PS050:
Synthesis of the outputs of research commissioned under the Patient Safety Research Portfolio

Robert Dingwall, Cecily Palmer, Emma Rowley, Justin Waring, Toby Murcott

University of Nottingham
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Comments and suggestions are welcome and should be directed to authors.

Professor Robert Dingwall
Robert.Dingwall@nottingham.ac.uk

Dr Cecily Palmer
patientsafety@nottingham.ac.uk

Dr Emma Rowley
Emma.Rowley@nottingham.ac.uk

Dr Justin Waring
Justin.Waring@nottingham.ac.uk

Dr Toby Murcott
Toby.Murcott@keteo.co.uk

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Executive Summary

The Patient Safety Research Portfolio (PSRP) was initiated in June 2001 in order to evaluate interventions that improve patient safety and identify processes that reduce the likelihood of adverse events occurring in healthcare.

This synthesis and narrative review study took place from Sept 2008 to March 2009 with the aim of reviewing and reflecting on the main findings, outputs and achievements of the PSRP, and further to draw lessons for clinicians, managers and policy-makers and make recommendations for the direction of future patient safety research.

Methods

- The study comprised the following elements:
  - A narrative review of all available studies and their associated outputs, in order to summarise and synthesise their findings.
  - An assessment exercise to determine the impact of PSRP research on academic literature and media coverage.

Key findings

- The majority of PSRP studies draw upon a theoretical patient safety ‘orthodoxy’, developed from the concepts and models associated with the human factors approach.

- A diverse range of research designs and techniques have been utilised, and although many follow in the ‘scientific’ tradition, interpretative, mixed and innovative methods have been integral to research.

- The PSRP shows considerable diversity in origin and focus, and makes contributions to knowledge in the areas of ‘people’, ‘organisations’, and ‘technology’. 

- The majority of PSRP projects had published outputs, although just under half of the projects had been referenced in secondary publications.

- PSRP research received very little direct coverage in the popular news media.

- The PSRP has provided the foundations for significant theoretical, methodological and empirical advances in the area of patient safety. The findings and recommendations make important contributions to policy formulation and implementation as well as professional and managerial practice.
Through this body of research the PSRP has supported the formation and maturity of a thriving research community across academic, policy and professional communities.

Although the PSRP corpus has largely used the human factors approach, it could be argued that other theories of organisational complexity and safety are somewhat neglected.

The majority of patient safety research, funded by PSRP or otherwise, typically makes recommendations for change at the level of the individual or team, despite the prevalence of ‘systems thinking’, which emphasises the importance of latent and upstream factors that shape safe clinical practice.

Little attention has been paid to the role of incentives and disincentives in securing patient safety.

It appears that the PSRP-funded studies would have achieved a wider impact if the research commissioners had placed more emphasis on the dissemination of research findings via the popular media and trade press.

**Recommendations**

- The predominant focus of patient safety research has been on acute care. Research, and with it, patient safety theories need to expand to cover the whole patient journey and examine the many different experiences.

- Further attention needs to be given to the ‘human’ side of errors: the patient and what happens to the patient.

- There is a need to examine the opportunities for creating and supporting teams that work well together quickly, building on the examples of high reliability organisations and Formula 1 race-teams (Ferrari/McLaren).

- Further work is necessary to address the admission and discharge into hospital and in particular the errors that tend to occur at this time.

- Future research needs to focus less on ‘what we know’ in relation to safety events, and more on ‘what we do’, and as part of this, to work more explicitly alongside managers to implement safety interventions.

- Further research could helpfully focus on alerts issued and interventions implemented to improve patient safety and examine their effectiveness over a longer period of time.

- It may be useful to examine the role of accountability in relation to organisational learning since evidence suggests that cultural norms, such as interruptions, can be challenged with the enforcement of rules and sanctions.
• There is a need to consider the different costs of patient safety, such as the cost-effectiveness of hospital design, the value of single rooms and social costs.

• Further investigation of the facilitation, adoption, diffusion and organisational learning stemming from patient safety interventions is required.

• To move the implementation of patient safety initiatives forward, safety should be regarded as both a political and institutional problem.

• Time-consuming procedural formalities have become a barrier to research within the NHS and need to be addressed as a matter of urgency.
Acknowledgements

We are grateful for the support for the PSRP in granting us the funding to produce this report.

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We are grateful to Dr Phil Hammond for agreeing to speak at our symposium. Lastly, we would like to thank the following organisations for their support of our patient safety research symposium: The Health Foundation, PatientPak Ltd, the National Patient Safety Agency, Trent Simulation and Clinical Skills Centre, and Quality and Safety in Health Care.
“To err is human, to cover up is unforgivable, and to fail to learn is inexcusable”.

Sir Liam Donaldson, World Alliance for Patient Safety, 27 October 2004
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Introduction

Research into patient safety has grown enormously over the last fifteen years. At the national and international levels there are now specialist research centres, government agencies, dedicated conferences and funding stream in the area of patient safety. For the UK, the expert report An Organisation with a Memory (Department of Health 2000) spearheaded this agenda by examining, and offering a new way of thinking about, the factors that shape patient safety and recommending the introduction of more robust systems of organisational learning. Its seventh recommendation called for a programme of basic research into the incidence and causes of risk; the transfer of knowledge from other sectors; the practical approaches to risk minimisation and learning; the contribution of the ‘systems’ approach; and the use of automated methods to evaluate clinical interventions.

The Patient Safety Research Portfolio was initiated in June 2001, with the central aim of ‘identifying the processes or structures which reduce the probability of adverse events and evaluate interventions which seek to change the healthcare system and improve patient safety’\(^1\). Based at the Department of Public Health and Epidemiology at the University of Birmingham, and led by Professor Richard Lilford, the programme of work undertook to identify and prioritise key questions for patient safety research; to commission, manage and disseminate research, and promote debate on patient safety among key stakeholders.

The Patient Safety Research Portfolio (PSRP) is a wide-ranging, multi-disciplinary corpus of work on ‘patient safety’. It has created new knowledge and informed service improvements by identifying structures and processes that reduce threats to patient safety and by evaluating interventions with potential to improve safety.

The ideas and topics researched under the PSRP have originated from a variety of sources; specifically as a product of workshops, from the analysis of previous reviews, or from individuals or organisations. As the PSRP comes to an end, it is time to assemble its key messages. This involves identifying common themes, reviewing recommendations, and assessing the overall impact on policy, service delivery and professional practice. This synthesis and narrative review identifies:

- Main findings from the programme;
- The main practical achievements and their implications;
- Lessons for clinicians, managers and policy-makers;
- Recommendations for further research.

\(^1\) Lilford, R; Foster, J; Stoddart, S; Maillard, N (2005) PSRP Standard operating procedures summary (PSRP internal document) p.3.
We have undertaken three activities to meet these aims:

- A narrative review of all 36 commissioned studies and their associated outputs, to summarise and synthesise their findings;
- The identification of key learning points and recommendations to inform future research, policy development and service improvement;
- An assessment of the PSRP’s impact.

The narrative review covers all available study reports (N=27/36)\(^2\). It has also included available outputs, e.g. journal articles, conference papers, books and chapters.

The review synthesises the PSRP outputs along four lines:

- A theoretical review: examining the theoretical contributions to understanding and responding to patient safety; tracing the development of new ways of conceptualising safety;
- A methodological review: exploring the ways in which patient safety can be researched; identifying the contributions of different research techniques;
- A thematic review: categorising findings into themes related to ‘people’, ‘organisations’ and ‘technology’;
- An integrative review: synthesising the findings to develop recommendations for service improvement and future research.

PSRP studies have been commissioned and undertaken between 2001-2009, with the later studies due to deliver in late 2009. There is some evidence of the issues or topics of importance raised in earlier studies having been empirically examined in later studies, demonstrating real signs of change and impact.

Although the PSRP work has been broadly focused on patient safety, it has included a diverse range of studies, in terms of their theoretical, methodological and empirical design. A complete list of project titles and summaries can be found in Appendix 1.

To recap, in carrying out the synthesis of the 27 PSRP research reports, it was our objective to identify the main findings from the programme, to assess the impact of the programme and to make recommendations to inform future patient safety research. The report first presents the methodological approach, followed by the results of the theoretical, methodological and thematic reviews. The impact assessment will then be presented, and finally the conclusion and recommendations for further research.

\(^2\) The remaining projects are either going through review or have completion dates in late 2009.
Methodology

i) Narrative review and synthesis

Narrative review is an approach to synthesising and commentating on a large body of studies that draw on diverse theoretical, methodological and substantive perspectives. Unlike systematic reviews, which typically seek to assess and synthesise studies in largely quantitative terms (Davis and Crombie 2003), it is a holistic and qualitative approach (Kirkevold, 1997). Our choice of narrative review is justified by the diversity of PRSP studies, which makes it difficult to compare them systematically on a like-for-like basis based upon standardised criteria of inclusion, comparison and analysis: for example, RCTs and ethnographies produce significantly different kinds of knowledge. It has been necessary therefore to adopt an approach capable of both accommodating this diversity and offering scope for synthesis (Jones, 2004).

While the narrative approach is sometimes seen as less rigorous, systematic and open to interpretative bias, it enabled us to take a more inclusive and holistic approach to this diversity (Davis and Crombie 2003), making for qualitative description, interpretation and synthesis (Kirkevold, 1997). In undertaking this review, the aim was to identify common and emergent themes from across the PSRP studies with our four review areas, rather than to test existing theory or evaluate specific study findings.

In carrying out the review and synthesis of the PSRP outputs, we have examined each of the completed study reports in-depth (n= 27/38). Following close reading of each completed research report a general summary was produced. These summaries detail the context and justification for each research project, the method(s) used, and the results and recommendations from each research project in the corpus. As we became more familiar with the diversity and range of the research projects, and as our knowledge of the PSRP corpus became more extensive, we began to map the themes and findings relating to each project. These maps allowed us to represent visually the findings and themes across the diverse corpus and to identify links and relationships between them. They also enabled us to categorise the projects into related clusters, as well as to identify outlying findings and research areas that had received less attention in the corpus. We further placed the methods used by each project into a matrix, thereby allowing the diversity and range of methods utilised within the corpus to be mapped, and for the multiple-methods used by the majority of the individual project to be presented (see Table 1).

Data have also been generated from discussions during a patient safety research symposium, in which all PSRP funded projects were invited to participate, and from telephone interviews undertaken with each of the principal investigators or lead authors of each project where possible. These interviews were designed to supplement the review and synthesis of the PSRP corpus by gaining additional information on the experience of undertaking these projects, the key outcomes from each study, and the wider dissemination of the findings and recommendations from
of research. In total 13 interviews were undertaken during three weeks in January 20093.

ii) Assessment of impact

In order to assess the impact of the PSRP corpus, an output and citation mapping exercise was undertaken, which collated the associated outputs from each research report, and tracked the citation of the original research reports in secondary publications. This exercise was undertaken by searching for the project title and the primary investigator and/or lead author’s name in PubMed (www.pubmed.gov), Web of Knowledge (http://www.isiwebofknowledge.com) and Google Scholar (http://scholar.google.co.uk). The exercise was further supplemented by information in the ‘related publications’ section of each project page on the PSRP online database (http://www.pcpoh.bham.ac.uk/publichealth/psrp/commissioned.shtml), on which publications and presentations were listed by some research teams, and by telephone interviews with principal investigators.

A further impact exercise was undertaken to assess the media coverage of the PSRP. UK national and regional newspapers were searched via the Nexis (www.lexisnexis.com) and News UK (www.newsuk.co.uk) databases. The use of a second database tested the accuracy of the Nexis results. No difference was found between the two databases, and so the results from Nexis are considered to be reliable. There are no similar databases for the broadcast media, so an ad-hoc approach was adopted. The websites of the BBC (www.bbc.co.uk); ITN (www.itn.co.uk) and Sky News (http://news.sky.com/skynews) were investigated as potential archives.

3 In addition to these, we received 6 declines, and a further 6 PIs failed to respond to our request.
Results

The following review is set out as follows: 1) theoretical review, 2) methodological review, and 3) thematic review. This structure has been evolved following discussions and feedback from an advisory board meeting (January 2009) and the research symposium (February 2009).

Part 1: Theoretical review

This theoretical review focused on the theoretical underpinnings of the PSRP. It considered the theoretical assumptions of individual projects, but also took a broader perspective to determine the extent to which an orthodoxy came to be established, with a particular focus on the genealogy of the ideas, conceptual language and causal models that were described in the reports. We were also attentive to the notion that new ideas might emerge that could be used to theoretically explain and empirically research patient safety issues.

We found that the work of the PSRP was largely informed by the ideas set out in the report, An Organisation with a Memory (Department of Health 2000), and was associated more broadly with ergonomics and human factors and theories related to high reliability organisations. In the wider area of ‘safety science’, these derive from the works of Reason (1997), Helmreich and Merritt (1998), Sexton et al (2000) and Leape and Berwick (2000). They have found particular application in healthcare through the work of authors such as Leape (1999), Berwick and Leape (1999), Vincent et al (1999) and Reason (2000). The widespread and popular translation of these ideas into healthcare has resulted in a theoretical orthodoxy for patient safety which suggests that patient safety events and clinical errors are not solely brought about by individual human error, but are conditioned and made more likely by the wider systemic context and latent factors found in the immediate work environment as well as the wider organisational context. The preference for this theoretical perspective was frequently justified in terms of its successful application in other industries and sectors, such as petrochemicals, aviation and nuclear energy. Its extension to healthcare originated in the USA before being developed and applied in the UK, as exemplified by the report To Err is Human (Kohn et al 2000).

These ideas and ways of conceptualising patient safety were extensively cited and utilised across the PSRP projects, reinforcing the view that they constitute a theoretical orthodoxy for patient safety. A number of projects sought to focus on specific safety related factors, such as the role of technology, teamwork or communication as a way of empirically applying and developing these ideas within the healthcare context (PS007, PS009, PS020). A number of studies took a broader and alternate view of organisational safety, associated with the works of Perrow (1999) and Vaughan (1996, 1999), which can be seen as extending, rather than necessarily critiquing, the prevailing model to consider the factors located outside the immediate psycho-social work context, e.g. cultural, structural and institutional factors.
Although there is strong evidence from other sectors and international experiences that this orthodox approach to theorising and modelling safety has much to offer in terms of informing research, empirical analysis and service improvement, questions remain about the ease with which these ideas from other sectors can be translated into healthcare. In particular, many reports highlighted the exceptional complexity of healthcare systems that involve multiple sectors, a diverse range of professional and occupational groups and a multifarious, inter-linked assortment of organisational forms (PS008, PS010, PS012, PS046). These points do not necessarily make the orthodox approach incompatible with the UK healthcare context, but they do mean that application and analysis needs to acknowledge this diversity. In some instances there appeared to be a tendency to utilise theory narrowly (PS012) specifically by focussing predominantly on the psycho-social context of care delivery to the detriment of developing a more thorough understanding of either the sources of risk or the methods of reducing risk within the wider organisational, cultural and institutional context. This means that despite the orthodox model directing investigation and analysis away from the individual and towards more the upstream factors, the extent to which the resultant analysis extends to the 'system' is often limited to the immediate work environment that shapes individual or group practice. Consequently, it fails to identify and address the determining influences of more wide-ranging root causes found in the organisation and regulation of care (see the recent example Stafford hospital, March 2009).

**Part 2: Methodological review**

The methodological review aimed to understand the different ways in which patient safety has been researched through the PSRP corpus. As noted above, the diversity of methods and design, from evaluations and trials to surveys and observational studies, underlines our use of a narrative review. In terms of methods, methodology, a proportion of most PSRP works used experimental designs and where possible, controlled cases (PS009, PS012, PS019, PS020, PS027, PS028). However, there were also examples of exploratory and interpretative work (PS008, PS022, NPSA001). The prevailing model reflects the customs and expectations of research in medicine. This may, however, fail to capture some of the complexity detail associated with the social organisation of patient care and clinical work. For example, the use of ethnography varied across studies, with two adopting a structured and scientific approach to observation that does not necessarily reflect the understandings of ethnographic work associated with anthropology and sociology (PS009, PS010, PS012).

A variety of research designs were found. A number of (early) works reviewed the existing literature on to safety and risk management (PS001, PS003), whilst subsequent works investigated the sources of clinical risk (PS008, PS009, PS012, PS014) and, later, available solutions, ranging from information technology and computer-based solutions (PS005, PS019, PS020), to training based interventions (PS007, PS009, PS45) and engineered solutions (PS038). A variety of approaches were, then, evident, from systematic and literature reviews, exploratory studies,
focussed case studies, trials of new technologies and evaluations of service improvement. The methodological review found that a number of projects developed and piloted methods and analytical tools to evaluate interventions such as electronic prescribing (PS019), to identify and count prescribing errors (PS020), and to assess individual and team performance in surgery (PS009). The majority of studies used multiple methods in their research design, and a proportion used both quantitative and qualitative methods (PS019, PS020).

A number of prominent barriers to research were identified across the studies. First and foremost were the time-consuming difficulties in acquiring NHS ethical and Trust R&D approval (PS022, PS026, PS028, PS045). This appeared to occupy a significant proportion of research activity and resources, and, at times, resulted in potential research sites being dropped. Questions need to be asked (outside this review) about the negative impact this can have on research. It was evident that there was a lack of data related to certain topics and themes, such as the outcomes and contribution of safety systems to service improvement. A significant observation, made by a number of studies, related to the lack of useable, easily accessible data within the healthcare system – and when data was available, it was often of poor quality. This included patient records, routine performance and service information systems, and litigation information (PS006, PS010, PS020, PS026). Moreover, it was recommended that more attention should be given to making data reusable (PS006, PS020). This might be by making existing data forms in NHS multifunctional, such as aligning incident reporting and the audit processes with external and secondary uses to reduce duplication and resource costs.

Overall, the quality of data produced through the works is evident and provides a significant contribution to knowledge and resource for future researchers and policy-makers. There no evidence that the studies were carried out inappropriately, unethically or inconsistently with their established methodological approach.
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4 Text in italics signifies that the project was ongoing or had not had its final report published at the time of our review.
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<td>‘Cluster randomised trial’</td>
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<td>PS026</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>Systematic literature review</td>
<td>Questionnaire survey of UK, EU and US paediatric health professionals; IT suppliers; community pharmacists</td>
<td>Independent expert panel assessment of selected interventions</td>
<td></td>
</tr>
<tr>
<td>PS027</td>
<td>Diagnostic errors in primary care: a learning needs analysis</td>
<td>Seven complex clinical scenarios presented to GPs</td>
<td>GPs interviewed using ‘stimulated recall’ – participants asked to recall and explain their thinking during 3 of the (misdiagnosed) diagnostic scenarios</td>
<td>GP performance assessed by number of cues requested, time taken to diagnose, diagnostic accuracy and appropriateness of management</td>
<td></td>
</tr>
</tbody>
</table>

18
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Method</th>
<th>Design</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS028</td>
<td>Reporting systems: a scoping study of methods of providing feedback within an organisation</td>
<td>Structured literature review</td>
<td>Questionnaire survey of NHS Trusts</td>
<td>Expert workshop</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Interviews at case study sites</td>
</tr>
<tr>
<td>PS029</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>‘Observational study’</td>
<td>‘Cluster randomised controlled trial’</td>
<td></td>
</tr>
<tr>
<td>PS030</td>
<td>Patient safety in healthcare professional educational curricula: examining the learning experience</td>
<td>Interviews</td>
<td>Observation</td>
<td>Documentary analysis</td>
</tr>
<tr>
<td>PS034</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>‘Prospective hazard analysis’</td>
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<tr>
<td>PS035</td>
<td>Prospective hazard analysis: tailoring prospective methods to a healthcare context</td>
<td>‘Prospective hazard analysis’</td>
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<tr>
<td>PS038</td>
<td>Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors - Phase 1 of 3: The potential hazards associated with the implementation of the prototype non-luer spinal connectors</td>
<td>Prospective hazard analysis</td>
<td>Prototype testing using simulator incorporating structured interview and observation</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>PS041</td>
<td>The cost-effectiveness of hospital design: options to improve patient safety and well-being</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS044</td>
<td>Evaluation of patient safety research alert on correct site surgery</td>
<td>Interview questionnaire administered before and after issue of CSS Alert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS045</td>
<td>Evaluation of the NPSA 3-day root cause analyses training programme</td>
<td>Survey questionnaire</td>
<td>Semi-structured interviews at 8 case study sites</td>
<td>Critical assessment of Root Cause Analysis (RCA) exemplars provided by case study trusts</td>
</tr>
<tr>
<td>Project Code</td>
<td>Title</td>
<td>Methodologies</td>
<td>Tools &amp; Techniques</td>
<td>Notes</td>
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<tr>
<td>PS046</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>Interview and survey questionnaire</td>
<td>Site visits including structured interview and audit</td>
<td></td>
</tr>
<tr>
<td>PS048</td>
<td>Checking procedures for nasogastric tubes: a systematic review, decision analysis and the development of evidence based guidelines</td>
<td>‘Systematic review’</td>
<td>‘Decision analysis’</td>
<td></td>
</tr>
<tr>
<td>PS049</td>
<td>Phase 2&amp;3: Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors</td>
<td>(see PS038)</td>
<td></td>
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</tr>
<tr>
<td>NPSA001</td>
<td>An exploration of bedside checking processes for in-patients in the acute care setting</td>
<td>Literature and policy review</td>
<td>Interviews, focus groups &amp; observation</td>
<td>Snapshot survey &amp; functional task analysis of wristbands use</td>
</tr>
</tbody>
</table>
Part 3: Thematic review

Our thematic review draws out the prominent and significant themes found across the studies; however the themes used to arrange our findings are not mutually exclusive or strictly bounded. The categorisation of the corpus into a series of themes has been challenging, and during the course of the review a number of thematic categorisations have been developed and revised. Categorising the projects from a corpus which exhibits such diversity and range in origin and focus is not straightforward and we emphasise that the following categories are a useful, but not a definitive, representation of the scope and variation in the PSRP corpus.

Therefore the projects have been organised under the following headings, while recognising that some projects contributed to more than one theme:

- People
- Organisations
- Technology

i) ‘People’

Our first theme brings together the studies that focus predominantly on the individual behaviour of healthcare professionals, and on the reception and effect of training interventions on healthcare staff.

<table>
<thead>
<tr>
<th>PS002</th>
<th>PS004</th>
<th>PS007</th>
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</thead>
<tbody>
<tr>
<td>Confronting errors in patient care</td>
<td>The reporting of adverse clinical incidents</td>
<td>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>
</tr>
<tr>
<td>PS016</td>
<td>PS027</td>
<td></td>
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<tr>
<td>Communication with patients in the context of error</td>
<td>Diagnostic errors in primary care: a learning needs analysis</td>
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<tr>
<td>PS045</td>
<td></td>
<td></td>
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<tr>
<td>Evaluation of the NPSA 3-day root cause analyses training programme</td>
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</table>

* For example, the PSRP organised their final conference and briefing booklet around alternative themes: ‘Response to An Organisation with a Memory’, ‘medication error’, ‘response to patient safety initiatives’, ‘Qualitative studies/exploring wider issues’ and ‘ethnographic studies and synthesis work’.
Two of the above projects explore healthcare professionals’ experience of adverse clinical incidents or error and examine the barriers and facilitators to the reporting of such incidents. Reporting is emphasised by the Government as key to building a ‘learning culture’ in which change and improvement will lead from the open disclosure of errors (Department of Health 2000; National Patient Safety Agency 2004). PS002 and PS004 however identified that a lack of trust and fear of the consequences of reporting, including litigation and punishment, were major barriers. The success of anonymised systems in encouraging greater reporting was identified, but this is tempered by staff feeling that truly ‘anonymous’ reporting within healthcare was unattainable. These studies further identify the lack of consistent guidance or definition in recognising the incidents that warrant reporting and emphasise the fundamental importance that reporting be seen to have an effect and to produce action that results in beneficial change: reporting systems will founder without evidence that they have an effect.

Reporting is a dominant theme in the PSRP corpus of research, with evidence demonstrating that it can improve safety and awareness of risk. However, reporting is hindered by professional cultures and hierarchies, and influenced by contextual practices. Several studies find under-reporting to be the norm and estimate that the actual incidence of error and/or adverse event is likely to be considerably higher than official figures suggest (PS002, PS004, PS008, PS012, PS014).

Related to the reporting of error, but more contentious, is ‘open disclosure’ or the admission directly to a patient that an error has occurred. PS016 establishes a set of principles for health professionals to guide communication with patients and their families following medical error, offering advice and guidance on open disclosure of error. Drawing on an extensive literature review, the authors note that, rather than the disclosure of error increasing the likelihood of being sued, the decision to take legal action may be provoked by deficient communication, or subsequent realisation that medical error has not been revealed at all. The authors emphasise the need to support both patient and practitioner following error and note that good staff support strategies within healthcare institutions are likely to facilitate communication about error.

Projects PS007 and PS045 evaluate training interventions for healthcare professionals. PS007 examined the effect of obstetric emergency training, and found a high regard for the programme and an increase in the knowledge and clinical skills necessary to manage an acute emergency, which were sustained over at least 12 months. This study makes the important observation that healthcare staff who perform less well in training scenarios are also less likely to return for further training, which is likely to have a negative impact on their practice, and ability to respond to and manage errors and critical situations. PS045 found that the NPSA training in Root Cause Analysis was well received, but that its implementation within Trusts faced considerable difficulty, due to a lack of ‘foundations’ or supporting structures within the organisation. PS027 focussed on the under-researched setting of primary care, examining information gathering during diagnosis of difficult cases in general practice. The study found that the number of critical cues requested influenced the accuracy of diagnosis, and, in keeping with earlier studies, that the
length of time for which a GP had been practicing had no effect on the accuracy of diagnosis in difficult cases.

These studies emphasise the role of the organisational context in facilitating and promoting changes to individual practice that aim to improve patient safety. Individual action must be considered within the organisational and cultural context of the healthcare system: changes in behaviour, and the implementation of patient safety improvement initiatives, will necessitate changes in institutional ideology and structure. However, the introduction of new ways of doing things is difficult. Change is unlikely unless both staff and management can be convinced of real benefit in outcomes.
ii) ‘Organisations’

Our second thematic grouping clusters the PSRP studies that focus on the organisational structure and/or culture of healthcare design / systems, in order to explore the sources of both risk and safety within the organisation and delivery of patient care. A subset of these projects examine the reception of particular patient safety initiatives (patient safety alerts) within the healthcare organisation.

<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>PS008</td>
<td>An ethnographic study of threats to patient safety in the operating theatre</td>
</tr>
<tr>
<td>PS009</td>
<td>Ethnographic study: enhancing the safety of surgical care</td>
</tr>
<tr>
<td>PS010</td>
<td>Ethnographic study: enhancing safety in A&amp;E care</td>
</tr>
<tr>
<td>PS011</td>
<td>Evaluation of the implementation of the Alert issued by the NPSA on the storage and handling of concentrated potassium chloride solution</td>
</tr>
<tr>
<td>PS012</td>
<td>Ethnographic study: identifying and reducing errors in the operating theatre</td>
</tr>
<tr>
<td>PS014</td>
<td>Summary of findings from root cause analysis of 36 adverse events and near misses in obstetrics</td>
</tr>
<tr>
<td>PS028</td>
<td>Reporting systems: a scoping study of methods of providing feedback within an organisation</td>
</tr>
<tr>
<td>PS044</td>
<td>Evaluation of patient safety alert on correct site surgery</td>
</tr>
<tr>
<td>PS046</td>
<td>A multi-method study of the uptake of advice and guidelines to the NHS from the Safety Alert Broadcast System</td>
</tr>
<tr>
<td>NPSA001</td>
<td>An exploration of bedside checking processes for inpatients in the acute care setting</td>
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</table>

This grouping contains the four ethnographic studies commissioned under the PSRP. Three focus on the social organisation of the operating theatre (PS008, PS009, PS012), and its relationship to other departments within the wider organisational environment (PS008, PS012). These studies examine the nature of error and identify predisposing sources and factors involved in adverse events in surgery. PS008 identified the negative impact of inter-departmental delays on the provision of
surgical care through changes to the order of the operating list, and degraded communication leading to omissions from normal safety routines and checks. This study also articulates the differing norms, values and attitudes to safety that characterise different professional groups, highlighting doctors’ propensity to view errors as inevitable, and not amenable to prevention. Given the deep-rooted differences between the perceptions of each professional group and their differing views of clinical practice, these authors emphasise that a shared or universal view of safe clinical practice may be an unrealistic goal. PS009 looked at individual and team processes and performance in surgery and, in keeping with PS008, found that delays and changes to case-lists occurred in over 70% of cases. This project also found that surgical teams were frequently subject to distraction and interruption during their work due to factors extrinsic to the case, such as beepers, phone calls and external staff entering the theatre. Project PS012 found that minor failures in operating theatres were common, tolerated and almost never reported, and that adverse events in surgery were likely to be associated with the accumulation of a number of these minor recurring failures. The commonality of routine distraction in surgery is reiterated by the finding in PS012 that distractions were the most numerous failure observed in orthopaedic operations. This study found that none of the error events observed during the research were reported as an incident, and noted organisational weaknesses in the monitoring, and managing of error, such as failure to address the problems that did get reported. The last of the ethnographic projects, PS010, focuses on Accident and Emergency and presents exploratory work on a range of topics. One study found the information given in A&E incident reports to have limitations that weakened the use of these data for learning and improvement, and that interruption of the Nurse in Charge was a common occurrence with impacts on the quality of communication that had possible patient safety implications.

Also included under this thematic grouping are three projects that evaluated the impact, uptake and dissemination of patient safety alerts, guidelines and directives within healthcare organisations. These projects examine the reception and filtering down of patient safety directives through the organisational structure and consider the impediments to, and extent of, implementation. PS011, which evaluated the NPSA alert on potassium chloride and other strong potassium solutions found a high overall compliance with the terms of the alert. Importantly however, this study identified a number of routes by which it is likely that ampoules of concentrated potassium chloride may gradually return to unauthorised clinical areas. The authors recommend a formal requirement for ongoing audit of the storage and use of potassium chloride concentrate. PS044, which evaluated the NPSA correct site surgery alert issued in 2005 found an increase in marking practice, but that some of the other requirements and checks stipulated by the CSS Alert were less likely to have been implemented. All three of the ‘patient safety alert’ projects reflected on the dissemination and communication of alerts; PS011 highlights the difficulty of communicating alerts to all staff, particularly across large and sprawling organisations, while PS044 found that the use of multiple channels resulted in well informed staff and more effective dissemination. Particularly important to the issue of dissemination is the finding by PS046 that a lack of IT literacy and IT access within certain domains of the healthcare system means that electronic dissemination does
not reach all levels of the organisation. PS046 studied twelve SABS-originated alerts finding that the successful implementation of alerts (i.e. leading to change in practice) depended on the alert being taken forward by someone with the interest and authority to enact the changes required in the organisation; and on discussion with individual frontline staff regarding the changes of behaviour required. Finally this study highlights that clear evidence of successful implementation is required before Trusts or Strategic Health Authorities can declare that the action required by an alert has been completed.

The remaining three projects in the ‘organisations’ grouping cover a range of topics; PS014 analysed the root causes of 37 adverse events and near misses in obstetrics, and identified way the culture and hierarchical structure of the labour ward perpetuated unsafe practice such as inexperienced staff attending complicated cases, failures to seek help, and failure for guidance and support to be given by senior staff when needed. Despite a Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI) in 1997 which identified the same issues, the use of unsupervised and unsupported senior house officers in a first on call position for obstetric complications continued, resulting in delays in taking action, and failure to provide adequate resuscitation for asphyxiated infants. This project further identified a lack of knowledge underpinning practice, including staff’s failure to identify obstructed labour and the inappropriate use of Syntocinon. The report emphasises the need for ongoing and ‘refresher’ training in cardiotocograph (CTG) interpretation and the management of shoulder dystocia.

Project PS028 examined mechanisms for providing useful feedback from incident reporting systems in the NHS. The project found that risk reporting and feedback systems were highly variable in terms of coverage and feedback, and that immediate feedback or acknowledgement to the reporting party occurred in only a third of Trusts. Dissemination of risk awareness information on current system vulnerabilities was practiced in all Trusts and feedback of improvements made to work systems occurred in two thirds of Trusts, although 25% were found to have no system in place for monitoring the impact of these system changes.

Finally, project NPSA001 examined the processes of bedside checking within the organisational and social context of acute care, noting considerable variation in wristband use and checking practice. In keeping with a number of the other studies, it found the healthcare environment to be busy, complex and prone to distraction, and that tasks/checks recognised as vital to safe practice were not protected from intrusion and interruption. Handovers and transfers of patients were identified as situations in which an increased emphasis on identity checking would be beneficial, and the authors encourage the more active involvement of patients.

This group of studies emphasise the complexity and dynamism of healthcare organisations, and the multi-faceted origins of risk and error. Some of these studies reveal that safety-threatening configurations often originate in the culture, norms and ‘normal functioning’ of parts of the healthcare organisation (PS008, PS014). Changing these elements will be neither simple nor straightforward, but ‘solutions’ that fail to take these nuances into account are likely to be limited in efficacy.
A number of the studies in this grouping suggest that communication could be improved; failings in communication in surgery are reported (PS008, PS009), and these appear particularly problematic in obstetrics where senior clinicians were not attendance, or staff fail to ask for or be given help, leading to safety incidents (PS014). Direct communication with healthcare staff, either prior to the introduction of a safety alert, or following the report of an incident, is identified as key to the successful and ongoing uptake of such safety initiatives. Likewise, given the ubiquity and frequency of distraction and interruption in healthcare work, attention should be given to how these can be managed.

For improvements and solutions to have any chance of success, practice at the ‘sharp-end’ and ‘frontline’ organisational context needs to be understood. Technology/interventions must be diffused across the workforce in order for them to be successfully adopted and change practice and outcomes. Alerts were particularly useful and altered practice, even when individuals questioned the evidence on which they were made. However, a number of these studies emphasise the need for much greater dedication of resources to monitoring the implementation of patient safety initiatives and safety-inspired changes within the healthcare system (PS011, PS012, PS028, PS046).
‘Technology’

Our final thematic grouping clusters the projects that examined multiple technologies and systems for engendering safety improvement. Technology was often seen as a source of improvement and risk-reduction.

<table>
<thead>
<tr>
<th>PS005</th>
<th>PS018</th>
<th>PS019</th>
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<tbody>
<tr>
<td>Patient safety and clinical information systems</td>
<td>A prospective hazard and improvement analysis of medication error in a UK secondary care setting</td>
<td>Safer, faster, better? Evaluating electronic prescribing</td>
</tr>
<tr>
<td>PS020</td>
<td>PS022</td>
<td>PS026</td>
</tr>
<tr>
<td>Development of capacity and evaluations of information technology solutions</td>
<td>Reuse of Single Use Medical Devices (SUDs). National survey of current practice and in-depth qualitative study to establish practitioner’s rationale for re-use</td>
<td>The COSMIC study – cooperative 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>
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<tr>
<td>PS038</td>
<td></td>
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<tr>
<td>Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors (Phase 1)</td>
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A number of the projects in this grouping identify and evaluate IT solutions to address medication error (PS005, PS018, PS19, PS20, PS26). These projects explore the role of clinical information systems in reducing error and quantitatively evaluate the effect and impact of electronic prescribing systems, and electronic patient records on the prevalence of medication errors. The projects focusing on medication error and its possible solutions and interventions also dedicate considerable resources to the development of methods for the measurement of error and evaluation of IT solutions.
PS005 focuses on clinical information systems as a means of improving information management and thereby improving patient safety. PS018 presents a primary economic study that identifies cost effective interventions aimed at reducing the impact of medication errors. Focusing on three interventions (electronic prescribing, extra pharmacists and bar coding) the analysis finds that the use of computerised physician order entry-systems (CPOE) and the provision of extra ward pharmacists have greater potential to reduce medication errors than the use of bar-coding systems. The impact of both CPOE and extra ward pharmacists was found to reduce the annual preventable adverse drug events (ADEs) in a 400-bed hospital from an average 450 yearly in the absence of any interventions, down to 300 per annum. The study estimated further that with the use of either of these interventions, the cost of health lost to preventable ADEs would fall to approx £14 million, from a base level of £20 million.

PS019 developed and tested ways to evaluate the impact of hospital electronic prescribing (EP) systems on patient safety and found that prospective and retrospective methods of detecting prescribing errors usually detected different errors. Piloting a prospective and a retrospective evaluation of two electronic prescribing systems, the research found that electronic prescribing could help to avoid 2 to 3 of the ten errors made for every 100 prescriptions written in hospital. The study also noted however that the safety improvements resulting from electronic prescribing were accompanied by significant increases in the time spent by staff on medication related activities. PS020 examined the impact of electronic patient record (EPR) systems on prescribing error and identified that more prescribing errors were made at the time of admission to hospital than at any other time. This study further emphasised the limitations of the patient’s medical record as a source of data. Both PS019 and PS020 make the important point that the introduction and use of IT systems to avoid certain errors may in fact generate alternative and new errors; an assumption that the electronic system has undertaken tasks such as allergy checking, when in fact it has not, was raised as one particular example. PS020 suggested however that clinicians were hesitant to over rely on technology and in fact regarded human beings (pharmacists), rather than electronic systems, as the best defence against error. The final medication error study (PS026) identified interventions that aimed to reduce dose calculation errors in a particularly at-risk patient population: infants and children. The study found a range of interventions to have been implemented in paediatric settings; however, the key finding from this study is the lack of audit, quality and performance data that would allow the effectiveness in practice of these interventions to be assessed. Users of interventions were found to hold broadly positive opinions about them, although most had no evidence to confirm whether or not the introduction of the intervention had reduced dose calculation errors in children. Hospitals were unable to provide data to confirm the efficacy or safety of the interventions used to reduce dosage errors.

PS038 presents the development and implementation of a non-Luer spinal connector for the intrathecal administration of drugs as an engineered solution to the misadministration of drugs to the spinal canal. The research found that clinicians would be happy to use a non-Luer device but not in the form of the prototypes used.
in the study. Although the prototype connectors were considered to be unsuitable for introduction into routine use, this study provides guidance for implementing new devices into a healthcare setting, stressing the fundamental importance of involving, and providing extensive training, for those who will be using the device.

The final project under the ‘technology’ grouping is PS022, which explored the re-use of single use medical devices (SUDs) in the English NHS. The research found confusion regarding the definition of single use, and that devices intended for a single episode of patient use, and those to be used for a single patient were not effectively distinguished; further, device labelling was found to be inconsistent or contradictory. An important finding from this study was that some SUDs were not felt to be fit for purpose, and to pose the risk of iatrogenic injury due to the perceived lower quality and performance of the materials used to make them. Practitioners therefore used reusable devices that were felt to perform better despite the increased risk of cross infection.

These studies suggest a positive role for information technology in the reduction and prevention of medication related errors. However, the lack of data relating to the performance and efficacy of IT based interventions and solutions is extremely important, particularly given the cost and complexity of introducing such systems. The studies emphasise that new errors or the risk of error can result from the introduction of technological interventions and solutions such as IT systems and specific devices. For example, single use devices designed to prevent the risk of infection and contamination at times posed risk of iatrogenic injury, and e-prescribing systems could potentially introduce new possibilities for error despite bypassing others. Therefore interventions and solutions are not fail-safe means of improving patient safety: they may reduce error, but they also introduce new risks that are not always immediately obvious.

A number of the studies in this thematic grouping emphasise the human systems and other technologies into which proposed technological solutions must mesh, highlighting that user acceptability and involvement are fundamental to technologies being accepted and successfully utilised in clinical practice. The implementation and introduction of technologies and systems into the complex environment of healthcare requires that the socio-cultural organisation and context be understood and that the users be actively involved from as early as possible in the process.

Technologies and interventions are used by humans, and humans are fallible. This suggests therefore that more work is needed to examine the adoption, integration and diffusion of technologies, in addition to organisational learning and training, in order that patient safety further embedded in the culture and practice of healthcare. The PSRP provides an important starting point for this vital further research.

A number of projects in the corpus reflect on the limitations of certain categories of data, with paper based records and older electronic records found to pose particular difficulties. Due to changes in IT systems and software, certain records could not be accessed or used at all. The information recorded in number of potential data sources, such as electronic records, incident reports or negligence claims, was found
to vary widely in comprehensiveness and detail. A number of authors suggest that the additional uses of electronic records, or negligence claims (among others) as audit and research tools should be facilitated by the collection of common and comprehensive categories of information, to make them more useful for future research.

**iv) Literature reviews and outliers**

Finally there were two literature reviews and two outlying projects that did not fit overtly into the above categories.

PS006 evaluated the potential usefulness of claims for clinical negligence as a source of data to improve patient safety. Using these data the research found that the commonest error in both primary and secondary care was failure or delay in diagnosis, while the unsatisfactory performance of a procedure was a common error in secondary care. Authors found however that the quality of data in clinical negligence litigation cases was variable, and that they form a small and unrepresentative sample of adverse healthcare outcomes. Consequently they recommend that alternative methods for the study of adverse events have fewer limitations and offer better understanding of incidents than claims review.

PS023 sought to monitor the incidence of neonatal encephalopathy (disordered brain function in infants). The research found no universally accepted definition for neonatal encephalopathy, meaning that measurements of the frequency of the condition and investigation of its epidemiology were difficult. The research team put in place a consensus process to develop a universal definition on which future surveillance and research will be based. This project also found that there had been no change in the stillbirth rate from the mid-1990’s onwards. PS023 may be helpfully considered alongside PS014. It is noteworthy that these projects both identify a lack of change in relation to aspects of maternal and neonatal safety/health issues. PS014 finds the same error inducing cultural and hierarchical structures within the labour ward as were identified in a CESDI in 1997; while PS023 finds the rate of neonatal encephalopathy and stillbirth also unchanged since the 1990s.
The Impact of PSRP

As well as reviewing the content and contribution of the PSRP works, a further objective was to establish the impact of the portfolio in terms of engaging with wider stakeholders, including academics, policy-makers and the public, and to examine whether this had led to any tangible service change and improvement.

There are occasional anecdotal indications in some of the research reports that the process of conducting the research itself has had a positive local impact. For example, during research study PS010 the use of a barrier analysis tool is thought to have led to safety improvements regarding medication admission by empowering the clinical staff to make changes to their working practice. Further, the simulated training, which formed part of the research design of report number PS007, had a long-term impact on the knowledge, skill and performance of labour ward staff. The NPSA has identified the impacts and action taken as a result of each PSRP research project.\(^6\)

i) Academic citation and output mapping exercise

The academic impact of the PSRP corpus of research was assessed by undertaking a citation and output mapping exercise. The associated outputs (publications and presentations) from each published research report were collated and the citations of the published PSRP research reports in secondary publications tracked. The citation tracking exercise was primarily undertaken by an online search for the project title and the primary investigator and/or lead author’s name in PubMed, Web of Knowledge (WoK) and Google Scholar.

The output mapping exercise, in addition to the online searches, also utilised the ‘related publications’ section of the online database of PSRP projects, in to which the primary investigator could list outputs related or relevant to each original research project, including publications, conference presentations and media stories. This ‘related publications’ section had been completed for 17 of the 27 published PSRP projects. Where this information was available, the listed publications and outputs were collected and added to the database of outputs. Further publications were identified during the telephone interviews with the principal investigators, which on a number of occasions led to more comprehensive lists of outputs being provided to the PS050 research team. The use of the PSRP database and direct discussion with principal investigators had the advantage of locating articles ‘in press’ which would not have been picked up in the database searches. However there were limitations to this search strategy, which are discussed further below.

Following the online searches and the collection of information from the PSRP database the number of outputs and citations in secondary publications were listed per published PSRP project, and further the outputs for each PSRP report were

\(^6\) See Appendix 6.

\(^7\) Available at [http://www.haps.bham.ac.uk/publichealth/psrp/commissioned.shtml](http://www.haps.bham.ac.uk/publichealth/psrp/commissioned.shtml)
divided into ‘publications’ and ‘presentations’. Publications were designated ‘outputs’ where one or more of the author’s names were the same as the authors listed on the PSRP research report. ‘Secondary publications’ are those found to cite a PSRP project where the authors are not those listed on the original PSRP research report.
Figure 1 - Located outputs and citations per PSRP project

Outputs / citations

PSRP project code (published projects only)

- Publications
- Presentations
- Publications found to cite PSRP project
The majority of the citation and output mapping data was collected during November and December 2008. The following observations can be made:

**Outputs:**

- Of the 27 published PSRP projects for which the citation and output mapping exercise was undertaken, 19 were found to have associated published outputs. In the majority these were journal articles, although several book chapters and other publications were also located;
- Presentations were a popular means by which these projects were disseminated, with 11 projects listing presentations in the ‘related publications’ section of the PSRP online database;
- PSRP projects were found to have been presented at nationally organised feedback events and at international conferences;
- Five of the published PSRP projects were however found to have no outputs (neither publications nor presentations);
- The majority of published outputs were publications in academic journals, although there were examples of outputs specifically designed for practitioners [PS028 & PS045];
- *Quality and Safety in Healthcare* was found to be a dominant publication in which output publications were published.

**Citations:**

- Of the 27 published PSRP projects for which the citation and output mapping exercise was undertaken, 14 were found to have been cited in secondary publications;
- The most frequently cited PSRP project was PS004, with citations in 12 secondary publications. Projects PS001 and PS002 followed, having been cited in 7 and 8 secondary publications respectively;
- However, using this strategy, 13 PSRP projects were not found to have been cited in any secondary publications;
- It may be noteworthy that at the time of the search, none of the ethnographic studies PS008, PS009, PS010 and PS012 were found to have been cited in secondary publications;
- The PSRP projects were found to have been cited in UK, European and International journal publications;
- The publications in which the PSRP projects were found to have been cited were in the vast majority academic journal articles, although several book chapters were found to have referenced PSRP projects;
• Reference to one PSRP project [PS007] was found in a Guideline document produced by a professional college, and another in a Confidential Enquiry [PS023]. Reference to one PSRP project [PS001] was found in a university-published health policy guidance document;

• Quality and Safety in Healthcare was found to be the source of many of the secondary publications which cited PSRP projects.

There are limitations to this search strategy. The inclusivity of the publication/presentation outputs listed on the PSRP online database are dependent on the principal investigators / research team’s willingness to upload these data; consequently, their comprehensiveness may be lacking. Further, 10 of the published PSRP projects had no information listed in the ‘related publications’ section of the online database.

The search strategy may overestimate outputs due to the fact that the relevance and relatedness of the self-declared outputs listed on the ‘related publications’ section of the PSRP database to the original PRSP project is dependent on the interpretation of the authors. For example, one project team specified that the outputs listed on the PSRP database were ones which presented data generated during the PSRP project; however another project team listed a number of publications produced by the research institution in which they were based, where the immediate relatedness to the PSRP project is less clear.

As we have already noted, the online search strategy will only locate published outputs with an online presence. Publications ‘in press’ will not be found. Lastly, our strategy may have missed some outputs where the output publication itself does not formally reference the original PSRP research project by title, but nevertheless presents data or findings originating from the PSRP research project.

ii) PSRP in the Media

The popular media is the most common means of communicating research findings to a wider audience, and targets two distinct audiences: the general media consuming public and health care professionals. Both will be covered by the mainstream press, broadcasting and internet outlets, while the latter are more likely to read the professional press.

Assessments of the coverage of any particular story in the media, be it professional or general, have much wider errors of margin than are studies published in academic journals. The sources are not as well referenced; there is a far higher incidence of opinion and comment, and of factual errors. Consequently, the following results should be considered with care and not seen as reliable as the academic citation search. Nevertheless, the findings presented here do provide a reasonable indication of the coverage of the PSRP research projects in the popular and professional press.

There are four main elements to the review.
1) A search of the popular media for references to the PSRP projects.

2) A search of a small subset of the most common professional publications.

3) A search of University press release archives for reference to the PSRP projects.


The main focus of the search was on news cuttings and hence the Nexis database. The database is far more comprehensive and, in general, the vast majority of news stories broadcast on any of the main news channels are also reported in the UK national or local press.

1) Popular media search

The BBC Website contains references to the majority of BBC TV and Radio programmes with varied amounts of detail about their content. For example, the website of the Today Programme on BBC Radio 4 carries a synopsis of every programme broadcast since 2003. There are similar records for many of the other news sequence programmes plus features and documentaries such as “Trust me I’m a Doctor” and “Horizon”. It was considered that the range and breadth of the BBC website would provide a means of obtaining a crude snapshot of the coverage of PSRP by the BBC. The ITN website proved to be less comprehensive but it was considered as a useful source. The Sky website was found to be similar but its search engine proved less sophisticated, producing thousands of hits more or less regardless of the search terms used. It should be emphasised that the use of the BBC, ITN and Sky News websites as sources was done in the full knowledge that these are neither comprehensive nor necessarily totally reliable sources. Web sites are not maintained as authoritative databases. They are, though, able to provide a crude measure of interest in any particular story and give some idea of the breadth of coverage.

The full title of the project was entered as the first search term. The same strategy of reducing the number of search terms was then followed including searching on the principal investigator’s name plus co-authors. As before, any articles that were returned as hits were checked manually to see if they could be directly linked to the PSRP. A small sample of searches were conducted on the ITV and Sky websites to see if they provided different results from the BBC website. In no cases did they do so.

No news stories were found that were directly linked to the PSRP portfolio. However, some topics produced a number of non-specific hits. Using the examples “electronic prescribing” produced 6 hits, and “medication errors” 4 hits on the BBC website. We have been informed that the PSRP has been mentioned on the Today programme on BBC Radio 4 (Lilford, personal communication 2009). However, it has not been possible to locate this by searching the BBC Website, despite its archive of Today programme listings.
2) Professional Press Search

There is no equivalent to the Nexis database for the wide range of professional publications relevant to healthcare professionals in the UK. Producing a comprehensive list of relevant publications and gaining access to their archives was prohibitively time consuming. A pragmatic decision was made to use the available archives for four widely read publications; the news section of the British Medical Journal; the news section of The Lancet; The Nursing Times and Health Services Journal.

No stories have been identified in the news, comment and opinion sections of The Lancet and BMJ or the Nursing Times or Health Services Journal that can be directly attributed to the PSRP. However, the question of coverage in the professional press is complex. The diversity of professional publications and the lack of a central archive means that making a realistic assessment of their coverage of PSRP research would require significantly more work than is possible within the constraints of this project.

3) University Press Release Archive Search.

The press release archive of the principal investigator’s University was searched via the publicly accessible databases presented on their websites. The aim here was to attempt to discover whether any institutions hosting the PSRP research projects had produced press releases relating to the research.

The websites of the Universities of York, Newcastle, Nottingham, Manchester, Imperial College London, Salford, Dundee, Bristol and UCL (covering 21 of the PSRP research projects) were searched. This resulted in one hit: PS024, the Pincer trial with principal investigator Professor Tony Avery. The University of Nottingham had produced a press release regarding this study, but it has not led to an identifiable story in the popular media. During his interview, Professor Aneez Esmail reported that his institution, Manchester University, put out a press release that led to the story in the Times (see Appendix 2). However, it has not been possible to locate that press release.


A search was conducted via the Nexis database on a small subset of key words common to much of the reporting of patient safety issues. This was to produce a brief, pragmatic, review of the type of story published in the popular media with reference to patient safety. It was not intended to be a detailed or comprehensive review but to provide a comparator for the coverage provided to the PSRP studies.

The aim of the search was to identify news items that could be directly linked to specific PSRP projects. In all cases the final decision as to whether the story was so linked was by reading the story looking for specific references to the project, the
institution in which the research was carried out and the principal investigators or co-authors. The first stage of the search was to enter the entire project title into the Nexis search engine. The next stage was to select key words from the titles and perform searches on them, reducing the number of keywords until hits were returned. If a small number of hits, fifty or below, were returned then the titles of the hits were scanned manually to see if any could be related to the PSRP projects. If not then “No Hits” was recorded. If a large number of hits were returned, fifty or greater, then secondary searches were performed on this subset. The first of these secondary searches was on the name of the principal investigator, followed, separately, by the names of the co-authors. This produced one of two outcomes. The most common was that no further reduction in hits was produced and so “No Hits” was recorded. The second was that the number of hits was reduced and were checked manually as before. Details of any hits were recorded with the headline of the news item plus the publishing newspaper and date of publication.

Only one news story was found that was directly linked to a PSRP project. This was published in The Times on May 21 2003 and referenced PS006. The main thrust of the story was the introduction of “aviation-style near-miss reports for family doctors”. It then went on to detail some of the results of PS006, including a number of quotes from the principal investigator, Professor Aneez Esmail (see Appendix 2).

As an additional check, all the databases described above were searched for the terms “PSRP” and “Patient Safety Research Portfolio”. The only hit returned was in the tenders section of the Health Service Journal (http://www.hsj.co.uk/tenders/2008/05/ps_050_synthesis_of_the_outputs_from_research_commissioned_under_the_patient_safety_research_portfolio.html). This was a call to tender for project PS050, the result of which is this narrative report.

The search of the Nexis database did show that some of the issues studied in the PSRP were featured at some length in UK Newspapers. For example the term “electronic prescribing”, the focus of PS019, returned 65 hits (see Appendix 3) and “medication errors”, the work of PS018 and PS020, produced 149 hits (see Appendix 4). In each case it was not possible to ascribe any story to a specific PSRP project, although it is possible that they did have an influence. Further investigation, beyond the scope of this project is required to determine what, if any, relationship there was between PSRP projects and the more general reporting of patient safety issues.

It should also be noted that a small number of the principal investigators appear in the popular media talking about many different aspects of patient safety. Professor Aneez Esmail of Manchester University and Professor Charles Vincent of Imperial College London are the most prolific.

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8 It is probable that one or more stories with their origins in the PSRP have been missed, most probably due to the fact that journalistic stories evolve away from their origins rather quickly and do not leave an easily identifiable audit trail of sources.
Patient safety issues feature regularly in the news media. By far the most common type of reporting is when a serious or fatal incident occurs. The brief, pragmatic review of patient safety in the popular media conducted for this report produced three broad categories of news story. The first is references either to specific cases such as the case of Wayne Jowett who died after vincristine was injected into his spine, or Tony Clowes who died after an anaesthetic tube became blocked. The source for this type of story is typically an official announcement from the hospital or Trust in which the incident occurred.

The second are references to calls from various sources to improve patient safety, including from MPs, individuals affected by specific cases or patient bodies. The source for these stories is normally the individual or organisation making the call. The third type of reference is to plans designed to improve patient safety such as the recent announcement that surgeons are to be required to use checklists in NHS hospitals (Appendix 5). The source for this type of story is normally the NHS or, since its inception, the National Patient Safety Agency. Moreover, these issues were often combined so that a story reflecting the new checklist would refer back to a previous serious incident or to more generic statistics on medical errors and accidents.

The broad groupings described here provide a useful framework for the following discussion of the profile of PSRP research in the media. They are however, a relatively crude analysis. A more refined catalogue of story types and sources would yield a greater understanding of how these stories appear in the media and evolve. However, that is beyond the scope of the current report.

It is useful at this point to discuss briefly the job of a science and health journalist and the way in which news is reported and stories developed. This comes from the personal experience of Dr Toby Murcott, science and health journalist for 15 years including a spell as the Science Correspondent for BBC World Service.

There are a number of pressures on a journalist that restrict the way they can report stories and the number and type of sources they use. The first restriction is simply time. A newspaper news journalist may have to file anything up to ten stories in a day, the majority of which may be rejected. A specialist health journalist would not necessarily be required to file as many stories per day, but would still be expected to cover non-specialist shifts and provide a steady stream of stories. It takes longer to produce radio and TV pieces, so a broadcast journalist would typically offer one or two stories a day but may well be required to produce different versions for different news programmes, ranging from short, 30 second pieces for bulletins to 5 minute features for news sequence programmes.

The need to produce stories severely limits the amount of time a journalist can spend digging up sources. The vast majority of stories in all forms of news media in the UK come from press releases or direct communication with the journalist; very few are produced by the journalist themselves uncovering stories by checking sources and contacts. The journalist will be on the pre-embargo press release list for all the major journals such as The Lancet, the British Medical Journal, the New England Journal of Medicine, and Journal of the American Medical Association. Likewise the journalist will also receive press releases from many government bodies.
such as the Department of Health, the NHS, the NPSA, and a myriad of health based charities, individual Trusts, hospitals and private health organisations. They will receive press releases from pro-active research institutions and may well pick up digests from central portals such as Alphagalileo (www.alphagalileo.org) or Eurekalert (www.eurekalert.org). In addition the journalist will cultivate contacts who may get in touch with tips on particular stories.

The final significant source of stories is other media outlets. A news room will take all the papers every day, will monitor local and national news broadcasts and will also have access to the news agencies such as Reuters or Associated Press (the news wires). They will also take some professional press. However, this is very dependent on budget and would normally be restricted to a few publications such as the Nursing Times.

It is a significant challenge to sift through all of this information and takes a considerable amount of time and skill. One of the consequences of this is that unless a story is actively presented to a journalist via a press release or direct contact, it is unlikely to feature on their radar. In particular, research that is published in journals that do not produce press releases is very unlikely to be picked up by the popular media. This sometimes comes as a surprise to researchers who are used to checking a large number of research journals on a weekly basis and may expect journalists to do the same.

The next constraint on a news journalist is the competition for time, in the broadcast media, or column inches in the press. These are finite and any specialist journalist will be competing with all the other journalists for space. To succeed they will have to produce a suitable number of published stories that catch the Editor’s attention. One of the key elements in this is familiarity. If a story is already known, and can be shown to have moved on significantly, then that can increase its general coverage.

A story has a number of elements, more or less rigidly defined depending on the outlet and whether it is considered a straight news report or a feature. A news story will need to be new, or a new angle on a current story. It will address the “six W’s” – who, why, what, where, when and how. It will probably be written with some context but that may not survive the final edit, be it subbed down for a short news item, or cut down for a quick broadcast bulletin. It can help a story if some context is either easily available or already known to a journalist. This is the main reason why so many stories on patient safety refer to a small number of previous serious incidents. They are known, are easily found within the cuttings databases and are already in an easily understandable form. The journalist can find sufficient context to support the story without too much effort, leaving more time to go on to other stories.

A key resource for every journalist is their contact book, full of experts able to comment on and help provide background for news stories. One of the first instincts of a journalist is to reach for the phone to talk to someone who can help them decide on the significance, veracity and relevance of a story. It can often be that discussion that makes the difference between the story being reported or not. An expert in the field is able to point out other relevant information and to put it in
context. Good contacts are invaluable and a comprehensive contact book is probably a journalist’s most precious resource. It is no coincidence that Professor Charles Vincent and Professor Aneez Esmail are regularly cited by the media in stories regarding patient safety. They are good contacts, reliable, clear, easy to get hold of and authoritative.

It is also important to consider briefly possible justifications for disseminating the results of the PSRP through the popular media. The first is that the majority of patient safety stories in the press are of incidents in which patients are harmed. The aim of the PSRP is to produce research aimed at reducing that harm. The vast majority of the general public do not follow the patient safety literature and obtain their information via the popular media. Therefore it can be argued that successes in research aimed at improving patient safety should be disseminated via the same outlets wherever possible. Another potentially compelling reason for dissemination via the popular media is that it may reach a significant percentage of the professional audience. While it might be hoped that all professionals involved in patient safety would follow the relevant publications and advisory notes, it is perfectly possible that pressures of time mean that they might miss an important piece of research or announcement. Attempting to reach them via the popular media is not reliable but it can be argued that it can help reinforce the results of relevant research within this crucial target audience.

The lack of news reports found concerning PSRP projects strongly suggests that the vast majority of the research undertaken in this programme has not been reported in the popular media. Furthermore the lack of press releases issued by the research hosting institutions suggests that there has been little effort on the part of the researchers or their institutions to promulgate their results through the popular media. This is supported by the telephone interviews conducted with the principal investigators in which none had made any effort to disseminate their results through the popular media.

One of the potential hurdles to wide coverage of the PSRP research is the lack of media awareness to date. A steady stream of press releases would have made journalists aware of the individual projects, and PSRP as a whole. This may have resulted in some coverage. It is important for a specialist journalist to know, or appear to know, what is going on in their particular field. If he or she has seen press releases regarding the PSRP over a period of time, they will know the background of the project and be in a better position to discuss it with their Editor. Secondly it allows the journalist to discover new contacts and develop a relationship with them before the larger project requires publicity. By highlighting the research, the press release will also highlight the expertise of the researchers undertaking the study. It could be that a journalist might need a comment on another story in the same area and turns to one of the contacts on the PSRP related press release for comment.

The potential benefits of a larger scale press campaign are subtle and hard to quantify. However, the arguments for disseminating the results of the PSRP in the popular media are clear. It has the potential to extend the reach to professionals who might be involved in implementing best practice, and to demonstrate to the
general public the complexity of the issues involved in improving patient safety. A strategy for engaging with the media is outlined in Appendix 7.
Conclusion

This report documents a narrative and synthesis of the outputs of the Patient Safety Research Portfolio’s corpus of funded research, and makes an assessment of its impact on the research community, policy-makers and wider public.

The PSRP was a unique programme of investment into patient safety research, bringing together skills, resources and disciplines to address chronic challenges to the healthcare system. Its focus has been methodologically, theoretically and empirically varied; however, lessons can be learnt and put into practice to ensure the improvement of patient’s safety experience. In this way, the lasting legacy of the PSRP will be its ability to act as a foundation, upon which future research on patient safety will be built.

The learning points and recommendations presented below have been generated empirically, based on the significant findings of the synthesis and narrative review. They have also been discussed with participants at the PSRP research symposium held in February 2009.

Outstanding areas of research

The PSRP has made a substantial and important contribution to the study of patient safety within the UK, although there are inevitably outstanding areas for future research. A number of studies have addressed safety in primary care (PS003, PS027), but there remains scope for further work in primary and community care, including investigations of the newer models of service delivery. This might include ambulance services, NHS Direct and Walk-in Centres, safety in intermediate and long term care facilities, and safety in community nursing and midwifery. There is also a need for such work to focus on the connections between sectors and services, and the transfer of information, resources and patients.

The PSRP have acknowledged that one gap in their corpus of commissioned research is mental health; however, this is an established body of research in the area of risk and safety in mental health services, which is often located within other disciplinary fields such as criminology. Nevertheless there remains scope for further research in this area that comes from a “patient safety” rather than a “community safety” direction.

Other areas that are less apparent in the PSRP funded studies include particular ‘grey areas’ in our understanding of diagnostic safety and more generally the processes of clinical decision-making and their impact upon safety. Although checklists and protocols clearly relate to these activities, on which there are PSRP studies (PS044), more research in these areas would help better understanding of the dynamics of clinical decision-making and the relative contributions of service innovations, such as guidelines or checklists. More widely, there has been comparatively little research that examines the wider institutional and organisational contexts of safety. These include political priorities, performance management and regulatory systems,
commissioning arrangements, and board level decision-making. Recent research conducted under the ESRC Public Service Programme and the SDO Management theme has the potential to contribute to this area, but little attention has been given directly to the influence of these wider factors on clinical safety. In particular, there must be concern that these methods have been wrenched out of their original context in high-reliability industries and applied without reference to the degree to which their effectiveness depends on their organisational embedding. A cockpit checklist is more than just a list of checks: it is also an element in a complex socio-technical process that organises interactions between the flight crew and ground services. Checklists and protocols also depend crucially on local acts of interpretation to decide whether what is being observed does indeed match the terms on the documents. They are not self-interpreting. Without studies of the local co-ordination of work by reference to documents, we cannot determine whether these are contributing to safety or merely shifting risk around.

A complex problem

The PSRP funded corpus of research demonstrates that patient safety remains a complex problem. Whilst the prevailing human factors approach (exemplified by Reason 1997) clearly has much to offer, it could be argued that other theories of organisational complexity and safety are somewhat neglected so that the wider institutional, organisational and cultural factors that frame safety are overlooked or downplayed. This includes the role of commissioning, targets and audit, professional training and the more tacit aspects of culture. It is also apparent that the prevailing research largely follows in a (dys)functional managerial tradition of ‘measure and manage’. More critical theoretical perspectives, which consider issues of knowledge, risk, identity and power, might help to explain the underlying dynamics of patient safety and the barriers/opportunities for change. They may also sustain a more proactive approach to safety where local actors are empowered to innovate and improvise in order to achieve optimal results in their particular circumstances rather than following a “one-size fits all” approach handed down from the top. When dealing with the individual diversity of human anatomy and physiology, this is likely to be more effective.

Complex solutions

The idea of ‘systems thinking’ encourages us to consider the latent and upstream factors that shape safe clinical practice. However, despite such an apparent emphasis on ‘the system’ and ‘upstream factors’, the prevailing mass of patient safety research (be it PSRP funded or other sources) typically makes recommendations for change at the level of the individual or team, for example re-training, checklists, protocols or technical innovation. This represents something of a paradox: can we really fix systems by fixing individuals or small groups? Furthermore, until some of the PSRP commissioned research, limited attention has been given to the unintended consequences of this change and how recommendations for safer practice may introduce new risks (see PS022, PS019, PS020). The PSRP body of research suggests that, although there are indeed areas where ‘quick wins’ can be made (PS011, PS044), even these might benefit from more
detailed evaluation. It is also important to consider wider changes required to support not only the introduction of more micro level innovation, but also to address directly the wider systems that frame safety. In other words, more complex interconnected solutions might be needed.

**Incentives and disincentives: the drivers of change**

Macro level policies place great importance on the role of incentives in driving performance improvement in the NHS. However, there appears to have been comparatively little attention paid to the role of incentives and disincentives in securing patient safety. This remains a highly debated area: what are the appropriate incentives for making micro level change, as well as for more organisational level improvements through wider performance management systems. Efforts need to be made in understanding how incentives can be operationalised. Insight might be drawn from the experiences of anaesthesia and obstetrics/midwifery, which have developed systems of risk management in advance of recent changes introduced by the NPSA. Equally, there is some evidence that national and even international professional associations can play a more active role than management in defining the standards of specific clinical services and care pathways - not only setting out expectations around service quality and safety, but also providing an accreditation system, e.g. JACIE, that provides an incentive for professionals to meet and build professional recognition and reputation. Other significant steps include linking Patient Safety Training and Research to CPD points and revalidation. This might also be linked to issues in commissioning (see below).

**Commissioning for safety**

World-class commissioning of healthcare is a policy priority. To this end, significant changes can be expected, including the development of tariff systems and payment by results. In this context, many of the regulatory and audit roles currently carried out by the Healthcare Commission (and its replacement, the Care Quality Commission) are likely to be devolved to commissioners at PCT level. This presents a significant opportunity therefore to more thoroughly establish patient safety within local commissioning arrangements. One example might be taken from the USA where questions are currently being asked as to whether patient safety events that result in morbidity and mortality and remedial or extra care, should be reimbursed by direct or third-party payers. In the context of payment by results, instances of patient harm raise significant questions, for example, about how (and if) these extra costs should be factored into the economic modelling and planning, whether payment (reimbursement) should occur or whether the additional cost incurred due to the harm should rest with providers, and what implications arise for blame and organisational responsibility or, more broadly, for knowledge sharing and learning. There is real need for research to be conducted in this area before the full policy and practice implications are worked out.

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As part of this focus on the commissioning process, we need to question how far the drive for safety can be reconciled with the other incentives offered by a marketised health care system, where safety investments have to be considered in terms of opportunity cost to the organization rather than their absolute private or social benefit. Health care organisations will increasingly have to consider what level of safety is affordable within their budgets rather than what is privately or social optimal. There is, however, no guarantee that other stakeholders will not demand safety investments that consume resources that the organisation could use more efficiently and effectively elsewhere.

Reflections on the PSRP corpus

While strength can be drawn from the diversity of the PSRP corpus of work, this is also a potential weakness - from the lack of a cohesive methodological or theoretical framework with which to drive the field forward. However, the mixed methods approach utilised by the majority of PSRP studies, which often incorporated recognition of the need to include views from front-line staff, via the use of interview studies and observations, is a valuable foundation from which to conduct patient safety research.

We were somewhat surprised to find such little evidence of impact from the PSRP funded studies, whether academically or in popular news coverage. It appears that the PSRP-funded studies would have achieved a wider impact if the research commissioners had placed more emphasis on the dissemination of research findings via the popular media and trade press; publicity for the projects was left to the individual principal investigators. This is not to say that the studies have made no impact; we have reported the limited evidence we could find, and acknowledge that the NPSA will shortly release a document outlining how each study has influenced healthcare and patient safety, while some reports have influenced Select Committees (PS027) and regulators (PS022).
Recommendations

As the PSRP comes to an end, this is the time to look forward and ask what comes next. We have identified examples of the further research that is needed, but questions remain regarding how this will happen. The UK patient safety research community has been fortunate to be funded by an organised and sustained programme of investment, but this has now ceased. There must be some unease about what will happen to the community and networks that have been built. Ring-fenced, core funding for patient safety research has been quite special; its withdrawal provides a challenge regarding how to sustain a coherent future in the absence of earmarked financial support.

The community and Government recognise that patient safety and patient safety research is a priority, however, there is some level of concern that research councils have not attached similar weight to the topic. Whilst the issue of healthcare acquired infection has been recognised, wider studies of safety have not. There is now a gap in the UK’s ongoing research portfolio. It seems to be assumed that other funding streams will close this gap, but there is an absence of evidence to support this conclusion. Without dedicated funding, there is a real chance that the field will slip away, dispersing the accumulated expertise and leading to new safety threats and risks.

Areas for future research: gaps in patient safety

The following suggestions for future studies are based on our own assessment of the gaps in the PSRP corpus, suggestions taken from the reports themselves, interviews with the principal investigators and the discussions held in our symposium workshop.

1. The predominant focus of patient safety research has been on acute care, with little discussion of the safety concerns relating to primary care, mental health and the ambulance service, let alone social care. Research, and with it, patient safety theories need to expand to cover the whole patient journey and examine the many different experiences.

2. The patient’s perspective on patient safety issues could have received greater focus. Further attention needs to be given to the ‘human’ side of errors: the patient and what happens to the patient. There is some suggestion that greater integration with patients, and greater dialogue with them, is key to meeting the common goal of improving patient safety.

3. The theme of teamwork features heavily in patient safety work. Teams are not constant, but fluid groups that change according to shift/day. There is a need to examine the opportunities for creating and supporting teams that work well together quickly, building on the examples of high reliability
organisations and Formula 1 race-team (Ferrari/McLaren), and more importantly, how to train healthcare workers, and instil this into the culture of the service delivery organisation.

4. A critical gap in the PSRP corpus of work involves admission and discharge into hospital, and in particular the errors that tend to occur at this time, including prescription errors, patient transfers and the loss of patient records/histories.

5. Future research needs to focus less on ‘what we know’ in relation to safety events, and more on ‘what we do’, and as part of this, to work more explicitly alongside managers to implement safety interventions. In this way, research can make an impact on practice through diffusion (coupled by bringing practitioners into research), rather than the traditional route of dissemination (more linear and decoupled from practitioners). However, caution needs to be given to the influence of hierarchies and professional cultures on the success or otherwise of interventions.

6. Future research may return to alerts issued and interventions implemented, and examine their effectiveness over a longer period of time. Such a focus would allow for a consideration of how deviant acts (as proscribed in the alerts) become accepted over time and recognised as normal behaviour, rather than as a patient safety risk.

7. There may be some value in examining the role of accountability in relation to organisational learning: evidence suggests that cultural norms, such as interruptions, can be challenged with the enforcement of rules and sanctions.

8. There is a need to consider the cost of safety, and ask questions such as: how much should we have to pay for a ‘never event’, or what price safety? Suitable scenarios may include cost-effectiveness of hospital design, the value of single rooms, the social cost of patient safety.

9. Further investigation is needed into the facilitation, adoption, diffusion and organisational learning stemming from the interventions. Resources need to be dedicated to monitoring the implementation of patient safety initiatives over time, within the healthcare system.

10. To move the implementation of patient safety initiatives forward, safety should be seen to be a political and institutional problem. As such, there is a need to look higher up to who is doing this framing, and ask what is the agenda of framing safety as a problem?

11. Time-consuming procedural formalities have become a barrier to research within the NHS and need to be addressed as a matter of urgency.
References


Appendix 1: PSRP project titles and summaries

PS 001 Patient safety: a mapping of the research literature
Dr Amanda Sowden, University of York
This report presents a mapping exercise of the research literature on patient safety and seeks to identify the goals of patient safety research, the methodologies used in patient safety research and the kinds of results shown by the type of study used.

PS 002 Confronting errors in patient care: report focus groups
Prof Jenny Firth-Cozens, University of Newcastle
This research explores what might encourage the development of a reporting and learning culture within healthcare organisations in the event of error or inappropriate behaviour taking place. Focus groups were conducted with nurses and doctors to establish learning points that might encourage this process.

PS 003 Threats to patient safety in primary care: a review of the research into the frequency and nature of error in primary care
Prof Aneez Esmail, University of Manchester
This project aims to identify the methods used for measuring the frequency and nature of errors in primary care, to summarise the error rates in primary care, and to provide recommendations for future research. The study outlines the features, strengths and weaknesses of identified error measurement methods, and considers their applicability to a primary care setting.

PS 004 The reporting of adverse clinical incidents a) achieving high quality reporting b) International views and experience: the results of a short research study
Prof Charles Shaw, CASPE
In light of the Government’s plans to introduce the ‘new mandatory national reporting scheme for adverse healthcare events and near misses within the NHS’; this research seeks to explore clinical team members’ views on what would motivate them to report or withhold information, and to elicit what they would consider appropriate and effective in respect of reporting clinical incidents centrally. It seeks to review existing reporting systems in the UK to draw lessons for good practice and to gain evidence from abroad about the type of systems which have and have not succeeded in eliciting high response rates.

PS 005 Patient safety and clinical information systems
Prof Jeremy Wyatt, University of Dundee
This research focuses on the role of clinical information systems in reducing medical errors. The authors use a broad definition for clinical information system as ‘a paper or computer-based tool which managed patient data, medical knowledge or other...

Projects in italics are ongoing.
information to improve clinical decisions and actions’. The author includes low tech, paper-based approaches, and distinguishes them from high tech computer systems. These systems have the commonality however that they are used in the health service to capture, process or communicate data or clinical knowledge relating to patients. The purpose of the report is to support and carry out groundwork for the Department of Health research and development programme to explore the contribution of such clinical information systems to patient safety. The study aims to assist those writing the commissioning brief for the R&D programme on clinical information systems and patient safety.

PS 006 Patient safety: lessons from litigation a) the epidemiology of error: an analysis of databases of clinical negligence litigation
b) Learning from litigation: an analysis of claims for clinical negligence
c) Case studies in litigation: claims reviews in four specialities
Prof Aneez Esmail, University of Manchester
This research was undertaken to examine what could be learned from claims for clinical negligence and how such learning could be used to improve patient safety. It comprises two phases, presented over three reports:
First Phase: concerned with the epidemiology of adverse events resulting in litigation and focussed on the analysis of existing computer databases of litigation cases, examining the cases of clinical negligence and exploring the utility of litigation data in learning lessons for patient safety and improving patient care
Second phase: focused on the causation and avoidability/prevention of certain types of adverse event resulting in litigation in four key specialties, using a structured review of case series by expert reviewers
The full reports from each of the specialty reviews are presented in the third report – providing more detailed information on the findings relevant to the individual specialities.

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 (The SaFE Study – Simulation and Fire-drill Evaluation)
Ms Bryony Strachan, St. Michael’s Hospital, Bristol
The study provides an objective measure of knowledge and skills of participants undergoing obstetric emergency training, and to determine the difference between training interventions undertaken in a high fidelity setting (a simulation centre), compared to those undertaken in a low fidelity setting (hospital based/delivery suites). Further the effect of ‘teamwork training’ is assessed. The research aimed to establish whether use of a high fidelity setting improves clinical skills in obstetric emergencies, and whether the inclusion of team training in emergency drills improves clinical skills in dealing with obstetric emergencies.

PS 008 An ethnographic study of threats to patient safety in the operating theatre
Prof Stephen Harrison, University of Manchester
This research examines safety culture in the operating theatre using ethnographic methods. Ethnographic methods are used to provide detailed understanding of the individual and group values, beliefs, attitudes, and perceptions, and the patterns of
behaviour of staff involved in the work of the operating theatre, in order to examine the factors predisposing to error in the operating theatre.

PS 009 Ethnographic study: enhancing the safety of surgical care / Enhancing Safety in Surgery
Prof Charles Vincent, Clinical Safety Research Unit, Imperial College London
The research is part of a broader research programme to identify aspects of the surgical system which compromise safety, develop a theoretical framework to enhance safety and reliability in surgery and develop measures of performance evaluation for training and assessment. This project looks at individual and team processes and performance in surgery, and considers the operating theatre environment, equipment and procedures, using a variety of qualitative and quantitative research methods to investigate the interrelated factors likely to be associated with surgical outcome. The research developed an observational assessment to assess individual surgical skill performance. It also measured team performance by interview, and by observational assessment of team performance in a simulated operating theatre context. A further observational study reflected on interference in the operating theatre. Finally, the authors claim to address a lack of interdisciplinary team training in surgery by developing simulated scenarios in one UK National Health Service hospital to provide team-training sessions.

PS 010 Ethnographic study: enhancing safety in Accident & Emergency care
Prof Charles Vincent, Clinical Safety Research Unit, Imperial College London
This report presents exploratory work using a range of methods on a range of topics. The authors claim that these studies give insight into different aspects of the unique A&E environment and provide a broad basis on which to conduct future research. The research encompasses a number of studies carried on a range of topics, four of these are presented in this report: A retrospective study evaluating the incident reporting process; a retrospective case analysis of the delayed treatment of a patient with chest pain; and two ‘ethnographic’ studies, one looking at communication in nurses and one evaluating the efficiency of the triage process. The report first outlines some of the unique challenges posed by the accident and emergency setting to the researcher, and then reflects on the variety of analytical tools employed for the range of studies that follow.

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
Prof Trevor Sheldon, University of York
This research audits the extent of compliance with the requirements of the National Patient Safety Alert on potassium chloride concentrate and other strong potassium solutions, issued in July 2002. It aims to describe and assess the effectiveness of the management actions taken by Trusts in the wake of the Alert and to determine the nature of any expected or actual unintended consequences.

PS 012 Ethnographic study: identifying and reducing errors in the operating theatre
Prof Marc de Leval, Great Ormond Street Hospital for Children
The research uses three methods to provide a total systems approach to the identification and reduction of errors in operating theatres. Human factors principles are used to examine the aetiology of human error within the operating theatre, and to observe and analyse behaviours that were indicative of systemic deficiencies. Cultural attitudes to safety within the operating theatre teams were assessed using a number of questionnaires and assessment tools, and operational research techniques were used to examine the path of patients and information through the healthcare system.

**PS 014 Summary of findings from root cause analysis of 36 adverse events and near misses in obstetrics**

Brenda Ashcroft, University of Salford

This research investigates the underlying or root causes of 36 adverse events and near misses in obstetrics, which arose from cases of severe birth asphyxia in term infants. This research is developed on the foundation of a semi-structured observational study into the organisation of care which was undertaken in the same Labour Wards from which adverse events and near miss cases were identified for this research. Information from case records and CTC recordings (records of the fetal heartbeat and the uterine contractions during childbirth), supplemented by interviews with members of staff, form the data for this study.

**PS 016 Communication with patients in the context of medical error**

Prof Lesley Fallowfield, University of Sussex

This research establishes a set of principles to guide communication with patients and their families following medical error, and prioritises an agenda for a focussed research programme in the area of communication in the context of error, on the basis of a literature review of current research in the area.

**PS 018 Medication error 1: A prospective hazard and improvement analysis of medication error in a UK secondary care setting**

Dr Jon Karnon, University of Sheffield

The study aims to inform research priorities into reducing the impact of medication errors in secondary care through a prospective hazard and improvement analysis (PHIA) that identifies interventions with the greatest potential for the cost effective reduction of the impact of medication errors on costs and health outcomes from the perspective of the NHS. The potential cost-effectiveness of three interventions is analysed: computerised physician order entry systems (CPOE), additional ward pharmacists and bar coding systems at the administration stage of the medication pathway.

**PS 019 Medication error 2: Safer, Faster, Better? Evaluating electronic prescribing**

Prof Nick Barber, The School of Pharmacy

This research was designed to develop and pilot ways of evaluating, prospectively and retrospectively, the impact of hospital electronic prescribing (EP) systems on patient safety. The new ServeRX system at Charing Cross Hospital, the already established electronic prescribing system, part of the Meditech Hospital Information System (HIS) at Queens Hospital, Burton Upon Trent, were evaluated.
PS 020 Medication errors 2: Development of capacity and evaluations of information technology solutions  
Prof Judy Cantrill, University of Manchester  
The study investigates the effect on medication errors of electronic patient record (EPR) systems which have improved safety as one of their aims. The research sought to develop a method for identifying and counting prescribing errors, develop a qualitative case study methodology to inform the quantitative study, provide evidence as to whether the above methods are capable of detecting change after the introduction of an electronic patient record system and provide evidence as to the magnitude of such a change, if one is found.

PS 022 Reuse of Single Use medical Devices (SUDs). National survey of current practice and in-depth qualitative study to establish practitioners’ rationale for reuse  
Prof Robert Dingwall, University of Nottingham  
This research explores the reuse of single use medical devices (SUDs) in the context of the English NHS, specifically with an empirical focus on operating and anaesthetic departments. The research aims to establish the incidence and prevalence of the reuse of single use medical devices, in particular to inventory the types of single use devices reported as being reused, and to explore the reasoning and rationales of individuals who either reuse, or do not reuse devices.

PS 023 Monitoring the incidence of neonatal encephalopathy - what next?  
Dr Peter Brocklehurst, University of Oxford  
The project undertook to estimate recent trends in the incidence of neonatal encephalopathy in the UK. Neonatal encephalopathy is a clinically defined syndrome of impaired neurological function that is most commonly found in the ‘term’ infant (an infant born between the end of the 37th week and the end of the 42nd week of gestation). The research also sought to explore the contribution of intrapartum events (events during labour/delivery/childbirth) to the aetiology of neonatal encephalopathy, and to make recommendations about future monitoring and research. The early stages of the research revealed a lack of clarity regarding how to define neonatal encephalopathy, which prompted a shift in research objectives. Authors put in place a consensus process to define neonatal encephalopathy on the basis of which monitoring and surveillance purposes can be undertaken. Preliminary discussion is located in Appendix B of the research report, and the final parts of the consensus process are still ongoing.

PS 024 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  
Prof Tony Avery, University of Nottingham  
Ongoing

PS 025 The CHUMS study - Care Home Use of Medicines Study  
Prof Nick Barber, The School of Pharmacy  
Final Report Under Revision
PS 026 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
Dr Ian Wong, The School of Pharmacy
The research seeks to identify and analyse interventions introduced to reduce dose calculation errors in neonatal and paediatric practice, to assess their impact on patient care and evaluate their transferability across the NHS. The research used a multi-stage design to identify both published interventions and local initiatives, records of which were not available in the public domain.

PS 027 Diagnostic errors in primary care: a learning needs analysis
Dr Olga Kostoupoulou, University of Birmingham
This research uses realistic diagnostic problems to examine the role of information gathering by the general practitioner, to better understand how difficult cases are dealt with by GPs and to identify determinants of successful performance in primary care diagnosis, on the basis of which insight can be made into how to improve and support diagnosis.

PS 028 Reporting systems: a scoping study of methods of providing feedback within an organisation
Prof Louise Wallace, Coventry University
The research investigates potential mechanisms for providing feedback from incident reporting systems within the UK NHS, noting the extensive research attention to the mechanisms of reporting and driving up reporting, but far less research attention to the development of learning and system changes from the incident reporting system.

PS 029 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
Prof Sheldon Stone, Royal and Free University College Medical School
Ongoing

PS 030 Patient safety in healthcare professional educational curricula: examining the learning experience
Dr Pauline Pearson, University of Newcastle
Ongoing

PS 034 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
Prof Ian Watt, University of York
Ongoing
PS 035 Prospective hazard analysis: tailoring prospective methods to a healthcare context
Prof John Clarkson, University of Cambridge
Ongoing

PS 038 Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors - Phase 1 of 3: The potential hazards associated with the implementation of the prototype non-luer spinal connectors
Dr Rebecca Lawton, University of Leeds
The research presents the development and implementation of a new connector for the administration of drugs intrathecally (to the spinal canal), as an engineered solution to the misconnection errors (and subsequent misadministration of drugs) facilitated by standard Luer connector leads.

PS 041 The cost-effectiveness of hospital design: options to improve patient safety and well-being
Dr Peter West, University of York
Final Report Under Revision

PS 044 Evaluation of patient safety research alert on correct site surgery
Dr John Wright, Bradford Teaching Hospitals
This study evaluates the impact of the National Patient Safety Agency issued ‘Correct Site Surgery (CSS) Alert’ on marking practices amongst surgeons in England and Wales. This guidance was sent to all UK hospitals in March 2005 following an earlier study which found there to be ambiguity and uncertainty relating to routine policies for preventing wrong site surgery. The authors utilise a before and after design to examine surgical marking practices prior and subsequent to the NPSA issued guidance, and to evaluate its impact on marking practices amongst surgeons.

PS 045 Evaluation of the NPSA 3-day root cause analyses training programme
Prof Louise Wallace, Coventry University
This research evaluates the 3-day training programme run by the National Patient Safety Agency which taught NHS staff how to conduct a Root Cause Analysis (Networked RCA training). Root cause analysis is a method of investigating and learning from patient safety incidents – the method requires healthcare staff to undertake a systematic process of investigation, from factual reporting of events and timelines, analysis of contributory factors, identification of possible causal links, and system vulnerabilities, and to formulate recommendations that aim to prevent recurrence of the incident. Centrally the RCA process aims to avoid personal blame of healthcare staff and to focus on the ‘systems problems’ leading to a critical incident.

PS 046 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)
Dr Peter West, University of York
The research explored the dissemination and monitoring processes adopted by trusts and strategic health authorities in relation to a range of patient safety alerts
broadcast by the safety alert broadcast system (SABS), to determine how such directives are disseminated and acted on in trusts, to identify how the system could be improved, and to identify factors impeding alert requirements in cases of non-compliance.

**PS 048 Checking procedures for nasogastric tubes: a systematic review, decision analysis and the development of evidence based guidelines**
*Dr George Hanna at Imperial College London*
*Ongoing*

**PS 049 Phase 2&3: Prospective hazard analysis and pre-implementation evaluation of non-luer spinal connectors**
*Dr Rebecca Lawton, University of Leeds*
*Ongoing*

**NPSA 001 An exploration of bedside checking processes for in-patients in the acute care setting**
*Prof Andrew Smith, Royal Lancaster Infirmary*

The overall aim of the project was to explore bedside checking procedures for NHS inpatients in acute hospitals. Mismatch of patients and their care is a substantial source of error in healthcare, and a threat to patient safety. The failure of checks is thought to be a major contributing factor to mismatching. The report presents a multi-method exploration of bedside checking processes in acute care, including an in-depth analysis of a relatively small number of observations and interviews. This research specifically follows on from an earlier piece of research on patient-care mismatch conducted by Sunjan *et al* in 2004.
Appendix 2: Media coverage of PSRP study (via University press release)

Source: The Times (London)

Date: May 21, 2003, Wednesday

Title: GPs will own up to errors in 'near miss' log

Author: Oliver Wright Health Correspondent

Section: Home news; p4

Length: 798 words

The Government is to introduce a system of aviation-style near-miss reports for family doctors in an attempt to reduce medical errors. From next year every GP in Britain will be encouraged to report mistakes made in their diagnoses and treatment of patients to the National Patient Safety Agency. The agency was set up last year to identify "adverse incidents" in the NHS and order policy changes to try to prevent suffering by patients. Britain is the first country to introduce a reporting scheme. The decision to introduce it comes after a government study revealed that up to 2.8 million GP consultations every year result in a medical error. Researchers at Manchester University analysed 15 studies on medical errors in primary care, including unpublished work by the Medical Protection Society which found that 63 per cent of all medical-legal action arose from errors in GP investigation and treatment. Errors occurred in 0.8 per cent (1 in 120) of consultations, and errors in diagnosis and subsequent prescription resulted in up to 78 per cent of all problems. Up to 42 per cent of errors concerned delayed or inappropriate treatment. The study suggested that between 60 per cent and 83 per cent of errors were preventable. Although the study was unable to identify how serious all the errors were, its authors said that a small minority were likely to result in death. The examples uncovered included a man with chest pains who was treated for indigestion but died weeks later from a heart attack. He had not been referred to hospital. Another case involved a young child with "indeterminate" symptoms who died of meningitis. Aneez Esmail, co-author of the study with John Sanders, a fellow GP, said that it had been hard to determine the level of errors made by GPs because of a lack of data on reporting. "Doctors know from their own experience that things do go wrong," he said. "Often nothing happens as a result and there is no real harm done. However, it is really horrendous if you miss a diagnosis for cancer or meningitis.
"What we don't have is an accurate idea of the scale of the problem. In the past studies have tended to look at medical errors in hospitals and not primary care. "That needs to change. GPs are the part of the health service which people have the most contact with. It is, therefore, very important that we have an accurate and reliable way of reporting problems which avoids blame, but from which lessons can be learnt."

Alan Milburn, the Health Secretary, has said that, although not every mistake in the health service can be eliminated, it is vital that better systems are developed to detect and learn from failure.

As a result, the agency will be standardising reporting procedures for adverse incidents and errors across the NHS. Such procedures exist in hospital trusts, but not formally in primary care.

Under the new scheme, GPs will be encouraged to report errors and "near misses". The reports will be anonymous, but should provide enough detail to detect trends and develop strategies to reduce errors.

As part of the new system hospital doctors will, for the first time, be able to report errors in primary care. These could include patients who arrive at accident and emergency departments with serious conditions that had not been spotted by a GP.

A spokeswoman for the agency said she hoped that its new reporting system would help to improve the safety of patients in primary care. "We are aware that in terms of error reporting the focus has been on secondary and acute care," she said.

"While we are keen to stress that errors of any kind are very rare, the agency was established to ensure that any lessons that need to be learnt from mistakes are learnt and that best practice is spread right across the NHS.

"That is what this reporting system, similar to that for airline pilots to log near accidents, has been set up to achieve."

Mayur Lakhani, of the Royal College of General Practitioners, said that he was concerned about the level of error thrown up by the Manchester study.

"With healthcare becoming more complex, with the fragmentation of services, errors will become an even more important issue," he said.

"It is therefore right that we take steps now to improve patient safety. The college welcomes the concept of an open and participative culture which recognises safety and the needs of patients as paramount.

"We agree that more should be done to support patients, particularly when they are receiving care from a number of different services.

"The GP's role is vital in co-ordinating care between the primary and secondary sectors. Primary healthcare in the UK is overall very safe and is among the best in the world."
**Appendix 3: Nexis coverage of patient safety (search term: electronic prescribing)**

1. **£300m investment to improve ICT in the Health Service**  
   Belfast Telegraph, October 22, 2008 Wednesday, NEWS; Pg. 4, 366 words, Claire Harrison Health Correspondent

2. **Manchester Evening News, May 28, 2008 Wednesday, BUSINESS; Pg. 35, 145 words**

3. **Manchester Evening News, May 28, 2008 Wednesday, BUSINESS; Pg. 35, 145 words**

4. **Hospital antibiotics 'fuelling superbugs'**  
   The Daily Telegraph (LONDON), May 17, 2008 Saturday, NEWS; Pg. 8, 253 words, Kate Devlin Medical Correspondent

5. **Four out of five doctors believe patient database will be at risk**  
   The Times (London), December 31, 2007, Monday, HOME NEWS; Pg. 4, 803 words, Nigel Hawkes Health Editor

6. **End in sight for illegible GPs' notes; MEDICINE: TECHNOLOGY; Hospital puts electronic prescriptions on trial**  
   Sunday Herald, November 25, 2007 Sunday, NEWS; Pg. 23, 657 words, Judith Duffy Health Correspondent

7. **Allergy patients at risk in hospital**  
   The Sunderland Echo, September 10, 2007, 554 words

8. **Technology can save lives**  
   The Times (London), July 17, 2007, Tuesday, FEATURES; Public Agenda; Pg. 20, 274 words

9. **New cancer systems**  
   Bexhill Observer, July 13, 2007, 427 words

10. **New cancer systems**  
    Rye and Battle Observer, July 13, 2007, 427 words

11. **New cancer systems**  
    Hastings Observer, July 12, 2007, 427 words

12. **Electronic scheme for patients**  
    Doncaster Free Press, April 14, 2007, 80 words

13. **Cost of making a call from hospital set to rise by 160%**  
    The Times (London), April 5, 2007, Thursday, HOME NEWS; Pg. 11, 753 words, David Rose
14. Patient records - at the touch of a button
   UK Newsquest Regional Press - This is Hampshire, March 28, 2007 Wednesday, NEWS, 268 words, Dick Bellringer

15. Chemist Vince has got the formula for Taekwon-Do
   Southern Reporter, February 16, 2007, 596 words

16. City trust has best UK profits; HEALTH: Heartlands surplus benefits care
   Birmingham Evening Mail, September 26, 2006, Tuesday, NEWS; Pg. 13, 277 words, Alison Dayani Health Correspondent

17. Connecting for Health is placed in intensive care
   The Times (London), August 26, 2006, Saturday, BUSINESS; Pg. 57, 472 words, Nigel Hawkes

18. Health chiefs target prescription fraud
   Belfast Telegraph, August 15, 2006 Tuesday, 294 words, By Nigel Gould

19. Improved care
   Evening Gazette, August 1, 2006, Tuesday, NEWS; Pg. 16, 74 words

20. Politics: Patients fleeced by hospital phone and parking charges, MPs say: Committee calls for full review of health fees: Cheap prescriptions for low-income families urged
   The Guardian (London) - Final Edition, July 18, 2006 Tuesday, GUARDIAN HOME PAGES; Pg. 14, 644 words, Sarah Hall, Health correspondent

21. NHS computer system behind schedule and to cost £20bn
   The Guardian (London) - Final Edition, May 31, 2006 Wednesday, GUARDIAN HOME PAGES; Pg. 14, 452 words, Sarah Hall, Health correspondent

22. Blood-thinning drugs risk serious reaction
   The Scotsman, May 20, 2006, Saturday, Pg. 17, 652 words, Lyndsay Moss Health Correspondent

23. Work begins on latest part of medical centre
   Blackpool Gazette, April 6, 2006, 205 words

24. Leading article: National Health Service: Doctors in deficit
   The Guardian (London) - Final Edition, January 10, 2006 Tuesday, GUARDIAN LEADER PAGES; Pg. 30, 637 words

25. Writing's on the wall for doctors' scrawl
   Mail on Sunday (London), September 25, 2005, HI_04; Pg. 11, 463 words, Vic Rodrick; Mark Aitken

26. Saving lives by remote control; The mobile phones carried by millions could potentially have huge healthcare benefits, according to a recent trial.
27. NHS staff need help to get right medicine; Experts warn the growing complexity of drugs can leave doctors confused and patients at risk, with pharmaceutical companies all too ready to exploit the situation.
The Herald (Glasgow), August 2, 2005, SOCIETY; Pg. 4, 1308 words, By Stephen Naysmith

28. Life: public domain: False pretences: Countries throughout Europe are introducing a form of identity card, but reaching a consensus on its use across borders is proving difficult.

29. Hewitt plans GPs shake-up
The Guardian (London) - Final Edition, June 23, 2005, Guardian Home Pages, Pg. 1, 834 words, Patrick Wintour Chief political correspondent

30. NHS IT plan is in rude health
The Times (London), April 5, 2005, Tuesday, Features; Public Agenda 4, 273 words

31. Business: Management: A £6bn question for the NHS: The world's biggest non-military IT operation is making companies think and operate in completely new ways
The Observer, February 13, 2005, Observer Business Pages, Pg. 12, 941 words, Simon Caulkin

32. The numbers just don't add up
The Times (London), November 2, 2004, Tuesday, Features; Public Agenda 4, 407 words

33. LEGACY TO BENEFIT COMMUNITY
Dearne Today, September 30, 2004, 799 words

34. Patient power may close hospitals: Labour sets out its five year plans to cut waiting times for operations and let people decide where they would prefer to be treated

35. SAVE OUR NHS: THE TORY BLOODSUCKER; LABOUR'S VISION FOR OUR HEALTH UNVEILED AS 'DRACULA' HOWARD IS
The Mirror, June 24, 2004, Thursday, 3 Star Edition; NEWS; Pg. 8,9, 1407 words, Oonagh Blackman, POLITICAL EDITOR AND Lorraine Fisher

36. NORTH'S CANCER SUFFERERS LOSE OUT IN TREATMENT 'LOTTERY'
The Northern Echo, June 15, 2004, Pg. 3, 365 words, By Robert Merrick, Political Correspondent

37. North's cancer sufferers lose out in treatment 'lottery',
UK Newsquest Regional Press - This is The NorthEast, June 15, 2004, 360 words, Robert
| 38. | **Cancer patients losers in postcode lottery**,  
   UK Newsquest Regional Press - This is The NorthEast, June 14, 2004, 454 words |
| 39. | **E-public: E-services: Swedes raise barriers on all fronts: It's official: Sweden's e-services are the best in Europe. E-customs monitor its borders, tax forms are filed online and everyone has an ID number.**  
| 40. | **NEW SYSTEM CUTS OUT HUMAN ERROR**  
   Birmingham Post, February 26, 2004, Thursday, NEWS; Pg. 4, 239 words |
| 41. | **epublic: Healthcare: Not what the doctor ordered: Everyone agrees that electronic prescribing will herald a safer and more efficient system of medicine administration, but Jon Hoeksma says its future lies on a waiting list**  
| 42. | **Visit the pharmacist instead of your doctor,**  
   UK Newsquest Regional Press - This is Cheshire, February 5, 2004, 339 words, Ian Kelly |
| 43. | **Epublic: Healthcare: Health service opts for industrial strength: Now that the NHS is geared up for IT, both staff and patients need to be convinced that this can only mean an improved service.**  
| 44. | **Hospital tonic for western areas of Ulster**  
   Belfast Telegraph, January 15, 2004, 376 words, By Michael McHugh |
| 45. | **COMPUTER PRINT-OUTS PRESCRIBED TO CURE PROBLEM OF DOCTORS’ POOR HANDWRITING**  
   Scotland on Sunday, June 15, 2003, Sunday, Pg. 10, 637 words, Tom Curtis |
| 46. | **Inside IT: Prescribing goes under the knife: Doctors make mistakes under pressure.**  
   The Guardian (London), May 22, 2003, Guardian Life Pages, Pg. 16, 794 words, Michael Cross |
| 47. | **Society: frontline: Counter culture: Is there room for supermarket pharmacies and traditional outlets to survive side by side?**  
   The Guardian (London), April 9, 2003, Guardian Society Pages, Pg. 10, 1173 words, Margaret Kubicek |
<p>| 48. | <strong>TWO YEARS OF INVESTMENT AND WE STILL CAN’T COPE; DAMNING NEW REPORT ON WELSH HOSPITALS FINDS NO IMPROVEMENT NOT ENOUGH BED SPACE INADEQUATE</strong> |</p>
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<td>49.</td>
<td><strong>EDUCATION AND HEALTH FIRMS SET GOAL ON TREASURY</strong></td>
<td>Birmingham Post, July 15, 2002, Monday, ROP; Pg. 31, 517 words</td>
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<td>50.</td>
<td><strong>Online: Blair's pounds 40bn gamble on IT: Last week's budget gave the NHS a huge shot in the arm.</strong></td>
<td>The Guardian (London), April 25, 2002, Guardian Online Pages, Pg. 1, 1531 words, Michael Cross</td>
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<td><strong>Painkiller was far too strong.</strong></td>
<td>UK Newsquest Regional Press - This is Local London, April 23, 2002, News, 349 words</td>
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<td>52.</td>
<td><strong>It's 2022 . . . and going to hospital is virtually pain-free</strong></td>
<td>THE DAILY TELEGRAPH (LONDON), April 18, 2002, Thursday, 322 words, By Celia Hall</td>
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<td>53.</td>
<td><strong>OBSOLETE SYSTEMS BLAMED FOR RISE IN NHS DRUG DEATHS</strong></td>
<td>The Independent (London), December 18, 2001, Tuesday, NEWS; Pg. 2, 636 words, Lorna Duckworth</td>
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<td>54.</td>
<td><strong>ELECTRONIC HEALTH RECORDS BOOST</strong></td>
<td>Birmingham Evening Mail, August 4, 2001, Saturday, Pg. 11, 318 words, Steve Johnson</td>
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<td><strong>COMPLICATION AFTER LIVER OP</strong></td>
<td>Birmingham Evening Mail, July 31, 2001, Tuesday, Pg. 16, 366 words, Paula Marsh Health Editor</td>
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<td><strong>Health fraud that's costing millions</strong></td>
<td>Belfast Telegraph, July 16, 2001, 957 words, By Nigel Gould</td>
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<td><strong>University guide: Pharmacy and pharmacology</strong></td>
<td>The Guardian (London), May 22, 2001, Guardian Special Supplement, Pg. 34, 913 words, Kam Mander</td>
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<td>58.</td>
<td><strong>GPS TO GET DNA FILES</strong></td>
<td>The Mirror, April 18, 2001, Wednesday, NEWS; Pg. 10, 195 words, Oonagh Blackman</td>
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<td>59.</td>
<td><strong>Torex breathless after jog round NHS</strong></td>
<td>THE DAILY TELEGRAPH (LONDON), February 14, 2001, Wednesday, 261 words, edited by George Trefgarne</td>
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<td>60.</td>
<td><strong>Society: Rewriting the script: Richard Lewis on why the government must help combat the multiple threats that could kill off a key element of primary care - the local chemist's shop</strong></td>
<td>The Guardian (London), January 17, 2001, Guardian Society Pages, Pg. 2, 1086 words, Richard Lewis</td>
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<td>GPs to prescribe drugs by email</td>
<td>The Observer, September 10, 2000, Observer News Pages, Pg. 8, 460 words, Anthony Browne</td>
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<td>HONOURS FOR TRAILBLAZING CANCER CARE SPECIALISTS</td>
<td>Birmingham Post, July 6, 2000, Thursday, NEWS; Pg. 3, 469 words</td>
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<td>63</td>
<td>£2m boost for cancer surgery</td>
<td>The Herald (Glasgow), March 16, 1999, Pg. 6, 658 words, Alan Macdermid Medical Correspondent</td>
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<td>64</td>
<td>WALLIS TOMLINSON TAKES STOCK WITH ALBERT E SHARP AGENCY CONTRACT</td>
<td>Birmingham Post, February 14, 1998, Saturday, Pg. 18, 413 words</td>
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<td>65</td>
<td>Just what the doctor ordered</td>
<td>The Times, November 12, 1997, Wednesday, Features, 341 words, Nicholas Booth</td>
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## Appendix 4: Nexis coverage of patient safety (search term: medication errors)

1. **Just what the doctor ordered - an end to medication mix-ups thanks to a signature stamp for medical staff; BMA welcomes clarity in records thanks to a signature stamp for medical staff**  
   The Western Mail, January 31, 2009 Saturday, NEWS; Pg. 20, 822 words, Madeleine Brindley Health Editor

2. **Increase in patient deaths because of medical errors**  
   The Western Mail, January 30, 2009 Friday, NEWS; Pg. 15, 737 words, Madeleine Brindley Health Editor

3. **Widow died after doctors ignored penicillin warning**  
   Daily Mail (London), October 27, 2008 Monday, Pg. 30, 599 words, Lucy Ballinger

4. **Barcode systems are flawed and can increase the probability of certain errors**  
   The Times (London), July 8, 2008 Tuesday, FEATURES; Public Agenda; Pg.4, 81 words

5. **100 patients a month hit by medicine mix-ups in Lothian**  
   Evening News (Edinburgh), June 10, 2008, Tuesday, Pg. 8, 470 words, Gareth Rose Health Reporter

6. **Inquiry by police into death of musician at hospital**  
   Yorkshire Post, June 5, 2008, 478 words

7. **What's the right prescription for tackling dispensing errors?; LEGAL DIAGNOSIS**  
   The Western Mail, June 2, 2008, Monday, FEATURES; Pg. 25, 591 words, Ken Thomas

8. **Evening News (Norwich), May 26, 2008 Monday, NEWS, 549 words, P Walsh**

9. **Drugs blunders hit five patients a day**  
   Scotland on Sunday, May 11, 2008, Sunday, Pg. 12, 884 words, Kate Foster

10. **Care home nurses face charges; HEARING: Trio accused of neglecting elderly patients**  
    Birmingham Evening Mail, February 19, 2008, Tuesday, NEWS; Pg. 7, 346 words, Alison Dayani

11. **Drugs mistakes at hospital**  
    UK Newsquest Regional Press - This is Lancashire, February 7, 2008 Thursday, NEWS, 42 words, Staff Reporter

12. **Diary dates**  
    The Times (London), December 11, 2007, Tuesday, FEATURES; Public Agenda; Pg. 12, 188 words
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<td>New scanner is unveiled at town hospital</td>
<td>South Wales Echo</td>
<td>December 7, 2007</td>
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<td>Hospital staff on red alert</td>
<td>Lancashire Evening Post</td>
<td>September 18, 2007</td>
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<td>Evening News (Norwich)</td>
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<td>September 4, 2007</td>
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<td>17</td>
<td>PRESCRIPTIONS FOR DISASTER; A six-year-old left suicidal by a steroid overdose. Cancer patients killed by drugs meant to save them. The grim toll of bungled prescriptions and why you should always check what you’re taking</td>
<td>Daily Mail (London)</td>
<td>August 14, 2007</td>
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<td>Hundreds of hospital fatalities 'avoidable'</td>
<td>The Daily Telegraph (LONDON)</td>
<td>July 26, 2007</td>
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<td>19</td>
<td>Patients pay the ultimate price for NHS errors, says watchdog</td>
<td>The Times (London)</td>
<td>July 26, 2007</td>
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<td>Pensioner was given wrong drugs</td>
<td>Wakefield Express</td>
<td>July 23, 2007</td>
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<td>Medical errors in NHS put 25,000 patients at risk</td>
<td>The Times (London)</td>
<td>July 12, 2007</td>
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<td>NHS gives wrong treatment to 500 hospital patients a week</td>
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<td>The NHS: What you need to know</td>
<td>The Daily Telegraph (LONDON)</td>
<td>April 24, 2007</td>
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<td>Heartache for family over boy's leukaemia medicine blunder</td>
<td>Yorkshire Evening Post</td>
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<td>'Barcodes can improve patient safety'</td>
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<td>Hospital barcodes 'will make patients safer'</td>
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<td>We doctors should give our patients more time; Good Health VIEW POINT</td>
<td>Daily Mail (London), January 23, 2007 Tuesday, ED 1ST; Pg. 50, 883</td>
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<td>NASTY HEALTH SERVICE; EXCLUSIVE DAILY MIRROR INVESTIGATION BLUNDERS KILL OVER 20094 CASES OF MRSA SUPERBUG WELCOME TO THE UK'S.</td>
<td>The Mirror, January 18, 2007 Thursday, NEWS; Pg. 32, 1294</td>
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<td>Nurses accused of putting paperwork before care</td>
<td>The Guardian (London) - Final Edition, January 12, 2007 Friday, GUARDIAN HOME PAGES; Pg. 14, 405</td>
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<td>Evening News (Norwich), December 8, 2006 Friday, NEWS, 349 words, CATCHPOZ</td>
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<td>Staffordshire News: Drug blunder hospitals rap; HEALTH: Trust bosses criticised over medication errors</td>
<td>Birmingham Evening Mail, August 15, 2006, Tuesday, NEWS; Pg. 18, 285</td>
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<td>Hospital praised for avoiding mistakes</td>
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<td>Drug errors hit one in five young leukaemia sufferers</td>
<td>The Times (London), August 14, 2006, Monday, HOME NEWS; Pg. 20, 391</td>
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<td>Hospitals shamed on medicine errors</td>
<td>Birmingham Post, August 12, 2006, Saturday, NEWS; Pg. 2, 515</td>
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<td>Hospital errors</td>
<td>Birmingham Evening Mail, August 11, 2006, Friday, NEWS; Pg. 8, 55</td>
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<td>36 deaths blamed on NHS dispensing errors</td>
<td>The Daily Telegraph (LONDON), August 11, 2006 Friday, NEWS; Pg. 11, 572</td>
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41. **NHS prescribing blunders kill 36 patients in a year**  
Daily Mail (London), August 11, 2006 Friday, ED 1ST; Pg. 28, 523 words, Jenny Hope

42. **Drive to cut hospital mistakes; 40,000 medical errors in one year, says report**  
Daily Post (Liverpool), August 11, 2006, Friday, NEWS; Pg. 18, 485 words, Jane Kirby Daily Post Correspondent

43. **40,000 NHS drug errors logged in a year**  
The Guardian (London) - Final Edition, August 11, 2006 Friday, GUARDIAN HOME PAGES; Pg. 12, 325 words, Sarah Boseley, Health Editor

44. **Hospital medication errors cost the lives of 36 patients**  
The Independent (London), August 11, 2006 Friday, NEWS; Pg. 16, 311 words, By Jeremy Laurance

45. **Hospitals warned over drugs errors**  
Western Mail, August 11, 2006, Friday, NEWS; Pg. 8, 94 words

46. **Doctors who could be poisoning their patients**  
Daily Mail (London), July 19, 2006 Wednesday, ED 1ST; Pg. 8, 692 words, Fiona Macrae, Jenny Hope

47. **DOCTORS 'KILLING PATIENTS' IN DRUG BLUNDERS; Thousands at risk, warns Scots medical chief**  
Daily Mail (London), July 19, 2006 Wednesday, ED SC1; Pg. 1, 550 words, Jenny Hope, Fiona Macrae

48. **Lives at risk as doctors 'lacking in basic drugs knowledge'**  
Evening News (Edinburgh), July 19, 2006, Wednesday, Pg. 11, 445 words, Andrew Picken

49. **Lives at risk from the doctors 'who don't know their drugs'**  
Evening News (Edinburgh), July 19, 2006, Wednesday, Pg. 4, 470 words, ANDREW PICKEN

50. **Reports reveal threats to NHS patients' safety: Women raped in psychiatric wards: Poor medical training causing drug deaths**  
The Guardian (London) - Final Edition, July 19, 2006 Wednesday, GUARDIAN HOME PAGES; Pg. 7, 680 words, John Carvel, Sarah Hall and Sarah Boseley

51. **1.2m patients a year are hit by NHS blunders**  
Daily Mail (London), July 6, 2006 Thursday, ED 1ST H; Pg. 10, 715 words, Jenny Hope

52. **1.2m patients are put at risk every year by the NHS blunderers**  
Daily Mail (London), July 6, 2006 Thursday, ED 3RD; Pg. 2, 761 words, Jenny Hope

53. **NHS 'not learning from errors'**  
The Times (London), July 6, 2006, Thursday, HOME NEWS; Pg. 29, 652 words, Sam Lister
| 54. | *Hospital errors 'put thousands of patients' lives in danger'*  
Yorkshire Post, July 6, 2006, 819 words |
| 55. | *Two-thirds of nurses say NHS lacks staff to treat patients properly*  
Scotland on Sunday, April 23, 2006, Sunday, Pg. 2, 202 words, Richard Gray HEALTH CORRESPONDENT |
| 56. | *One in five people 'has experience of a wrong diagnosis' in the NHS*  
The Daily Telegraph (LONDON), January 11, 2006 Wednesday, NEWS; Pg. 10, 266 words, Nic Fleming Medical Correspondent |
| 57. | *Medical errors kill or injure 21,000 Scots*  
The Times (London), December 5, 2005, Monday, HOME NEWS; Scotland; Pg. 24, 438 words, Shirley English |
| 58. | *Scandal of patients who die from bad hospital treatment*  
Scotland on Sunday, December 4, 2005, Sunday, Pg. 7, 992 words, Richard Gray, HEALTH CORRESPONDENT |
| 59. | *HOSPITALS ARE A HEALTH RISK*  
Birmingham Post, November 3, 2005, Thursday, First Edition; NEWS; Pg. 8, 598 words, BY Karen Attwood |
| 60. | *More than 1m patients fall victim to mistakes in NHS hospitals: Audit reveals errors cost health service £2bn: Progress made in reducing blame culture*  
| 61. | *NHS UNDER FIRE AS MISTAKES KILL 2,000 PATIENTS IN A YEAR*  
The Independent (London), November 3, 2005, Thursday, First Edition; NEWS; Pg. 12, 525 words, BY Jeremy Laurance HEALTH EDITOR |
| 62. | *2,000 DIE IN NHS SAFETY BLUNDERS*  
The Mirror, November 3, 2005, Thursday, 3 Star Edition; FEATURES; Pg. 32, 208 words, BY Rosa Prince |
| 63. | *NHS accidents 'kill 30,000 a year'*  
The Times (London), November 3, 2005, Thursday, Home news; 30, 387 words, Jill Sherman, Whitehall Editor |
| 64. | *Hospital safety blunders led to 2,000 patient deaths - report*  
Yorkshire Post, November 3, 2005, 1102 words |
| 65. | *Fears on nursing home after death*  
UK Newsquest Regional Press - This is Wiltshire, October 20, 2005, News, 492 words |
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<td>UK Newsquest Regional Press - This is Local London, August 18, 2005, Business, 352 words, Steve Wrelton</td>
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<td>Attacks on hospital staff ‘worrying’,</td>
<td>UK Newsquest Regional Press - This is Hertfordshire, August 11, 2005, News, 421 words, Beena Nadeem</td>
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<td>Hospital safety bracelets could save patients’ lives</td>
<td>THE DAILY TELEGRAPH(LONDON), August 10, 2005, Wednesday, 256 words, By Celia Hall Medical Editor</td>
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<td>Increase in hospital staff abuse,</td>
<td>UK Newsquest Regional Press - This is Hertfordshire, August 5, 2005, News, 439 words, Louisa Barnett</td>
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<td>190,000 patients harmed by hospital safety lapses</td>
<td>THE DAILY TELEGRAPH(LONDON), July 22, 2005, Friday, 479 words, By Nic Fleming Medical Correspondent</td>
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<td>Thousands suffer NHS errors</td>
<td>The Times (London), July 22, 2005, Friday, Home news; 32, 204 words, Nigel Hawkes</td>
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<td>Mistakes kill 840 patients every year</td>
<td>The Evening Standard (London), July 21, 2005, C_MERGE; Pg. 16, 154 words, Rebecca Smith</td>
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<td>DAILY MAIL (London), July 19, 2005, ED_SC1_04; Pg. 17, 757 words, Gordon Lyon</td>
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<td>Evening Times (Glasgow), November 27, 2004, Pg. 8, 353 words, Ann Fotheringham</td>
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<td>UK Newsquest Regional Press - This is Wiltshire, November 26, 2004, 147 words</td>
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<td><strong>E-Business: Lecturers Aim to End Errors Using Software</strong></td>
<td>Birmingham Post, October 26, 2004, Tuesday, First Edition; BUSINESS; Pg. 22, 271 words</td>
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<td><strong>I Could be Crippled for Life by the Hospital Bug</strong></td>
<td>The Evening Standard (London), August 17, 2004, A_MERGE; Pg. 24, 1553 words, Mike Baker</td>
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<td><strong>Mental Health: My View from Inside</strong></td>
<td>UK Newsquest Regional Press - This is Oxfordshire, August 16, 2004, 312 words</td>
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<td><strong>Hospital Staff Face Violence Every Day</strong></td>
<td>UK Newsquest Regional Press - This is Oxfordshire, August 4, 2004, 494 words, Victoria Owen</td>
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<td><strong>Poisoning Blunders</strong></td>
<td>The Mirror, July 14, 2004, Wednesday, Lancs Edition; NEWS; Pg. 4, 113 words</td>
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<td><strong>Tablets May Kill 10,000 a Year; University Blames Deaths on Bad Reaction to Medicines</strong></td>
<td>Daily Post (Liverpool), July 2, 2004, Friday, NW Merseyside Edition; NEWS; Pg. 1,5, 585 words, Clare Usher</td>
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<td><strong>Leading Article: When the Medicine Does More Damage Than the Disease</strong></td>
<td>The Independent (London), July 2, 2004, Friday, First Edition; LEADER; Pg. 34, 365 words</td>
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<td><strong>We’ll Stop the Sick Notes!; Brum’s Trainee Docs Get Lessons in Handwriting</strong></td>
<td>Birmingham Evening Mail, May 21, 2004, Friday, First Edition; NEWS; Pg. 5, 379 words, Andy Shipley</td>
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<td><strong>Treat Us Write Please Doc!; Exclusive Legibility Lessons for Birmingham’s Trainee Medics</strong></td>
<td>Birmingham Evening Mail, May 21, 2004, Friday, C1 Edition; NEWS; Pg. 5, 345 words, ANDY SHIPLEY PROBLEM MAGNIFIED: Dr Bryan Fehilly. Picture: Loretta Brennan</td>
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<td><strong>DOCTORS' HI-TECH KIT 'RISK TO LIVES'</strong></td>
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<td><strong>A dose of negligence</strong></td>
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<td><strong>Maths Mistakes Cost Lives,</strong></td>
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<td><strong>Medication errors blight care homes</strong></td>
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<td><strong>Doctors are paragons of management. We should be flying planes</strong></td>
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<td><strong>REVIEW; WHEN DOCTORS MAKE MISTAKES...</strong></td>
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<td><strong>Fatigue causes GP drug errors</strong></td>
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<td>103.</td>
<td><strong>'Admit mistakes and you're off the hook'</strong></td>
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| 104 | *Inside IT: Prescribing goes under the knife: Doctors make mistakes under pressure.*  
The Guardian (London), May 22, 2003, Guardian Life Pages, Pg. 16, 794 words, Michael Cross |
| 105 | *'tribes' Need A Dose Of Data?*  
The Times Higher Education Supplement, May 2, 2003, BOOKS; BUSINESS AND MANAGEMENT; No.1587; Pg.26, 1185 words, Alan Maynard |
| 106 | *National roundup: Ward errors with drugs risking lives*  
The Guardian (London), March 28, 2003, Guardian Home Pages, Pg. 18, 173 words, James Meikle |
| 107 | *Victory for labelling campaign*  
Yorkshire Post, March 4, 2003, 906 words |
| 108 | *Victory for labelling campaign*  
Yorkshire Post, March 3, 2003, 906 words |
| 109 | *Hospital staff suffer from high level of violence*  
UK Newsquest Regional Press - This is Oxfordshire, January 23, 2003, news, 366 words, Victoria Owen |
| 110 | *MOST ADVERSE REACTIONS TO DRUGS ARE NOT REPORTED*  
The Independent (London), January 16, 2003, Thursday, NEWS; Pg. 2, 402 words, Jeremy Laurance HEALTH EDITOR |
| 111 | *CONCERN OVER LACK OF INFORMATION ABOUT THE SAFETY OF MEDICINES*  
Western Mail, January 16, 2003, Thursday, NEWS; Pg. 8, 476 words |
| 112 | *Mixed messages from medicine labels, says report*  
Yorkshire Post, January 16, 2003, 547 words |
| 113 | *MIRROR ON THE CITY IN DUBLIN: BITTER PILL FOR CHEMISTS*  
The Mirror, January 15, 2003, Wednesday, BUSINESS; Pg. 36, 148 words |
| 114 | *Harmful errors 'in one in 200 prescriptions'*  
The Times (London), December 5, 2002, Thursday, Home news; 6, 618 words, Oliver Wright, Health Correspondent |
| 115 | *Hospital 'gave dying patient a lethal overdose'*  
DAILY MAIL (London), July 15, 2002, Pg. 31, 428 words, Kate Hurry |
| 116 | *When Medicine Is A Risky Business,*  
The Times Higher Education Supplement, July 5, 2002, CUTTING EDGE; No.1545; Pg.22, 643 words, Tony Avery |
| 117 | *One in 10 patients falls victim to blunders* |
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DOC WRITING 'COULD KILL'
The Mirror, April 27, 2002, Saturday, NEWS; Pg. 17, 129 words

LEADER PATIENTS AND DOCTORS MUST TAKE CONTROL FROM POLITICIANS; MONEY ALONE WILL NOT CURE THE NHS
Sunday Express, April 21, 2002, LEADER; Pg. 38, 805 words, By Michael Howard

Ominous vision for a tenth of Britain's economy
The Times (London), April 19, 2002, Friday, Business, 1003 words, Graham Searjeant Financial Editor

Comment & Analysis: Leader: Bitter NHS medicine: A Tory plan which is devious and unfair
The Guardian (London), April 13, 2002, Guardian Leader Pages, Pg. 21, 406 words

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The Guardian (London), April 2, 2002, Guardian Leader Pages, Pg. 17, 597 words

Patient agency sets its sights on safety; Plans for national system of reporting medication errors and near misses
Yorkshire Post, April 1, 2002, 693 words, Mike Waites Health Correspondent

Party ready to dissolve National Health Service
The Times (London), March 22, 2002, Friday, Home news, 420 words, Melissa Kite Political Correspondent

Manchester Evening News, January 30, 2002, BUSINESS; Pg. 10, 643 words, Emma Corlett

500PC RISE IN DEATHS FROM MEDICAL ERROR
Western Mail, December 19, 2001, Wednesday, NEWS; Pg. 7, 348 words

Prescription error deaths soar by 500%
Belfast Telegraph, December 18, 2001, 485 words

HEALTH: DEATHS FROM ERRORS 'SOARING'
Belfast News Letter (Northern Ireland), December 18, 2001, Tuesday, NEWS; Pg. 15, 188 words

DYING FROM PRESCRIPTIONS
Birmingham Post, December 18, 2001, Tuesday, NEWS; Pg. 8, 177 words

HOSPITAL DRUG DEATHS SOARING; FAILURE TO SCREEN PATIENTS
Birmingham Evening Mail, December 18, 2001, Tuesday, NEWS; Pg. 6, 371 words, Correspondent
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<td>131</td>
<td>DAILY MAIL (London), December 18, 2001</td>
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<td>132</td>
<td>OBSOLETE SYSTEMS BLAMED FOR RISE IN NHS DRUG DEATHS</td>
<td>December 18, 2001, Tuesday, NEWS; Pg. 2, 636 words, Lorna Duckworth</td>
<td>Greater toxicity of drugs is blamed for some deaths</td>
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<td>133</td>
<td>ERRORS CUT AT HOSPITAL</td>
<td>December 18, 2001, Tuesday, NEWS; Pg. 2, 77 words</td>
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<td>134</td>
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<td>December 18, 2001, Tuesday, Home news, 312 words, Nigel Hawkes</td>
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<td>135</td>
<td>FATAL DRUGS ERRORS IN NHS SOAR; HEALTH</td>
<td>December 18, 2001, Tuesday, NEWS; Pg. 9, 276 words</td>
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<td>136</td>
<td>100S GIVEN WRONG PILLS</td>
<td>November 8, 2001, Thursday, NEWS; Pg. 4, 68 words</td>
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<td>137</td>
<td>Labelling for drugs to be reviewed</td>
<td>April 21, 2001, Guardian Home Pages, Pg. 6, 484 words, James Meikle Health correspondent</td>
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<td>138</td>
<td>NHS AGENCY TO PROBE HOSPITAL 'NEAR MISSES'; BRIEFINGS TO CURB MEDICAL MISTAKES</td>
<td>April 18, 2001, Wednesday, Pg. 7, 315 words</td>
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<td>139</td>
<td>Drug blunders 'kept secret'</td>
<td>November 20, 2000, 308 words</td>
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<td>140</td>
<td>Parents 'not told' of hospital errors</td>
<td>November 20, 2000, Guardian Home Pages, Pg. 7, 465 words, James Meikle Health correspondent</td>
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<td>141</td>
<td>Parents not told of doctors' errors</td>
<td>November 20, 2000, Pg. 8, 332 words, Chris Starrs</td>
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<td>142</td>
<td>HOSPITAL DRUG MISTAKES KEPT SECRET, SAYS STUDY</td>
<td>November 20, 2000, Monday, Pg. 4, 270 words, John Innes</td>
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<td>Experts challenge drug trade name 'confusion'</td>
<td>September 18, 2000, 533 words</td>
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<td>144</td>
<td>10% of mistakes caused by doctors' scrawl; Bad writing leads to drug errors</td>
<td>March 29, 1997, Pg. 5, 608 words, By Alan Macdermid;Medical Correspondent</td>
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<td>145</td>
<td>GPS PAY PRICE FOR WRONG MEDICINE</td>
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146 NO-HEADLINE
The Independent (London), June 4, 1996, Tuesday, NEWS; Page 2, 157 words, Liz Hunt

147 Drug errors cost Pounds 3.5m
The Times, June 4, 1996, Tuesday, Home news, 75 words

148 QUESTIONS TO SAVE YOUR LIFE; QUESTIONS TO ASK YOUR DOCTOR BEFORE HE MAKES A MISTAKE: DR VERNON COLEMAN'S CASEBOOK
The People, November 20, 1994, Sunday, FEATURES; Pg. 43, 360 words, Dr Vernon Coleman

149 Computer: Nursing a bar code - Hi-tech has hit the hospital drugs trolley.
The Guardian (London), September 5, 1991, 1117 words, By PAUL FISHER
Appendix 5: Media coverage of patient safety (search term: checklist)

Source: The Daily Telegraph (London)
Date: January 15, 2009 Thursday
Title: Safety checklist to cut errors in operations for surgeons
Author: Rebecca Smith Medical Editor
Section: NEWS; Pg. 8
Length: 372 words

An airline-style checklist is to be introduced in NHS operating theatres after a worldwide study showed it cut deaths and complications after surgery by one third. The checklist, drawn up by the World Health Organisation, involves stopping all work at three points in an operation. The staff then confirm they have the right patient, equipment is working, and they are about to do the correct surgery. They make sure all needles and swabs are accounted for before and after to ensure none has been left inside the patient.

Eight hospitals around the world carrying out operations on a total of 7,688 patients, recorded surgical complications and deaths before implementing the checklist and afterwards.

The results, published in the New England Journal of Medicine, showed that serious complications fell from 11 per cent to seven per cent - a reduction of one third - and deaths dropped from 1.5 per cent to 0.8 per cent - a 40 per cent reduction.

The National Patient Safety Agency has informed all NHS trusts of the checklist and will require them to implement a version of it by February next year. The hospitals will be audited to make sure they are using it. In England and Wales, 129,419 incidents relating to surgical specialties were reported to the National Patient Safety Association in 2007, with 217 deaths.

Sir Liam Donaldson, Chief Medical Officer for England and chairman of WHO world alliance for patient safety, said: "Our aim must be to reduce patient deaths and the level of surgical complications. By giving our hospitals clear guidelines and a strict timeline for implementing the alert, we are highlighting the importance of patient safety."

Dr Atul Gawande, the author of the study and team leader for the development of the WHO surgical safety checklist, said: "The checklists must be short, extremely simple, and carefully tested in the real world. But in specialties ranging from cardiac care to paediatrics, they could become as essential as the stethoscope."

St Mary's Hospital in London took part in the study. Surgeons there removed the wrong patient's gall bladder while the hospital was using the checklist system. However, the error was made in an operating theatre that was not involved in the study.
### Appendix 6: Action taken by NPSA from PSRP research

<table>
<thead>
<tr>
<th>Project code</th>
<th>Actions taken by NPSA as a result of the research(^\text{11})</th>
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<tbody>
<tr>
<td>PS001</td>
<td>The information around existing research and knowledge gaps was important for prioritising research to be commissioned by the PSRP over the next years.</td>
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<tr>
<td>PS002</td>
<td>The NPSA used the research to develop a national Reporting and Learning System for England and Wales, and its work on influencing local culture around patient safety.</td>
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<tr>
<td>PS003</td>
<td>This early research influenced the development of the NPSA’s Reporting and Learning System, and its work with the primary care community to develop Significant Event Audit. The review also revealed the existence of a large systematic review from the US Cochrane Center at Stanford University and this has been a reliable resource for the NPSA.</td>
</tr>
<tr>
<td>PS004</td>
<td>Results were used in the setting up of the NPSA’s Reporting and Learning System and strengthened arguments for anonymous reporting.</td>
</tr>
<tr>
<td>PS005</td>
<td>Research contributed to the embedding of human factors in the NPSA’s work and the clinical information it develops, and further work with the Connecting for Health programme.</td>
</tr>
<tr>
<td>PS006</td>
<td>The NPSA values and uses litigation data as part of its scoping around issues raised from reported data on adverse events, particularly when it needs information on underlying systems failures. The analysis from the four specialties has influenced the NPSA’s work with frontline staff. Further PSRP research in diagnostic error was prioritised largely on the basis of this report.</td>
</tr>
<tr>
<td>PS007</td>
<td>Simulation training is a good way of improving clinical skills and knowledge for teams involved in emergency obstetric management and individual trusts can organise to deliver this locally or through a centralised simulation centre</td>
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<tr>
<td>PS008</td>
<td>Different norms, values and attitudes amongst different staff groups are relevant to ongoing NPSA work, and helps it to present advice in differing ways for different groups; feeding in particular into its work with clinical specialty groups</td>
</tr>
<tr>
<td>PS009</td>
<td>Teamwork is particularly important in surgery, and understanding this feeds into guidelines and checklists for safer surgical practice,</td>
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\(^{11}\) Taken from NPSA (2008) Working together for safer care – the Patient Safety Research Portfolio and the National Patient Safety Agency. Available at npsa.nhs.uk
including the NPSA’s recent alert based on the World Health Organization’s Safer Surgical Checklist.

| PS010 | The work fed into the development of the NPSA’s Reporting and Learning System, and paved the way for more detailed study of communication in other situations. |
| PS011 | This was important initial feedback on one of the NPSA’s early alerts, before the existence of a central safety alert broadcast system and therefore was useful in the development of further alerts. In particular, it influenced later alerts on the safer use of injectable medicines and of epidural medicines, where implementation aids such as risk assessment tools and risk reduction strategies were developed for trusts to use. |
| PS012 | Further knowledge transfer from other industries may be useful. The NPSA’s alert based on the World Health Organization’s Surgical Safety Checklist has been developed as a method for improving the ability of teams to anticipate and respond to potential safety threats. |
| PS014 | Root causes in adverse events can be collected by talking to local staff and might suggest systemic issues. The NPSA has developed consistent ways of carrying out root cause analysis. Further research has been commissioned to look for the value of simulation and teamwork training in obstetrics. The research has helped the NPSA to prioritise the maternity care programme. The NPSA has developed and tested a care bundle around the care of women for whom electronic fetal monitoring is clinically indicated and is currently developing a proforma for analysing information about stillbirths to build on this. |
| PS016 | The NPSA used this in its work towards the development of a clear and unambiguous policy, Being Open, around communication with patients after error. |
| PS018 | The literature suggested that computerised physician order entry systems and the provision of additional ward pharmacists have potential net benefits, more than barcoding systems. However, as most research was US hospitals, this identified the need for more UK-derived data and interpretation, and further research was commissioned. |
| PS019 | The research continues to inform future development and implementation of electronic prescribing and drug administration in the UK. |
| PS020 | The understanding of the impact of electronic prescribing systems in practice in a UK setting is informing future development and |
| PS022 | Trusts should continue to ensure their staff understand the terminology and are using equipment as directed if for single use only. |
| PS023 | The research has been useful to the NPSA in its work around a care bundle for women having electronic fetal monitoring and its work on a proforma for analysing information about stillbirths. |
| PS024 | Technology is a potentially important way of increasing patient safety with regard to prescribing errors, and the trial should show if it does in practice. |
| PS025 | Understanding errors in community settings may suggest important areas for further scoping and potential interventions. |
| PS026 | Further work around double checking has been commissioned by the NPSA in the field of anaesthesia. The research will also inform future NPSA guidance on safe medication practice in children. |
| PS027 | Diagnostic error is commonly a cause for litigation yet it is not given much emphasis in the patient safety literature. Education for doctors around asking critical questions and seeking further cues may be important, potentially through the electronic health record, and further research is still needed. |
| PS028 | This had implications in the development of the NPSA’s national Reporting and Learning System: helping to understand local processes so that the national system can be overlaid on to this. |
| PS029 | The research is being used in further development of the NPSA’s cleanyourhands campaign, including in acute and non-acute settings, and in wider work to influence practice around this in the UK. |
| PS030 | Targeting education in different ways is a key way of influencing understanding around patient safety. Information that emerges will be useful in considering the best ways to build on existing programmes. |
| PS034 | This will support work with patients and patient champions in the NHS. The NPSA, Action against Medical Accidents (AvMA) and Strategic Health Authorities are working with patient champions in different regions to increase patient involvement and improve patient safety. |
| PS035 | In parallel the NPSA has developed the Foresight training programme that helps staff see the potential for errors throughout their work. The results of the research will contribute to further |
development in this area.

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<tr>
<th>PS038</th>
<th>This is feeding into the ongoing national work on the benefits and potential new risks of introducing new spinal/epidural connectors into practice and will be of practical benefit when these devices are finally implemented in the NHS.</th>
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<tr>
<td>PS041</td>
<td>The subject links closely to the NPSA’s ongoing work around preventing slips, trips and falls (as one of the commonest incidents reported to the NPSA’s national</td>
</tr>
<tr>
<td>PS044</td>
<td>The evaluation of an early NPSA patient safety alert on surgical marking has informed the development of the more recent NPSA alert based on the World Health Organization’s Surgical Safety Checklist that formalises marking procedures as part of a wider international initiative to make surgery safer through standardisation.</td>
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<tr>
<td>PS045</td>
<td>RCA training gives confidence in understanding and carrying out RCA, but it is not as easy as first thought to cascade this to others locally in trusts. More emphasis is now on regional and local support for carrying out RCAs, and the NPSA is developing good practice examples and advice for trusts to use.</td>
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<tr>
<td>PS046</td>
<td>The SABS distribution system has been revised by the Department of Health and is now the Central Alerting System, bringing together the Chief Medical Officer’s Public Health Link and SABS. It enables alerts and urgent patient safety specific guidance to be accessed at any time. The research showed that implementation of alerts is of crucial importance to patient safety, and this is an increasing focus nationally, regionally and locally.</td>
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<tr>
<td>PS048</td>
<td>The NPSA has developed alerts on testing for correct placement of nasogastric tubes. However, this has not been consistently implemented (see PS 046 above), and the research may highlight better tests that could be used in future guidelines.</td>
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<tr>
<td>PS049</td>
<td>This is important work to develop laboratory, simulator and clinical testing methods for these new connectors. One prototype connector has completed all test procedures and is ready to be further developed by the medical devices industry. The connector design and testing methods are to be submitted to the International Organization for Standardization (ISO) Standards process for adoption as an international standard for spinal/epidural connectors.</td>
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Appendix 7: Potential media strategy

The broad concepts below come from the personal experience of Toby Murcott, who has been a science journalist for the last 15 years covering radio, TV and print.

The results from the media impact arm of the synthesis and narrative review strongly suggest that the twenty seven PSRP studies had minimal impact in the popular media and professional press. It should be emphasised that there is scope for more research in this area, particularly in the professional press, but the research strategy followed for this study would be expected to turn up any significant stories that were sourced directly from a PSRP study.

Why should a media strategy be pursued?

The decision to pursue a media strategy is dependent on a number of variables, including the aims of the funding bodies and researchers; the subject of the research; the existing relationships with media outlets and the desire to reach a lay audience. The success of such a strategy is also impossible to predict, particularly as there will always be competition from many other newsworthy items.

The following strategy is based around the PSRP, and is described as if starting on this series of studies de novo. It is not designed to be a detailed strategy, but rather to offer suggestions for ways in which the media impact of the PSRP corpus could have been increased. There are two basic aims of this proposed strategy. The first is to develop relationships with key journalists. The second is to provide them with stories in such a way that they are most likely to run with them.

Aim 1: Developing relationships with journalists.

While many media outlets have a large workforce, stories are normally gathered and reported on by individuals; often it is a small number of individuals within a much larger organisation. Consequently, finding and building a relationship with those individuals is very important. This can be straightforward; for example, the medical or health correspondents would be the logical choice for the PSRP. However, there are others who could be useful, such as producers of health programmes or social affairs editors. The corollary of this is that while it is important to distribute press releases widely, do not expect a press release sent to general newsroom to end up with the right reporter.

A key thing to remember is that all journalists and producers will be pressed for time. Tim Radford, the widely respected ex-Science Editor of the Guardian says that potential stories have about seven seconds to grab his attention. As a result stories that are clearly explained, have elements prepared such as a variety of contributors on standby; good pictures; B-roll footage available (broadcast quality video recordings that can be used by the TV reporter) and so on will tend to have a better
chance of coverage. This requires some effort to prepare and should be started very early in the process.

The other factor that strongly influences a journalist’s work is the competition for space or airtime. With the exception of the web, all media outlets are restricted in the amount of stories they can cover either by time or print space. This leads to a strong competition for stories amongst the journalists. For daily news outlets, there is typically a morning editorial meeting at which stories for the day are pitched. This can be quite ‘cut and thrust’, with ideas being rejected or changed beyond recognition very quickly. A successful journalist is one who can persuade their editor to run with their story ideas. A successful press strategy is one that can help journalists to do this.

In addition, there is added the pressure of stories that break during the day. A big story can knock all other stories down the schedule or out completely. It will happen to any press strategy and is frustrating, particularly when considerable effort has been spent. There is also the pressure applied to journalists to mould their stories to the preconceptions or desires of the editor; a story may be prepared in one way but the editor may see it and decide it needs a radical rethink.

These factors can often work to make the media appear fickle. A journalist may promise to run with a story and it fail to appear, or appear in a very different form, perhaps to the consternation of the researchers who were interviewed. This is consequence of the media process. It applies across all sectors of the media, and while it can be disconcerting the media savvy accept it as a fact of life. It is worth finding out whether there was anything you could do better or help with next time, but it is important to recognise that there must be a next time and not give up at that point.

There is value in spending some time reading the local and national press, listening to TV and Radio programmes to identify the key reporters and producers. Importantly, for TV and Radio, the key person to interest is the producer not the presenter, so watch or listen for the credits. Once identified it is worth contacting them to ask let them know about the project and what potential stories might come from it.

It can be tempting to suggest a leisurely meeting over lunch or perhaps even dinner, but a journalist rarely has time for this sort of hospitality, and will, in any case, be a little wary of it. A more productive strategy is likely to be a short, a matter of minutes, initial phone call to check that they are the right person to contact and to ask how they would like to receive further information. Do not deluge them with long emails or mountains of papers to read, they will most likely go straight in the bin. Also, be very sensitive about the time of day. A daily print journalist will normally have a copy deadline of around 16:00. They will not appreciate a phone call at 15:45. Likewise, a TV news producer will not take your call moments before their programme goes on air.
Aim 2: Story Choice.

A working journalist will have hundreds of press releases come across their desk per week. It is impossible to predict which ones will be taken forward and developed into a story, but there are a few key elements that should be considered when choosing stories for press releases.

1. Relevance to the audience.

The journalist is looking for stories that will chime with their audience. A story about hip operations is unlikely to work with a youth programme but would probably be a strong candidate for a programme with an elderly demographic. Local stories may not make it into the national media but might have a good run regionally. Finding the human element to a story always works well. For example, rather than describing a luer-lock replacement, it is likely to be received better to say a new type of device has been developed in that will help prevent accidents from the maladministration of IV medications. Another strategy is to link up with patient interest groups. Offering an interview with someone who has been campaigning for a change in practice will bring “colour” and human interest to the story, and make it easier for the journalist to sell it to their editor.

2. Bad news.

Particularly with a project such as the PSRP it is impossible to avoid bad news. Many of the research projects are informed by previous tragic accidents, and these should not be avoided. In fact they can make a story more appealing to the media. For example, it might be worth reminding the journalist, and hence their audience, of an accident and that the research now described is aimed at preventing it happen again. For a good example of this approach, read the Daily Mail for a week. It is common to see a health scare story on the front page with an article describing how to avoid that particular problem deeper within the paper. Frighten then reassure is a common device.

Awards of grant money are normally not seen as particularly newsworthy. The main exception being where an award will bring in significant numbers of jobs to a region and is reported on by the local media. However, in the case of the PSRP, the setting up of the research funds and award of grants has the potential to be a story in its own right. There is a strong news angle in that this is funding aimed specifically at making encounters with the medical profession safer for patients. It would also provide an opportunity to tell journalists and producers about the range of studies about to be undertaken and therefore start the process of alerting them to potential future stories.

Regular, but short, follow ups will help keep the journalist aware of the project. However, caution should be noted at making these contacts frivolous. Each press release should have the potential to be a story, even a small one. Regular but useless press releases will be seen as “crying wolf”. As a project starts the primary reason for regular contact is to keep it in the journalist’s mind. As more results start to appear
then producing regular press releases becomes easier and with a greater potential to producer published stories.

Some of the research projects will report negative results or fail to reach conclusions. While it is less likely that these will be worth reporting, they should not be discounted. For example, PS006 reported that it was difficult to gain access to some of the litigation databases that could help produce better patient safety outcomes. This could in fact be a call for a change in legislation or reconsideration of how access is granted to these databases. In other words, what might initially appear negative is in fact a call for a positive change.

The other use for negative and inconclusive projects is to include mention of them in the final summary. They could be bracketed together as areas where the research has shown up areas that need further thought. It is less satisfying than a clear cut answer, but should not be discarded and under no circumstances should any attempt be made to hide or ignore them. A very good story for any journalist is one where they discover that an organisation is trying to hide something from public scrutiny.

There is one final point to make about regular stories in the media. The media regularly cannibalises older stories. The existence of stories within the cuttings database means that they are more likely to be followed up in the future, or used as sources for new and different stories. This will also prime them for a much larger effort on a final report.

**Timeline for getting media attention.**

1. The press strategy should start alongside the decision to establish the research programme. Journalists and producers should be identified and contacted to start the process of developing relationships. An experienced press office will already have many of these relationships in place.
2. An initial announcement of the research programme should be clearly identified as a set of projects with a human aim, not just a large sum of money awarded to researchers.
3. At regular intervals the research progress should be assessed to see if there is a suitable story for a press release. These will initially be slow in coming through, maybe one every six months, but they will speed up. It is worth adding a note of caution here. If a number of studies report within a short space of time it is better to choose one or two to highlight rather than risking overwhelming the press with a significant number of releases.
4. Call the relevant journalists briefly once every few months or so. This is important as they may have some larger project on that the PSRP data could feed into. They might also be open to other related ideas or even be looking for a story for a special programme or pullout supplement. Keeping up to date with what the journalist wants is crucial, and it will change regularly.
5. The final report is clearly the time for the biggest press push. The steady but unobtrusive contact over the previous years will, as well as can be hoped, have primed the media for the final results. Given warning of this nature they may even commission a special programme or feature on the subject. Bear in mind, though, that commissioning in the broadcast media rarely takes less than a year.

6. Once complete, the hope is that there will be a record of PSRP related stories in the press, and in the cuttings databases. It is highly likely that these stories will have reached an audience unreachable via the medical literature. It may well be that the medical professionals who are the main target of these studies will also have been reminded of the work, either directly or indirectly by friends, family and patients.