Research Report

Mobile Learning for the NHS

Imogen Casebourne

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Executive Summary
In 2012 NHS South of England (Central) commissioned Epic to undertake an update of a previous study Epic undertook in 2010 to seek to understand the potential benefits of mobile learning for the healthcare workforce. In particular, they were interested in how three pilot apps created by NHS South of England, which are available on the app stores and have seen over 63,000 downloads in total, were being used.

This report is the final output from the study, which took place over four months from May 2012 to September 2012. It describes the research objectives, methodology, findings and subsequent recommendations, and is supported by appendices that include the data collection tools and background descriptions of papers that emerged from a literature review.

More than 230 NHS staff participated in the research, including 133 of 270 randomly sampled NHS staff and managers from across three Trusts and six distinct job roles, who were invited to complete an online survey, as well as 53 of 90 randomly sampled potential users of the Health and
Safety assessment app, who were invited to complete a separate online survey. The response rate to the online surveys (at circa 50%) represented a slight improvement on the pleasingly high rate achieved by the previous study. Other research participants shared their views via two large focus groups involving nurses and nurse managers (who represented potential future users of all three pilot apps); or through telephone interviews, which were held with key stakeholders, technical experts and NHS staff who had used the Health and Safety assessment app. In addition, desk research resulted in a number of relevant journal papers forming a literature review, and the development of a working system of classification for the large number of learning apps now aimed at health practitioners (a market which has grown significantly since the previous study in 2010), which facilitated the development of survey questions.

The findings suggest marked enthusiasm for mobile learning amongst this sample of NHS staff, and show the Health and Safety assessment pilot to have been well received. Barriers to further uptake were also identified, and these included lack of connectivity in the workplace, lack of access to suitable devices and lower than expected levels of awareness that the apps were available as learning options.

The research was peer reviewed by Dr Chris Davies, Head of the E-learning Research Group at Oxford University, and Professor John Traxler, Professor of Mobile Learning at the University of Wolverhampton, to ensure quality and rigour.

Forward: comments from Dr Chris Davies and Professor John Traxler

Comments from external reviewer Dr Chris Davies, Department of Education, University of Oxford

Overall, I am satisfied that this study has been carried out in a highly responsible and systematic manner, and that it has been reported carefully, comprehensively, and transparently. In addition, I think it succeeds in raising a considerable number of important issues for consideration in both NHS settings, and workplace settings more broadly, where the use of mobile devices for training purposes and information sharing is increasingly being viewed as a viable and timely means of extending opportunities for work-based learning.

1. Reporting the study

The aims and objectives of the study are laid out and explained with good clarity, as were all the elements of data collection. The description of processes was clear and transparent throughout, such as in the description of the selection of participants (e.g. in 4.1.1), and the rationales behind these decisions.

Headings were clear and helpful, and the prose was informative and engaging. The Appendices are detailed and helpful in providing full information about the design and conduct of the study.

2. Findings

The findings present a very informative picture of some of the quite complex issues that come into play when mobile learning is engaged in via smartphones, reflecting users uncertainty at times about
the legitimacy of using devices for these purposes, alongside the value many clearly experience in doing so.

Of particular interest in these respects were issues raised 4.2.2.2 (whereby it is suggested that some staff do not choose to use own smartphones for work/training purposes); in 4.2.1.8, pointing to lack of confidence in reliability of systems surrounding mobile assessment; in 4.2.2.6 regarding fears of training impinging on non-working hours; and in 4.2.2.7 regarding the issue of crossover from personal use to professional use, this time in the concern that patients might misinterpret staff use of these devices in front of them. Such issues are generally picked up well in the recommendations in section 5.

The report also raises important points concerning the need to ensure that mobile learning is provided as one out of a range of modes of learning. This is raised for instance in 4.2.2 regarding the importance of not solely depending on mobile devices, and is reflected in a different way in 4.3.1.5 and expresses a very important point about learning not ideally being exclusively individual, but rather consisting of a combination of opportunities, with mobile info valuable at various stages, but not adequate as sole source. The recommendations incorporate this issue well.

3. Recommendations

This is perhaps the greatest strength of the report, offering a wide-ranging and thoughtful set of proposals for future development of mobile training resources. It seems to me that all important issues indicated in the findings have been successfully incorporated into these recommendations.

3. Conclusion

Overall, I feel that this study has presented a valid and useful account of how mobile learning is advancing in the cases studied, and offers a wealth of guidance drawn from the report’s findings on how the lessons learned can form the basis for considerable further development in terms of provision of training via mobile devices.

Comments from external reviewer Professor John Traxler, University of Wolverhampton

This is a valuable and worthwhile report. The earlier report and its findings were probably a unique snapshot that combined research rigour with insights from outside the usual research domain. This second report, equally valuable in itself, now gives us the chance to see the extent of movement and change as mobiles become ever more embedded in our lives.

In brief, the fieldwork research instruments, methods and analysis are transparent and trustworthy, the subsequent findings and recommendations are clearly and logically based on them and the desk research gives readers a cross-section of current research and of current medical apps, giving readers both the context for the fieldwork and the findings, and interesting opportunities to follow up. The recommendations follow on sensibly and logically from the findings; an extension to them however might be to maintain a watching brief and look at other organisations currently addressing similar concerns. A recent forum in London on Apps for the Public Sector was evidence of activity in local government and the voluntary sector, and the British Computer Society supports several special interest groups and reports frequently through its various media.
The findings on attitudes, access and ownership are obviously relevant to many other complex and sophisticated organisations, in both the public sector and the private sector. Any such organisations should perhaps consider running their own surveys and investigations, not only out of enlightened self-interest but in order to test and extend the current findings across a wider domain at a time of dramatic change and increased opportunity. In addition, the apps developed and deployed give more specific insights that will be valuable to many other organisations thinking of developing and deploying apps. The findings on how and where the pilot apps were being used were curious and thought-provoking. Feedback on the apps seems universally positive. Given Epic's expertise and track record, answers to questions around usage, expectations, acceptance and take up are perhaps to be found in areas other than quality of design and represent another possible line of enquiry.

I think in looking forwards and thinking about these findings, that technical and infrastructural barriers are in the longer term not significant issues and need to be kept in proportion. Newer, better technologies will be designed, developed and marketed, and can be procured; infrastructure inevitably gets faster, broader, more robust and more pervasive. Cultural, social and organisational barriers however are fluid, intangible, perhaps irrational and sometimes counter-intuitive and represent the real and ongoing challenge to fully exploiting mobile learning within organisations.

The fluidity and diversity of devices is of course what we have learned to expect over the last five or six years. Nevertheless, managers and technologists must continue to work to develop policies and practices that optimise the balance between training materials and learning opportunities that are widely available and accessible on the one hand and stimulating and engaging on the other, whilst positioning training materials and programmes in ways that maintain the user acceptance necessary to exploit learners' own devices - a strategy now frequently referred in education and in industry as BYOD, bring-your-own-device, but sometimes significantly as BYOS, bring-your-own-services. This is significant semantics because it alludes to all the other systems that learners bring with them, for example their own social network systems and their own blogging systems. There is a sense in which BYOD is only the first step and the implicit question is whether, having taken a decision to exploit learners' own hardware devices, we should move on to exploiting the other software and network systems and services that they inhabit.

My own view on 'mobile learning' as a term is that it can be potentially exclusive, esoteric or pretentious, giving the wider world the impression that what is happening is somehow different and separate from the rather more obvious 'learning with mobiles'. In this respect m-learning was even worse! Perceptions are important. This may be a footnote in wider campaign within organisations and their workers to explain and convert.

**Background**

In 2010 NHS South Central commissioned Epic to undertake a study to provide them with sound, research-based and empirical evidence to guide next steps and inform any investment and development decisions for mobile learning. In particular, they were interested in where mobile learning could contribute to the delivery of statutory and mandatory training and assessment. They
also wanted to understand the challenges of mobile learning, and how they may be overcome, including the feasibility of implementing it within current NHS IT infrastructures.

The findings of that study set out 27 different benefits to mobile learning for the NHS workforce, including convenience and flexibility, but also less obvious ones, such as the immediacy of feedback leading to speedier remediation, and the ability to frequently reference material supporting decision making, both of which have the potential to contribute to improved patient care. The study also identified ways in which mobile learning may contribute to training and assessment, in particular for statutory and mandatory skills. Additionally that study identified 22 challenges, ranging from that of screen size to the potential for dishonesty if individuals are undertaking assessments using a mobile device and the possible problems of interfacing with NHS IT systems.

Following on from the 2010 study, NHS South Central commissioned and piloted three mobile learning apps. Two were medical apps, based on existing e-learning; these were Compatibility of Injectable Medicines and Adult Drug Calculations. The third offered training and assessment in Health and Safety, which was one of nine identified areas of key statutory and mandatory training identified by NHS South Central.¹

In 2012 the Strategic Health Authority commissioned Epic to follow up the initial study. This offered an opportunity to evaluate the uptake of the three apps deployed by the Strategic Health Authority. It also offered the opportunity to gain an updated snapshot of device usage and access amongst NHS South of England staff. Additionally, the new study sought to identify new initiatives and case studies not available at the time of the original research which might yield new insights. Desk research, including a literature review and a review of medical apps, examined the evolving landscape and sought to draw new conclusions from recent developments.

¹ The nine areas are: Conflict Resolution; Equality, Diversity and Human Rights; Fire Safety; Health and Safety; Infection Prevention and Control; Moving and Handling; Resuscitation; Safeguarding Children; Safeguarding Vulnerable Adults.
Research aims and objectives

2.1 The aims

The research refresh aimed to investigate two key areas in order to make recommendations on mobile learning direction for NHS South of England.

1. Current learner experience of and attitudes to mobile learning.
2. Technology available for mobile learning within NHS South of England.

2.2 The objectives

This led to five research objectives:

**Current learner experience of and attitudes to mobile learning**

*Research Objective 1*: Identify how and where the three NHS South of England apps are being used

*Research Objective 2*: Identify potential barriers to uptake of assessment apps

**Technology available for mobile learning with NHS South of England**

*Research Objective 3*: Establish the kinds of mobile devices now available to NHS South of England staff

*Research Objective 4*: Establish the types of mobile apps now available to NHS South of England staff

*Research Objective 5*: Establish the extent to which infrastructure policies have changed since the initial research

**Mobile learning direction for NHS South of England**

*Research Outcome A*: Make mobile learning strategy recommendations based on the outcomes of research objectives 1 to 5.

Research methodology

The methodology described below employs quantitative and qualitative data collection using desk research, surveys, regional focus groups and telephone interviews, to meet research objectives 1 to 5. Then it describes how the analysis of this data will result in meeting research outcome A.
3.1 Data collection

3.1.1 Desk research

To meet research objectives 2 and 4:

**Research Objective 2:** Identify potential barriers to uptake of assessment apps

**Research objective 4:** Establish the types of mobile apps now available to NHS South of England (Central) staff

Desk research sought to identify relevant journal and papers and also to identify relevant healthcare apps - in addition to the three piloted by NHS South of England (Central) - developed since publication of the original report.

Papers were chosen where they offered empirical evidence of the benefits and challenges of mobile learning in healthcare settings, or descriptions of assessments delivered via mobile devices or insight into the evolving status of mobile device usage in NHS settings. In addition, Epic sought the advice of Professor John Traxler, Professor of Mobile Learning at the University of Wolverhampton.

The process for identifying healthcare apps was as follows:

1. Relevant apps were identified from a review of journals during initial desk research.
2. The app stores were searched for further apps, using medical keywords suggested by previous desk research, such as ‘drugs’, etc.
3. Apps aimed primarily at patients were discounted.
4. Apps aimed at clinical staff were roughly grouped in terms of the functionality offered until a number of distinct categories emerged.

3.1.2 Surveys

To meet research objectives 1, 2, 3 and 4:

**Research Objective 1:** Identify how and where the NHS South of England (Central) apps are being used

**Research Objective 2:** Identify potential barriers to uptake of assessment apps

**Research Objective 3:** Establish the kinds of mobile devices available to NHS South of England (Central) staff

**Research Objective 4:** Establish the types of mobile apps now available to NHS South of England (Central) staff

Two surveys were created: a snapshot survey of the NHS South of England workforce, which will seek to update the findings of the original survey. The second was aimed at the specific sub-category
of NHS South of England staff from the Trust participating in the pilot study who were about to re-accredit for Health and Safety. This second survey sought to probe the advantages of and barriers to mobile assessment. Finally, the results of a third (customer satisfaction) survey, launched in tandem with the launch of the pilot Health and Safety app, were included in the data analysis phase.

Survey 1

To meet research objectives 2, 3 and 4, 270 staff from within NHS South of England (Central) were surveyed using the sampling methodology employed in the previous report to ensure data for the research update drew on a consistent snapshot of the workforce.

Participants were selected from the same set of job roles (that is whether the job entails working with no, some or continuous access to desktop computers). Data was triangulated across three diverse (geographically and demographically) Trusts, and across seniority of role, involving both staff and managers.

As previously, surveys took no longer than 20 minutes to complete and included compulsory multiple-choice and Likert-scale questions with options to support answers with a written justification if desired. Questions sought to understand: mobile devices that are available to staff, and the potential acceptance for mobile learning, including assessment. Manager and staff surveys were mostly the same, but inevitably there were some questions unique to practice or managerial responsibilities.

Survey 2

To meet research objective 3, a smaller survey was created. This was aimed at NHS staff in the Trust where the Health and Safety assessment app is currently in use. Southern Health NHS Foundation Trust (SHFT) participants were individuals who were about to be re-accredited for Health and Safety and would shortly need to choose between face-to-face, e-learning or mobile routes to accreditation. Participants were also approached at library sessions and asked to complete the survey.

Survey questions were written by Epic and peer reviewed by Dr Chris Davies of Oxford University, prior to survey distribution.

Survey 3

An automated customer satisfaction survey was launched in tandem with the Health and Safety learning and assessment pilot app, and this had collected some feedback on that app by the time data was analysed. Data collected by means of this survey was included in the desk research and data analysis phases of the study.
3.1.3 Regional focus groups

To meet research objective 3:

**Research Objective 3:** Establish the types of mobile apps now available to NHS South of England staff

Two regional focus groups were held: one 40-minute focus group with nurses who would be potential users of the Adult Drug Calculation and Compatibility of Injectable Medicines apps as well as of the Health and Safety app, the other a 40-minute focus group with managers of nurses who might be potential users of the three apps.

Participants were asked to examine and assess several mobile apps (including the three created by NHS South of England and also other apps identified during desk research), and were asked questions about when and how they would use the apps.

During focus groups, questions were posed and small groups given time to discuss their responses, before feeding back to the whole group. Where appropriate, preliminary analysis of survey data (as described in section 3.1.2) contributed to the detail of questions posed during focus groups.

These focus groups were planned and run by Epic. Plans were peer reviewed Dr Chris Davies.

3.1.4 Telephone interviews

To meet research objectives 1, 2 and 5:

**Research objective 1:** Identify how the NHS South of England (Central) apps are being used

**Research Objective 2:** Identify potential barriers to uptake of assessment apps

**Research Objective 5:** Establish the extent to which infrastructure policies have changed since the initial research

Telephone interviews (40 minutes in length) were conducted with a total of 11 staff in key leadership and technical roles at national, regional and local levels (examples include TEL Framework lead, SHA eLearning lead, SHA CIO, Learning and Development Manager, Head of ICT and Technology). These interviews sought to uncover any changes or development in strategic direction in the NHS from a senior management high-level perspective and from a technical perspective.

Telephone interviews (20 minutes in length) were conducted with four people who had taken the Health and Safety online assessment. These interviews sought to uncover benefits and challenges of using the mobile assessment.

Technical interview schedules were peer reviewed by Professor John Traxler, while the rest of the telephone interview schedules were peer reviewed by Dr Chris Davies for consistency across data collection.
3.2 Data analysis

To meet research outcome A:

**Research outcome A:** Make mobile learning strategy recommendations based on the outcomes of research objectives 1 to 5

Quantitative data was collected through surveys (described in 3.1.2) to identify frequencies and central tendencies that inform patterns. Qualitative data, some collected through surveys, but largely collected through regional focus groups (described in 3.1.3) and telephone interviews (described in 3.1.4) were sorted in a grid. The grid listed participants in the first column and questions from left to right in the first row, with answers inserted in the relevant cells.

The single qualitative data grid was split into two smaller grids: one that focused on data that relates to mobile learning, the other on data that relates to mobile technology. Data in each grid was colour-coded and reorganised according to common motifs and then preliminary themes were drawn from the data. Finally, supporting quantitative data, and relevant references that emerged from the literature review, were inserted under the appropriate themes to bring all the data together.

Themes that emerged were presented as key finding(s) with some supporting example quotes (verbatim), and accompanied by possible recommendation(s). These findings and recommendations are organised under objectives.

All findings and recommendations were peer reviewed by Professor John Traxler and Dr Chris Davies.

3.3 Ethics and confidentiality of data

Participation in the study was voluntary, participants were informed of the purpose of the study and how the information they provided would be used.

Data collected in surveys was anonymised. Respondents were assigned a participant number by NHS South of England, which did not have access to the survey responses. Survey responses were analysed by the independent research team, which had no access to respondent names and details.

Telephone interviews and focus groups were recorded to facilitate data collection. Participants were asked for their informed consent before recording commenced, and were assured that responses collected would remain confidential to the independent researcher (either a learning or technical researcher for telephone interviews) and that recordings would be destroyed after six months.

No personal data was collected or retained in the study.
4. Research participants

The methodology described above (in section 3) involved the following numbers of research participants from a variety of job roles, triangulated across three Trusts, and across practitioners, managers and senior managers, to ensure richness in perspective.

4.1 Numbers of participants and their job roles

4.1.1 Participants surveyed

Survey 1: The job role sampling used for the original study was replicated as this was found to be useful and productive in the original study, but different Trusts took part, thus creating an updated snapshot of mobile usage and attitudes to mobile learning.

Two hundred and seventy members of the NHS South of England (Central) workforce, from each of three geographically and demographically diverse Trusts were surveyed, as follows:

1. Thirty staff (including ten managers) from across two specific job roles that involve working remotely, with no access to desktop computers, to include:
   a. ten community nurses and five managers of community nurses
   b. ten ambulance workers and five managers of ambulance workers.

2. Thirty staff (including ten managers) from across two specific job roles that have some access to technology, but not necessarily always connected, to include:
   a. ten junior doctors and five managers of junior doctors
   b. ten community psychiatric nurses and five managers of community psychiatric nurses.

3. Thirty staff (including ten managers) from across two specific job roles that have constant access to technology, to include:
   a. ten administrators and five managers of administrators
   b. ten radiographers and five managers of radiographers.

In summary:

<table>
<thead>
<tr>
<th>Across three Trusts:</th>
<th>Working remotely, no access</th>
<th>Some access</th>
<th>Always connected</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practitioner</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>180</td>
</tr>
<tr>
<td>Managers</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>90</td>
</tr>
<tr>
<td>Totals</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>270</td>
</tr>
</tbody>
</table>

Survey 2: Ninety staff from a range of job roles and grades within Southern Health NHS Foundation Trust (where the Health and Safety app is being piloted), all of whom were shortly to require Health and Safety re-accreditation and as such were potential users of the app, were surveyed.
Survey 3: A self-selecting sample of 11 users of the Health and Safety learning and assessment app responded to an invitation to fill out a customer satisfaction survey on completion of the app (this was not compulsory). Of these, three respondents were Southern Health NHS Foundation Trust staff, five came from elsewhere within the NHS, and three were not working in the NHS.

4.1.2 Participants involved in focus groups

Up to 14 Nurses were drawn from across the NHS South of England Trusts. This group (nurses) was chosen as representing potential future users of all three pilot products.

Up to 14 nurse managers were drawn from across the NHS South of England Trusts. This group (nurse managers) was chosen as representing managers of potential future users of all three pilot products.

4.1.3 Participants involved in telephone interviews

Six key National or SHA Leads and five technical staff working nationally, regionally and locally were contacted, although only four technical staff were interviewed. These staff included national ESR/NLMS technical staff, technical staff working for national e-learning providers, strategic information leads at SHA level, and Trust IT Leads, with differing strategic and operational perspectives on the use of mobile devices within the NHS.

Five Southern Health Foundation Trust staff who had used the mobile Health and Safety learning and assessment were approached for interview feedback, although only four could be contacted in the event.

4.2 Sampling and involving participants

4.2.1 Sampling

Survey 1: Adedayo Odubayo (Project Manager for NHS South of England) and Helen Bingham (Libraries & E-Learning Lead) used their professional knowledge of the geographic location and demographic covered by NHS South of England to select Trusts to be involved in the research: Oxford Health NHS Foundation Trust (a mental health/community care Trust), University Hospital NHS Southampton Foundation Trust, and South Central Ambulance Service NHS Foundation Trust. Of these, one (South Central Ambulance Service NHS Foundation Trust) took part in the previous study. The other two Trusts did not take part in the previous study. The job roles contacted were the same as used in the previous study (and outlined above) as this sampling approach was judged to have yielded valuable insights across working practices and learning needs.

Staff working in these job roles, and those who manage them, were sampled by Adedayo Odubayo (Project Manager for NHS South of England) from Electronic Staff Records, and given a number from 001 to 270.
As in the previous study, each of the 270 participants were sent emails asking for their cooperation in participating in the research study. The content of the emails (drafted by Epic) were sent by NHS South of England from the account of a person as senior as possible (identified by Adedayo Odubayo and Helen Bingham), thus adding weight to the research and encouraging a greater response rate.

Content of the emails were as follows:

- Email 1 trailed the survey (for example, “20 minutes, 20 questions on the 20\textsuperscript{th}”).
- Email 2 included the research participant number and a link to the survey to be completed.
- Email 3 included a ‘countdown’ prompt to those who had yet to complete the survey (for example, “Only three days left to do it”).
- Email 4 extended the deadline for completion of the survey to encourage further responses.

Staff working remotely with little or no access to desktop computers (and so unlikely to receive email) were sent a paper-based version of the email trail and then a printed survey with pre-addressed return envelope (this was done via internal NHS post). Staff whose email addresses couldn’t be confirmed (for example, the email gets bounced), were also sent paper communications.

Survey 2: Participants for survey 2 were drawn from individuals at Southern Health NHS Foundation Trust who were coming up for Health and Safety training/accreditation. Ninety participants were sampled by Adedayo Odubayo across job roles and grades from records supplied to him by Sharon Gomez (Statutory and mandatory training lead at Southern Health Foundation Trust).

As with survey one, each of the participants was sent emails asking for their cooperation in participating in the research study. The content of the emails (drafted by Epic) were sent by NHS South of England from the account of a person as senior as possible (identified by Adedayo Odubayo, Sharon Gomez and Helen Bingham), thus adding weight to the research and encouraging a greater response rate.

Survey 3: Respondents to this survey were a self-selecting sample of users who had used the Health and Safety learning and assessment pilot app. All users of the app are invited to fill out a non-compulsory customer satisfaction survey.

4.2.2 Sampling and involving participants for regional focus groups

Participants for focus groups were drawn from Portsmouth Hospitals NHS Trust.
4.2.3 Sampling and contacting participants for telephone interviews

Adedayo Odubayo and Helen Bingham identified ten key stakeholders, who were likely to be involved in taking decisions based on recommendations from this research study. They were six key National Leads, who are the most significant Stakeholders in terms of learning; and four key technical staff who are the most significant Stakeholders in terms of technology. These ten key stakeholders were invited to participate in 40-minute telephone interviews.

Adedayo Odubayo and Sharon Gomez identified four Southern Health NHS Foundation Trust staff who had used the mobile Health and Safety training and assessment. These staff were invited to participate in 20-minute interviews to give feedback on their experience of using the Health and Safety assessment app.

Each of the participants for telephone interviews, described above, were contacted by Adedayo Odubayo to arrange a first-choice and later second-choice telephone appointment in an Outlook calendar shared with Epic. Names, telephone numbers and an interview description (i.e. 40-minute National Lead learning interview or 40-minute technology interview), were entered in a shared calendar.

Data analysis

To meet research outcome A:

Project Outcome A: Make mobile learning strategy recommendations based on the outcomes of research objectives 1 to 5

Quantitative data collected through surveys (described in 3.1.2) offered frequencies and central tendencies. Qualitative data, some collected through surveys and feedback forms, but largely collected through focus groups and telephone interviews, were coded according to common motifs, and then preliminary themes were drawn from the data. Finally, supporting quantitative data, and relevant references that emerged from the desk research, were inserted under the appropriate themes to bring all the data together.

Themes that emerged are presented in this report as key findings (see Section 4: Findings) that led to the recommendations (see Section 5).

All findings and recommendations have been peer reviewed by Professor John Traxler.
Findings

4.1 Introduction to findings

Key findings are represented as themes that emerged independently from more than one data source, for example, from a desk research paper and a telephone interview, or from more than one survey respondents’ comments, or from both focus groups. They are described in Section 4.2 of this research study, beneath relevant objectives 1-4.

General findings are included in Appendix C: Overview of responses to the general survey, on page 53. Findings from desk research are included in Appendix B: Findings from desk research on page 42.

4.1.1 Coding of findings

Each finding is numbered and then coded to indicate the data collection tool used, as outlined below.

Desk research findings are coded as follows:
[DR for desk research] [Paper’s reference number] [Paper’s key finding number], e.g. DR1.3

Note: See Appendix B on page 42 for the outcome of the desk research in its entirety. Papers are listed in alphabetical order and then assigned a paper reference number. Each paper reference is accompanied by a summary of the project it describes and key findings of relevance to this research.

Survey findings are coded as follows:
[S-G for the general survey across three Trusts] [S for staff], i.e. S-GS
[S-HS for the Health and Safety assessment survey] [M for manager], i.e. S-HSM
[S-CS for the Health and Safety customer satisfaction survey] i.e. S-CS

General findings from surveys are included in Appendix C: Overview of responses to the general survey, on page 53.

Focus group findings are coded as follows:
[FG for focus group] [S for staff], i.e. FGS
[FG for focus group] [M for manager], i.e. FGM

Telephone interviews are coded as follows:
[T for telephone interview] [HS for Health and Safety app users], i.e. THS
[T for telephone interview] [S for Stakeholder], i.e. TS
[T for telephone interview] [T for Technical], i.e. TT
4.2. How and where the pilot apps are being used

Research Objective 1: Identify how and where the three NHS South Central apps are being used

NHS South of England has produced three pilot mobile learning/assessment apps, which are available to staff within NHS South Central, and also to users across the UK and globally.

The three NHS South of England pilot apps are as follows:

- Compatibility of Injectable Medicines – non-compulsory training based on existing NHS South of England e-learning. This is available for download from the Apple and Android app stores.²
- Adult Drug Calculations – non-compulsory training based on existing NHS South of England e-learning. This is available for download from the Apple and Android app stores.³
- Health and Safety – based on statutory and mandatory training objectives developed within NHS South of England. The learning is available for download from the Apple store but the assessment is only available to learners at Southern Health Trust, who can track their scores to the Learning Management System (LMS).⁴

Since their launch in 2011 and early 2012, the apps have been available for download from the app stores (and have seen over 63,000 downloads in total across the Apple and Android stores). They have been publicised within NHS South of England by means of flyers, posters and articles in appropriate internal magazine and newsletter articles.

It wasn’t possible to collect as much data as hoped on how the three pilot apps are being used, as a significant percentage of respondents reported that they didn’t know about the apps and therefore hadn’t used them. Only a single respondent from the 133 NHS South of England managers and staff who completed the general survey reported that they or a member of staff had tried using any of the pilot apps (it was the Adult Drug Calculations app), and a relatively small number of NHS South of England staff had used the Health and Safety assessment app.

This raises a question as to the identity of the 63,000 individuals who downloaded the apps. Data from the app stores suggests that a percentage of these are individuals working in the UK (some of whom will doubtless be NHS South of England (Central) staff), with the two medical apps also seeing a significant percentage of downloads from overseas.

4.2.1 All three apps attracted a global audience

The three NHS South of England pilot apps are all freely available across the UK, and the medical apps have been downloaded both UK wide and globally.

For example, for the Adult Drug calculation app, nearly half of downloads (48%) were in the US, with the UK in second place with 9% of downloads and the rest spread across the globe.

4.2.2 The Health and Safety assessment is largely being attempted in learners own time, from home

The assessment app is currently being accessed primarily from home (three out of four phone interview respondents), in learners’ own time, on learners’ own personal devices [THS] and [S-CS].

When asked why they had chosen to access from home, users cited concerns about Wi-Fi coverage at work: “We did not have Wi-Fi access at that time in the hospital” [THS], a view which was echoed by 53% of potential Health and Safety app users, who said they had no Wi-Fi access at work, and made comments such as such as “We’re not allowed Wi-Fi or mobile devices because we are a secure unit” [S-H&S].

4.2.3 The Health and Safety assessment was as likely to be attempted on its own as after the associated learning

Of the small number of individuals who spoke about taking the Health and Safety assessment, three of the four opted to take the assessment without doing the associated learning first, although one had gone back to look at the learning after having done the assessment [THS].

4.2.4 Users of the Health and Safety assessment found it convenient to be able to take mandatory training flexibly

The small sample of users who had taken the Health and Safety assessment reported themselves pleased to have the option to re-accredit in this way. [THS] A typical comment was “Useful and relevant, not necessarily thorough, at the right level not overwhelming with too much information. Suitable for what I needed. I needed to re-accredit”.

4.2.5 Users of the Health and Safety assessment found it easy to use

The small sample of users who had taken the Health and Safety assessment report it being very easy to use [THS]. Comments left on the app store are also positive, for example, “Very good app, the expert tips section is super” [FGS]. Typical comments were “really quick, easy”. All the interviewees found the app easy to navigate. Typical comments were “absolutely fine”, “simple to use, to navigate”, and “brilliant, really clear and to the point, really easy to see where you click next”. Focus group attendees who were given the opportunity to try the app also found it easy to use, although some said that they preferred using it on the iPad to the iPhone [FGS], [FGM].

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5 100% of telephone respondents and 87.5% of customer satisfaction survey respondents.
The small number of concerns expressed around ease of use related to the questions, with one telephone respondent saying that it was possible to hit the Confirm button unintentionally when scrolling down the screen [THS].

Data collected from the customer satisfaction survey [S-CS] is shown in the statistical diagram below.

4.2.6 Users of the Health and Safety assessment would use it again and would recommend this approach to others

Telephone interviewees said they would recommend or already had recommended the Health and Safety assessment app to colleagues, and that they would welcome being offered other statutory and mandatory training in this way: “I liked it as a method of assessment, it was really easy and I’d do it again”, “Absolutely – I think it is something they should do more of” [THS].

4.2.7 Some users who downloaded from the app stores apparently expected them to contain reference material or tools

Some negative feedback left on an app store suggested disappointment on finding the medical apps contained structured training material, rather than just in time reference material, or performance support tools such as calculators. “This is only an instructional app. No useable information”.7 Desk research suggested that there are now a number of medical-type calculators and reference apps on the market, which may have led to the confusion.

4.2.8 Some users were concerned that their records might not be updated

Two respondents to the Customer Satisfaction questionnaire expressed concerns that their records had not been updated [S-CS]. However, none of the telephone interviewees said that this was a particular concern for them (although two had checked online almost immediately after taking the assessment) [THS].

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It is possible that such concerns may be inherited from concerns around e-learning, as focus group members volunteered that they didn’t always feel confident that their online records had been updated following completion of PC based e-learning [FGS].

4.3 Barriers to uptake of assessment apps

Research objective 2: Identify potential barriers to uptake of assessment apps

Two key categories of potential barrier to uptake were identified: technological barriers to effective use of mobile learning apps (principally lack of access to suitable devices and lack of connectivity) and, perhaps most significantly, a lack of awareness that mobile learning was an available option.

Notably, whilst some cultural resistance to mobile learning was in evidence, only 28.6% of 91 staff survey respondents opted for a mobile device over a laptop or a PC when explicitly asked which they would prefer to learn on, a lack of interest or inclination for learning via mobile devices was expressed by only 11.9% of staff respondents to the general survey [S-GS] [a rather higher 28.8% of respondents who were potential immediate users of the Health and Safety assessment app showed a lack of enthusiasm for learning and assessment via mobile device [S-HS]].

Similarly, staff interviewees and both staff and managers who attended focus groups were markedly positive about mobile learning as an option: “Well, I think it’s the future” [FGS]. Not unreasonably however, many respondents, whilst seeing value in mobile learning, thought that it would often work best as a component of a blend, rather than as a complete replacement for face-to-face training: “For manual handling, you need to see what someone’s doing, whether they are doing it right” [FGM] and [TS].

4.3.1 Lack of access to suitable devices

84.6% of respondents said they weren’t issued a mobile device by work, and 28.8% said that they wouldn’t be able to take the assessment because they didn’t have access to a suitable device [S-H&S].

Of the respondents who were aware of the two pilot medical apps (Compatibility of Injectable Medicines and Adult Drug Calculations) 23.8% reported that they weren’t able to use them as they didn’t have access to a suitable device that would allow them to explore them [S-GS] [S-GM].

In terms of access to suitable mobile devices, staff were more marginally likely than managers to report having some kind of access to a suitable device. However, many would seem to be personal devices, as 85.4% of staff reported that they weren’t provided with a mobile device by the NHS [SG-S], [S-GM], and focus group respondents who were non-managers tended to say they had access to personal rather than work mobile devices [FGS].

It is worth noting that 15% of the respondents who said they hadn’t tried the apps because they didn’t have access to a suitable device had elsewhere reported that they did have access to an Apple or Android smartphone, and a further 12% of this group reported that they had access to a mobile

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8 12.1% slightly disagree, 13.2% disagree, 3.3% strongly disagree.
9 Out of 84 staff respondents 11.9% stated ‘I would prefer not to learn from a mobile device’.
10 When asked about the Health and Safety assessment 11.5% chose “Yes – I’ve heard about this, but I’m not interested”; 17.3% chose ‘No – I hadn’t heard about this before, and I’m not interested’
phone of some kind with internet access. This raises the question as to why these respondents didn’t regard these phones as potentially suitable devices. It wasn’t clear whether this was due to a possible lack of awareness of which devices are supported or an unwillingness to use a personal device for work-related activities (a preference not to use mobile devices for learning at all was a separate option not selected by this group) [S-GM], [S-GS].

4.3.2 Lack of internet access at work

A large percentage of respondents to the Health and Safety survey reported that they rarely or never had access to Wi-Fi at work [S-H&S]. Of those interviewed, three out of four accessed it from home in the evening, partly due to concerns about Wi-Fi access at work [THS]. The customer satisfaction survey didn’t ask users where they had taken the learning, but all seven respondents who answered the question about devices said they had taken it on their own device [S-CS].

The statistical diagram below shows reported access to Wi-Fi by grade.

![Statistical diagram showing access to Wi-Fi by grade](image)

Of the respondents to the main survey who were aware of the pilot medical apps and had a suitable device, some 3.6% staff hadn’t tried them because they believed they had no access to the internet [S-G]. 6.5% of managers agreed [S-G].

As shown below, managers were more likely than staff to report regular Wi-Fi access at work.

### Survey respondents’ access to Wi-Fi at work (staff)
51% of the staff survey respondents have never used Wi-Fi at work. 14.6% sometimes, depending on location. Only 8.3% all or most of the time. 4.2% rarely.

### Survey respondents’ access to Wi-Fi at work (managers)
Managers have a wider access to Wi-Fi than staffs: 43.2% of the manager survey respondents have used Wi-Fi at work sometimes and depending on location. 21.6% all or most of the time. 16% never; 5.4% rarely; 13.5% don’t know.

#### 4.3.3 Inability to track assessment results to a Learning Management System (LMS)
The assessment is available less widely than the associated learning, as it is restricted to users within the Southern Health NHS Foundation Trust who are in a position to log in and to track to their results back to their Learning Management System (LMS) to gain accreditation.

#### 4.3.4 Lack of awareness that the pilot apps were available
Perhaps the most significant barrier to the further uptake of the pilot apps within NHS South of England is a lack of awareness that they are a learning option.
Of respondents to the survey of potential users of the Health and Safety assessment, nine (17%) had heard of it and 43 hadn’t heard of it (83%). Of the respondents who had heard of it, a further two reported that they weren’t sure where to find or download it [S-HS].

Only one respondent to the general survey had tried using any of the apps, and 48.8% reported that they were unaware of either of the two pilot medical apps (Compatibility of Injectable Medicines and Adult Drug Calculations) [SG-S] and [SG-M].

### 4.3.5 Concerns that smartphones might be too small for some people to use

Focus group respondents expressed concerns that the smartphone devices might be hard to use “for older ones like us” [FGM]. There was a general concern that the small screen size of smartphone devices might prove too fiddly to use for individuals unfamiliar with technology or individuals with impaired vision [TS], [TT], or self-reported ‘older’ users [FGM].

### 4.3.6 Concerns around the potential solitude of learning from mobile devices

Focus group respondents expressed concerns that learning from mobile devices might prove isolating, and cut them off from the interaction with colleagues which is gained by attending face-to-face training courses [FGS]. This also came up in desk research [DR11.3].

### 4.3.7 Concerns that mobile learning pushes learning and development into non-work time

Whilst many staff welcome the potential to fit learning into unexpected windows of time, others see both e-learning and mobile learning as a potential threat to safeguarded time to learn during working hours [FGS] [S-GS], and fear that moves to use technology for training may eventually result in them being forced to undertake training and development outside their working hours.

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11 Note that the Health and Safety assessment app has not been promoted to the respondents of the general survey, as they would not currently be able to track results to their training records, so they were not asked about this.
4.3.8 Concerns that referring to mobile devices in the workplace might appear disrespectful to patients

This was a concern identified in the previous study [DR11.3] and in desk research [DR4.6]. However, focus group attendees were less concerned, with one attendee suggesting that as more and more patients started using apps to monitor and track their own conditions, use of medical apps was becoming or would fast become more accepted, as long as it was properly communicated: “Need to make customers aware that it is not just going on Facebook!” [FGS]. Desk research [DR15.3] also suggested that tablet devices could be used in patient settings for clinical purposes if their use was properly communicated to patients.

4.3.9 Concerns that being seen carrying an expensive mobile device in community settings might compromise the security of staff members

Experiences from a pilot in which staff carried mobile devices for the purpose of recording patient information when visiting patients in the community, suggested that staff preferred to carry a smartphone as this was more ‘discrete’ than a larger device such as a tablet and therefore less likely to compromise the security of the individual staff member [FGM].

4.3.10 Concerns around battery life and logistics

Whilst many mobile devices have improved battery life over the past few years, concerns were expressed that if devices were issued to staff for training they would be found to have powered down and become unusable during the working day [FGM]. It was suggested that a docking station would need to be provided in a defined location, for staff to charge up mobile devices [FGM] and that apps “should not use too much battery” [TS].

4.4 Types of mobile app available to NHS South of England staff

Research Objective 4: Establish the types of mobile apps now available to NHS South of England staff

Desk research identified a significant number of healthcare apps, which have largely become available over the last two years. Many of these were identified via searches on the Apple and Android app stores, but there is also a US website designed to highlight and promote medical apps.12 Of the apps surveyed, the majority examined were aimed at patients, but a significant number were tailored to medical staff.

Of apps tailored to medical staff, six distinct categories were identified: apps which allow users to assess existing reference material from their mobile device, apps which allow users to follow decision or information trees, apps which perform calculations on data entered, apps which provide structured training and assessment not dissimilar to that provided by e-learning courses (the three NHS South of England pilot apps fall within this category), simulation apps and apps which allow users to communicate with peer groups.

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As with the NHS South of England pilot apps, it wasn’t possible to learn as much as hoped about usage patterns of mobile learning apps in general, as there is still relatively little experience of using mobile learning.

### 4.4.1 Mobile reference apps

The response across the board was that these would be extremely useful. Survey findings were that of 91 staff, 88% would use a mobile device for learning by consulting online reference material. 13 86.2% of the 36 managers supported this view, believing their staff would use a mobile device for learning in this way\(^{14}\) [S-GS] [S-GM].

Telephone interviewees also said that they would be extremely useful: “textbooks can be downloaded relatively easily so people can look for things” or “protocols and guidelines loaded” onto the devices. “References for master classes advertised for conflict resolution would be useful on the go, on your way to meetings”. [TS]

Desk research [DR.4.3] suggested that access to information whilst in the clinical setting could give students a better framework for understanding and storing the new information, and allow more efficient retrieval for future use.

### 4.4.2 Mobile decision tree apps

Many respondents were enthusiastic about these as potential job support aids.

Of 91 practitioner survey respondents, 86.9% [increased from the first study where it was 66.3%] would use a mobile device for learning by working through decision trees. 15 80.6% [73.1% in the previous study] of the 36 manager survey respondents supported this view, believing their staff would use a mobile device for learning in this way\(^{16}\) [S-GS], [S-GM]. One interviewee warned there might be “some dangers in those decisions”. It is important to be “careful with those. We want doctors to make sensible decisions. The software does not take into account individuality of patients. Diagnosis is complex”; “NHS help lines use those kind of decision tree approaches and end up with call the doctor at the end” [TS].

### 4.4.3 Mobile calculators

Mobile calculators were also viewed as a potentially useful tool. Of 91 practitioner survey respondents, 75.9% would use a mobile device for learning by checking calculations. 17 58.4% of the 36 managers supported this view, believing their staff would use a mobile device for learning in this way\(^{18}\) [S-GS], [S-GM]. It is worth noting that desk research [DR8.3] suggested that these were the type of app most likely to fall under the remit of medical device regulation.

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\(^{13}\) 30.8% strongly agreed; 44.0% agreed and 13.2% slightly agreed.

\(^{14}\) 13.9% strongly agreed; 41.7% agreed and 30.6% slightly agreed.

\(^{15}\) 8.8% strongly agreed; 48.4% agreed and 29.7% slightly agreed.

\(^{16}\) 5.6% strongly agreed; 36.1% agreed and 38.9% slightly agreed.

\(^{17}\) 13.2% strongly agreed; 45.1% agreed and 17.6% slightly agreed.

\(^{18}\) 5.6% strongly agreed; 25% agreed and 27.8% slightly agreed.
4.4.4 Mobile training courses

The three NHS South of England (Central) pilot apps fall under this category. There was general positivity around the potential of mobile training courses.

Of 91 staff survey respondents, 74.8% believed that a mobile device for learning would make it more convenient for them to undertake training, because they would not have to leave the workplace. Of 36 manager survey respondents, 83.3% shared this opinion. 72.6% of the staff respondents appreciated the fact that they would not have to wait to access a computer. 77.8% of the 36 managers agreed. 79.2% (of 91) staff believed that a mobile device for learning would make training more relevant, as it could take place in the work setting where the training is put into practice. 77.8% of the 36 managers shared this view.

Another benefit which emerged was the good use of ‘dead time’: of 91 practitioner survey respondents, 73.7% would be likely to use a mobile device for learning during ‘dead time’, for example when waiting for a clinic to begin, or an emergency call. 69.4% of the 44 managers agreed.

4.4.5 Mobile apps which allow learners to communicate

Some members of the focus group expressed concern that e-learning in general, of which m-learning was viewed as a subset, removed opportunities for networking and discussion with other staff. It was agreed that online forums had the potential to fill this gap [FG-S]. Of 91 staff respondents, 71.5% would use a mobile device for learning by sending messages and discussing with peers and/or experts. 77.8% [65.9% in the previous study] of 36 managers supported this view, believing their staff would use a mobile device for learning in this way.

4.4.6 Most staff had little or no experience of using mobile learning

Of 133 survey respondents, 98 stated they had never tried using a mobile device for learning. Staff were more likely than managers to have tried learning via a mobile device either once or twice, or frequently.

19 15.4% strongly agreed; 35.2% agreed and 24.2% slightly agreed.
20 19.8% strongly agreed; 30.8% agreed and 22.0% slightly agreed.
21 19.4% strongly agreed; 41.7% agreed and 16.7% slightly agreed.
22 13.2% strongly agreed; 33.0% agreed and 33.0% slightly agreed.
23 19.4% strongly agreed; 41.7% agreed and 16.7% slightly agreed.
24 22.0% strongly agreed; 33% agreed and 18.7% slightly agreed.
25 19.4% strongly agreed; 36.1% agreed and 13.9% slightly agreed.
26 13.2% strongly agreed; 34.1% agreed and 24.2% slightly agreed.
27 8.3% strongly agreed; 30.6% agreed and 38.9% slightly agreed.
28 17 (18%) of the 96 staff respondents stated once or twice; 70 (73%) never. 9 (24%) of the 37 manager respondents stated once or twice; 28 (76%) never.
There are now many apps (mobile applications) available to help health care staff with learning. Have you tried using a mobile device for learning?

However, it is interesting to note that approximately half of the staff had an app store account (50.50%) and 40.5% of the 37 managers had an app store account.

4.4.7 Managers who used mobile devices for learning used them to look up reference material

Reference material accessed included the NICE guidelines, JRCALC PDF\textsuperscript{29}, and GP directory PDF\textsuperscript{30}, another respondent mentioned “Looking up medication and conditions when out on the road” [S-GM]. This practice was also found in stakeholder interviewees, one of whom described looking up information on rare medical conditions via a mobile device [TS].

4.4.8 Managers who used mobile devices for learning used them to undertake training

An ECG training App was cited\textsuperscript{31}, as was the Paeds Eng app\textsuperscript{32}, and another respondent talked about referring using mobile devices to learn about “Anatomy (constantly) and basic First aid (Rarely)” [S-GM].

4.4.9 Staff who used mobile devices for learning used them to look up reference material

One respondent said they used them to “look up drug information”, another said they used it for “Research on medical conditions, spellings and locations” [S-GS], ‘BMJ journals, Athens’ [S-GS].

\textsuperscript{29} This PDF document can be accessed via mobile devices using an app such as iBooks for the iPhone.

\textsuperscript{30} This PDF document can be accessed via mobile devices using an app such as iBooks for the iPhone.

\textsuperscript{31} There are a number of ECG apps on the market and it is not clear which one was used by the respondent.

4.4.10 Staff who used mobile devices for learning used them to undertake interactive training

A number of apps were cited including: “Musculoskeletal anatomy apps’ [S-GS], ‘X-ray imaging, a brief description on reporting, meningitis signs and symptoms, X-ray cool images app, hearing test app,” [S-GS], “apps to revise anatomy, pharmacology, ECGs” [S-GS], and “ECG and resus apps for information” [S-GS], “i meds and various cardiac apps” [S-GS].

An anatomy programme offered the opportunity of looking up anatomical details while carrying out other activities [TS].

4.4.11 Where location of use was specified by respondents, mobile devices were used for learning primarily from home and on the road

“Only out of work” [S-GS], “Own home use” [S-GS], “Looking up medication and conditions when out on the road” [S-GM]. Three out of four Health and Safety interviewees had also used the assessment app from home [THS].

4.4.12 Staff using internet-enabled mobile devices for work may start using them for learning

Staff who have been issued with internet-enabled mobile devices for work activities other than making phone calls or sending emails (e.g. as part of other mobile-related pilots, for example electronic record-keeping) may also start to use the devices for learning by looking up reference material [FG-M], [DR9.6], [TS].

4.5 Types of device available to NHS staff

Research Objective 3: Establish the types of devices available to NHS South of England staff

The following table gives a consolidated overview of reported device usage as percentage of overall respondents to the general survey (staff and managers are shown in separate columns) and the Health and Safety survey(s), comprising data from 193 respondents in total [S-GM/S], [S-HS], [S-CS].
People who said ‘other’ reported Blackberry with no touch screen, Samsung, HTC, and Wii. One individual reported a lack of capability in using the device provided: “I notice that my work phone now has an internet access symbol on it but I do not know anything about using it. My personal phone has internet access but I have never used it”.

It is worth noting that it is likely that some individuals will have access to more than one smartphone or tablet [TS], [TT] whereas others may have no access to a potentially suitable device (i.e. an internet-enabled smartphone, iPod or tablet), so it should not be assumed that a straight addition of ‘suitable’ mobile enabled devices can be safely undertaken. However, the overall figures above suggest that access to a suitable device, in this sample at least, might well be nearing the 50% mark.

These figures are broadly commensurate with those found in general surveys of large organisations, learners tend to be using either smartphones or tablets for learning at work [DR 14.4].

For an overview of device usage by occupation, compared to figures in the 2010 snapshot, please refer to Appendix C on page 57.

### 4.6 Infrastructure policies

**Research objective 5:** Establish the extent to which infrastructure policies have changed since the initial research

#### 4.6.1 Most interviewees were unaware of specific infrastructure policies governing mobile device use

No interviews identified any Departmental level policies governing mobile device use or infrastructure [TT], [TS].

#### 4.6.2 Wi-Fi access remains patchy

Whilst this study set out to build on the previous study by creating an updated snapshot and no longitudinal conclusions around development over time can be drawn, the expectation was that coverage might be more widespread in 2012. However, this did not appear to be the case [S-GM], [S-GS].
One possible explanation for this is that as more people attempt to make use of Wi-Fi, more pressure is placed on existing provision and the quality of access drops as a result.

It is also worth noting that relatively senior stakeholders tended to be more optimistic about Wi-Fi provision and coverage than more junior staff [TS], [TT], [THS], [S-GM] [S-GS].

4.6.3 Individual Trusts are starting to upgrade Wi-Fi access

As in the previous study [DR11.1] institutions are involved in a process of expanding and improving Wi-Fi access [TT], [TS].

4.6.4 There is some positivity around 3G as an access method for users with work-issued devices

Whilst Wi-Fi remains the preferred method of access, ‘aggressively priced’ 3G packages for NHS usage means this can be seen a potentially viable alternative to Wi-Fi for staff issued with NHS mobile devices [TT]. However, individuals using their own devices for learning were understandably less keen on using 3G to access potentially large files [THS].

4.6.5 Cost is a major factor in decisions around mobile devices

Cost is an important factor in decisions about which mobile devices should be issued to staff. If the primary use for devices is seen as email and voice, then cheaper Blackberry or non-internet-enabled devices are preferred (although one respondent said that staff often now request to be issued iPads) [TT].

If mobile device usage can be shown to reduce costs elsewhere, the business case for enabling mobile usage and issuing mobile devices will be much stronger [TS].

4.6.6 ‘Bring Your Own Device’ (BYOD) policies can significantly reduce the costs of deploying mobile learning

Perhaps inevitably in the current financial climate, the cost of issuing staff with suitable devices was seen as a barrier to the more widespread adoption of mobile learning. It was suggested that allowing learners to use their own devices could significantly increase adoption without involving potentially unaffordable investment in hardware [TS], [TT]. The importance of BYOD strategies also emerged in desk research [DR14.3].

4.6.7 Individual Trusts are starting to formulate BYOD policies

Telephone interviewees spoke of the potential for the introduction of managed device policies with accompanying agreements to overcome potential security issues arising from allowing staff to use personal mobile devices in workplace contexts. Generally such policies involve some level of formal agreement where the owner of the device gives an IT department licence to remove all apps from their personal device in the event of them reporting it lost or stolen [TS], [TT]. It was acknowledged that provision in this area was currently patchy, and might take some years to evolve [TS].
4.6.8 Government and EU level policies endorse technology supported learning

Whilst no specific mobile learning policy was identified, a number of recently developed Governmental policy and guidance documents separately endorse the use of mobile devices in healthcare and the use of technology as an element in training provision and seek to encourage the development of appropriate strategies at grass root level [DR16.1], [DR7.2], [DR1.3].

There is also endorsement from senior stakeholders [TS] for the use of mobile technology as an element in an overall training package.

4.6.9 The flexibility of mobile learning opportunities may necessitate updating training and development policies

Desk research revealed a need to re-evaluate training strategies in line with changing time pressures and working patterns [DR 16.1]. Mobile learning could form a part of such a re-evaluation [DR16.2]. Meanwhile, potential mobile learners are unsure of how time spent mobile learning will be recognised [C-GS], [FGS]. One interviewee suggested that study leave policy may often contain elements which could be applied to recognition of mobile learning undertaken out of work hours or away from work premises [TS].

4.6.10 Increased use of mobile devices in clinical settings will necessitate development of a policy on hygiene for mobile devices

There was a concern that if medical practitioners carried mobile devices from location to location and regularly accessed them for reference, this could potentially compromise hygiene [FGM]. Desk research also raised this as an area of potential concern [DR13.5].

4.6.11 Mobile learning and assessment may be most powerful as a component within a blend

Several stakeholders and managers, whilst endorsing the potential value of mobile learning and assessment for statutory and mandatory topics, thought that mobile elements would work best as part of a blend for some topics (i.e. a course which might comprise of face-to-face elements as well as e-learning and mobile elements) [TS], [FGM].

4.6.12 Mobile devices will be increasingly used in care settings

Various NHS Trusts are considering using mobile devices for data recording in social care settings; Trusts such as Oxford Mental Health have been trialling the use of mobile devices for data collection. The potential of such pilots in terms of efficiency savings, cost savings and improved patient care may drive the mobile agenda in terms of device adoption [TS]. Desk research also suggested that the more general use of mobile devices in care settings may help drive their use for learning [DR9.6].

4.6.13 There is a move to regulate apps under medical device legislation

Governments worldwide are considering classifying medical apps under medical device legislation [DR8.5; DR12.3]. Whilst legislative bodies governing NHS apps will be UK- and EU-based, other
legislation may apply to apps made available for global access. It is likely that future legislation may distinguish between apps intended for training purposes away from the immediate workplace and apps intended to be used as performance support tools in clinical settings [DR8.5], [TS].

Desk research also indicated that UK legislation may restrict the use of mobile devices to record achievements by taking photographs [DR3.5].

**Recommendations in relation to research objectives**

**Research outcome A:** Make mobile learning recommendations based on the outcomes of research objectives 1 to 5

Section 5.1 below addresses project objective A.

**5.1 Mobile learning**

**5.1.1 Deployment**

**Recommendation 1: Consider formulating a BYOD policy**

Allowing staff to use their own devices is a way of serving the increasing number of staff who own personal smartphones but who either don’t have work phones or would prefer not to use work phones.

*Ref: findings 4.6.5 Cost is a major factor in decisions around mobile devices: 4.6.6 ‘Bring Your Own Device’ (BYOD) policies can significantly reduce the costs of deploying mobile learning*

**Recommendation 2: Consider investing in a managed device system**

This may be the best route to ensuring the success of Bring Your Own Device (BYOD) policies, as it addresses concerns around security and access. Staff who are interested in using their own devices should be asked to sign a declaration endorsing IT staff to remove apps from their personal device in the instance of a suspected security breach.

*Ref: findings 4.6.7 Individual Trusts are starting to formulate BYOD policies*

**Recommendation 3: Ensure learning apps are available across multiple devices/operating systems**

Currently, a wide range of devices are in use, both issued through work and for personal use. Apps that work across multiple devices are more likely to be widely used [DR4.7]. This should include making them available via a PC.

*Ref: findings 4.5 Types of device available to NHS staff [Survey respondents’ use of mobile devices]*
Recommendation 4: Clarify where mobile learning opportunities fit into overall training portfolios

Whilst many staff welcome the potential to fit learning into unexpected windows of time, others see both e-learning and mobile learning as a potential threat to safeguarded time to learn during working hours. Both learning policy and publicity for mobile learning apps should address such concerns head on.

Ref: findings 4.3.7 Concerns that mobile learning pushes learning and development into non-work time; 4.2.2 The Health and Safety assessment is largely being attempted in learners own time, from home; 4.4.11 Where location of use was specified by respondents, mobile devices were used for learning primarily from home and on the road

Recommendation 5: Clarify the legal status of training apps

Development guidelines and publicity for apps should clarify where each apps sits in relation to legislation [DR9.8].

Ref: finding 4.6.13 There is a move to regulate apps under medical device legislation

Recommendation 6: Align mobile learning strategies with strategies for using mobile devices in the workplace

This should include formulating strategies for ensuring hygiene control of mobile devices, and considerations such as providing docking stations on wards so that devices can be consistently charged.

Ref: findings 4.3.10 Concerns around battery life and logistics; 4.6.10 Increased use of mobile devices in clinical settings will necessitate development of a policy on hygiene for mobile devices

Recommendation 7: Recoup costs of developing mobile apps by charging a small fee for anyone downloading them from outside the organisation

Costs were a significant factor in decisions about mobile rollout. Ultimately, business cases for the development of mobile learning may be primarily reliant on cost-savings in delivering training, cost savings due to increased performance as a result of training that becomes either more effective or more widely used, or cost savings resulting from the deployment of mobile devices in areas other than training. However, the ability to recoup development costs for individual apps should enable more training to be delivered in this form.

This could be achieved by buying a ‘Developer Enterprise Programme’ licence which allows any apps signed with this licence to be distributed within a specified Trust, either directly from one of their servers, or using a Mobile Device Management system such as AirWatch (which gives tighter control over distribution and usage). Such apps would only be available to employees. For public distribution the App Store could then be used, with differential pricing set for different countries, if required, by having multiple entries of the same app in the App Store but with different pricing and restrictions.

Ref: findings 4.2.1 All three apps attracted a global audience; 4.6.5 Cost is a major factor in decisions around mobile devices
Recommendation 8: Include guidance in training strategies about where and how mobile devices should be used

Training strategies should outline etiquette for using mobile devices in clinical settings. This might include information about docking stations, physical locations which are appropriate for prolonged mobile study, and where and under what circumstances it is appropriate to use mobile devices for looking up reference material.

Ref: findings 4.3.8 Concerns that referring to mobile devices in the workplace might appear disrespectful to patients; 4.3.9 Concerns that being seen carrying an expensive mobile device in community settings might compromise the security of staff members

5.1.2 Publicity

Recommendation 9: Formulate a brand for mobile learning initiatives

Identify the aspects of mobile learning which most appeal to key target groups and formulate a brand that encapsulates key areas of appeal and directly addresses potential areas of concern (such as losing opportunities for networking, or being required to undertake training in own time). This can then be used as an umbrella for launching new pilots and initiatives.

Ref: findings 4.4.1 Mobile reference apps; 4.4.2 Mobile decision tree apps; 4.4.3 Mobile calculators; 4.4.4 Mobile training courses; 4.3.7 Concerns that mobile learning pushes learning and development into non-work time; 4.4.5 Mobile apps which allow learners to communicate; 4.3.4 Lack of awareness that the pilot apps were available

Recommendation 10: Identify a strap-line for mobile learning initiatives

It should be possible to give the rationale for adding a mobile component to a training policy in a single sentence: a strap-line such as, for example, ‘In your hands’ can play a key role in successfully marketing mobile initiatives.

Ref: findings 4.4.6 Most staff had little or no experience of using mobile learning; 4.3.4 Lack of awareness that the pilot apps were available

Recommendation 11: Instigate a marketing drive and market mobile learning opportunities via a variety of media over a set period of time

Despite marketing activity, a large percentage of survey participants said that they didn’t know about the pilot apps. Emails from senior staff members endorsing initiatives and asking for pilot group participants, regular reminder emails or letters sent at set intervals, flyers in canteens, and road shows may all play a part in raising awareness and ensuring uptake.

Ref: findings 4.3.4 Lack of awareness that the pilot apps were available
Recommendation 12: Identify pilot group participants and support and monitor them through the process of trialling mobile learning apps

As well as enabling user feedback to be gathered, monitored pilot groups have the potential to find and identify potential ‘mobile learning champions’ who may provide quotes for publicity purposes, and also informally spread the word about perceived advantages of mobile learning.\(^{33}\)

*Ref:* findings 4.4.6 Most staff had little or no experience of using mobile learning; 4.3.4 Lack of awareness that the pilot apps were available

Recommendation 13: Align pilot mobile learning initiatives with other mobile pilots within the NHS

Pilots where staff are provided with mobile devices (smartphones or tablets) to carry out other work-related activities, for example recording patient information, are being run across the NHS [FGM].\(^{34}\) Identifying such pilots and aligning them with pilots of appropriate mobile learning initiatives will ensure that those piloting mobile learning initiatives have regular access to a suitable device, and access to Wi-Fi.

*Ref:* finding 4.4.12 Staff using internet-enabled mobile devices for work may start using them for learning

Recommendation 14: Ensure publicity and naming clarifies the type of mobile learning app and suggestions for its use

Desk research identified several distinct categories of app aimed at medical staff [DR3.3; DR9.6; DR12.1], which may be used in different ways. As people become more familiar with using apps for learning, it will become increasingly important to clarify what type of learning or performance support each app offers. For example, with increased awareness of the existence of medical calculator apps, the title ‘Adult Drug Calculations’ might lead some learners to expect the app to be a calculator, rather than a training opportunity.

*Ref:* findings 4.2.7 Some users who downloaded from the app stores apparently expected them to contain reference material or tools; 4.4.1 Mobile reference apps; 4.4.2 Mobile decision tree apps; 4.4.3 Mobile calculators; 4.4.4 Mobile training courses; 4.4.5 Mobile apps which allow learners to communicate

Recommendation 15: Consider including Wi-Fi access maps in publicity initiatives

Wi-Fi provision maps could help staff keep up-to-date with changing Wi-Fi provision, which may in turn encourage them to consider making use of Wi-Fi hotspots to access mobile learning.

*Ref:* findings 4.6.2 Wi-Fi access remains patchy; 4.6.3 Individual Trusts are starting to upgrade Wi-Fi access

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\(^{33}\) The NHS e-learning readiness toolkit gives pointers for recruiting e-learning champions, which to some extent also apply to mobile learning. Available: [http://www.elearningreadiness.org/page_204.html](http://www.elearningreadiness.org/page_204.html) [Accessed 23/08/12]

5.1.3 Design

**Recommendation 16: Consider delivering mobile training and assessment bundled with access to related reference material**

Whilst there was considerable endorsement of mobile training as a strategy, enthusiasm for mobile access to online reference material was even higher. Linking training opportunities to relevant reference material will raise awareness of the existence of training opportunities. For example, online access to policy and guidelines could be accompanied by a link to re-accreditation for relevant statutory and mandatory training, or online reference materials relating to medicines could be linked to an opportunity to download the training app on Compatibility of Injectable medicines.

*Ref:* findings 4.4.1 Mobile reference apps; 4.4.4 Mobile training courses

**Recommendation 17: Test key design features across a range of users**

Concerns over accessing training on a smartphone seemed to focus on ability to accurately interact with question buttons, especially for users unfamiliar with this type of technology. Running formal user testing sessions with users of varying levels of technological experience and across demographics should help to identify the most appropriate size and location for key buttons, and could lead to guidance about who is best placed to take advantage of this route to training.

*Ref:* findings 4.3.5 Concerns that smartphones might be too small for some people to use

**Recommendation 18: Consider incorporating mobile elements into face-to-face training sessions**

A mobile assessment or quiz taken in groups on a mobile device made available for the duration of a classroom session could form an engaging element of a face-to-face training session, and would also help introduce learners to the concept of learning using mobile devices.

*Ref:* findings 4.4.6 Most staff had little or no experience of using mobile learning; 4.3.4 Lack of awareness that the pilot apps were available

**Recommendation 19: Consider incorporating optional mobile elements in blended packages**

There was considerable enthusiasm for incorporating mobile learning into blends, for example as pre-work or follow-up for face-to-face sessions.

Consider making requisite pre-work for a face-to-face session available in the form of e-learning and m-learning, and allow time at the start of the session for a brief discussion of the pre-work, which could include a show of hands as to who had had used which access method. This will help to publicise m-learning, and also to monitor changing usage patterns.

*Ref:* findings 4.6.11 Mobile learning and assessment may be most powerful as a component within a blend
**Recommendation 20: Design e-learning to output to multiple devices**

A new generation of e-learning authoring tools allow designers to author e-learning courses aimed at PCs which automatically adapt content for optimised delivery to tablets and smartphones. Use of such tools enables mobile versions of new e-learning to be generated at no extra cost, which may help facilitate a gradual transition to mobile learning.

*Ref: findings* 4.2.4 Users of the Health and Safety assessment found it convenient to be able to take mandatory training flexibly, 4.2.6 Users of the Health and Safety assessment would use it again and would recommend this approach to others, 4.4.10 Staff who used mobile devices for learning used them to undertake interactive training, 4.3.1 Lack of access to suitable devices, 4.6.2 Wi-Fi access remains patchy

### 5.2 Mobile technology

**Recommendation 21: Upgrade LMSs to enable tracking of mobile learning**

When mobile learning and assessment can be tracked by common LMSs uptake is likely to increase.

*Ref: findings* 4.3.3 Inability to track assessment results to a Learning Management System (LMS)

**Recommendation 22: Invest in upgrading Wi-Fi where possible**

Perceived lack of Wi-Fi access in the workplace presented a significant barrier to uptake and use.

*Ref: findings* 4.2.2 The Health and Safety assessment is largely being attempted in learners own time, from home; 4.3.2 Lack of internet access at work; 4.4.11 Where location of use was specified by respondents, mobile devices were used for learning primarily from home and on the road; 4.6.2 Wi-Fi access remains patchy; 4.6.3 Individual Trusts are starting to upgrade Wi-Fi access
### Appendix A: Research timetable

<table>
<thead>
<tr>
<th>Dates</th>
<th>Activity</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 21 – Mon 28 May 2012</td>
<td>Desk research: literature review undertaken</td>
<td>Epic</td>
</tr>
<tr>
<td>By Thurs 6 June 2012</td>
<td>Draft survey questions written and submitted to NHS South of England</td>
<td>Epic</td>
</tr>
<tr>
<td>By Wed 6 June 2012</td>
<td>Draft survey emails (and paper-based communication written for those without email addresses) submitted to NHS South of England</td>
<td>Epic</td>
</tr>
<tr>
<td>By Wed 7 June 2012</td>
<td>Survey questions and emails finalised</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>By Fri 8 June 2012</td>
<td>Survey questions peer reviewed by Oxford University</td>
<td>Dr Chris Davies</td>
</tr>
<tr>
<td>By Mon 11 June 2012</td>
<td>Amends (highlighted by peer review) are made</td>
<td>Epic (with agreement by NHS South of England)</td>
</tr>
<tr>
<td>By Tues 19 June 2012</td>
<td>Sample of 270 survey participants for general survey and 90 participants for Health and Safety survey identified</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>On Thurs 21 June 2012</td>
<td>Trail emails (email 1 – see section 4.2.1) and paper-based trail flyer sent</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>On Fri 28 June 2012</td>
<td>Surveys (including research participant number and link for electronic completion) sent via email and paper (email 2 – see section 4.2.1)</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>By Mon 25 June 2012</td>
<td>Draft Focus Group plan submitted to NHS South of England</td>
<td>Epic</td>
</tr>
<tr>
<td>By Mon 25 June 2012</td>
<td>Telephone interviewees identified</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>By Tues 26 June 2012</td>
<td>Focus Group plan finalised</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>By Wed 27 June 2012</td>
<td>Focus Group plan peer reviewed by Oxford University</td>
<td>Dr Chris Davies</td>
</tr>
<tr>
<td>On Thurs 28 June 2012</td>
<td>Amends (highlighted by peer review) are made</td>
<td>Epic (with agreement by NHS South of England)</td>
</tr>
<tr>
<td>Dates</td>
<td>Activity</td>
<td>Responsibilities</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>By Tues 3 July 2012</td>
<td>All telephone interviews scheduled</td>
<td>NHS South of England</td>
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<tr>
<td>By Thurs 5 July 2012</td>
<td>Draft telephone interview schedules submitted to NHS South of England</td>
<td>Epic</td>
</tr>
<tr>
<td>By Thurs 5 July 2012</td>
<td>Telephone interview schedules finalised</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>Mon 2 July 2012</td>
<td>Email ‘countdown’ prompt sent to survey participants (email 3 – see section 4.2.1)</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>On Thurs 5 July 2012</td>
<td>Telephone interviews confirmed (as reminders for participants)</td>
<td>NHS South of England</td>
</tr>
<tr>
<td>By Fri 13 July 2012</td>
<td>Telephone interview schedules peer reviewed</td>
<td>Dr Chris Davies, Professor John Traxler</td>
</tr>
<tr>
<td>By Mon 16 July 2012</td>
<td>Amends (highlighted by peer review) are made</td>
<td>Epic (with agreement by NHS South of England)</td>
</tr>
<tr>
<td>On Thurs 19 July 2012</td>
<td>Email extending deadline sent to survey participants yet to complete survey (email 4 – see section 4.2.1) to be sent</td>
<td>NHS South of England</td>
</tr>
</tbody>
</table>
| July 17 2012 (One hour) | Focus Group                                                              | Arranging: NHS South of England  
Planning: Epic  
Running: Epic |
| On Thurs 26 July 2012  | Survey closed                                                             | Epic               |
| From Wed Aug 1 to Wed Aug 8 2012 | Telephone interviews for stakeholders take place  
Note that the school summer holidays commence from Monday 23 July | Epic               |
| By Mon 20 Aug 2012     | Data analysis                                                             | Epic               |
| By Fri 24 Aug 2012     | Write up                                                                  | Epic               |
| By Fri 7 Sept 2012     | Findings/recommendations peer review                                      |                   |
| By Fri 14 Sept         | Report submitted to NHS South of England                                   |                   |
Appendix B: Findings from desk research


Paper summary: This paper identifies five levers for change, and recommends a number of actions, including connecting data and increasing health literacy. It is also discussed how information from healthcare apps can be utilised in future.

Key findings:
1. There is a rapidly growing market of online applications and social media tools for health, with little focus on the issue of ownership and protection of data. (p. 6)
2. Important issue to consider: ownership – Who owns the information put into health apps and how is it used? External interoperability – how open can eHealth systems be to other applications and programmes, while ensuring security of transactions within the health sphere? (p. 6)
3. It is important to put in place the safeguards that will allow citizens to use health apps with confidence that their data is handled appropriately and subsequently it will create the conditions for the integration of user-generated data with official medical data so that care can be more integrated, personalised and useful for patients. (p. 7)


Paper summary: This paper gives an overview of the state of the heart of health and healthcare smartphone apps available on the market. The study also focuses on the development of a smartphone app within eCAALYX (Enhanced Complete Ambient Assisted Living Experiment, 2009 - 2012), an EU-funded project for older people with multiple chronic conditions.

Key findings:
1. There is a continuous increase in the diffusion of mobile health applications. (p. 2)
2. Clinicians and allied health workers are already adopting smartphones successfully in a diverse range of practices. (p. 3, 4, 11)
3. Patients too are accessing health information, actively participating in their own care, and maintaining contact with their healthcare providers through smartphones. (p. 3, 4, 11)
4. A special ‘niche market’ for smartphone apps is ‘chronic conditions such as diabetes mellitus and cardiovascular disease’. (p. 8, 11)
5. Benefits related to the use of smartphone are: keeping clinicians up to date with the latest medical, easily communicating advice and guidelines to a distributed community of practice. (p. 11)
6. System and service reliability is an important issue to take into account when developing mobile platforms. (p. 4)
7. Usability was a critical issue for eCAALYX as, usually, users in the target group do not have any familiarity with technology and this is also often compounded by a range of physical (e.g., poor eyesight) and/or cognitive disabilities (e.g., dementia). (p. 5)


Paper summary: This paper describes how mobile technology is evolving and suggests that it is important that all physicians are aware of new advances. Smartphones have the potential to improve the diagnostic skills and education of surgeons.
Key findings:
1. The iPhone is increasing in popularity and has many uses for surgeons which may not be immediately apparent to users. (p. 47)
2. Podcasts may help surgeons to keep up-to-date with the new advances in medicine and surgery. (p. 47)
3. A large number of applications can both educate and provide support in day to day activities in the work place. (p. 46, 47)
4. It is important that all surgeons become aware of the iPhone’s potential. (p. 47)
5. Barriers in adoption of iPhones include security and confidentiality in sending data. (p. 45)
6. The use of personal mobile phones for taking pictures has been forbidden within the NHS. Only those registered with the Information Commissioner as data controllers are allowed to take and send photos. (p. 45)


Paper summary: This paper documents the extension of a 2006/7 pilot study. It is a study of learning ecology across a cohort of 387 medical students, who were equipped with a PDA loaded with reference resources to facilitate mobile learning. The paper offers lessons which are transferable to learning with newer technologies, such as smartphones.

Key findings:
1. Development of a model for mobile learning in the clinical setting that shows how different theories contribute and which will allow learning opportunities to be optimised. (p. 7, 8)
2. A trigger (external or internal) leads to the recognition of an educational need, following which the mobile device enables learning to take place. Positive (readiness and acceptance of using IT, identifying the appropriate tool and social context) and negative (technological barriers, negative social feedbacks or perceptions) factors can affect the cycle at any stage. (p. 7, 8)
3. Instant access to information whilst in the clinical setting gives the students a better framework for understanding and storing the new information, and allows more efficient retrieval for future use. (p. 7)
4. Resources on the PDA were seen as a useful additional tool to have a supplement rather than a replacement for their traditional learning strategies. (p. 7)
5. Several factors including perceived utility and ease of use determine the attitude towards technology.
6. Guidance on etiquette was required, so-called “mobiquette”. The students had to learn how to incorporate it into their consultations without harming their relationship with the patient. (p. 7)
7. Resources need to be able to work effectively on multiple hardware platforms that will have an impact on development costs.


Paper summary: Currently much evaluation of mobile learning pilots is confined to Kirkpatrick level 1 evaluation and concerned primarily with how learners respond to the learning opportunities offered by learning on mobile devices. This study looks at the impact of learning interventions on subsequent performance, and finds evidence of enhanced performance following just in time learning using a mobile device.
Key findings:
1. The procedural animation video is an effective medium for teaching procedural skills. (p. 3, 4)
2. Embedding the video on a mobile device, and allowing trainees to access it immediately before chest tube insertion, may enhance and standardise surgical education for civilians and military personnel. (p. 3, 4)


Paper summary: This paper provides a framework for commissioners and providers of health and social care seeking to provide high quality and cost-effective education, training and development. The study contains pointers to the potential of e-learning, simulations and smartphones to play a role in future initiatives.

Key findings:
1. The framework provided aims to enable world-class education, training and continued development that makes the best use of technology, ensuring that the workforce acquire and maintain the knowledge, values and behaviours needed to improve constantly patient outcomes, safety and experience. (p. 18)
2. Innovative technologies such as simulation and e-learning have an important role to play as part of a blended approach to learning. (p. 20)
3. Simulation and other technologies are already used in the education and training of allied health professionals, dentists, healthcare scientists and pharmacists. (p. 21)
4. The use of simulation, e-learning and other technologies should be achievable and clearly mapped to specific learning outcomes in identified areas of the curriculum or learning framework. (p. 28)
5. Simulation, e-learning and new technologies should not be used as an end in themselves, but appropriately integrated in a blended approach to learning and implemented to address specific learning or clinical needs. (p. 28)
6. E-learning can allow learners to train at different times and at their own pace. (p. 22)
7. Content to support e-learning on computers or mobile devices should be developed according to agreed technical standards to ensure easy access across different Learning Management Systems. (p. 39)
8. Simulation provides a safe environment for health and social care students and staff to develop their skills. (p. 22)
9. Learning Management Systems allow users to keep a record of their learning, to capture the results of on-line assessments and obtain feedback. (p. 25)
10. The DH has invested in centrally developed learning management systems to provide cost-effective solutions for health and social care providers and capture data which providers will be required to share with commissioners and the NHSLA. (p. 26)


Paper summary: The paper provides the formal Government response to the 2010 consultation ‘Liberating the NHS: An Information Revolution’. It deals with the use of technology in the NHS broadly, and is not confined to technology for learning.

Key findings:
1. Using digital and online services can simplify the more routine aspects of care, such as booking appointments, requesting repeat prescriptions, or self-assessment for social care. (p.23)
2. Technology can help care professionals to focus more time on face-to-face aspects of care. (p.32)
3. Clear direction and standards from central Government are vital. (p.32)
4. Many actions will require local decisions, local leadership and local drive. (p.39)


Paper summary: This paper sets out some key pointers to the regulatory position of mobile apps for learning. Different regulatory frameworks apply in different jurisdictions. While standalone software can be deemed a medical device under the Medical Device Directive, the definitions are not explicit and therefore are open to interpretation.

Key findings:
1. Health professionals make considerable use of mobile phones during their working day, as do their patients. (p.32)
2. The regulations applicable to health apps vary by geography. In the UK, the MHRA is responsible for the regulation of medical devices. (p.4)
3. Specific regulations that accompany this nascent technology are in their infancy, but should not be ignored. (p.32)
4. Health professionals should carefully consider the risks when using apps to support a patient’s care. (p.22)
5. Developers of apps for the healthcare sector should consider whether the software they are placing on the market constitutes a medical device under the current regulations. (p.16)
6. The Medical Device Directive 93/42/EEC (MDD) is the primary source of regulation governing health apps across European member states. (p.13)
7. Patients should examine carefully the source of the apps they use to manage their health. Within Europe, health apps that influence a patient’s treatment should carry the CE mark to demonstrate their conformity with the appropriate regulation. (p.20)


Paper summary: This paper provides an overview of apps available for medical practitioners from the standpoint of US healthcare providers.

Key findings:
1. The smartphone is just one platform among a growing array of mobile health devices. (p.17)
2. Smartphone apps do not require large up-front investments from health providers or consumers. (p.17)
3. The iPad may emerge as an attractive ‘in between’ small device for health providers. (p.17).
4. There are different types of smartphone apps for clinicians and consumers: medical references, diagnostic tools, patient records, mobile and home monitoring, home care, etc. (pp. 8-12)
5. Physicians’ work is mobile, and smartphone apps can increase productivity. (p.18)
6. The killer app for physicians could be electronic health records adoption. (p.18)
7. Health apps could help people managing chronic health conditions such as asthma, diabetes, etc. (p.18)
8. Barriers: too much app development is done by technologists without much user input; it is difficult to distinguish safe, medically credible apps from untested apps; consumers may believe that downloading and using medical apps is a replacement for consulting a physician; keeping personal health information secure is a challenge. (pp. 13, 14)

Paper summary: The paper sets out quality standards for the development of e-learning, some of which also apply to the development and implementation of mobile learning.

Key findings:
1. Any development must have a clearly defined educational purpose. (p.10)
2. The course or learning activity should be appropriate to the specified audience, in terms of terminology used, level and amount of content, and assessment processes used. (p.13)
3. The educational aims and objectives of the course/learning activity should be clear and include identifiable learning outcomes which are specific in terms of knowledge, skills, and vocational/professional competences to be gained. (p.11)
4. It is important to identify any requisite IT skills that will be needed to gain access and progress through the course/learning activity. (p.12)
5. Health care organisations have a legal responsible to ensure that any materials produced are accessible for the widest possible audience. (p.13)


Paper summary: This paper is an initial study into the potential of mobile learning for the NHS. It identified 27 benefits, 22 challenges and makes a number of recommendations based on those findings.

Key findings
1. The study represents a snapshot of a very rapidly evolving and expanding discipline. (p. 43)
2. Benefits of mobile learning: convenience (learning location, timely learning); reassurance; flexibility; relevance; control of learning; quick and easy access to information; quick and easy communication; easy knowledge sharing; improved learner confidence; supported decision making, improved care, fits many learning styles; choice; good use of ‘dead time; lends itself to informal learning; convenience (assessment location, timely assessment); easy evidence collection; immediacy of assessment feedback; easy reference to previous assessments; easy repeating self-assessment; easy contact with mentors; consistency; efficiency and cost savings; wide reach; appeal across the board. (p.19-23)
3. Challenges of mobile learning: little or no experience of mobile learning; reluctance to accept mobile learning; poor perception of e-learning transferred to mobile learning; misconception that mobile learning will be introduced for all training; solitude of learning on a mobile device; reference for laptops/PCs over mobile devices; screen size; lack of confidence in the reliability of mobile technology; appropriateness when capturing evidence; potential for dishonesty; lack of skill with mobile technology; inequality of access; technical support requirement; input limitations; easy to lose or steal; conversion of existing e-learning to mobile; device agnosticism; security; interference with other equipment; costs; HR policy; interfacing with NHS IT systems. (pp.23-28)


Paper summary: The purpose of this article is to provide an overview of some of the diverse infectious diseases-oriented resources available to the iPhone/iPod touch user.

The medical student’s book-laden lab coat has been as much a part of the lore of medicine as the stethoscope or the Aesculapian staff. Generations of clinicians have long sought ways to have
medical information accessible at their fingertips. The internet brought vast information resources to a physician's desktop. With the acceptance of electronic media by the medical community came a desire to make these resources portable.

Key findings:
1. A growing number of medical educational resources and apps are now accessible on the iPhone (e.g. video and podcasts on YouTube or iTunes U, infectious disease apps, drug information databases, medical calculators, etc.). (p. 1267-1272)
2. In 2008, at the insistence of some in the medical community, Apple created a separate medical classification that in early 2009 became the third fastest growing App Store category. (p. 1273)
3. The FDA has been monitoring this development and an FDA official has stated that the iPhone may ultimately need to be regulated as a medical device. (p. 1273)


Paper summary: While the use of smartphones is innovative, PDAs have been well utilised by nurses and nursing schools. A study of PDAs published in 2009 found that 70% of medical students used PDAs or PDA-like devices while learning. The use of PDAs has been associated with high levels of student satisfaction.

Key findings:
1. The literature on the use of smartphones in clinical education is relatively scarce. Whilst the use of smartphones is innovative, PDAs have been well utilised by nurses and nursing schools.
2. Nursing education can benefit from access to a diversity of educational aids during clinical, class, or clinical conference (e.g. instructional videos, podcasts, national care guidelines, online references).
3. Nursing education can benefit from specific apps (e.g. apps to look up patient drugs by physical characteristics, calculations of body mass, etc.)
4. Texting allows students to easily call their instructors for assistance.
5. The main concerns and barriers are: cost, frequent releases of new products, accessibility, interference, hygiene concerns, and confidentiality.


Paper summary: This paper examines that state of the market and the survey responses of 819 guild members. It suggests potential gains for the use of mobile technology for learning.

Key findings:
1. The market is still evolving but there is every indication is that mobile will represent as big a shift as the internet.
2. Everybody can and should be starting their initial mobile efforts: it is important to start thinking about a mobile strategy and it is time to mobilise resources.
3. Approximately 70% of those surveyed reported using personal devices for m-learning (p. 12).
4. Tablets and smartphones are the most popular personal devices for learning, with smartphones only slightly ahead of tablets (p. 12).
5. Reported barriers to implementing m-learning include concerns around suitability of existing content, security, connectivity and access, and lack of standards (p. 19).
6. Nonetheless, over 65% reported that they intended to do more m-learning (p. 18).

Paper summary: This study set out to determine patient attitudes toward physicians’ exam room use of tablet devices using a sample of 96 patients. Patients were asked about their attitudes toward technology use in the exam room and results showed mostly positive patient perceptions of the tablets regardless of age, gender, race, ethnicity, and income.

Key findings:
1. Health information technology (HIT) is seen as part of the solution to improving the quality, efficiency, and cost of health care. (p. 643)
2. The success of redesigning primary care and correctly implementing Health Information Technology over the next several years will rely on rigorous evaluation of new systems, software, and devices. (p. 647)
3. The use of tablet computers by physicians in the examining room is perceived positively by most patients. (pp. 646-647)
4. Nearly all of the patients surveyed had no problems with physicians’ use of the tablet computer. Most of the patients expressed confidence that the tablet computers did not affect their relationship with the physician, lengthen their visit, or increase mistakes made in their care. Concerns about privacy were apparent, as reported in previous studies. (pp. 646-647)
5. Particular attention should be paid to minorities, disadvantaged patients (including those with low levels of education), and older patients to ensure that the benefits of Health Information Technology do not create disparities in health care systems. (p. 647)


Paper summary: This paper is an overview of the implications of the EU working time directive for medical training, amongst other things it points to the potential of technology to meet training provision.

Key findings:
1. The effective and integrated use of simulation can help to lessen the impact of reduced hours and shift working by accelerating the acquisition of skills and transferring learning away from the patient. (p. 53)
2. Technology can provide a safe, controlled environment and accelerate learning (p. 53)
3. E-learning is a relatively economical, easy and flexible approach to training whereby a trainee can gain more control over what, when and the pace at which they learn. (p. 53)
4. Where appropriate, skills and expertise should be learnt in a simulation environment and from other modern techniques, not on patients (p. 9)
<table>
<thead>
<tr>
<th>Title of app</th>
<th>Produced by</th>
<th>Available from [Accessed 23/08/12]</th>
<th>Content of app</th>
<th>Classified as</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABG</td>
<td>Matthew DeCaro</td>
<td><a href="http://itunes.apple.com/us/app/abg/id288690509?mt=8">http://itunes.apple.com/us/app/abg/id288690509?mt=8</a></td>
<td>Provides functionality to analyse arterial blood gasses; output a recommended FIO2; perform hemodynamic calculations using the Fick principle; determine drip rate from desired dosing for an infusion (or vice-versa).</td>
<td>Mobile calculator</td>
</tr>
<tr>
<td>ACLS</td>
<td>Anesoft</td>
<td><a href="http://itunes.apple.com/us/app/acls-sim-lite/id361156185?mt=8">http://itunes.apple.com/us/app/acls-sim-lite/id361156185?mt=8</a></td>
<td>Users can see the results of their decisions simulated in the app.</td>
<td>Mobile simulator</td>
</tr>
<tr>
<td>Title of app</td>
<td>Produced by</td>
<td>Available from [Accessed 23/08/12]</td>
<td>Content of app</td>
<td>Classified as</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Inc.</td>
<td>Epocrates, Inc.</td>
<td><img src="https://play.google.com/store/apps/details?id=com.qxmd.ecgguide&amp;hl=en" alt="Content" /></td>
<td>uncommon ECGs.</td>
<td></td>
</tr>
<tr>
<td>Epocrates</td>
<td>Epocrates, Inc.</td>
<td><img src="http://itunes.apple.com/gb/app/epocrates/id281935788?mt=8" alt="Content" /> <img src="https://play.google.com/store/apps/details?id=com.epocrates&amp;feature=search_result#?t=W251bGwsMSwxLDEsImNvbS5lcG9jcmF0ZXMjQ.." alt="Content" /></td>
<td>Regularly updated drug database. Epocrates Rx has got a Contact Manufacturer section that connects the user to the drug manufacturer for product-related questions, to report adverse events, or to learn about patient assistance programmes.</td>
<td>Mobile reference, Mobile forum</td>
</tr>
<tr>
<td>Glasgow Coma Scale</td>
<td>HandheldCare</td>
<td><img src="http://itunes.apple.com/us/app/glasgow-coma-scale/id286073351?mt=8" alt="Content" /></td>
<td>A tool to calculate medical formulas, equations and scores.</td>
<td>Mobile calculator</td>
</tr>
<tr>
<td>iVCL</td>
<td>Shawn Larson</td>
<td><img src="http://itunes.apple.com/us/app/ivcl/id379011867?mt=8" alt="Content" /></td>
<td>Provides a c-arm simulator and an anatomical viewer.</td>
<td>Mobile simulator</td>
</tr>
<tr>
<td>Title of app</td>
<td>Produced by</td>
<td>Available from [Accessed 23/08/12]</td>
<td>Content of app</td>
<td>Classified as</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Title of app</td>
<td>Produced by</td>
<td>Available from [Accessed 23/08/12]</td>
<td>Content of app</td>
<td>Classified as</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>------------------------------------</td>
<td>----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Inc.</td>
<td>calculator/id361811483?mt=8 <a href="https://play.google.com/store/apps/details?id=com.qxmd.calculate&amp;hl=en">https://play.google.com/store/apps/details?id=com.qxmd.calculate&amp;hl=en</a></td>
<td>well as calculate numbers.</td>
<td>calculator/Mobile decision trees</td>
<td></td>
</tr>
</tbody>
</table>

Note that some apps contained more than one of the identified features in a single app. No mobile forum apps specifically aimed at medical staff were identified during desk research, although there are some aimed at keeping patients in touch with doctors or other care providers (for example, WarmHealth and HealthTap)\(^{35}\). However, this approach to learning was included in surveys and question schedules, as they featured as possibilities in journals and papers accessed in desk research.

Appendix C: Overview of responses to the general survey

Note: There were 133 survey respondents to the general survey (96 staff and 37 managers), with a reasonable spread across Trusts and job roles (the sampling method used was that of the previous study):

<table>
<thead>
<tr>
<th>Job Role</th>
<th>Oxford Health NHS FT</th>
<th>SCAS NHS FT</th>
<th>UHFST FT</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community nurse</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Community nurse manager</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Ambulance worker</td>
<td>0</td>
<td>21</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Ambulance worker manager</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Junior doctor</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Junior doctor manager</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Community psychiatric nurse</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Community psychiatric nurse manager</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Administrator</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Administrator manager</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Radiographer</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Radiographer manager</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Other (non-manager)</td>
<td>2</td>
<td>11</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Other (manager)</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Totals</td>
<td>46</td>
<td>53</td>
<td>34</td>
<td>133</td>
</tr>
</tbody>
</table>

Those who selected ‘Other’ worked in a variety of roles, most popularly as consultants (six survey respondents), health visitors (six survey respondents) and call handlers (three respondents). There were also one-off roles mentioned, such as tissue viability nurse or team therapist.

All but one of the 133 survey respondents completed all the questions in the survey (96 practitioners and 37 managers). The remaining respondent abandoned the survey after the initial stage.
The statistical diagrams below offer background on respondents to the general survey. 133 survey respondents in total answered these questions: 96 practitioners and 37 managers.

**Survey respondents’ ages (96 staff)**

- Under 25: 1
- 26 - 35: 4
- 36 – 45: 6
- 46 – 55: 16
- Over 55: 4

**Survey respondents’ ages (37 managers)**

- Under 25: 2
- 26 - 35: 3
- 36 – 45: 5
- 46 – 55: 10
- Over 55: 4

**Survey respondents’ gender (96 staff)**

- Female: 63
- Male: 33

**Survey respondents’ gender (37 managers)**

- Female: 25
- Male: 12
Survey respondents’ access to a computer/laptop in their workplace (96 staff)

Of 96 staff respondents 85.6% have access to a computer/laptop in their workplace. Some respondent state there is “no time” or “limited time” to do it. Some others say the computers have to be shared among “nine people working in the office”.

Survey respondents’ access to a computer/laptop in their workplace (37 managers)

All the manager survey respondents have access to a computer/laptop in their workplace. Two of them report some problems related to the connection (“Sometimes IT access from GP Surgery to Oxford Health is challenging”. “I am unable to use my laptop in most GP Practices due to lack of wireless connectivity”).

Survey respondents with an app store account (96 staff)

Approximately half of the staff survey respondents have an app store account (50.5%).

Survey respondents with an app store account (37 managers)

Just over 40% of 37 manager survey respondents have an app store account.
Survey respondents’ use of mobile devices (96 staff)
37.10% of the staff survey respondents use a mobile phone with no internet access. 30.90% use an Apple iPhone, followed by an Android/Google smartphone (21.60%). 16.50% of the respondents have an Apple iPad.

Survey respondents’ use of mobile devices (37 managers)
29.70% of the manager survey respondents use a mobile phone with no internet access. Managers are especially likely to use a Blackberry: 32.40% use a basic version with no internet connection, 18.90% use a Blackberry smartphone with touch screen and wireless internet access (operating system 5 or 6). The Apple iPhone is used by 24.30% of the respondents, followed by an Android/Google smartphone (13.50%). 10.50% of managers have an Apple iPad.
The tables below give device usage by role (clinical and non-clinical) for both the 2010 and 2012 snapshots.

### 2010 - Which of these jobs best describes your role?

<table>
<thead>
<tr>
<th>Devices</th>
<th>Community nurse</th>
<th>Ambulance worker</th>
<th>Junior doctor</th>
<th>Community psychiatric nurse</th>
<th>Radiographer</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone (with no internet access)</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>63.2%</td>
</tr>
<tr>
<td>Android/Google smart phone</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5.3%</td>
</tr>
<tr>
<td>Apple iPhone</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>12.3%</td>
</tr>
<tr>
<td>Apple iPod Touch</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3.5%</td>
</tr>
<tr>
<td>Blackberry</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>8.8%</td>
</tr>
<tr>
<td>Symbian/Nokia smart phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Windows mobile smart phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Apple iPad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1.8%</td>
</tr>
<tr>
<td>Other tablet</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Nintendo DS</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>14.0%</td>
</tr>
<tr>
<td>Mobile phone (with internet access, but I do not know what kind)</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>15.8%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

### 2012 - Which of these jobs best describes your role?

<table>
<thead>
<tr>
<th>Devices</th>
<th>Community nurse</th>
<th>Ambulance worker</th>
<th>Junior doctor</th>
<th>Community psychiatric nurse</th>
<th>Radiographer</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone (with no internet access)</td>
<td>12</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>35.8%</td>
</tr>
<tr>
<td>Android/Google smart phone</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>20.9%</td>
</tr>
<tr>
<td>Apple iPhone</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>32.8%</td>
</tr>
<tr>
<td>Apple iPod Touch</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6.0%</td>
</tr>
<tr>
<td>Blackberry (basic version with no internet access)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>6.0%</td>
</tr>
<tr>
<td>Blackberry smart phone with touch screen and wireless internet access (operating system 5 or 6)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4.5%</td>
</tr>
<tr>
<td>Symbian/Nokia smart phone</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3.0%</td>
</tr>
<tr>
<td>Windows mobile smart phone</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.5%</td>
</tr>
<tr>
<td>Apple iPad</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>19.4%</td>
</tr>
<tr>
<td>Devices</td>
<td>Administrator</td>
<td>Administrator manager</td>
<td>Other (manager)</td>
<td>Response Percent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile phone (with no internet access)</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>83.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Android/Google smart phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple iPhone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple iPod Touch</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>16.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blackberry</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbian/Nokia smart phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows mobile smart phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple iPad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other tablet</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nintendo DS</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>16.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile phone (with internet access, but I do not know what kind)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>33.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2012 - Which of these jobs best describes your role?

<table>
<thead>
<tr>
<th>Devices</th>
<th>Administrator</th>
<th>Administrator manager</th>
<th>Other (manager)</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile phone (with no internet access)</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>54.5%</td>
</tr>
<tr>
<td>Android/Google smart phone</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>18.2%</td>
</tr>
<tr>
<td>Apple iPhone</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>18.2%</td>
</tr>
<tr>
<td>Apple iPod Touch</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>18.2%</td>
</tr>
<tr>
<td>Blackberry (basic version with no internet access)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Blackberry smart phone with touch screen and wireless</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9.1%</td>
</tr>
</tbody>
</table>
There were 11 respondents to the Health and Safety customer satisfaction survey; these respondents were not asked to provide demographic information.
There were 53 respondents to the Health and Safety survey (aimed at individuals within the Trust who have the potential to re-accredit for Health and Safety via mobile assessment and who were due to reaccredit), with a reasonable spread across grades and roles. Of these, the majority did not have access to Wi-Fi, or did not know whether they had access to Wi-Fi.

<table>
<thead>
<tr>
<th>Access to Wi-Fi</th>
<th>I am band 4 or below and work in a patient-facing role</th>
<th>I am band 4 or below and work in a non-patient-facing role</th>
<th>I am band 5 or above and work in a patient-facing role</th>
<th>I am band 5 or above and work in a non-patient-facing role</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>All or most of the time</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sometimes, depending on location</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Access for some time each day</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rarely</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Never</td>
<td>9</td>
<td>4</td>
<td>10</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

The statistical diagrams below offer further background on respondents to the Health and Safety survey. 53 survey respondents in total answered these questions.
Survey respondents’ ages (22 respondents band 4 and below)
Respondents were predominantly in patient-facing roles.

Survey respondents’ ages (31 respondents band 5 and above)
Respondents were predominantly in patient-facing roles.

Survey respondents’ gender (22 respondents band 4 and below)
Respondents were predominantly in patient-facing roles.

Survey respondents’ gender (31 respondents band 5 and above)
Respondents were predominantly in patient-facing roles.
Appendix D: Surveys

General Survey

<table>
<thead>
<tr>
<th>Questions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 1: About you, your job, and your use of technology</strong></td>
<td></td>
</tr>
<tr>
<td>*1. The email/letter you received about this survey included a research participant number. Please enter it below.</td>
<td>Note: throughout, star * denotes required question. (For those who complete the survey online, they will not be able to skip these questions).</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*2 Which of these Trusts do you work for?</td>
<td>Ref: Q2 and Q3</td>
</tr>
<tr>
<td>- Oxford Health NHS Foundation Trust</td>
<td>The research participant number should give us this information, but:</td>
</tr>
<tr>
<td>- South Central Ambulance Service NHS Foundation Trust</td>
<td>1. It is always a good idea to cross-reference.</td>
</tr>
<tr>
<td>- University Hospital NHS Southampton Foundation Trust</td>
<td>2. Collecting this information means we can guarantee participant anonymity – the independent researcher responsible for data analysis will not need to access the NHS list of names for data analysis, and the NHS will not have access to which particular participant number answered in a particular way.</td>
</tr>
<tr>
<td>*3 Which of these jobs best describes your role?</td>
<td></td>
</tr>
<tr>
<td>- Community nurse</td>
<td></td>
</tr>
<tr>
<td>- Community nurse manager</td>
<td></td>
</tr>
<tr>
<td>- Ambulance worker</td>
<td></td>
</tr>
<tr>
<td>- Ambulance worker manager</td>
<td></td>
</tr>
<tr>
<td>- Junior doctor</td>
<td></td>
</tr>
<tr>
<td>- Junior doctor manager</td>
<td></td>
</tr>
<tr>
<td>- Community psychiatric nurse</td>
<td></td>
</tr>
<tr>
<td>- Community psychiatric nurse manager</td>
<td></td>
</tr>
<tr>
<td>- Administrator</td>
<td></td>
</tr>
<tr>
<td>- Administrator manager</td>
<td></td>
</tr>
<tr>
<td>- Radiographer</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>5. What is your gender?</td>
<td>Male, Female</td>
</tr>
<tr>
<td>6. Is it easy for you to access a computer/laptop in your workplace?</td>
<td>Yes, No, I can’t access a computer</td>
</tr>
<tr>
<td>7. A smartphone is a mobile phone with a touch screen, internet access and the ability to run applications (known as apps). Do you use any of the following mobile devices either in or outside work? (tick as many as apply)</td>
<td>Mobile phone (with no internet access), Android/Google smartphone, Apple iPhone, Apple iPod Touch</td>
</tr>
</tbody>
</table>

Ref Q4 and Q5
These give useful data on the age and gender of those most likely to accept mobile learning, and so the kind of work that may need to be done in preparation for any roll out.

Ref Q7
We avoided asking “do you own...?” as I thought some people may be reluctant to answer honestly, fearful that they may be asked to use their personal device for work use.
- Blackberry (basic version with no internet access)
- Blackberry smartphone with touch screen and wireless internet access (operating system 5 or 6)
- Symbian/Nokia smartphone
- Windows mobile smartphone
- Apple iPad
- Other tablet
- Nintendo DS
- Mobile phone (with internet access, but I do not know what kind)
- Other (please specify) ______________

*8 Apps are applications which can be bought or downloaded for free and which run on smartphones like the iPhone. Do you have an account at an app store?
- Yes
- No

Ref Q9
This should give some indication of technical familiarity and knowhow.

*9 Does the NHS provide you with a mobile device, such as a smartphone or tablet?
- No
- Yes (please specify)

Ref Q10
This should give an indication of how far access to Wi-Fi may present a barrier to uptake.

*10 Wireless networking - often just known as Wi-Fi - is a way of getting onto the internet without cables. Do you have access to Wi-Fi at work?
- All or most of the time
- Sometimes, depending on location
- Access for some time each day
- Rarely
- Never
- Don’t know
*11 There are now many apps (mobile applications) available to help health care staff with learning. Have you tried using a mobile device for learning?

- Frequently
- Once or twice
- Never

If you have any experience of using mobile devices for learning, please briefly describe what you have used and how often.

---

**Section 2: Your thoughts and opinions on mobile learning**

**staff**

*12 Assume the NHS has provided you with a mobile device. Which of these statements would be true for you?

- I am good with technology and I am sure I would find the mobile device intuitive. I would not require training in its use.
- I would like some initial training in how to use the mobile device.

**managers**

*12 Assume the NHS has provided your staff with mobile devices. Which of these statements would be true for them?

- All my staff are good with technology and I am sure they would find the mobile devices intuitive and not require training in their use.
- Some of my staff are good with technology and I am sure they would find the mobile devices intuitive, but others would require training in their use.
- I would like all my staff to have some initial training in how to use the mobile devices.

Note: left-most column are questions for staff, and the column next to it are questions for managers. (Determined by answers to question 2 above).
This is an introduction to questions 13 – 19. Rather than asking about media for learning, I’ve focused on the various types of app which are now available.

Please note: images used in this survey are examples only. They do not indicate the exact mobile device that may be used, nor the exact content employed for NHS training.
For the following questions, assume the NHS has provided you with some kind of mobile device for workplace learning, and offered you training to use it.

<table>
<thead>
<tr>
<th>*13</th>
<th>Indicate the extent to which you agree or disagree with this statement.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“I would use a mobile device for learning by checking my calculations.”</td>
</tr>
<tr>
<td></td>
<td>Please comment on your answer (optional).</td>
</tr>
</tbody>
</table>

For the following questions, assume the NHS has provided your staff with some kind of mobile device for workplace learning, and offered them training in their use.

<table>
<thead>
<tr>
<th>*13</th>
<th>Indicate the extent to which you agree or disagree with this statement.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“I believe my staff would use a mobile device for learning by checking their calculations.”</td>
</tr>
<tr>
<td></td>
<td>Please comment on your answer (optional).</td>
</tr>
</tbody>
</table>

Ref: Q13 Participants would have the option to select: ‘Strongly agree’, ‘Agree’, ‘Slightly agree’, ‘Slightly disagree’, ‘Disagree’, ‘Strongly disagree’ or ‘Not applicable’.
Indicate the extent to which you agree or disagree with this statement.

“I would use a mobile device for learning by working through decision trees.”

Please comment on your answer (optional).

Indicate the extent to which you agree or disagree with this statement.

“I believe my staff would use a mobile device for learning by working through decision trees.”

Please comment on your answer (optional).
Indicate the extent to which you agree or disagree with this statement.

“I would use a mobile device for learning by consulting online reference material.”

Please comment on your answer (optional).

Indicate the extent to which you agree or disagree with this statement.

“I believe my staff would use a mobile device for learning by consulting online reference material.”

Please comment on your answer (optional).
Indicate the extent to which you agree or disagree with this statement.

“I would use a mobile device for learning by working through an interactive tutorial containing video, questions and animations.”

Please comment on your answer (optional).

Indicate the extent to which you agree or disagree with this statement.

“I believe my staff would use a mobile device for learning by working through an interactive tutorial containing video, questions and animations.”

Please comment on your answer (optional).
Indicate the extent to which you agree or disagree with this statement.
“I would use a mobile device for learning by using a mobile simulator.”
Please comment on your answer (optional).

Indicate the extent to which you agree or disagree with this statement.
“I believe my staff would use a mobile device for learning by using a mobile simulator.”
Please comment on your answer (optional).
Indicate the extent to which you agree or disagree with this statement.

“I would use a mobile device for learning by sending messages and discussing with peers and/or experts.”

Please comment on your answer (optional).

*18 Indicate the extent to which you agree or disagree with the statements below. If I had a mobile device for learning:

- It would be more convenient for me to undertake training, because I would not have to leave my workplace.
- It would be more convenient for me to undertake training because I would not have to wait to access a computer.

*19 Indicate the extent to which you agree or disagree with the statements below. If my staff had mobile devices for learning:

- It would be more convenient for them to undertake training, because they would not have to leave the workplace.
- It would be more convenient for them to undertake training because they would not have to wait to access a computer.

Ref: Q18

Ref: Q19

Here is an example of mobile learning.
<table>
<thead>
<tr>
<th>It would be more relevant for me because I could learn in the place where I have to put my training into practice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would use it for learning during ‘dead time’, for example when waiting for a clinic to begin, or travelling by public transport.</td>
</tr>
<tr>
<td>I would rather use a computer/laptop than a mobile device if I was asked to learn using technology.</td>
</tr>
<tr>
<td>I would not use mobile technology for learning in the workplace, because I worry that others might not understand why I was looking at a phone.</td>
</tr>
<tr>
<td>I would benefit from being able to use it to quickly and easily communicate with peers, my manager or with experts to get timely advice.</td>
</tr>
</tbody>
</table>

Please comment on your answers (optional) and/or describe any other advantages or disadvantages that you believe mobile learning may offer you.

<table>
<thead>
<tr>
<th>It would be more relevant for them because they could learn in the place where they have to put their training into practice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe they would use it for learning during ‘dead time’, for example when waiting for a clinic to begin, or travelling by public transport.</td>
</tr>
<tr>
<td>I believe they would rather use a computer/laptop than a mobile device if asked to learn using technology.</td>
</tr>
<tr>
<td>I believe they would not use mobile technology for learning in the workplace, because they would worry that others might not understand why they were looking at a phone.</td>
</tr>
<tr>
<td>They would benefit from being able to quickly and easily communicate with peers, managers and experts to get timely advice.</td>
</tr>
</tbody>
</table>

Please comment on your answers (optional) and/or describe any other advantages or disadvantages that you believe mobile learning may offer your staff.

disagree’ to each of the statements.

In the statements I tried to address issues, such as portability, situatedness (i.e. learning in the workplace) context sensitivity (i.e. relevance to the context), learning preferences, connectivity and collaborative learning.

I deliberately inserted two negatively worded statements (bullets 5 and 6) to introduce balance and signal that negative responses are acceptable.
This is an example of mobile assessment.

<table>
<thead>
<tr>
<th>20</th>
<th>20</th>
</tr>
</thead>
</table>

For the following questions, assume the NHS has provided you with a mobile device for assessment, and offered you training to use it.

For the following questions, assume the NHS has provided staff with mobile devices for assessment, and offered them training in their use.

*20

<table>
<thead>
<tr>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate the extent to which you agree or disagree with this statement.</td>
</tr>
</tbody>
</table>

“I would use a mobile device for assessments that involve answering

Assessment by answering multiple choice questions with results that identify areas of strengths and weaknesses

Indicate the extent to which you agree or disagree with this statement.

“I believe my staff would use a mobile device for assessments that

Assessment by answering multiple choice questions with results that identify areas of strengths and weaknesses

Indicate the extent to which you agree or disagree with this statement.
**21 Indicate the extent to which you agree or disagree with the statements below. If I had a mobile device for assessment of my knowledge and skills:**

- It would be more convenient because I could undertake formal assessments in my place of work and send them off there and then via the mobile device.

- I would prefer to get assessment feedback and advice on next steps via the mobile device, so that I could use mobile learning to immediately address my needs.

- I would be happy to use it for assessments on the essential knowledge I require for subjects such as Fire Safety and Infection Prevention and Control (for example, by answering a series of word or picture questions in a quiz).

- I would be happy to use it for assessments on some of the essential skills I require for subjects such as Moving and Handling (for example by submitting evidence of practice).

Please comment on your answers (optional) and/or describe any other advantages or disadvantages that you believe mobile assessment may offer you.

---

**21 Indicate the extent to which you agree or disagree with the statements below. If my staff had mobile devices for assessment of their knowledge and skills:**

- It would be more convenient because they could undertake formal assessments in their place of work and send them off there and then via the mobile device.

- I believe they would prefer to get assessment feedback and advice on next steps via the mobile device, so that they could use mobile learning to immediately address their needs.

- I believe they would be happy to use it for assessments on the essential knowledge they require for subjects such as Fire Safety and Infection Prevention and Control (for example, by answering a series of word or picture questions in a quiz).

- I believe they would be happy to use it for assessments on some of the essential skills they require for subjects such as Moving and Handling (for example by submitting evidence of practice).

Please comment on your answers (optional) and/or describe any other advantages or disadvantages that you believe mobile assessment may offer your staff.

Ref: Q21

Participants would have the option to select: ‘Strongly agree’, ‘Agree’, ‘Slightly agree’, ‘Slightly disagree’, ‘Disagree’, ‘Strongly disagree’ for each of the areas.
Section 3: Your previous experience of NHS training (staff)  

Here are two pilot mobile learning apps developed by NHS South of England.

![Image of mobile apps]

*22 Have you used any of the NHS South of England pilot mobile apps?

- Yes [to section 3a]
- No [to section 3b]

Section 3: Your staffs’ previous experience of NHS training (managers)  

*22 Have any of your staff used any of the NHS South of England pilot mobile apps?

- Yes [to section 3a]
- No [to section 3b]

Ref: Q22  
This question allows us to gather feedback on the NHS South of England pilot apps. If users select ‘Yes’ they will be asked about their experiences of using the apps. If they select ‘No’ they will be asked whether they have heard of the apps, questions about potential barriers to using the apps, as well as some questions about their experiences of other training.
### Section 3a: Have used at least one of the NHS South of England apps (staff)

#### *23a Which of the NHS South of England mobile apps have you used?
- □ I used the Compatibility of Injectable Medicines learning app
- □ I used the Adult Drug Calculations learning app

### Section 3a: Staff have used at least one of the NHS South of England pilot apps (managers)

#### 23a Which of the NHS South of England mobile apps have your staff used?
- □ They used the Compatibility of Injectable Medicines learning app
- □ They used the Adult Drug Calculations learning app
- □ Don’t know

### Section 3a: Have used at least one of the NHS South of England apps (staff)

#### *24a Where did you hear about the app(s)?
- ○ My manager told me
- ○ I heard from colleagues
- ○ I saw marketing material
- ○ I found it by searching on the app store
- ○ Other

Please comment on your answer (optional).

### Section 3a: Staff have used at least one of the NHS South of England pilot apps (managers)

#### 24a Where did you hear about the app(s)?
- ○ My manager told me
- ○ I heard from colleagues
- ○ I saw marketing material
- ○ I found it by searching on the app store
- ○ Other

Please comment on your answer (optional).

### Section 3a: Have used at least one of the NHS South of England apps (staff)

#### *25a How did you use the app(s)?
- ○ In moments of quiet time in the workplace
- ○ In my own time away from the workplace
- ○ As part of a formal training session
- ○ Other

Ref: Q25a
This question allows us to gain insights into how the pilot apps are being used.
<table>
<thead>
<tr>
<th>Please comment on your answer (optional).</th>
<th>They used it as part of a formal training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

Please comment on your answer (optional).

<table>
<thead>
<tr>
<th>*26a Indicate the extent to which you agree or disagree with the statements below.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The app(s) were easy to find and download.</td>
</tr>
<tr>
<td>• The app(s) were easy to navigate.</td>
</tr>
<tr>
<td>• The learning content was helpful to me.</td>
</tr>
<tr>
<td>• The images were relevant and interesting.</td>
</tr>
<tr>
<td>• The video content was relevant and interesting.</td>
</tr>
<tr>
<td>• The questions and quizzes were helpful to me.</td>
</tr>
<tr>
<td>• I am confident I could use the skills I have learned in the workplace.</td>
</tr>
</tbody>
</table>

Please comment on your responses (optional).

<table>
<thead>
<tr>
<th>*26a Indicate the extent to which you agree or disagree with the statements below.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• My staff found the app(s) easy to find and download.</td>
</tr>
<tr>
<td>• My staff found the app(s) easy to navigate.</td>
</tr>
<tr>
<td>• My staff found the learning content helpful.</td>
</tr>
<tr>
<td>• My staff found the images relevant and interesting.</td>
</tr>
<tr>
<td>• My staff found the video content relevant and interesting.</td>
</tr>
<tr>
<td>• My staff found the questions and quizzes helpful.</td>
</tr>
<tr>
<td>• I am confident that my staff could use the skills they have learned in the workplace.</td>
</tr>
</tbody>
</table>

Please comment on your responses (optional).

Ref: Q26a
This question allows us to gather feedback on how the apps have been received.

Participants would have the option to select: ‘Strongly agree’, ‘Agree’, ‘Slightly agree’, ‘Slightly disagree’, ‘Disagree’, ‘Strongly disagree’ for each of the areas.
### Section 3b: No previous experience of NHS South of England apps (staff)

**23b** Tell us more about why you haven’t used the apps.

- I didn’t know about these apps
- I don’t have access to a suitable mobile device
- I have a device I could use, but I don’t have access to the internet (Wi-Fi) at work
- The subjects aren’t applicable to me, but I would like the opportunity to learn from similar apps
- I’ve been meaning to try them, but I haven’t had time
- I would prefer not to learn from a mobile device

### Section 3b: Staff have no previous experience of NHS South of England pilot apps (managers)

**23b** Tell us more about why your staff haven’t used the apps.

- We didn’t know about these apps
- My staff don’t have access to suitable mobile devices
- My staff have mobile devices but little or no access to the internet (Wi-Fi) at work
- The subjects aren’t applicable to my staff, but I believe they would be interested in learning from similar apps
- My staff have been too busy to try them out
- I believe my staff would prefer not to learn from a mobile device

### Ref Q24b

This is an opportunity to learn more about potential barriers to uptake of mobile learning.

### 24b Describe in no more than three sentences the most valuable training

* (with or without the use of technology) you have received in the NHS. Include the subject, the length, how the training was delivered, and two things that made it particularly valuable.

### Ref: Q25b

This may offer some common opinions on what works for training from a staff/manager point of view, which could then offer insights for mobile training design.

### 25b Describe in no more than three sentences the least valuable training

* (with or without the use of technology) you have received in the NHS. Include the subject, the length, how the training was delivered, and two things that made it particularly valuable.

### Ref: Q26b

This may offer some common opinions on what does not work so well for training.
the subject, the length, how the training was delivered, and two things that made it least valuable.

NHS. Include the subject, the length, how the training was delivered, and two things that made it least valuable.

from a staff/manager point of view, which could then offer insights for mobile training design.

---

### Health and Safety: potential users survey

<table>
<thead>
<tr>
<th>Questions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The email/letter you received about this survey included a research participant number. Please enter it below.</td>
<td>Note: throughout, star * denotes required question. (For those who complete the survey online, they will not be able to skip these questions).</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*1 Tell us a little about your role.</td>
<td>Note: As the number of job roles are potentially very large, I have asked whether respondents are patient-facing and about their levels of seniority.</td>
</tr>
<tr>
<td>○ I am band 4 or below and work in a patient-facing role</td>
<td></td>
</tr>
<tr>
<td>○ I am band 4 or below and work in a non-patient-facing role</td>
<td></td>
</tr>
<tr>
<td>○ I am band 5 or above and work in a patient-facing role</td>
<td></td>
</tr>
<tr>
<td>○ I am band 5 or above and work in a non-patient-facing role</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ref Q2 and Q3 These may give useful data on the age and gender of those most likely to accept mobile assessment, and so the kind of work that may need to be done in</td>
</tr>
<tr>
<td>*2 What is your age range?</td>
<td></td>
</tr>
<tr>
<td>○ Under 25</td>
<td></td>
</tr>
<tr>
<td>○ 26 – 35</td>
<td></td>
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<tr>
<td>○ 36 – 45</td>
<td></td>
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<tr>
<td>○ 46 – 55</td>
<td></td>
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<tr>
<td>○ Over 55</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*3 What is your gender?</td>
<td></td>
</tr>
<tr>
<td>○ Male</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>0</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*4 How often do you use a computer/laptop for work or personal use?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Every day, seven days per week</td>
</tr>
<tr>
<td>0</td>
<td>Every weekday (Monday to Friday)</td>
</tr>
<tr>
<td>0</td>
<td>About twice per week</td>
</tr>
<tr>
<td>0</td>
<td>About once per week</td>
</tr>
<tr>
<td>0</td>
<td>About once per fortnight</td>
</tr>
<tr>
<td>0</td>
<td>About once per month</td>
</tr>
<tr>
<td>0</td>
<td>Less often than monthly</td>
</tr>
<tr>
<td>0</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>Please comment, if required.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*5 Is it easy for you to access a computer/laptop in your workplace?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>I can’t access a computer</td>
</tr>
<tr>
<td></td>
<td>Please comment, if required.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*6 A smartphone is a mobile phone with a touch screen, internet access and the ability to run applications (known as apps). Do you use any of the following mobile devices either in or outside work? (tick as many as apply)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mobile phone (with no internet access)</td>
</tr>
<tr>
<td></td>
<td>Android/Google smartphone</td>
</tr>
<tr>
<td></td>
<td>Apple iPhone</td>
</tr>
<tr>
<td></td>
<td>Apple iPod Touch</td>
</tr>
<tr>
<td></td>
<td>Blackberry (basic version with no internet access)</td>
</tr>
<tr>
<td></td>
<td>Ref Q6</td>
</tr>
<tr>
<td></td>
<td>I avoided asking “do you own...?” as I thought some people may be reluctant to answer honestly, fearful that they may be asked to use their personal device for work use.</td>
</tr>
</tbody>
</table>
- Blackberry smartphone with touch screen and wireless internet access (operating system 5 or 6)
- Symbian/Nokia smartphone
- Windows mobile smartphone
- Apple iPad
- Other tablet
- Nintendo DS
- Mobile phone (with internet access, but I do not know what kind)
- Other (please specify) __________________

*7 Apps are applications which can be bought or downloaded for free and which run on smartphones like the iPhone. Do you have an account at an app store?
- Yes
- No

*8 Does the NHS provide you with a mobile device, such as a smartphone or tablet?
- No
- Yes (please specify)

*9 Wireless networking - often just known as Wi-Fi - is a way of getting onto the internet without wires. Do you have access to Wi-Fi at work?
- All or most of the time
- Sometimes, depending on location
- Access for some time each day
- Rarely
- Never
- Don’t know

Ref Q7
This should give some indication of technical familiarity and knowhow.
**10 Did you know you can now take your Health and Safety assessment on a mobile device?**

- Yes – I’ve done this
- Yes – I’ve heard about this, but I don’t have an iPhone or iPod
- Yes – I’ve heard about this, but I don’t know where to find it
- Yes – I’ve heard about this, but I’m not interested
- No – I hadn’t heard about this before, but it sounds interesting
- No – I hadn’t heard about this, but it won’t work for me because I don’t have an iPhone or iPod
- No – I hadn’t heard about this before, and I’m not interested

**11 If I had the choice of taking a short Health and Safety assessment in a number of ways, I would prefer to:**

- take a mobile assessment on my personal mobile device
- take a mobile assessment on my work mobile device
- take an online assessment on a PC
- arrange to borrow a mobile device to take the assessment.

Please comment on your answer (optional).

Ref: Q11

Currently staff taking the Health and Safety assessment have these options.

**12 Assume the NHS has provided you with a mobile device. Which of these statements would be true for you?**

- I am good with technology and I am sure I would find the mobile device intuitive. I would not require training in its use.
- I would like some initial training in how to use the mobile device.
Appendix E: Survey communications

General survey

Email/Letter 1: Trailing the survey

For all 270 identified survey participants, sent on 21 June.

Subject: An important request for your opinion

Dear [NAME]

We need your help in advancing training within the NHS.

As you know, many NHS staff work in community settings, or in jobs that require them to be on the move. Learning and assessments on mobile phones or other mobile devices may be the answer to providing consistent training across all staff. We need you to tell us if you believe that this is indeed the case.

Next week we will be sending a short survey. It is divided into three sections: section 1 is about you, your job, and your existing comfort with technology; section 2 provides some very brief descriptions of mobile learning and asks for your opinions and thoughts on them; and section 3 asks you to comment on the NHS training that you value most and least.

The survey is designed to take you no more than 20 minutes and needs to be completed and submitted by 20 July. Your insights are critically important to ensuring we make the best decisions for NHS training in the future. Therefore, your co-operation is very much appreciated.

Thank you. Yours sincerely,

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PS All you need to do is remember to put aside 20 minutes by the 20th! Please block out a 20 minute slot now in your diary for completing and submitting the survey before 20th July.

Email 2: Research participant number and survey

For all identified survey participants with email access, sent on 28 June.

Subject: An important request for your opinion

Dear [NAME]

I wrote to you recently about some important research into the future of training at the NHS, and asked if you would invest just 20 minutes of your time to complete a survey about your thoughts and opinions.

Your research participant number is XXX – you will need this at the start of the survey, so please jot it down now so you can enter it when requested.
When you are ready, please click here to access the survey:

INSERT LINK (S)

Your co-operation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for learning and assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete the survey by 20th July.

Letter 2: Research participant number and survey

For all identified survey participants without email access, sent on 28 June.

Dear [NAME]

I wrote to you recently about some important research into the future of training at the NHS, and asked if you would invest just 20 minutes of your time to complete a survey about your thoughts and opinions.

Your research participant number is XXX – you will need this at the start of the survey. When you are ready, please complete the survey and return it in the envelope enclosed.

Your co-operation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for learning and assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete the survey by 20th July.

Email 3: Countdown prompt to end of survey

For all identified survey participants with email access, sent on 2 July.

NOTE: This should be a forwarded email 2 above (thus still including the link to the survey), as follows:

Subject: FW An important request for your opinion

Dear [NAME]

You received the message below from me on 21st June, requesting your help in better understanding if and how mobile devices could be used for learning and assessments within the NHS. If you have
already responded to the survey, then thank you very much for your participation. If not, then I would appreciate it greatly if you would spare just 20 minutes today to complete the survey. Your cooperation is very much appreciated.

Yours sincerely,

------

Letter 3: Countdown prompt to end of survey

_For all identified survey participants without email access, sent on 2 July._

Dear [NAME]

You received a letter, dated 21\textsuperscript{th} June, requesting your help in better understanding if and how mobile devices could be used for learning and assessments within the NHS. If you have already completed and returned the survey enclosed with that letter, then thank you very much for your participation. If not, then please take 20 minutes as soon as possible to complete and return it. The deadline is 20\textsuperscript{th} July.

Your cooperation is very much appreciated.

Yours sincerely,

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Email 4: Deadline extension

_For all identified survey participants with email access who have not responded, sent on 19 July._

Subject: An important request

Dear [NAME]

Last month, you received a request from me asking for your help in advancing training within the NHS. Specifically, I asked you to invest just 20 minutes of your time to give your thoughts and opinions on a new way forward.

I understand that it may have been difficult for you to fit this in but I ask that you consider starting the summer holidays by setting aside just _20 minutes before the end of this week_ to participate. Your insights are critically important to ensuring we make the best decisions for NHS training in the future.

Your research participant number is XXX – you will need this at the start of the survey, so please jot it down now so you can enter it when requested.

When you are ready, please click here to access the survey:

  INSERT LINK (S)

Your co-operation is much appreciated.
Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for learning and assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete this survey by 25th July. It is important.

Letter 4: Deadline extension (sent on 19 July)

For all identified survey participants without email access who have not responded, sent on 19 July (Imogen Casebourne of Epic to provide all relevant research participant numbers).

Dear [NAME]

Last month, you received a request from me asking for your help in advancing training within the NHS. Specifically, I asked you to invest just 20 minutes of your time to give your thoughts and opinions on a new way forward.

I understand that it may have been difficult for you to fit this in but I ask that you start the summer holidays by setting aside 20 minutes before the end of this week to participate. I enclose the survey once again and ask that you return it in the envelope provided. Your insights are critically important to ensuring we make the best decisions for NHS training in the future.

Your research participant number is XXX – you will need this at the start of the survey. Your cooperation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for learning and assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete and return this survey by 25th July. It is important.

Health and Safety: potential users survey

Email/Letter 1: Trailing the survey

For XX identified survey participants in Southern Health FT, sent on 21 June.

Subject: An important request for your opinion

Dear [NAME]

We need your help in advancing training within the NHS.
As you know, many NHS staff work in community settings, or in jobs that require them to be on the move. Learning and assessments on mobile phones or other mobile devices may be the answer to providing consistent training across all staff. We need you to tell us if you believe that this is indeed the case.

Next week we will be sending a short survey. It is designed to take you no more than 10 minutes and needs to be completed and submitted by 10 July. Your insights are critically important to ensuring we make the best decisions for NHS training in the future. Therefore, your co-operation is very much appreciated.

Thank you.

Yours sincerely,

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PS All you need to do is remember to put aside 10 minutes by the 10th! Please block out a 10 minute slot now in your diary for completing and submitting the survey before 10th July.

Email 2: Research participant number and survey

For all identified survey participants with email access, sent on 26 June.

Subject: An important request for your opinion

Dear [NAME]

I wrote to you recently about some important research into the future of training at the NHS, and asked if you would invest just 10 minutes of your time to complete a survey about your thoughts and opinions.

Your research participant number is XXX – you will need this at the start of the survey, so please jot it down now so you can enter it when requested.

When you are ready, please click here to access the survey:

    INSERT LINK (S)

Your co-operation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete the survey by 10th July.
Letter 2: Research participant number and survey

For all identified survey participants without email access, sent on 28 June.

Dear [NAME]

I wrote to you recently about some important research into the future of training at the NHS, and asked if you would invest just 10 minutes of your time to complete a survey about your thoughts and opinions.

Your research participant number is XXX – you will need this at the start of the survey. When you are ready, please complete the survey and return it in the envelope enclosed.

Your co-operation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete the survey by 20th July.

Email 3: Countdown prompt to end of survey

For all identified survey participants with email access, sent on 2 July.

NOTE: This should be a forwarded email 2 above (thus still including the link to the survey), as follows:

Subject: FW An important request for your opinion

Dear [NAME]

You received the message below from me on 21st June, requesting your help in better understanding if and how mobile devices could be used for learning and assessments within the NHS. If you have already responded to the survey, then thank you very much for your participation. If not, then I would appreciate it greatly if you would spare just 10 minutes today to complete the survey. Your cooperation is very much appreciated.

Yours sincerely,

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Letter 3: Countdown prompt to end of survey

For all identified survey participants without email access, sent on 2 July.

Dear [NAME]
You received a letter, dated 21\textsuperscript{th} June, requesting your help in better understanding if and how mobile devices could be used for learning and assessments within the NHS. If you have already completed and returned the survey enclosed with that letter, then thank you very much for your participation. If not, then please take 10 minutes as soon as possible to complete and return it. The deadline is 10\textsuperscript{th} July.

Your cooperation is very much appreciated.

Yours sincerely,

-------

\textbf{Email 4: Deadline extension}

\textit{For all identified survey participants with email access who have not responded, sent on 19 July.}

Subject: An important request

Dear [NAME]

Last month, you received a request from me asking for your help in advancing training within the NHS. Specifically, I asked you to invest just 10 minutes of your time to give your thoughts and opinions on a new way forward.

I understand that it may have been difficult for you to fit this in but I ask that you consider starting the summer holidays by setting aside just 10 minutes before the end of this week to participate. Your insights are critically important to ensuring we make the best decisions for NHS training in the future.

Your research participant number is XXX – you will need this at the start of the survey, so please jot it down now so you can enter it when requested.

When you are ready, please click here to access the survey:

\hspace{1cm} INSERT LINK (S)

Your co-operation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for assessment, and it is not a test of your knowledge and skills. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete this survey by 25\textsuperscript{th} July. It is important.
Letter 4: Deadline extension (sent on 19 July)

For all identified survey participants without email access who have not responded, sent on 19 July (Epic provided all relevant research participant numbers).

Dear [NAME]

Last month, you received a request from me asking for your help in advancing training within the NHS. Specifically, I asked you to invest just 10 minutes of your time to give your thoughts and opinions on a new way forward.

I understand that it may have been difficult for you to fit this in but I ask that you start the summer holidays by setting aside **10 minutes before the end of this week** to participate. I enclose the survey once again and ask that you return it in the envelope provided. Your insights are critically important to ensuring we make the best decisions for NHS training in the future.

Your research participant number is XXX – you will need this at the start of the survey. Your cooperation is much appreciated.

Yours sincerely,

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PS Please note, the survey is exploring the potential of mobile devices for learning and assessment, and it is not a test of you. Your answers will be anonymous and received by independent researchers, who will not be supplied with your name. The NHS will only see aggregated data. Please complete and return this survey by 25\textsuperscript{th} July. It is important.
Appendix F: Focus group plan

Background

Two regional focus groups were held:

- A 40-minute focus group with nurses who would be potential users of the Adult Drug Calculation and Compatibility of Injectable Medicines apps as well as of the Health and Safety app.
- A 40-minute focus group with managers of nurses who might be potential users of the three apps.

Participants were asked to examine and assess several mobile apps (including the three created by NHS South of England and also other apps identified during desk research), and were also asked questions about when and how they would use the apps.

Objectives

Research Objective 3: Establish the types of mobile apps now available to NHS South of England staff

Activities

1. Introduction to the session (distributed with an agenda before session)
   - Brief background to the purpose of the study and the significance of the focus group discussion.
   - How the focus group session will work, including mention of tape recording, confidentiality, and how the data will be used and analysed.
   (See appendix 1).

2. Explanation: What do we mean by mobile learning? (3 mins)
   - Brief explanation of mobile apps for learning in the NHS, including examples such as learning from tutorials, simulations, decision trees and reference material, etc.
   Hand out: graphical representations of examples of mobile learning apps (see appendix 2).

3. Hands on - general (3 mins)
   Small groups were given real examples – on iPhone and iPads – to support them in their discussions.

4. Discussion: Would you use these app types and if so how? (5 mins)
   - Potential for using different types of app discussed in small groups, and captured on post-its: “[I/they] would use this” explanations on yellow post-its and stuck on an A1 sheet of paper headed “Where and how [I/they] would use [type of app]”; “[I/they] wouldn’t use this” on pink post-its and stuck on A1 sheet of paper headed “[I/they] wouldn’t use [type of app] because”.

Page 92
5. Hands on - pilot learning apps (4 mins)
   - Small groups given a chance to explore the NHS South of England pilot learning apps in more detail (Compatibility of Injectable medicines and Adult Drug Calculations).

6. Discussion: Initial impressions - learning apps (5 mins)
   - Positives and negatives discussed in small groups, and captured on post-its: positives on yellow post-its and stuck on an A1 sheet of paper headed ‘Liked’; negatives on pink post-its and stuck on A1 sheet of paper headed ‘Struggled with’.

7. Explanation: What do we mean by mobile assessment? (5 mins)
   - Brief explanation of mobile assessment, including interactive demo of the Health and Safety learning and assessment app.
   - Hand out: graphical representations of examples of mobile assessment (see appendix 3)

8. Discussion: Initial impressions - assessment app (4 mins)
   - Positives and negatives discussed in small groups, and captured on post-its: positives on yellow post-its and stuck on an A1 sheet of paper headed ‘Assessment - Liked’; negatives on pink post-its and stuck on A1 sheet of paper headed ‘Assessment - Struggled with’.

9. Discussion: Would you consider using a similar learning/assessment tool for accreditation in other Statutory and Mandatory topics? (5 mins)\(^{36}\)
   - Small groups each given two of the other eight essential areas to focus on – one that is more knowledge-based (for example, Equality, Diversity and Human Rights); and one that is more skills-based (for example, Manual Handling). Potential for mobile learning and assessment for these particular areas were discussed in the small groups, and captured on post-its: benefits on yellow post-its and stuck on an A1 sheet of paper headed “[I/they] would use mobile assessment for [essential area]”; concerns on pink post-its and stuck on A1 sheet of paper headed “[I/they would prefer not to use mobile assessment for [essential area] because”.
   - Hand out: copies of the Statutory and Mandatory Training Framework (published: May 2010)

10. Whole group discussion of key themes that emerged (6 mins)

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\(^{36}\) Please note that while the framework is specific to NHS South of England, other regions are using/developing similar frameworks.
Appendix F1: Introduction to the focus group session

As you know, many NHS staff work in community settings, or in jobs that require them to be on the move. Learning and assessment on mobile devices (supplied by the NHS, such as mobile phones) is an opportunity for staff to be re-accredited in key areas without needing to attend a face-to-face training session or do some PC based e-learning. We need you to tell us if you feel that this could benefit you.

Therefore, at your meeting on 17th July, approximately 40 minutes will be dedicated to collecting data for a research project into the potential of mobile learning and assessment for the NHS.

You do not need to do any work in preparation. All that we ask is that you approach the session with an open-mind and willingness to contribute your opinions and ideas. The agenda for the session is as follows:

- Brief explanation of what we mean by mobile learning apps.
- Opportunity for hands on – iPhone and iPads (no previous experience necessary).
- Small group discussion.
- Opportunity for hand on review of pilot learning apps - iPhone and iPads (no previous experience necessary).
- Small group discussion: initial impressions.
- Brief explanation of what we mean by mobile assessment and demo of Health and Safety assessment app.
- Small group discussion: initial impressions.
- Small group discussion: what would be the benefits/challenges of NHS staff learning/being assessed in this way for some of the other eight key essential areas set out in the Statutory and Mandatory Training Framework.
- Whole group discussion of key themes that emerged.

Please note: some of the session may be tape recorded to aid data analysis by independent researchers. However, please rest assured that all contributions to focus group discussions will be reported anonymously, so will be non-attributable, in the final research report.
Appendix F2 - Handout: Examples of mobile learning

1. Learning by checking calculations
2. Learning by following a decision tree
3. Learning by looking up online reference material
4. Learning by using an interactive mobile tutorial
5. Learning by using a mobile simulator
6. Learning by using discussion forums
Appendix F3: Handout - Examples of mobile assessment
Appendix G: Telephone schedules

Background

There were three types of telephone interviews:

1. **Health and Safety pilot interviews**, involving:
   Five healthcare professionals who have used the Health and Safety app.

2. **Stakeholders interviews**, involving:
   Key National Leads and or technical staff: potential Stakeholders in taking forward recommendations that emerge from this research study.

3. **Technical interviews**, involving:
   Key technical staff: including those with national roles (for example from the central ESR National LMS team, or a national e-learning content provider), those with regional roles (for example the SHA Chief Information Officer) and those with local Trust roles (for example Trust Heads of IT).

All interviews were semi-structured. Therefore, while the sequence and wording of questions were determined in advance, the interviewer had the freedom to delve deeper where responses required further clarification. For example, interviewers sought further information from technical responses in order to gain a fuller understanding of technical architecture.

All research participants were assigned a research participant number. Data collected during interviews was immediately entered by the interviewer into Survey Monkey to allow for ease of data collection and analysis. Following consent from participants, telephone interviews were also tape recorded for reference.
Health and Safety pilot interviews

Background

To meet research objectives 1 and 2:

**Research Objective 1:** Identify how the NHS South of England apps are being used

**Research Objective 2:** Identify potential barriers to uptake of assessment apps

Twenty-minute telephone interviews will be conducted with five staff who have used the Health and Safety assessment app.

Interview schedule

Before commencing the interview, the interviewer will note the research participant number.

Interview questions

1. What is your job title?
2. Please very briefly describe what your job role involves.
3. Do you have access to a smartphone or tablet on a regular basis, and if so, do you have an account at an app store?

I understand that you have used the Health and Safety assessment app.

4. Did you use the online learning and the assessment, or only the assessment? (If the latter, how did you do the learning?)
5. Where and when did you use the learning/assessment?
6. Did you use your own device, or did you borrow a device (if the latter where did you borrow it from)
7. How did you hear about the project? For example, SHA publication, Friday bulletin, Southern Health website
8. How easy did you find it to download the assessment?
9. How easy did you find it to navigate the assessment?
10. How easy did you find it to answer the assessment questions?
11. Did you feel confident that your records had been updated once you had completed the assessment? (If not, why not?)

**Questions 11-13 if they did the learning as well as the assessment.**

12. What did you think about the learning content?
13. What did you think of the video and multi-media?
14. What did you think of the questions and quizzes?
15. Would you recommend this to others? (Why? Or why not?)
16. What could be done better?
17. What lessons do you think we can we learn from this pilot if we wanted to use mobile learning and assessment for training in the other eight essential areas of the Statutory and Mandatory Training framework?
   Eight areas...
18. Anything else to add
Potential stake-holder interviews

Background

To meet research objectives 2 and 5:

**Research Objective 2:** Identify potential barriers to uptake of assessment apps

**Research Objective 5:** Establish the extent to which infrastructure policies have changed since the initial research

Forty-minute telephone interviews will be conducted with six key National Leads who would be potential Stakeholders in taking forward recommendations that emerge from this research study. These interviews will seek to uncover the benefits and challenges to mobile learning in the NHS from a senior management high level perspective.

Interview schedule

*Before commencing the interview, the interviewer should read the interviewer notes (see Appendix 1).

**Interview questions**

1. What is your job title?
2. Do you have access to a smartphone or tablet on a regular basis, and if so, do you have an account at an app store?
3. Please very briefly describe what your job role involves.
4. Are you aware of mobile devices being used, or having been used, for any learning and assessment within the NHS? (If yes: please could you describe how they have been used) **NHS South of England have been trialling mobile Health and Safety training and tracked assessments and also learning on Compatibility of Injectable medicines and Adult Drug Calculations**
5. Are you aware of these pilots? (If yes: please could you describe how they have been used.) **There are now a number of learning apps targeted at NHS professionals, for example, learning by checking calculations, following decision trees, consulting online reference materials, and using simulators.**
6. Are you aware of these types of apps? (If yes: please could you describe how they have been used)
7. What are your opinions of the potential suitability of these types of app? Please rate how appropriate you believe they would be for mobile assessment specifically. 1 is highly appropriate; 5 is not at all appropriate.
8. Are you aware of any mobile learning strategy, planned strategy or policy within the NHS? (If yes: please describe its content.)
9. Have these evolved over the last couple of years?
10. In what main ways, if any, do you think NHS staff could benefit from using a mobile device for their learning and assessment?
11. What are the key challenges, if any, for the use of mobile devices for learning and assessment among NHS staff?
12. How might the challenges you identified be overcome?
13. Who are the key people you believe would need to be involved in making mobile learning and assessment work for the NHS?
14. What specific staff roles do you feel would be best supported by mobile learning and assessment?
15. Now I am going to read out some content areas. Please rate how appropriate you believe they would be for mobile assessment specifically and as a comment for each. 1 is highly appropriate; 5 is not at all appropriate.
   Conflict resolution
   Fire Safety
   Infection Prevention and Control
   Moving and Handling
   Resuscitation
16. Do you think there are other topics which may be suitable for mobile learning, for example, clinical, management and essential skills?
17. Which, if any, mobile devices are provided or supported for use by staff within the NHS? (Please give details of makes and models.)
18. Is there a BYOD (Bring Your Own Device) policy in place? If so could you give an overview of it?
19. Do you have any other thoughts or views on the use of mobile devices for learning and assessment within the NHS that you would like to add?
Technical interviews

To meet research objective 5:

**Research Objective 5:** Establish the extent to which infrastructure policies have changed since the initial research

Forty-minute telephone interviews will be conducted with five key technical staff, including those with national roles (for example from the central ESR National LMS team, or a national e-learning content provider), those with regional roles (for example the SHA Chief Information Officer) and those with local Trust roles (for example Trust Heads of IT). During these interviews technical questioning will seek a better understanding of the interoperability of mobile devices with the NHS’s National Learning Management Systems and the possibilities for tracking learners using mobile devices.

**Interview schedule**

*Before commencing the interview, the interviewer should read the interviewer notes (see Appendix 1).

**Interview questions**

1. What is your job title?
2. Please very briefly describe what your job role involves.
   The next few questions I would like to ask you regard getting mobile devices (such as mobile phones, tablets and media players such as iPods) on to a controlled secure network within the NHS.
3. What percentage of NHS sites, if any, do you estimate have wireless access?
4. What kind of job roles would have access?
5. Where there is wireless access, are all NHS staff allowed to use it? What is the nature of restrictions on access (if any)?
6. Does the NHS have a wireless policy, and if so, would you briefly tell me about it?
7. Has wireless coverage changed over the last couple of years?
8. What challenges, if any, do you believe there would be in putting wireless into NHS sites that are currently without it?
9. Where wireless is not available, what do you believe would be the main challenges of getting access to the intranet via 3G?
   **To make any kind of mobile assessment or training effective we would need to save the user’s data back to your Learning Management system.**
10. What do you think would be the simplest way for a mobile device to send back user data to your network infrastructure?
11. Please would you describe any other mobile projects, or similar instances, where data has had to be sent back to your network infrastructure?
12. Which, if any, mobile devices are provided or supported for use by staff within the NHS? (Please give detail of recommended makes and models)
13. In your experience, which roles within the NHS are provided with mobile devices as part of their job function?

14. In your experience, who decides what devices NHS staff should use?

   **Staff may, or may not be supported in using their own smartphones and tablets at work.**

15. Is there a BYOD (Bring Your Own Device) policy in place? If so could you give an overview of it, including costs, implications - e.g. connectivity, airtime, insurance, acceptable use policy?

16. In your experience what do you think is the approximate ratio of iPhone/Android/BlackBerry and Windows Phone for NHS staff’s own devices?

   **NHS South of England have been trialling mobile Health and Safety training and tracked assessments, and also learning on Compatibility of Injectable medicines and Adult Drug Calculations.**

17. Are you aware of any similar projects currently running in the NHS, where staff are supplied with mobile devices for learning and assessment? (If yes, please describe and comment on any lessons learnt from such projects)

   **There have been some trials run in certain areas of the country that have used mobile devices such as Blackberries to record patient information.**

18. Are you aware of any other projects currently running in the NHS, where staff are supplied with mobile devices for other purposes, and where their value for training also could be explored? (If yes, please describe and comment on any lessons learnt from such projects.)

19. Are you aware of any existing or future plans for mobile learning strategy or policy within the NHS? (If yes, please describe its content.)

20. Is there anything else you would like to add that you think may be useful to me in determining how mobile learning can integrate with existing NHS IT infrastructures (perhaps patient or public attitudes)?
Appendix G1: Interviewer notes

You will need:

☐ A room with:
  - speaker telephone
  - computer with internet access

☐ Name and telephone number of the interviewee

☐ Recording equipment

Pre-interview:

☐ Set up recording equipment next to the telephone

☐ Open the relevant NHS mobile telephone interview data collection tool:
  - Stakeholders - http://www.surveymonkey.com/s/8BX6PKP

*Please double-check you have opened the correct one.

☐ Enter the interviewee’s name

☐ Have your calendar available in case the timing of the interview is no longer convenient

The interview:

☐ Check you are speaking to the correct person

☐ Read the following introduction:

I am ringing regarding the telephone interview set up by Adedayo Odubayo, a Project Manager at NHS South of England Strategic Health Authority. Is it still OK for me to ask you a few questions? It will take about 30-40 minutes of your time.

[If the interviewee says ‘no’, then schedule another time in early August that is more convenient.)

The interview is about the potential of mobile learning for the NHS, and will play a vital role in decisions on e-learning (using computers for training) in the NHS going forward. Answers will be aggregated with responses from other participants, and so will not be attributable to you. Therefore, all I ask is that you approach the interview with an open-mind and a willingness to contribute your honest opinions and ideas.
[For technical interviews only: I also ask that if you are unsure about an answer, then you indicate that you are unsure, or state you do not know, so that I can be certain I am collecting accurate information.]

Finally, please be aware that I will be writing down your responses, but I am also tape recording this call for data collection purposes only, so that I can be sure I capture everything that is said. The independent researcher, outside the NHS, who will be analysing the data is the only person who will have access to this recording. The recording will be destroyed after six months.

☐ Now work through the questionnaire, entering data as you go, and clicking the next button. As you do so:
  
  o Encourage the interviewee to give examples from their own experience.
  
  o If the interviewee can't answer a question, move on to the next.
  
  o If the interviewee gives an ambiguous response, seek clarification, for example if they state something ‘worked well’, it would be useful if you could ask them in what way.
  
  o If the interviewee goes off the subject, politely say you need to move on.
  
  o Don't be afraid to ask people to repeat or elaborate.
  
  o If the interviewee is interrupted and cannot continue the call, make a note of their name and click through the questionnaire until you get to Done, so you can save the data you managed to collect.

Arrange a time to call back later. On the second call, enter the respondent’s name again into the survey and click through the questions you've already answered. Then start entering data from that point forward.

☐ When you get to the end, thank the interviewee for their time, tell them they've been very helpful, and then click the Done button.