Are we ready for the Electronic Patient Record? Attitudes and perceptions of staff from two NHS Trust hospitals

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Abstract

Background: In light of plans to implement an electronic patient record (EPR), preparations for radical organisational change were recognised as being critical to success.

Aim: To determine hospital staff's experience of and attitudes toward computer use and the EPR.

Method: A cross-sectional design using The Computer and EPR Attitude Survey was administered to 878 health service employees in two acute hospitals; 479 completed questionnaires were returned, representing a 54% response rate.

Results: The majority of respondents demonstrated positive attitudes toward the use of computers and toward EPR, although only 298 (62%) wrote that they knew what 'EPR' actually stood for. Nurses consistently recorded the greatest agreement with negative statements: 'I avoid using computers whenever I can,'

'Using a computer is more trouble than it is worth,' and 'I sometimes feel intimidated by the thought of using a computer.'

Recommendations: Responsive and prompt actions e.g. informative workshops and targeted skills training.

Key words and terms: attitudes, electronic patient record, health service employees, survey

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Introduction

Steady progress on radically changing the clinical information systems within health care provider services, such as acute hospitals, have been made within the UK as a consequence of major national initiatives to improve the quality, effectiveness and efficiency within the National Health Service [1] [2] [3]. At a local NHS Healthcare Trust, it was recognised relatively early on that planning for implementation of an Electronic Patient Record (EPR) would require a great deal of preparatory consideration in addition to resource allocation. Organisational development and leadership were recognised as key determinates for success specifically, to ensure that the vision of an integrated EPR became a truly useful and functioning reality.

Existing computer-based systems used to manage patient administration and clinical services information consisted of: an executive patient administrative system (PAS) which was antiquated, inflexible and no longer supported or developed by the original supplier; a range of add-on modules (e.g. maternity, physiotherapy); a selection of non-integrated systems for pathology, radiology and pharmacy and in one hospital a Picture Archives and Communication System (PACS) for radiology applications.

As part of the preliminary specification and design stage, two Senior Nurses for Practice Development (EPR/Clinical Informatics) were appointed to prepare professional staff within the two acute hospitals that made up the NHS Trust. To achieve this aim, a 'concept', known as The Vision Centre was devised to:

- Determine the developmental needs of professional staff associated with routine use of EPR.

- Formulate a strategy for change based on staff development

- Process map clinical services

- Initiate and implement a series of interactive presentations to introduce EPR to all Trust staff

- Facilitate workshops for clinical teams to examine 'best practice'

- Create (in a association with software suppliers) computer simulated scenarios of patient-focused clinical applications

As an early priority of the Vision Centre was identified as determining the developmental needs of employees, it was necessary to identify the collective experience, knowledge and perceptions of computer use and EPR of staff in the local NHS Trust. This information was deemed to be central to the formulation of a strategy to enable achievement of the Vision Centre objectives. The collected responses from hospital staff could also be used as baseline data from which organisational change could be measured throughout the subsequent phases of EPR implementation and utilisation.

A study was designed to determine hospital staff's experience of and attitudes toward computer use and the EPR.

Method

A cross-sectional survey design was used to meet the study aim.

Instrument

A questionnaire called the Computer and EPR Attitude Survey was developed by the author based on a validated measure of computer anxiety by Maurer [4] and incorporated minor amendments made by Cooper [5]. The survey instrument was presented as a four-paged A4 booklet and arranged in three sections:

1. 14 demographic questions about general background; experience, training and use of computers; knowledge of the use of EPR

2. 22 item attitude scale where the response options were: strongly agree, agree, uncertain, disagree and strongly disagree

3. A boxed section on the last page that welcomed comments from participants.

<u>Pilot</u>

Before the questionnaire was administered to its intended representative sample, a draft version was piloted within another NHS Trust to 22 hospital staff. Minor changes were made to improve the clarity of two questions. Respondents commented that the form was quick and easy to complete and that it encouraged them to consider the implications of EPR within their place of work.

<u>Sample</u>

The sample was derived from two moderately large acute hospitals that serve a population of approximately 412,000 people in two towns and surrounding rural areas. Latest figures indicate that the Trust provides treatment for 69,000 inpatients, 26,200 day cases, 364,000 outpatients and 127,000 visits to the accident and emergency departments a year.

The primary criterion for completing the questionnaire was defined as: Anyone working in the NHS Trust who would be using the EPR. This included all grades of nurses, doctors, professionals allied to medicine (PAMs), pharmacists, laboratory staff, radiology staff, medical secretaries, ward clerks,

managers/co-coordinators and other clerical staff (e.g. medical records, booked admissions, reception officers).

Data collection

The senior practice development nurses distributed the questionnaires in person to every clinical department within the acute sector of the Trust. After a verbal introduction, an adequate number of forms (as determined by consultation with individual departments) were handed directly to the manager or person in charge of each clinical area. Cover letters that explained the purpose of the survey and contact details of the researchers were also included. A date for collection of the completed questionnaires was then negotiated; the suggested time allotted was three weeks. Some departments suggested that they send the forms directly to the practice development nurses; these offers were accepted appreciatively. After four weeks, additional visits were made to the departments who had not responded in an attempt to ascertain if there were any specific problems and to encourage further participation.

Analysis

Responses from the completed questionnaires were scanned using Formic for data entry, 'cleaned' and then analysed using SPSS v10. The data were explored in four stages: description of the sample, comparison between hospital sites, comparison between professional groups and recording of written comments.

Results

<u>The sample</u>

Eight hundred and seventy-eight (878) questionnaires were distributed in total. Four hundred and seventy-nine (479) were returned from a broad cross-section of staff from the two acute hospitals after six weeks. This represented a response rate of 54 percent. When reviewed according to individual hospital there were:

- 278 (58%) respondents from Hospital A

- 191 (40%) respondents from Hospital B and

- 9 (2%) respondents who viewed themselves as working at both sites.

Upon further examination, it was found that 48% of the sample consisted of nurses or midwives, which represented the largest single group of hospital staff (Table 1).

Table 1: Breakdown of sample by profession/job title N = 479

Job title	Actual Number	Percent of sample
Doctor	30	6.3
Secretary	22	4.6
Nurse, midwife	234	48.9

Manager	7	1.5
Ward clerk, clerical assistant, appointment clerk	40	8.4
Auxiliary nurse, health care assistant	34	7.1
Various clerical, admin and coordinating roles	30	6.3
Scientists, pharmacists	39	8.1
Professional allied to medicine (PAMs)	43	9.0
Total	479	100.0

When compared alongside the actual distribution of Trust personnel within the organisation according to professional groups, the questionnaire returns reflected comparable percentages (Table 2).

Table 2: Distribution of all Trust personnel according to professional job titles (Population)*

Job title	Percent of sample	Percent of Trust personnel (population)
		(medical & dental)
Doctor	6.3	7.4
Secretary	4.6	(administration &
Ward clerk, clerical assistant, appointment clerk	8.4	clerical)
Various clerical, admin and coordinating roles	6.3	
	(subtotal = 19.3)	18.3

Nurse, midwife	48.9	43.5
Manager	1.5	2.7
Auxiliary nurse, health care assistant	7.1	7.8
		(plus technicians)
Scientists, pharmacists	8.1	10.4
		(plus support staff)
Professional allied to medicine (PAMs)	9.0	9.9
Total	100.0	100.0

*[Data supplied by Human Resource Department of the local NHS Trust]

Experience and use of computers (whole sample)

One hundred and ninety respondents (40%) reported that they had completed some form of computer skills course; 289 (60%) staff member reported that they had not. Three hundred and twenty staff members (67%) recorded that they used a computer at home; 159 staff members, (33%) of the sample, recorded that they did not. A large section of the sample, 438 (91%), used a computer at work. Only 41 (9%) of staff in the sample reported that they did not use a computer at work.

 When asked, 'How would you rate your ability to use reference indices and databases (e.g. Medline, CINAHL, Cochrane)?'

- 137 (28.6%) reported they were confident

- 134 (28.0%) reported that were not confident

- 208 (43.4%) reported that they never use them

In response to being asked if they knew what the 'EPR' was, 298 (62%) answered that they did and 181 (38%) answered that they did not.

Attitude statements (whole sample)

In response to the attitude statements, it was found that at least 50% of respondents agreed with the following statements:

- Productivity is improved when computers are used (54%)

- Computers save time and work (64%)

- Computers make things easier (60%)

- I enjoy using computers (67%)

- I can think of many ways I would use a computer (65%)

- I can think of many benefits associated with using EPR (58%)

It was also noted that at least 50% of respondents disagreed with the following statements:

- I feel very negative about computers in general (76%)

- I avoid using computers whenever I can (78%)

- I feel there are too many computers around now (70%)

- Using a computer is more trouble than it is work (72%)

- I feel uncomfortable about the thought of using computers (71%)

- Computers are too complicated to be much use to me (69%)

- If I had to use a computer all the time I would probably be very unhappy (58%)

- I sometime feel very intimidated by the thought of using a computer (63%)

- EPR will be too complicated to be much use to me (55%)

There were six attitude statements that specifically mentioned EPR. All revealed a disproportionate percentage of 'uncertain' responses. According to these results, one third of the sample had not yet formed an opinion about EPR; this was reflected in their responses, which were noticeably neither positive nor negative. Furthermore, the analysis of the results also demonstrated that staff members who had completed a computer course were more likely to know what EPR was and were more positive toward computers and EPR.

Comparisons between sites

When data from each of the two hospitals were compared, representation of staff based on their job titles was remarkably similar, as displayed below (Table 3).

Table 3: Breakdown of sample by job title and place of work N = 479

Job title	Hospital A (%)	Hospital B (%)	Duties across both hospitals	Total number (%)

			(%)	
Auxiliary nurse/HCA	18 (6.5)	16 (8.4)	0	34 (7.1)
Doctor	15 (5.4)	10 (5.2)	5 (55.6)	30 (6.3)
Manager	6 (2.2)	1(.5)	0	7 (1.5)
Misc. clerical, admin., co-ordinators	19 (6.8)	10 (5.2)	1 (11.1)	30 (6.3)
Nurse, midwife	128 (45.9)	103 (53.9)	3 (33.3)	234 (48.9)
Professions allied to medicine (PAMs)	37 (13.3)	6 (3.1)	0	43 (9.0)
Scientist, pharmacist	23 (8.2)	16 (8.4)	0	39 (8.1)
Secretary	13 (4.7)	9 (4.7)	0	22 (4.6)
Ward clerk, clinical assist, appointments	20 (7.2)	20 (10.5)	0	40 (8.4)
Total	279 (100)	191 (100)	9	479 (100)

The two acute hospital sites were also compared according to their responses to three specific questions. In response to 'Have you completed a computer course?' It appears that a slightly higher percentage of Hospital 2 staff recorded 'yes' (47%), compared to Hospital 1 (34%). Similarly, in answering 'Do you know what EPR is?' 71% of Hospital 2 staff wrote 'yes' compared to 56% at

Hospital 1. Responses to the question 'Please rate your ability to use indices/database (e.g. Medline, Cochrane)?' were very similar between sites.

Comparisons between professional groups

Differences between different professional groups with were observed for three specific questions. In response to 'Have you completed a computer course?', only 28% of nurses recorded 'yes', compared to 43% of doctors. A very high percentage of secretaries (95.5%) had completed a computer course.

For the question 'Do you know what EPR is?' all professional groups answered similarly. Within each group between 59% and 63.3% responded affirmatively.

When asked to 'Rate your ability to use indices/databases (e.g. Medline, Cochrane)?' , doctors, as a group, were overwhelmingly confident (80%). Comparisons are displayed in the Table 4 below.

Table 4: Comparison between professional groups in response to being asked 'Rate your ability to use indices/ databases (e.g. Medline,Cochrane)?' N = 479

Professional group	Confident (%)	Not confident (%)	Never use them (%)
Doctor	30 (80.0)	4 (13.3)	2 (6.7)
Nurse, midwife	73 (31.2)	80 (34.2)	81 (34.6)
Scientist, pharmacist	7 (17.9)	10 (25.6)	22 (56.4)
PAMs	17 (39.5)	17 (39.5)	9 (20.9)

In most instances, clerical staff (e.g. secretaries, ward clerks, administrators) shared similar positive views when it came to attitudes to computers. Secretaries tended to be extremely positive with 100% agreeing that they 'enjoy using computers.' Professional clinical staff on the whole were generally positive, as reflected in the selected attitude statements items listed below (Tables 5, 6 & 7). Generally, nurses/midwives (including nursing auxiliaries) were frequently more wary of computers.

Table 5: Comparison between professional groups in response to Item 7: 'I avoid using computers whenever I can'

Professional group	Agree (%)	Uncertain(%)	Disagree(%)
Doctors	2 (6.7)	1 (3.3)	27 (90.0)
Nurse, midwives	42 (17.9)	23 (9.80	169 (72.20
Scientist, pharmacist	2 (5.1)	5 (12.8)	32 (82.1)
PAMs	4 (9.3)	2 (4.7)	37 (86.0)

Table 6: Comparison between professional groups in response to Item 11:

'Using a computer is more trouble than it is worth'

Professional group	Agree (%)	Uncertain(%)	Disagree(%)
Doctors	1 (3.3)	7 (23.3)	22 (73.3)
Nurse, midwives	31 (13.2)	50 (21.4)	153 (65.4)
Scientist, pharmacist	2 (5.1)	7 (18.0)	30 (76.9)
PAMs	4.7	16.3	79.1

Table 7: Comparison between professional groups in response to Item 12: 'I feel uncomfortable about the thought of using computers'

Professional group	Agree (%)	Uncertain(%)	Disagree(%)
Doctors	2 (6.7)	1 (3.30	27 (90.0)
Nurse, midwives	55 (23.5)	33 (14.1)	146 (62.4)
Scientist, pharmacist	4 (10.3)	5 (12.8)	30 (76.9)
PAMs	7 (16.3)	1 (2.3)	35 (81.4)

Table 8: Comparison between professional groups in response to Item 15: 'I sometimes feel intimidated by the thought of using a computer'

Professional group	Agree (%)	Uncertain(%)	Disagree(%)
Doctors	16.7	6.7	76.7
Nurse, midwives	34.2	9.8	56
Scientist, pharmacist	15.4	12.8	71.8
PAMs	20.9	9.3	69.8

Written comments

On the last page of the questionnaire respondents were encouraged to write down their comments if they wished. The following quotations were selected from a total of 36 free-text responses and classified by the researcher into four common themes: access and time issues, dependability, training and preparation, professional concerns. [The numbers in brackets refer to corresponding identifier number allocated to each respondent].

Access and time issue:

- 'I find computers do save time in the way of word processing, literature searching and obtaining results. I have to say I am apprehensive about EPR. I feel it would be beneficial to us, but

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the disadvantage will be too many nurses trying to use the same computer.' (6)

- 'It is difficult with discharges, many interruptions and doctors needing results etc. As it is at present you have to come out of the system completely.' (217)

- 'Computers are very useful. Should be more widespread and easily accessible.' (279)

- 'Constantly ending and restarting episodes takes up a lot of time.' (368)

Dependibility

- 'The present system is very poor and constantly breaking down. I'm hoping for a better system and improved back up from the IT Dept. will be implemented.' (19)

- 'The problem with computers at work is that when they go down everything comes to a stand still.' (375)

- 'My biggest fear is: What happens if the system crashes.' (473)

Training and preparation

- 'I feel that when I am given a good training in computers I will feel more positive.' (174)

- 'Some information about EPR may be of use as I know nothing about this.' (427)

- 'I would very much appreciate some in-service training using a computer.' (468)

- 'I feel with correct training and implementation the EPR will be very useful. However, it must be made simple for all levels of staff in order for it to work.' (366)

- 'I think it would be useful to have some written information about EPR and what it could be used for and also some information about the training that staff would have to undertake to allow the use of EPR to be initiated.' (475)

- 'I feel [that] when I feel confident in computer skills, I will be happier in using computers at work.' (476)

Professional concerns

- 'A an a little weary about reliability and also confidentiality for patient info.' (370)

- 'I did not come into nursing to sit at a desk looking at a screen all night.' (410)

Discussion

Among the varied information provided by the baseline survey of Trust employees, it is clear that there are distinct differences between subgroups within the sample in terms of current computer use, previous training, acknowledgement of EPR and in some of their attitudes and perceptions. It is quite striking that despite an overall optimistic view of electronic information technologies, nurses consistently recorded the greatest agreement with negative statements such as: 'I avoid using computers whenever I can', 'Using a computer is more trouble than it is worth,' 'I feel uncomfortable about the thought of using computers' and 'I sometimes feel intimidated by the thought of using a computer.' However, the view can be taken that it is realistic, sensible and logical to be cautious when faced with new technologies that have such a potential impact on the way patient care is managed and delivered. In light of previous research on the attitudes of nurses to computer information systems, the responses of the nurses in this sample appear to be justified; considerable problems encountered during the implementation of integrated clinical information systems are documented in the literature. For example, Brady [6] highlighted that systems sometimes only automate current practices and do not always increase productivity and improve patient care. In an earlier investigation Furst [7] made a point to state that electronic information systems must be able to ensure the patient confidentiality and address legal and ethical regulations.

 It was not surprising that a large number of respondents in the current study recorded the 'uncertain' option for the attitude statements that included a reference to EPR. At the time of data collection, only sixty-two percent of the

sample was familiar with 'EPR'. As activity on the EPR Programme has increased dramatically within the past year, it would be safe to assume that this number would have enlarged considerably; a follow-up survey should be considered.

This pragmatic survey was designed to obtain a quick 'snapshot' of Trust employees in preparation for EPR; this has been achieved. However, a limitation of the research was observed in its sampling technique. The convenience sample was self-selected rather than researcher selected from a definable sample frame of Trust employees. This point would need to be corrected in subsequent rounds of the survey.

Further research will be required to monitor the experience of Trust staff throughout the implementation of EPR. It will be important to identify potential areas of difficulty before major problems arise, which may have a devastating impact on the effectiveness of the new integrated clinical information management system. Observational methods that document how individuals learn to use and then apply their understanding of the system to their daily practice will be an invaluable adjunct to identifying attitudes and perceptions of the specific information management technology.

Implications and recommendations

This survey has provided the local NHS hospital Trust with some basic, but quite important information about the perceptions of a broad spectrum of

employees on the EPR and general computer use. The main implications and their associated recommendations for explicit action were as follows:

- Although justifiably wary of EPR, the majority of participating Trust staff were positive and appeared to be looking forward to its implementation. It is therefore essential that the recognised enthusiasm and positive outlook be maintained by keeping all Trust staff informed of progress and attention given to listening to their concerns.

- There are many individuals from all areas who would like to know more about EPR, and this should be addressed in the near future. A series of meeting and presentations with staff will need to be planned. These informal interactions will focus on explaining: What is EPR? How and when EPR might affect them? and should also be used to elicit the views and particular concerns of potential users.

- Adequate training is a particular concern and recognised need for nurses and PAMs. This would suggest that support for those who are less confident should be given sensitively. It is therefore important that the software supplier's training strategy is disseminated promptly to managers and designated trainers.

- Both acute hospitals within the Trust demonstrated similar views of computers in general, although staff members at Hospital 2 seem to be more aware of EPR. Each hospital will be assigned one Senior Practice Development Nurse, who will take responsibility for tailoring development activity within each site.

- Important concerns of trust staff about access to computer terminals, impact on individual time, training and preparation requirements, confidentiality of information and overall dependability of EPR were previously specified in early strategic documentation and continue to be viewed as being vital to the effectiveness of any T & M development.

Since its inception The EPR Project team have endeavoured to address the concerns of Trust staff and direct its actions toward exploring, in partnership with clinical staff, how an EPR system may facilitate and support improvements to clinical practice. A series of Vision Centre workshops have now commenced, which focus on exploring with clinical staff new ways of working in response to an electronic medium.

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