which may impact on the ineffectiveness of audit attempts including: lack of
protected time; professional apathy; and lack of knowledge and skills. In response NHS Education for Scotland developed voluntary peer feedback mechanisms to enable trained general medical practitioners to review the quality of colleagues’ clinical audit attempts – specifically, criterion based audit and significant event analyses. Evidence of the value and impact of this educational model has shown promise. The aim of this pilot study is to determine the potential feasibility, acceptability and educational impact of a similar clinical audit feedback model to a range of other non-medical primary health care professionals.

Methods
Pilot study involving review of the criterion audit and Significant Event Analysis (SEA) attempts of west of Scotland dentists, pharmacists, physiotherapists, practice managers and nurse practitioners by trained colleagues using validated assessment instruments. Audit, SEA and feedback reports were content analysed independently by two researchers, with disagreements resolved by consensus. Data on the pre and post study attitudes, experiences and knowledge level of participants were collected by questionnaire. Differences in mean group scores were calculated, with ≥1.0 judged to indicate perceived educational gain.

Results
34 participants submitted 54 audit and SEA reports, with 20 submitting both (58.9%). 14/20 Audits (75%) and 26/34 SEAs (76.5%) contained evidence of appropriate learning needs and action(s) implemented for healthcare improvements judged by trained reviewers. Feedback focused on improving knowledge and skills in applying audit methods; demonstrating insight into deficiencies; highlighting appropriate learning needs; and guidance around the implementation of change. The perceived audit knowledge and skill rating scores of participants increased by a mean difference of ≥1.0 for most stages of the audit cycle and SEA method. Study participants reported strong agreement on the educational value of independent feedback of clinical audit performance.

Conclusion
This small study provides further evidence of the acceptability and educational impact of the external review of clinical audit activities as part of Continuous Professional Development (CPD) as a whole and the first known evidence involving non-medical professionals. The study highlights some difficulties in applying audit methods across professions and highlights the added value of feedback by trained colleagues, but is limited in size. Integrating clinical audit and peer feedback with CPD obligations may facilitate greater engagement and more effective quality improvement, but will require a policy change and additional resource.
Given the overall evidence base for clinical audit, NHS Education for Scotland should consider engagement with relevant stakeholders to enhance practice as part of vocational training and CPD as a means of contributing towards effective appraisal, clinical governance and patient safety objectives.

4.5 Assessment of competence in applying the significant event analysis technique: more assessors or event analyses?
Research team: Paul Bowie, John McKay, Douglas Murphy, Ailsa Power

Background and Aims
Significant event analysis (SEA) is an important technique for facilitating multi-disciplinary reflective learning, improving health care and enhancing patient safety. A voluntary model of peer assessment, based on educational principles, has been developed and tested by NHS Education for Scotland (NES) for the purpose of determining whether event analyses undertaken by GPs and pharmacists are judged to be of a satisfactory standard. Peer networks of assessors have been created and trained for this purpose. However, a potential limitation of the model is that it is focused on the assessment of a single significant event that has been voluntarily submitted by a practitioner as a proxy to determine the ability of individual practitioners to apply this technique to a satisfactory standard. The main aim of this pilot study was to provide evidence that fair and reliable judgments can be made on the competence of an individual practitioner in applying the SEA technique.

Methods
12 GPs were required to submit 3 SEA reports to provide sufficient data for statistical analysis. These were assessed using a continuous seven-point rating scale and assessors were also asked to make a dichotomous judgment as to whether each event analysis report was satisfactory or unsatisfactory. The assessors were then asked to provide a dichotomous decision on whether in their view the submitting health professional could be judged overall as competent in the SEA technique (overall pass/fail).

Data were analysed to examine the relationship between the continuous 7-point rating scale and the ‘satisfactory’/‘unsatisfactory’ judgment and the relationship between the overall ‘competence’ judgment and the ‘satisfactory’/‘unsatisfactory’ judgments. Differences in judgments were explored using a chi-squared test.
Results
As a general finding a 0 or 1 satisfactory judgment from three 3 SEA reports resulted in a judgment of ‘not competent.’ 2 or 3 ‘satisfactory’ SEA reports resulted in a ‘competent’ judgment. However on 3 occasions a reviewer did not follow this pattern with a participant’s 3 SEA reports. There was substantial variation between assessors with assessor 2 for only 1 of the 12 GPs, with assessors 4 and 8 giving a satisfactory judgment on all 3 SEA reports for 9 of the 12 GPs.

Conclusion
The findings demonstrate that further training and calibration of the GP peer reviewers is required to improve assessment consistency prior to repeating any further reliability exercises.

4.6 Decontamination in primary care: an investigation into the barriers and facilitators to dissemination and implementation of best evidence
Research team: Alex Haig, Jan Clarkson, Doug Stirling, Debbi Bonetti, Linda Young, Heather Cassie

Background and Aims
There has been a concerted effort across the NHS to promote evidence based practice. A cornerstone of evidence based practice is national clinical guidance which enables healthcare practitioners to base decisions on a synthesis of the latest high quality research. Whilst a great deal of effort and resource goes into producing clinical guidance, there is very little evidence on how to best ensure that the guidance becomes part of practice, particularly in primary care.

The specific topic area this study focused on was decontamination in primary care dentistry. In Scotland alone, 180 million reusable instruments are decontaminated annually in general dental practice. Previous work has highlighted inadequate decontamination of instruments increasing the risk of HAIs including blood borne viruses (HIV, Hepatitis B, and Hepatitis C), vCJD and viral, bacterial and fungal infections. There are a number of initiatives currently underway to improve practice and ensure compliance with the Glennie Report by 2009; the research was conducted with close working with the Scottish Dental Clinical Effectiveness Programme’s (SDCEP) now published guidance on primary care decontamination.
Methods
This project build upon previous scoping research to produce a robust and comprehensive national survey to elicit the barriers and facilitators to implementing clinical guidance (for decontamination) in primary care dentistry. The work examined behaviour at both dentist and practice level, looking at current practice, beliefs, self-assessment, attitudes and perceived behavioural control.

Results
The results demonstrated wide variation in current decontamination working at both dentist and practice level, with no respondents complying with all sixteen behaviours examined. Intention to change also varied widely depending on the behaviour examined, though motivation to change was more consistent. This research confirmed previous findings that strongly questioned the effectiveness of self-assessment in evaluating and changing individuals’ behaviour. Dentists generally thought decontamination procedures were important and necessary but often questioned their practicality; compliance was far more likely when they saw it as necessary and/or practical.

Conclusion
The work has informed numerous projects, including the ongoing design of a multi-centre randomised controlled trial.

4.7 Judging the quality of clinical audit by general practitioners: a pilot study comparing the educational assessments of medical peers and NHS audit specialists?
Research team: Paul Bowie, John McLay, Lilian Murray, Murray Lough

Background and Aims
Clinical audit informs GP appraisal and will provide evidence of performance for revalidation in the UK. However, objective evidence is now required. An established peer assessment system may offer an educational solution for making objective judgments on clinical audit quality. NHS clinical audit specialists could potentially support this system if their audit assessments were comparable with established medical peer assessors. The study aimed to quantify differences between clinical audit specialists and medical peer assessors in their assessments of clinical audit projects.

Methods
A comparison study of the assessment outcomes of clinical audit reports by two groups using appropriate assessment instruments. Mean scores were compared and 95%
confidence intervals (CI) and limits of agreement calculated. A 2-point mean difference would be relevant.

**Results**

12 SEA and 12 criterion audit reports were assessed by 11 experienced GP assessors and 10 NHS audit specialist novice assessors. For SEA, the mean score differences between groups was <1.0. 95% CI for bias was -0.1 to 0.5 (P=0.14). Limits of agreement ranged from -0.7 to 1.2. For criterion audit, a mean score difference of 1 or less was calculated for seven projects and scores between 1.1 and 1.9 for four. 95% CI for bias was 0.8 to 1.5 (P<0.001). Limits of agreement ranged from -2.5 to -0.0.

**Conclusion**

The study findings suggest that a sample of NHS clinical audit specialists can give numerically accurate feedback scores to GPs on the quality of their clinical audit activity compared with established peer assessors as part of the model outlined. In summary, this study positively supports further exploitation of the concept of trained NHS audit specialists providing formative educational feedback to medical practitioners on the quality of their clinical audit activity. If stronger evidence is forthcoming then there are potential service implications. In particular, NHS organisations would have to be consulted and persuaded to absorb workload associated with these assessments. However, given the potential for improving clinical audit practice this may come at a cost-benefit.

4.8 Clinical audit and quality improvement in NHSScotland: time for a rethink?

**Research team:** Paul Bowie, Nick Bradley, Rosemary Rushmer, Ailsa Power

**Background and Aims**

Evidence of the benefits of clinical audit to patient care is limited, despite its longevity. Additionally, numerous attitudinal, professional and organisational barriers impede its effectiveness. Yet, audit remains a favoured quality improvement (QI) policy lever. Growing interest in alternative QI techniques suggest it is timely to re-examine audit. Clinical audit advisors assist in healthcare teams, so hold unique cross-cutting perspectives on the strategic and practical application of audit in NHS organisations. To explore clinical audit advisors’ experiences, views and perceptions of the current barriers and facilitators impacting on audit development in a range of healthcare sectors in NHS Scotland. We also contrast these findings with the established evidence base and debate them in the context of more recent policy developments.
Methods
Qualitative analysis of semi-structured and focus group interviews in NHS Scotland with 21 audit advisors in NHS Greater Glasgow and Clyde and NHS Lothian Board areas in Scotland. Nine participants attended individual interviews and a further 12 were involved in two focus group sessions. Interview transcripts were subject to a thematic analysis.

Results
Six principle themes were identified: Clinician engagement with audit; Leadership and accountability; Knowledge, skills and experiences of clinicians; Clinicians’ attitudes and perceptions; Resource and support issues; and Perceptions of progress. Participants reported that audit does not appear to be embedded in the professional practices of many clinical teams. Work pressure and lack of protected time were cited as audit barriers, but these may hide other reasons for non-engagement. Different professions may experience varying opportunities to participate. Doctors have more opportunities and may dominate or frustrate the process. Audit is perceived as time-consuming, additional chore and a managerially driven exercise with no associated professional rewards. Management failure to support and resource changes may fuel low motivation and disillusionment. A significant minority of clinicians are apparently unaware of, or inactive and unconcerned about the need to participate in audit. The priority given to the topic amongst NHS organisations is variable and inconsistent as is the necessary leadership to promote, plan and manage audit effectively.

Conclusion
This study provides further confirmatory evidence of the difficulties affecting the implementation of clinical audit in the NHS. Policymakers have largely assumed that clinicians intuitively understand audit method and can apply it effectively. NHS organisations may still be failing to provide sufficient leadership in the strategic planning and implementation of effective programmes of audit in priority areas. Overall, it is clear that across the board audit education and training at undergraduate and postgraduate levels, and as part of continuing professional development, should be introduced where necessary and have a much greater and integrated focus. A long-term educational strategy will be pivotal to equipping clinicians with the necessary skills and professional behaviours to allow them to engage in the process knowledgeably and with confidence. Enhancing the quality and safety of healthcare is to be taken seriously, the teaching of improvement methods should be a compulsory part of the education and training of all healthcare professionals. NHS Education for Scotland has a challenging but influential role to play in persuading key stakeholders of the merits of this argument based the merits of this argument.
4.9 The new prescriber: the development of a tool which will quality assure the prescribing performance of Foundation Doctors and the Nurse Prescriber

Research team: Anne Hesketh

Background and Aims
This study describes the development of a 360° diagnostic tool on prescribing performance. It also describes the piloting of the tool and its associated feedback system with FY1 doctors and hospital based nurse prescribers.

Methods
The content of the tool was established through several stages:

- A literature review of prescribing competences and prescribing errors
- A cross check of content against other documents relevant to prescribing
- Patient interviews
- Feedback from prescribing experts and other groups with an interest in safe prescribing.

A short pretesting exercise helped guide the format of the 360° diagnostic questionnaire. This was then developmentally tested with seven potential participants/raters. The system consisted of the prescriber giving four 360° questionnaires to a range of raters and completing one as self assessment. All their results were then collated. A feedback format for the collated scores and supporting comments was designed. The feedback also included an action plan for follow up reflection or action. FY1s were to receive their feedback through meeting with their Foundation Tutor; nurses were encouraged to discuss their feedback with a suitable colleague.

FY1 trainees from three Foundation programmes and nurse prescribers on the NHS Tayside Hospital based prescriber database were invited to participate in the pilot. The process was evaluated through:

- A summary analysis of prescriber performance data
- Prescriber questionnaire
- Rater focus groups
- Interviews with Foundation Tutors

Results
Of those targeted 28 (58%) of FY1s and 8 (21%) Nurse prescribers participated. Not all had complete sets of returns (4 peer raters and a self assessment). Many Nurse Prescribers [23 (60%)] volunteered non participation reasons which included not, or limited
scope for prescribing. Pharmacists, nurses and trainee grade doctors were the most common raters. Main findings showed that the system was feasible to implement. Its usefulness for nurse prescribers was variable due primarily to the environment in which they prescribe, e.g. in isolation in a clinic, or due to the limited number/frequency of drugs prescribed. The content of the tool with its detailed breakdown of the prescribing process successfully provided valuable feedback to both groups of prescribers and highlighted educational needs. It also was very successful in raising awareness of the various aspects of good prescribing. The feedback discussion was a valuable part of the system.

Concerns were expressed on the ability of the tool to identify poor performers. This is a valid concern, although the tool was designed to be diagnostic, not screening i.e. to support the poor performer. Reasons for this concern primarily focussed on rater knowledge of the prescriber and, for trainee doctors, the lack of responsibility many FY1s had in reality with regard to the prescribing process.

Conclusion

The 360° prescribing performance system for FY1s is acceptable to those involved, can be implemented in a busy hospital environment and is able to provide valuable formative feedback on performance. Its use with new nurse prescribers, however, may be limited due to the environment in which they prescribe. However the groundwork carried out in this project may prove a sound basis for a reflective tool or, with adaptation, a system for on-the-job assessment for this group of prescribers.

4.10 Patient safety incidents relating to the use of medicine: a preliminary investigation of educational needs arising from patient safety incidents involving the use of medicines

Research team: Anne Watson, Hannah Hesselgreaves

Background and Aims

Differences in education and training have led to some health professionals in secondary care repeating or missing learning opportunities. Evidence about educational needs is required to consider a national “passport system”. To analyse patient safety incidents; explore staff views in relation to educational needs; identify existing educational programmes related to safe medicine use; propose a strategy to develop the educational framework.

Methods

A three stage mixed methodology approach was taken: using medication incident reports (1058), three focus groups including medical, nursing, and pharmacy staff, and eight
telephone interviews with education providers within NHS hospitals in Greater Glasgow and Clyde, Scotland.

Results
Incidents in prescribing, dispensing, preparation, administration, monitoring, advice, supply chain, and discharge stages of medicating patients were identified from incident reports. Focus groups highlighted educational needs. For doctors' training, focus on prescribing (particularly IV medicines), preparation of IV medicines, and consistent handwriting protocols were suggested. For nursing education, skill mix, and knowledge of drugs were highlighted. Pharmacists can contribute by being involved in training, particularly in checking procedures. More exposure to clinical experiences, resourcing limitations, and variability in access to training were considerations in implementing training. Curriculum content in higher education institutions and in-service training programmes does not directly and formally address the factors raised in patient safety incident data.

Conclusion
Patient safety data can inform areas for education and training across professional groups. A strategy is proposed to consider interventions for medical, nursing and pharmacy education, including formal training, local level improvement cycles, and other small-scale changes to influence attitudes about practices that contribute to patient safety.

4.11 What impact are Foundation Programmes having on Foundation Doctors, the healthcare team and patient care?
Research team: Fiona French, Judy Wakeling, Catriona Rooke, Gelisse Bagnall, Ken McHardy

Background and Aims
A new Foundation Programme was introduced in 2005, reforming the first two years of UK postgraduate medical training. Foundation emphasises the acquisition of generic skills, supported by formal teaching sessions based on a national curriculum. Trainees are formally assessed throughout the two years. They rotate through six 4-month posts, providing experience of more specialties than previously.

The aim of this first Scotland-wide qualitative project was to assess the impact of the new Programme on F1 doctors, F2 doctors, consultants, nurses and patients. Previous research had reported that many aspects of the F1 year were working well but trainees and consultants had some concerns, particularly about the teaching and assessment.
Some trainees felt they were over-protected and denied valuable learning opportunities such as working at nights.

Methods
In summer 2007, just before the end of the F1/F2 years, we interviewed 23 F1 doctors, 22 F2 doctors, 23 consultants and 25 nurses in 29 hospital units. Interviews were used so that we could explore issues in some depth. During the interview phase, the new UK Medical Training Application System ran into considerable difficulties, adversely affecting the morale of trainees. This may have also negatively influenced trainees’ opinions of Foundation training.

Results
On the whole, trainees reported satisfaction with the knowledge and skills gained from working as a trainee doctor. However, some consultants and F2s felt that some specialties were too specialised, resulting in insufficient responsibility and/or difficulties acquiring generic skills. Consultants and F2s also reported that F2s were at times compared unfavourably to their predecessors because they were less experienced and less useful to the service. They may also have little interest in the specialty in which they were working. Some trainees were unhappy with the mix of specialties they had experienced and felt there should be more flexibility. Of the 44 trainees, 18 felt that exposure to certain specialties had a positive impact on their career plans, while 20 trainees reported no impact.

Many trainees felt that working at nights was a valuable learning experience as they had to be more self-reliant. Many were positive about working within a hospital-at-night team as they were able to focus on the more difficult aspects of patient care. Consultants and nurses generally agreed although some had concerns about doctors becoming deskilled.

Trainees were critical of the F1 teaching and would like more clinical topics included. Trainees and consultants felt that the assessment tools could be improved but nurses were generally satisfied with them. All groups commented on the possible bias resulting from trainees choosing their assessors. Trainees felt that some of the practical skills being assessed were too basic. Trainees and consultants were concerned that some assessment tools lacked reliability and poorly performing trainees would not necessarily be detected. Nurses appreciated being involved as assessors. Shorter rotations and reduced working hours have made it more difficult for consultants and nurses to get to know trainees. Some trainees and consultants suggested the F1 year should return to two 6-month posts, with the F2 year remaining as three 4-month posts.
Conclusion
Further research is required into the merits of shorter rotations (particularly as working hours are to be reduced further) and the ability of some specialties to deliver adequate training for F2 doctors. The assessment tools and teaching programme also require further attention.

4.12 A qualitative study of staff perceptions of complaints and related learning in primary care
Research team: Pat Quinn, Paul Bowie

Background and Aims
Complaints are understood as both a source and a medium which by contributing to patient safety culture improvements can be expected in quality of outcome and experience of health care. However, there exists little research of the experience of complaints and what is learned from them from the perspective of primary care staff. To understand complaints and what is learned from them from the perspective of primary care staff working in general practice in Glasgow.

Methods
An inductive iterative approach was adopted. Informal visits to general practices was accessed and arranged through GP colleagues working within NHS Education for Scotland. Exploratory informal interviews, participant observation and purposeful literature review informed subsequent sample frame and data collection methods. Primary care staff working in selected general practices were invited to participate in the study. A convenience sample of three practices in Glasgow was drawn from positive responses. Data collection involved field observation and semi-structured interviews with different staff group members.

Results
For primary care staff ‘expressed dissatisfaction’ is both ubiquitous and of diverse origin. Emerging issues include the differential experience of complaints according to occupational role- how this potentially negative impact can be accentuated or minimised; routine non-conformity as component of learning; perceived (in)efficacy of complaints procedures, the structure and organisation of practice tasks, the role of locality and the nature of expressed dissatisfaction; the relationship between practice philosophy and levels of complaints.
Conclusion
The preliminary findings of this small study are at an early stage of development, but provide important preliminary insights into the nature of complaints, how they perceived and are handled, and how practice staff identify learning outcomes from them. Team-based learning from complaints appears at this stage to be a largely an informal, on-the-job process, rather than through more formal investigative processes which is the expectation/assumption amongst policy markers. More research is required amongst a more diverse group of practices.

4.13 The development and psychometric evaluation of a safety climate measure for primary care in NHSScotland
Research team: Paul Bowie, Carl de Wet

Background and Aims
Building a safety culture is an important part of improving patient safety. Measuring safety climate is part of this process. We know that organisations with a positive safety culture are more likely to learn openly and effectively from failure and adapt their working practices appropriately. The converse is true for those with a weak safety culture, which has been impacted as a causal factor in many organisations failures, including high profile healthcare incidents. Many healthcare organisations have begun to look critically at ways to improve their safety climate. However, existing instruments were mainly developed for secondary care settings in North America and many lack adequate psychometric testing. The study of patient safety in primary care settings worldwide is limited, but there is a growing recognition of the need to develop relevant tools, techniques and strategic approaches for improvement in this setting. Our aim was to develop and test an instrument to measure safety climate in primary care in NHSScotland.

Methods
The instrument development phase was facilitated through a researcher-led steering group, comprehensive literature review, semi-structured interviews with west of Scotland primary care clinicians and staff, a modified Delphi group and the completion of a content validity index by patient safety experts based across the United Kingdom. A cross-sectional postal survey utilising the developed instrument was undertaken in a random sample of west of Scotland general practices to facilitate psychometric evaluation. Statistical methods including exploratory and confirmatory factor analysis, Cronbach and Raykov reliability coefficients and ANOVA of subgroups were conducted.
Results
Of the 667 primary care team members based in 49 GP practices surveyed, 563 returned completed questionnaires (84.4%). Psychometric evaluation resulted in the development of a 30-item questionnaire with five safety climate factors: leadership, teamwork, communication, safety systems and workload. Retained items have strong factor loadings to only one factor. Reliability coefficients were satisfactory (= 0.94 and = 0.93). Overall perceptions of safety climate were generally positive for primary care. There were significant differences between individual practices and professional staff groups. ‘Management’ perceptions of safety climate were generally more positive than ‘staff’.

Discussion
This study is the first stage in the development of an appropriate valid and reliable safety climate measure for primary care. Measuring safety climate perceptions has the potential to help primary care organisations and teams focus attention on safety-related issues and target improvement through educational interventions. Future research is required to explore acceptability and feasibility issues for primary care teams and the potential for organisational benchmarking. Gaining greater insight into the processes that effectively create and sustain a culture change and the ways in which climate assessment can be combined with other safety improvement methods should also be a research priority. Understanding the complex manner in which safety climate interacts with other determinants of behaviour, such as internal and external incentives and the motivational links influencing behaviour between patient safety and worker safety, also require further elucidation.

4.14 Significant events in primary care: a cross-sectional study of awareness, attitudes and analysis in NHS Greater Glasgow
Research team: Paul Bowie, Carl de Wet, Ailsa Power

Background and Aims
Significant event analysis (SEA) is a qualitative method of clinical audit that has been widely promoted in primary care. It can potentially facilitate collective learning and change, the reporting of patient safety incidents and the management of risk. Professional and organisational concerns such as appraisal, clinical governance and the practice contract requirements demand evidence of participation in SEA. The limited evidence base suggests there is variation in SEA practices and standards. We aimed to assess levels of awareness of a recent event amongst primary care teams, whether a structured analysis was undertaken and if this impacted on the perceived risk of the event recurring. We also ascertained the fora that practices use to discuss and analyse events and the
involvement of various members of the multi-professional team. A final aim was to compare and contrast our findings with a similar study conducted in 2003.

Methods
A postal questionnaire survey was undertaken of a random selection of general medical practitioners and non-medical primary care team members in NHS Greater Glasgow in 2007. Statistical methods included descriptive item analysis and univariate and multivariate logistic regression.

Results
233/361 practice team members responded (65%). In a comparison to the 2003 study, awareness of a recent significant event increased from 86% to 97% of respondents. The proportion of respondents who indicated that they undertook a full structured analysis of this event also increased from 55% to 77%. Dedicated SEA and practice team meetings are now more common-place, while the proportion of GP-only and informal SEA meetings has reportedly decreased. Practice nurses, community nurses and administrative staff are increasingly reported as being involved in SEA meetings but allied health professionals still attend or are invited infrequently. Just over 20% of respondents perceived the risk of recently identified events recurring in the future as 'moderate' to 'very high', which is similar to the previous study.

Discussion
The findings of the study suggest that the awareness and analysis of a recently identified significant event by primary care team members has reportedly improved over the last five years. The involvement of different members of the primary care team in SEA meetings has also reportedly increased, which may suggest that more formal collective learning from quality and safety related incidents is taking place. However, a significant minority of respondents indicated that analysed events are still likely to recur, which potentially points to a further education issue in applying the technique or its ineffectiveness as an investigative procedure for more complex incidents in primary care. Further research is required in both areas. Although SEA has become steadily embedded in primary care settings there is still a need to provide educational support in the effective application of the technique, particularly in ensuring that healthcare teams demonstrate insight into why error and harm occurs and that necessary change is implemented in a sustainable manner.
4.15 A review of the current evidence base for significant event analysis
Research team: Paul Bowie, Lindsey Pope, Murray Lough

Background and aims
The emergence of significant event analysis (SEA) in general medical practice was a first step for many in investigating and learning from important risk and safety issues. SEA based on a synthesis of traditional safety issues. SEA, based on a synthesis of traditional case review and the principals of the critical incident technique, has added a qualitative dimension to clinical audit. Application of the technique should involve an in-depth, structured analysis of an event identified to be 'significant' by a healthcare team. Mostly this occurs when care is sub-optimal, although excellent health care practice can be identified and shared. Learning from the analyses of significant events is now a compulsory expectation for most general practitioners (GPs) in the UK in order to satisfy professional, clinical governance and education standards. Despite the high level promotion of SEA and the external pressures to participate, there remains a lack of objective evidence supporting its value as a quality improvement technique. The aim of this study is to review the literature on the perceived benefits and disadvantages associated with significant event analysis (SEA) and identify reported barriers and facilitating factors.

Methods
A comprehensive search of electronic databases (Medline, Cinhal, Embase and PsycInfo) and relevant peer reviewed journals was conducted during June 2006. Empirical studies which explored or measured perceptions or attitudes in relation to SEA or assessed its impact on health care quality were included.

Results
27 studies were identified with most undertaken in UK general practice. Perceived benefits include: improved communication, enhanced team-working and awareness of others’ contributions. SEA has a strong emotional resonance which may lead to a greater commitment to change. Multiple changes in practice and important improvements in service quality were reported through participation. Disadvantages include concerns about litigation, reprisal, embarrassment and confidentiality. The reliability of SEA is questioned because it lacks a robust, standard structured method. Barriers include a lack of training, poor team dynamics, failings in facilitation and leadership, selective topic choice and associated emotional demands. Facilitating factors include: effective practice in meetings; protected meeting time; a structured methodical approach; and strong team dynamics and leadership.
Discussion
The positive aspects of SEA now appear to be reasonably clear. Conceptually, it is educationally attractive with high face validity and strong support amongst healthcare teams, and is commonly reported to be a valued multi-disciplinary quality improvement mechanism. SEA meetings are perceived to be instrumental in problem solving, managing sensitive issues and conflict, and facilitating the decision-making process. Enhanced teamwork, personal support, morale and communication are important by-products. However, the lack of a standard, structured SEA method appears to contributing to the superficiality and subjectivity of the process. When a standard method is defined and followed to allow identification of learning needs, there is a variation in the quality of many analyses with potentially serious events remaining unresolved.

A chasm exists between the high expectations for SEA and the lack of evidence of its impact. SEA may have some merit as a team-based educational tool. However, it may not be a reliable technique for investigating serious safety-related incidents in general practice. Primary care teams require targeted educational support on how to apply the technique more effectively, while policy makers need to be more explicit about the actual purpose and limitations of SEA.
5.0 **Patient Safety international curricula**

There are various organisations working on the research and subsequent development of teaching materials to support patient safety worldwide. Research from some individual institutions will be discussed in detail below.

5.1 **Australia**

The patient safety research in Australia from the University of Sydney and the Queensland Government initiative will now be discussed.

5.1.1 **University of Sydney, Australia**

At the University of Sydney, the Faculty of Medicine has a team working on research, innovation, and development of healthcare professional education. Under the supervision of Professor Merrilyn Walton, this group have focussed on the patient safety teaching and ethical practice. In particular, researchers are investigating how ‘poorly designed systems’ can lead to adverse events suffered by patients. Professor Merrilyn Walton has been heading work for the WHO to develop guidance for medical school curricula. More information about patient safety projects at the University of Sydney can be found at:


5.1.2 **Queensland Government - Patient Safety Centre**

The Queensland Government in Australia has established a Patient Safety Centre (PSC). PSC is responsible for “planning, implementing, managing and evaluating patient safety initiatives and programs” in Queensland. There are a number of resources available online at the Queensland PSC at the following location:


5.2 **United States of America**

There are many sources of patient safety research from the USA. This report discusses a few specific initiatives. Research from the Department of Veterans Affairs, Safety Task Force at the Society for Academic Emergency Medicine, University Michigan, John Hopkins University, American Academy of Orthopaedic Surgeons, Institute for Healthcare Innovation, American Academy of Family Physicians and University of Washington will now be discussed.
5.2.1 Department of Veterans Affairs (DVA)
In the USA, the DVA has developed resources to supporting patient safety teaching. It is divided here into three categories:

1. Class Materials (learners),
2. Instructor Preparation (teachers); and
3. Workshop Faculty Development (teachers in training).

These resources are available on the web. More details of this project (and the resources) can be found at the following location:

• http://www.va.gov/ncps/curriculum/index.html

5.2.2 Safety Task Force at the Society for Academic Emergency Medicine (SAEM)
SAEM has also developed a patient safety teaching materials. The modules of the curriculum (below) were specifically designed for ‘emergency medicine residency training’. However SAEM states that there are “overlaps with other medical areas”. Hence this information may be of interest for other medical specialities. The seven patient safety modules developed are as follows:

1. “Awareness of Error: Bringing a Safety-Conscious Culture to Medicine”
2. “Definitions and Models of Error”
3. “Cognitive Error and Medical Decision-Making”
4. “Learning From the Experience of Others”
5. “Complications from Invasive Procedures”
6. “Medical Error from a Systems Perspective”
7. “Living with the Reality of Error”

More details of this project can be found at the following location:

• http://www.saem.org/SAEMDNN/Portals/0/patient%20safety.pdf

5.2.3 University of Michigan Health System
The University Michigan Health System researchers have developed an online "Patient Safety Toolkit". The toolkit is a knowledge source which contains practical applications to assist clinicians to develop best practice. The toolkit contains areas are designed to improve patient safety and quality. The focus areas of the University of Michigan Health System toolkit are:

1. “Patient safety overview”;
2. “Safety Culture”;
3. “Safety Plan”;
4. “Safety Curriculum”;
5. “Adverse Events”; and
6. “Medication Safety”;

Page 33 of 48
7. “Infection Prevention Control”; and
8. “Disclosure”.

More details of this project can be found at the following location:

- [http://www.med.umich.edu/patientsafetytoolkit/overview.htm](http://www.med.umich.edu/patientsafetytoolkit/overview.htm)

University of Michigan as part of safety coalition project has also developed a toolkit for intensive care unit teaching. This resource can be found at:

- [http://www.mihealthandsafety.org/icu/1.htm](http://www.mihealthandsafety.org/icu/1.htm)

5.2.4 John Hopkins University

Investigators at the Quality and Safety Research unit of John Hopkins University have developed online patient safety tools. Some research projects aimed at improving patient safety include:

2. “Assessing Climate Across Ascension Health System”
3. “Bedscapes Distraction Therapy”
4. “Intensive Care Unit Safety Reporting System (ICUSRS)”
5. “Medical Errors in the Elderly”
7. “Patient Tracking”
8. “Efforts to Improve Care in Intensive Care Units”
9. “Teamwork in the Operating Room”

Further details of these projects can be found at the following location:

- [http://www.safetyresearch.jhu.edu/QSR/index.asp](http://www.safetyresearch.jhu.edu/QSR/index.asp)

5.2.5 American Academy of Orthopaedic Surgeons (AAOS)

AAOS have developed a patient safety curriculum, which is made up of seven learning modules. The modules are modeled around six core competencies which are used to develop education and assess student progress. In the future, it is expected that these six competency areas will be used in “certification and re-certification” (revalidation in the UK) of orthopedic specialists. More detail of each of the curriculum elements is shown below:

   - Patient safety concepts, terms and literature. It includes patient safety perceptions and reporting, human factors, root cause analysis, barriers which hinder improvement.
2. “Template for Morbidity and Mortality Conferences”
3. “Wrong Site Surgery”
   - Wrong site & patient procedures (including surgery). This module discusses how often and why wrong site surgery occurs, the medical-legal consequences as a result and the appropriate course of action following this event.
4. “Communications”
   - Communication problems are usually responsible for medical errors. This module discusses communication and how to improve dialogue.
5. “Medication Errors”
   - This module reviews the reason for medical errors occur. It also examines how errors may be reduced and avoided, by using technology in preference of human contact.
6. “Surgical Site Infection (SSI)”
   - SSI is not always because of human error. However staff can use clinical effectiveness guidelines to decrease SSI; this module reviews guidelines.
7. “Venous Thromboembolism”
   - Orthopaedic patients can suffer from venous thromboembolism. This module examines risk, and occurrence. In addition it reviews patient protection, monitoring, detection and possible treatment strategies.

More information about the whole AAOS curricula is available at:
• http://www3.aaos.org/member/safety/pscurriculum.cfm

5.2.6 The Institute for Healthcare Innovation (IHI)
The ITI are working to improve healthcare and have produced a ‘Leadership Guide to Patient Safety’. The document presents the following eight steps recommended to improve patient safety:
1. “Address Strategic Priorities, Culture, and Infrastructure”
2. “Engage Key Stakeholders”
3. “Communicate and Build Awareness”
4. “Establish, Oversee, and Communicate System-Level Aims”
5. “Track/Measure Performance Over Time, Strengthen Analysis”
6. “Support Staff and Patients/Families Impacted by Medical Errors”
7. “Align System-Wide Activities and Incentives”
8. “Redesign Systems and Improve Reliability”
This ‘Leadership Guide to Patient Safety’ document is available at the following location:
5.2.7 American Academy of Family Physicians (AAFP)

The AAFP also have web based patient safety materials which cover the following areas:

1. “A Curriculum for Medical Errors”
2. “Fallibility Curriculum”
3. “Safety Education for Med Students”
4. “Approaches to Error Reduction in a Teaching Family Practice”
5. “Promoting Safe Use of Medications in the Ambulatory Setting”
6. “Reducing Medical Error in Residency”
7. “Enhancing the Disclosure of Medical Errors in Primary Care”
8. “Root Cause Analysis”
10. “Breast Program & Safety”
11. “HRSA-Funded Collaborative Patient Safety Training”
12. “Teaching Tools”
13. “Role of a Tracking Log”
14. “Three Years of Experience in Teaching about Medical Errors”

For more information the web page can also be accessed at:


5.2.8 University of Washington – Centre for health sciences inter-professional education and research

The Centre for Health Sciences have developed an information guide entitled “Best Practices in Patient Safety Education”. This handbook is a comprehensive guide of patient safety improvements, which includes how to implement change and focuses on ‘team based’ learning. It is available at the following location.


More information about the patient safety research going on at the University of Washington can be found at:


5.2.9 Duke University Medical centre online patient safety – quality improvement portal

Duke University have created a web portal to support learning in patient safety and quality improvement methodology. The QI Model which is used in this programme has five points and is known as “FADE”:

1. “Focus: Define and verify the process to be improved”
2. “Analyse: Collect and analyze data to establish baselines, identify root causes and point toward possible solutions
“Develop: Based on the data, develop action plans for improvement, including implementation, communication, and measuring/monitoring”
“Execute: Implement the action plans, on a pilot basis as indicated”, and
“Evaluate: Install an ongoing measuring/monitoring (process control) system to ensure success”.

This model is similar to the “PSDA” cycle model adopted by the IHI. The learning portal provides information on how the two models compare and overlap. This is presented as follows:

<table>
<thead>
<tr>
<th>“FADE”</th>
<th>“PDSA”</th>
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<tbody>
<tr>
<td>Focus</td>
<td>Plan</td>
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<tr>
<td>Analyze</td>
<td>Do</td>
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<tr>
<td>Develop</td>
<td>Study</td>
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<tr>
<td>Execute</td>
<td>Act</td>
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</tbody>
</table>

Access to this learning resource is via the following web link:
- http://patientsafetyed.duhs.duke.edu/

5.3 Multi-national organisations

The patient safety research from multinational organisations such as the World Health Organisation and European Union Network for Patient Safety will now be discussed.

5.3.1 The World Health Organisation (WHO)

5.3.1.1 Patient safety curricula guidance for medical schools.

The WHO is currently developing curricula guidance for medical schools globally. The WHO project has three aims. These are as follows:

1. to produce a curricular guide for medical schools worldwide on patient safety;
2. to create a learning environment where teachers can access resources to teach patient safety to medical students; and
3. to support an evidence base for effective use of patient safety curriculum in medical schools.

As stated previously, Professor Merrilyn Walton (Australia) is drafting the first version of the curriculum. More information about this curriculum can be found at:

The guide (draft form) will encourage and support patient safety teaching to medical students. The guide is currently undergoing pilot testing in six WHO regions (various
countries and medical schools). The pilot should provide the WHO with information of easy the curriculum will be to implement and how it may impact on students’ patient safety knowledge and skills. The published Guide (medical curricula) has been developed in two sections. The first part should increase teachers’ knowledge and the second part should develop patient safety core skills of students. The draft curriculum can be accessed using the link below:


5.3.1.2 WHO Surgical Safety Checklist

The WHO published a Surgical Safety Checklist on 26 January 2009. The Department of Health and NPSA has a mandatory requirement for all healthcare organisations (England and Wales) to use an adapted WHO Checklist when treating a surgical patient. This initiative is part of the “WHO second Global Patient Safety Challenge - Safe Surgery Saves Lives”. This initiative is committed to address safety issues during surgical. The checklist includes:

1. “Improving anaesthetic safety practices”;
2. “Ensuring correct site surgery”;
3. “Avoiding surgical site infections”; and
4. “Improving communication within the team”.

The WHO Surgical Safety Checklist document also includes implementation materials and tools. To view all details of the, please visit:


5.3.2 European Union Network for Patient Safety (EUNetPaS)

EUNetPaS was launched in 2008. The project aims to engage EU Member States (and stakeholders) to support patient safety improvements. The key focus areas include:

1. “Promoting a Culture of Patient Safety”;
2. “Structuring Education and Training in Patient Safety via:
   i. Mutual exchange of experience and knowledge
   ii. Reaching out to decision makers in Higher Education”;
3. “Proposal of a Core European curricula for Patient Safety in higher education”; and

Page 38 of 48
More specifically the project’s outcomes include:

- “A more efficient use of resources”;  
- “Support to countries less advanced in the field of Patient Safety”;  
- “The development of a Patient Safety culture”;  
- “The production of guidelines for health professionals on core competencies and development of curricula for medical doctors and nurses to acquire competency”;  
- “A rapid alert mechanism for sharing high-priority Patient Safety issues or solutions”;  
- “The development of EU healthcare organisations and national institutions involved in Patient Safety”; and  
- “ Raised awareness and an improved Patient Safety culture”.

Although this is a useful project, there seems no indication of how these outcomes will be delivered, when they might be achievable by and who will be responsible for delivering them. There is also no indication of how their effectiveness might be evaluated. To date there are no events, news items or updates of progress for 2009.

6.0 Conclusion

There are various institutions funded to research patient safety both in the UK and internationally to greater or lesser degrees. This research in general terms can be used to influence the teaching of health care professions. Consequently it is important that NES continues to support and is aware of this patient safety research in the UK and internationally.

It is also important that an effective evaluation processes is used to ensure that only appropriate information is included in new education programmes. All new curricula developments should be careful to balance the training needs of the NHS, patients and the national healthcare regulators with educational tools to improve patient safety.

Although there a number of novel tools and new methods which the universities and NES could consider using, these need to be carefully evaluated to ensure they will support NHS Scotland staff and improve the safety of patients using the service and to ensure changes are fit for purpose.
### 7.0 Annex

#### 7.1 Annex 1 - Department of Health established the Patient Safety Research Portfolio projects

<table>
<thead>
<tr>
<th>Research Project</th>
<th>Principal Investigator</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS 001 Patient safety: a mapping of the research literature</td>
<td>Dr Amanda Swoden</td>
<td>University of York</td>
</tr>
<tr>
<td>PS 002 Confronting errors in patient care: report focus groups</td>
<td>Prof Jenny Firth-Cozens</td>
<td>University of Newcastle</td>
</tr>
<tr>
<td>PS 003 Threats to patient safety in primary care: a review of the research into the frequency and nature of error in primary care</td>
<td>Prof Aneez Esmail</td>
<td>University of Manchester</td>
</tr>
<tr>
<td>PS 004 The reporting of adverse clinical incidents - achieving high quality reporting: the results of a short research study</td>
<td>Prof Ian Shaw</td>
<td>University of Nottingham</td>
</tr>
<tr>
<td>PS 005 Patient safety and clinical information systems</td>
<td>Prof Jeremy Wyatt</td>
<td>University of Dundee</td>
</tr>
<tr>
<td>PS 006 Patient safety: lessons from litigation</td>
<td>Prof Aneez Esmail</td>
<td>University of Manchester</td>
</tr>
<tr>
<td>PS 007 Proof of principle study of the effect of individual and team drill on the ability of labour ward staff to manage acute obstetric emergencies</td>
<td>Ms Bryony Strachan</td>
<td>St. Michael's Hospital, Bristol</td>
</tr>
<tr>
<td>PS 008 An ethnographic study of threats to patient safety in the operating theatre</td>
<td>Prof Stephen Harrison</td>
<td>University of Manchester</td>
</tr>
<tr>
<td>PS 009 Ethnographic study: enhancing the safety of surgical care</td>
<td>Prof Charles Vincent</td>
<td>Clinical Safety Research Unit, ICL</td>
</tr>
<tr>
<td>PS 010 Ethnographic study: enhancing safety in A&amp;E care</td>
<td>Prof Charles Vincent</td>
<td>Clinical Safety Research Unit, ICL</td>
</tr>
<tr>
<td>PS 011 Evaluation of the implementation of the alert issued by the NPSA on the storage and handling of concentrated potassium chloride solution: results of an audit conducted in 20 acute NHS Trusts</td>
<td>Prof Trevor Sheldon</td>
<td>University of York</td>
</tr>
<tr>
<td>PS 012 Ethnographic study: identifying and reducing errors in the operating theatre</td>
<td>Prof Marc de Leval</td>
<td>Great Ormond Street Hospital</td>
</tr>
<tr>
<td>PS 014 Summary of findings from root cause analysis of 36 adverse events and near misses in obstetrics</td>
<td>Brenda Ashcroft</td>
<td>University of Salford</td>
</tr>
<tr>
<td>PS 016 Communication with patients in the context of error</td>
<td>Prof Lesley Fallowfield</td>
<td>University of Sussex</td>
</tr>
<tr>
<td>PS 018 Medication error 1: A prospective hazard and improvement analysis of medication error in a UK secondary care setting</td>
<td>Dr Jon Karnon</td>
<td>University of Sheffield</td>
</tr>
<tr>
<td>PS 019 Medication error 2: Safer, Faster, Better? Evaluating electronic prescribing</td>
<td>Prof Nick Barber</td>
<td>School of Pharmacy, UCL</td>
</tr>
<tr>
<td>PS 020</td>
<td>Medication error 2: Development of capacity and evaluations of information technology solutions</td>
<td>Prof Judy Cantril</td>
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<tr>
<td>PS 022</td>
<td>Reuse of Single Use medical Devices (SUDs). National survey of current practice and in-depth qualitative study to establish practitioners rationale for re-use</td>
<td>Prof Robert Dingwall</td>
</tr>
<tr>
<td>PS 023</td>
<td>Monitoring the incidence of neonatal encephalopathy - what next?</td>
<td>Dr Peter Brocklehurst</td>
</tr>
<tr>
<td>PS 024</td>
<td>The PINCER trial - A cluster randomised trial comparing the effectiveness of a pharmacist led IT intervention with simple feedback in reducing rates of clinically important errors in medicines management</td>
<td>Prof Tony Avery</td>
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<tr>
<td>PS 025</td>
<td>The CHUMS study - Care Home Use of Medicines Study</td>
<td>Prof Nick Barber</td>
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<tr>
<td>PS 026</td>
<td>The COSMIC study - Co-operative of Safety of Medicines in Children: a scoping study to identify and analyse interventions used to reduce errors in calculation of paediatric drug doses</td>
<td>Dr Ian Wong</td>
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<tr>
<td>PS 027</td>
<td>Diagnostic errors in primary care: a learning needs analysis</td>
<td>Dr Olga Kostoupoulou</td>
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<tr>
<td>PS 028</td>
<td>Reporting systems: a scoping study of methods of providing feedback within an organisation</td>
<td>Prof Louise Wallace</td>
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<tr>
<td>PS 029</td>
<td>Does feedback of hand hygiene sustain hand hygiene long term? - A national observational study of the effectiveness of the Clean Your Hands (CYH) campaign and a cluster randomised controlled trial of the effectiveness and cost-effectiveness of feedback from Intensive Care Units (ICUs) and acute general medical wards</td>
<td>Prof Sheldon Stone</td>
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<tr>
<td>PS 030</td>
<td>Patient safety in healthcare professional educational curricula: examining the learning experience</td>
<td>Dr Pauline Pearson</td>
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<tr>
<td>PS 034</td>
<td>A review of strategies to promote patient involvement - a study to explore patient's views and attitudes and a pilot study to evaluate the acceptability of selected patient involvement strategies</td>
<td>Prof Ian Watt</td>
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<tr>
<td>PS 035</td>
<td>Prospective hazard analysis: tailoring prospective methods to a healthcare context</td>
<td>Prof John Clarkson</td>
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<tr>
<td>PS 038</td>
<td>Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors - Phase 1: The potential hazards associated with the implementation of the prototype non-luer spinal connectors</td>
<td>Dr Rebecca Lawton</td>
</tr>
<tr>
<td>PS 041</td>
<td>The cost-effectiveness of hospital design: options to improve patient safety and well-being</td>
<td>Dr Peter West</td>
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<tr>
<td>PS 044</td>
<td>Evaluation of patient safety research alert on correct site surgery</td>
<td>Dr John Wright</td>
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<tr>
<td>PS 045</td>
<td>Evaluation of the NPSA 3-day root cause analyses training programme</td>
<td>Prof Louise Wallace</td>
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<tr>
<td>PS 046</td>
<td>A multi-method study of the update of advice, directives and guidelines to the NHS concerning patient safety by the Safety Alert Broadcast System (SABS)</td>
<td>Dr Peter West</td>
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<tr>
<td>PS 048</td>
<td>Checking procedures for nasogastric tubes: a systematic review, decision analysis and the development of evidence based guidelines</td>
<td>Dr George Hanna</td>
</tr>
<tr>
<td>PS 049</td>
<td>Phase 2&amp;3: Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors</td>
<td>Dr Rebecca Lawton</td>
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<tr>
<td>NPSA 001</td>
<td>An exploration of bedside checking processes for in-patients in the acute care setting</td>
<td>Prof Andrew Smith</td>
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</table>
### 7.2 Annex 2 – Institutions in the UK carrying out patient safety research projects

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<tr>
<th>Institution</th>
<th>Web link</th>
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<td>School of Medical Sciences Education New castle University The Medical School Framlington Place New castle upon Tyne NE2 4HH</td>
<td><a href="http://www.ncl.ac.uk/medev/assets/documents/NPSABID.pdf">http://www.ncl.ac.uk/medev/assets/documents/NPSABID.pdf</a></td>
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<td>Kingston St Georges University, London</td>
<td><a href="http://www.kingston.ac.uk/bimedinfo/">http://www.kingston.ac.uk/bimedinfo/</a></td>
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<td>Bedford</td>
<td><a href="http://www.beds.ac.uk/courses/bysubject/health/medicine/enhquathrpat.aspx">http://www.beds.ac.uk/courses/bysubject/health/medicine/enhquathrpat.aspx</a></td>
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<td>Warwick &amp; Coventry University with NHS Innovation &amp; Improvement</td>
<td><a href="http://www2.warwick.ac.uk/fac/med/research/hsri/emergencycare/research/sdo/csi2/resources/documents/phase2_ug_learning_coventry_warwick_v2_0public.pdf">http://www2.warwick.ac.uk/fac/med/research/hsri/emergencycare/research/sdo/csi2/resources/documents/phase2_ug_learning_coventry_warwick_v2_0public.pdf</a></td>
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<td>Warwick - Innovation, knowledge and organisational networks research unit (IKON)</td>
<td><a href="http://www2.warwick.ac.uk/fac/sci/wimrc/projects/major/capacity/">http://www2.warwick.ac.uk/fac/sci/wimrc/projects/major/capacity/</a></td>
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<tr>
<td>Manchester</td>
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ACUTE develop competencies in medical students who are responsible for acutely ill or arrested patients.
### 7.3 Annex 3 – Some patient safety organisations worldwide

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<th>Publications</th>
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<tr>
<td><strong>UK</strong></td>
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<tr>
<td>Alliance of UK Health Regulators on Europe</td>
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<td>National Patient Safety Agency</td>
<td><a href="http://www.npsa.nhs.uk/">http://www.npsa.nhs.uk/</a></td>
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<tr>
<td>Patient Safety Research Programme</td>
<td><a href="http://www.publichealth.bham.ac.uk/">http://www.publichealth.bham.ac.uk/</a></td>
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<tr>
<td>Scottish Patient Safety Alliance</td>
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<tr>
<td>NHS Quality Improvement Scotland</td>
<td><a href="http://www.nhshealthquality.org/">http://www.nhshealthquality.org/</a></td>
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<tr>
<td>Institute for innovation and improvement</td>
<td><a href="http://www.institute.nhs.uk/">http://www.institute.nhs.uk/</a></td>
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<td>The health foundation</td>
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<td>NHS Connecting for Health</td>
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<td>Patient Safety First (NHS)</td>
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<td><strong>Canada</strong></td>
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<tr>
<td>Health Canada</td>
<td><a href="http://www.hc-sc.gc.ca">http://www.hc-sc.gc.ca</a></td>
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<tr>
<td>Canadian Medical Protective Association</td>
<td><a href="http://www.cmpa-acpm.ca/">http://www.cmpa-acpm.ca/</a></td>
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<td>Canadian Medical Association</td>
<td><a href="http://www.cma.ca">http://www.cma.ca</a></td>
</tr>
<tr>
<td>Canadian Institute for Health Information</td>
<td><a href="http://secure.cihi.ca/cihiweb/splash.html">http://secure.cihi.ca/cihiweb/splash.html</a></td>
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<tr>
<td>Canadian Healthcare Association</td>
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<tr>
<td>Canadian Council on Health Services</td>
<td><a href="http://www.cchsa.ca">http://www.cchsa.ca</a></td>
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<tr>
<td>Institute for Safe Medication Practices Canada</td>
<td><a href="http://www.ismp-canada.org/">http://www.ismp-canada.org/</a></td>
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<tr>
<td>Royal College of Physicians and Surgeons of Canada</td>
<td><a href="http://rcpsc.medical.org/main_e.php">http://rcpsc.medical.org/main_e.php</a></td>
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<td>Canadian Nurses Association</td>
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<td>Canadian Medication Incident Reporting and Prevention System (CMIRPS)</td>
<td><a href="http://www.hc-sc.gc.ca/hpb/bedgpsa/tpddpt/fact_cmirps_e.html">http://www.hc-sc.gc.ca/hpb/bedgpsa/tpddpt/fact_cmirps_e.html</a></td>
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<td>Canadian Nurses Protective Society</td>
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<tr>
<td><strong>European</strong></td>
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<tr>
<td>European society for quality in healthcare</td>
<td><a href="http://www.esqh.net/newsfolder_view?portal_status_title=ESQH+NEWS">http://www.esqh.net/newsfolder_view?portal_status_title=ESQH+NEWS</a></td>
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<td>FDA (Centre for drug evaluation &amp; research)</td>
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<tr>
<td>The National Quality Forum (NQF)</td>
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<tr>
<td>Agency for healthcare research &amp; quality - Quality &amp; patient safety</td>
<td><a href="http://www.ahrq.gov/qual/">http://www.ahrq.gov/qual/</a></td>
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<tr>
<td>Leapfrog Group (network)</td>
<td><a href="http://www.leapfroggroup.org/for_hospitals/leapfrog_hospital_survey_copy/leapfrog_safety_practices">http://www.leapfroggroup.org/for_hospitals/leapfrog_hospital_survey_copy/leapfrog_safety_practices</a></td>
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<td>The Joint Commission (JCAHO) - Patient safety factsheet</td>
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<td>URAC - American Accreditation Health Care Commission</td>
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<tr>
<td>Institute of Medicine of the National Academies</td>
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<td>Institute for Healthcare Improvement</td>
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<td><strong>International</strong></td>
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<td>WHO - Hand Hygiene in Health Care: Implementation Strategies</td>
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<td>International society for quality in healthcare</td>
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<td>Australian Patient Safety Foundation</td>
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<tr>
<td>New Zealand Ministry of Health</td>
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7.4 Annex 4 - Publication of Organisation Patient Safety Incident Reports

The publication of organisation patient safety incident report provides information for NHS England and Wales organisations.

This repository covers patient safety incidents (errors) from 1 April 2008 to 30 September 2008. These incidents were reported to the Reporting and Learning System (RLS) by 28 November 2008. Each incident was uploaded to the RLS electronically by the NHS organisation.

It is suggested by the evidence base now collated that organisations with a strong safety culture higher generally also have a higher reporting rate. Following on from this information it is suggested that high reporters aim to learn from incident reporting and consequently patient care should be safer. For further information on this level of reporting, please use the following link: