Electronic patient record evaluation in community mental health

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ABSTRACT

Background Deployment of electronic patient records (EPRs) is one of the primary goals of national NHS information technology (IT) initiatives. However, many systems come into disrepute through poor planning or design flaws, and media scrutiny focuses on these problems rather than the potential gains.

Objective To evaluate the deployment of an EPR in a community mental health setting.

Method A validated user questionnaire was issued to all clinically qualified staff working in community mental health teams followed by interview and validation phases. The study encompassed both quantitative and qualitative mechanisms to establish the efficacy and usability of the system.

Results The questionnaire had a response rate of 49.3%. Overall, the response was positive, with almost no extreme negative responses. Of respondents, 88.5% were satisfied with system accuracy, while 91.7% of responses indicated that data was made available in a timely manner. Of those surveyed, 88.7% agreed the system was ‘worth the time and effort required to use it’. Additionally, electronic notes are used more frequently than paper-based equivalents.

Conclusion The research concludes that the implemented system appears to offer a robust EPR that gives its users a high degree of satisfaction and provides tangible benefits to clinical staff.

Keywords: electronic patient record, evaluation, mental health

Introduction

The electronic patient record (EPR) is one of the key health informatics themes of government-backed initiatives such as Connecting for Health1,2 in England and Informing Healthcare in Wales.3 These have aimed to improve NHS information and communication technology, but since their inception, initiatives such as the online outpatient booking system Choose and Book have been maligned by financial pressures and perceived failures of implementation.4 Despite this, there is still a profound need to ensure that the shift towards electronic records continues, in order to increase patient safety and improve care besides adding convenience for clinicians.5

Cardiff and Vale University Health Board is an NHS organisation, which recently completed a project to provide an EPR for use across mental health and community care services. The project uses In4Tek’s PARIS system as the platform for the EPR. This paper will discuss the general findings of research into evaluation of the deployment of this system within community mental health.

Knight wrote in response to the NHS Information Management and Technology strategy for Mental Health Services that: ‘There is an intrinsic lack of interest in information systems among many clinical staff’ and that ‘This disinterest will continue until clinicians see benefits arriving from information and understand its value and potential’.6

The author concluded that the data obtainable from the implemented EPR should be ‘clinically appropriate, timely, accurate and useable’.7 This study seeks to evaluate the EPR in terms of clinical usage and efficacy in order to prove that this statement is true in terms of the implemented system.
**Method**

This study utilised an academically validated questionnaire developed by Laerum and Faxvaag specifically for the purpose of EPR system evaluation. It focused on performance of the medical record system both in achieving clinical tasks and in its general usage. According to best practice for health systems evaluation, the methodology encompasses both quantitative and qualitative mechanisms using multipoint scaled questions and free text comments within the instrument. An interview phase and test–retest were also conducted. Laerum and Faxvaag’s framework was chosen as it is relatively modern, and arguably more applicable than similar methodologies of system evaluation which are not based around health informatics systems.

The questionnaire was forwarded to all qualified clinical personnel in the community mental health teams. Clinical staff are the principal users of the EPR, and they are therefore in the best position to judge the system in terms of how useful it is in their daily clinical work.

Paper copies of the questionnaire were sent to all eligible staff in December 2007 with an additional mailing after two weeks if no response had been received. The study excluded clinicians who had not been active system users for the previous three months.

The total number of valid respondents was 205, based on the active user base within community teams. The study response rate was 49.3% (n = 101) of the total eligible (n = 205). All statistical comparisons were conducted using SPSS (version 16).

**Findings**

Of the responses received, 49.5% were derived from mental health nurses and 16.5% from medical practitioners. The remainder were from psychologists, therapists, pharmacists and administrative staff. Responses from the interview and retest cycles are not included.

**General use of medical records**

The findings provide an important comparison between the use of electronic and paper-based records, with a strong indication that the usage of the EPR is greater than that of its paper equivalent (Figure 1, question C1). Of respondents, 57.7% use paper records ‘seldom’ to ‘never’, with 27.0% making approximately equal use of both of the two media. Only 15.5% utilise paper records on ‘most’ to ‘all’ occasions. Additionally, the response indicates that EPR use is high with...
76.3% of respondents using it at least ‘most’ of the time (question C2).

**User satisfaction with the EPR**

These questions represent a direct investigation into user satisfaction and give an indication that a high level of satisfaction exists (Figure 2). Question E2a ‘How often is the system accurate?’ gives a response of 84.4% in the ‘most’ and ‘all’ categories, while 88.5% of respondents find they are personally satisfied with system accuracy for the same categories (question E2b).

Rapid information retrieval is important for effective patient care within mental health and 91.7% of responses indicated that on ‘most’ to ‘all’ occasions information was obtained in a timely manner (question E5a). In essence, this question asked if the EPR offered a ‘timely’ data retrieval mechanism, and the results seem to suggest that end-users believed it did.

High levels of satisfaction were also found with questions concerning usability (75.0%, question E4) and clarity of system derived information (77.1%, question E3b) for the same categories.

**Global assessment of the EPR**

Questions asked within this section examine the system within the context of the service, and how use of the EPR affects the work conducted by service staff (Table 1). Of respondents, 88.7% agreed that the system was ‘worth the time and effort required to use it’, while users rated their satisfaction with the system as either ‘good’ or ‘excellent’ in 72.2% of cases. This dropped only slightly to 68.8% for success within the department as a whole, which does not include the response in the ‘fair’ category.

There was a high proportion of positive responses to questions E3a and E3b, indicating that the performance of both the department’s work and personal tasks had been made easier by the EPR (75.0% and 81.3% respectively).

**Discussion**

**Principal findings**

The results of this study show a positive attitude to use of the implemented system and both personal and departmental performance, whilst its use is perceived...
to have increased (e.g. responses to questions F3a to F3c). Good information availability (question E5a) is another indicator of success.

There is a distinctly positive emphasis throughout the research, with very few responses in the extreme ‘negative’ range. It could be surmised that negative experiences are in part due to previous user error, or systematic failings within the service structure and processes (e.g. information not being present within the system may be due to incorrect or delayed data entry) and not just to the system itself. However, these issues require further examination so that such instances can be avoided in future. This study provides a diagnostic indicator of some of these.

### Implications for practice

There are considerable potential benefits to be gained from being able to access patient information at times of crisis. The importance of being able to access data quickly and methodically cannot be overemphasised when dealing with patient safety, with examples of systemic failures leading to patient fatalities. The issue of accessing notes when the clinical base of a patient may be many miles away in the community can cause problems in an emergency or crisis situation. EPR systems offer significant advantages over the ‘locked cabinet, in a locked room within a locked building’ scenario, as is borne out by elements of these

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**Table 1 Tabulated responses to questions in Section F**

<table>
<thead>
<tr>
<th>Question F1: How much do you agree with the following statement: the EMR is worth the time and effort required to use it?</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Neutral</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1%</td>
<td>2.1%</td>
<td>3.1%</td>
<td>4.1%</td>
<td>11.3%</td>
<td>49.5%</td>
<td>27.8%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question F2: How would you rate your satisfaction with PARIS in your department?</th>
<th>Non-existent</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0%</td>
<td>5.2%</td>
<td>22.7%</td>
<td>54.6%</td>
<td>17.5%</td>
<td></td>
</tr>
</tbody>
</table>

| Question F4: How would you rate the success of the EMR system installed in your department? |
|-------------------------------------------------------------------------------------------------
| 0.0%                                                                                     | 4.2%    | 27.1% | 50.0% | 18.8% |

<table>
<thead>
<tr>
<th>Question F3a: The performance of our department’s work has become</th>
<th>Significantly more difficult</th>
<th>More difficult</th>
<th>Slightly more difficult</th>
<th>No change</th>
<th>Slightly easier</th>
<th>Easier</th>
<th>Significantly easier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0%</td>
<td>3.1%</td>
<td>9.4%</td>
<td>11.5%</td>
<td>19.8%</td>
<td>37.5%</td>
<td>17.7%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question F3b: The performance of my own tasks has become</th>
</tr>
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<tbody>
<tr>
<td>1.0%</td>
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<table>
<thead>
<tr>
<th>Question F3c: The quality of our department’s work has become</th>
</tr>
</thead>
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<tr>
<td>1.0%</td>
</tr>
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</table>
findings. Furthermore, rapid data entry and retrieval is necessary now that health services are becoming more accountable through clinical governance.\textsuperscript{11}

**Comparison with the literature**

Many colleagues working in community mental health missed using paper records. Paper records are perceived as flexible due to their very nature; they are self-contained and able to be carried between clinical locations.\textsuperscript{11} However, issues such as the variable legibility of handwritten notes highlight the advantages of electronic records.

The argument for paper-based records being more portable than electronic ones only stands if there is a lack of IT infrastructure in clinical locations,\textsuperscript{12} and an EPR can be printed and disseminated as appropriate, regardless of the IT hardware capabilities of a given location. Identifying updates and amendments is also more pervasive in an electronic medium,\textsuperscript{13} by comparison with the traditional method of crossing out and countersigning a paper record.\textsuperscript{14}

**Limitations of the method**

The study in general can be viewed as a success; however, there are some key areas which could be improved upon in future investigations. A response rate of 49.3\% may give results which are not representative of the service as a whole and future studies will be more successful if this response rate is increased. There are several mechanisms which could facilitate this, but primarily additional reminders and mail out phases could be employed.

**Conclusions**

This study demonstrates a predominantly positive response to the EPR in mental health. Large scale system implementation is not a trivial exercise and significant change management is required to move a service from reliance on paper-based notes to a modern EPR solution.

From the hypothesis proposed by Knight,\textsuperscript{6} several key factors needed to be addressed to achieve success within community mental health. From this study it is clear that system users understand the value and potential that an EPR brings to their working environment, and that they view the system as clinically appropriate with a high degree of accuracy and usability. It can be concluded that within this health setting, the implemented system appears to offer a robust electronic medical record that gives its users a high degree of satisfaction.

**REFERENCES**

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9 Islington PCT. Serious Untoward Incident Investigation into the Death of Penny Campbell. 2007.

**CONFLICTS OF INTEREST**

None.

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