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**TITLE:**

A Study of the Uptake and Application of Community Information Systems in England and Wales.

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## **ABSTRACT**

The use of information systems in community healthcare has increased greatly over the last ten years. The primary motivation for this development was the need to produce national data sets. However, more recently, it has been recognised that such information systems also have the potential to deliver a wide range of benefits to administrative, managerial and clinical staff. This article describes an innovative research link that has been established between Central Nottinghamshire Healthcare (NHS) Trust and The Business School at Loughborough University that intends to provide independent research studying the effects of information systems on community trusts. The first stage of the research is a survey of community trusts in England and Wales studying the uptake and application of community information systems. Preliminary results of the survey indicate that the aim of delivering a wide range of benefits to staff is now being addressed in addition to the production of the national data sets.

## **1. Introduction**

The Körner initiative in the 1980's provided the first major driver for the implementation of computer based information systems in community units. The systems implemented in the late 1980's were principally concerned with meeting the requirements of the Körner data collection standards rather than the requirements of local managers and clinicians.

Consequently, many of these first generation community information systems (CIS's) have considerable drawbacks. For example, they are not patient-focused, easy to use, or flexible and many of the systems adopted were not designed to be used in the community sector.<sup>1</sup>

Following the 1991 NHS reforms the Körner data set was identified as being unable to support the contracting processes of the internal market. The project responsible for the information aspects of 'Working for Patients' recommended the adoption of the concept of nationally agreed minimum data sets to be known as contract Minimum Data Sets (MDS).<sup>2</sup>

The community contract MDS was designed to replace the Körner data collected previously. The new data set was planned for implementation in 1995 but encountered a series of obstacles including doubts over its value to purchasers. Consequently, the implementation date was put back to April 1997. Further consultation with the NHS has resulted in the proposed Community and Maternity MDS being put under review again with the preparation of business cases and implementation plans to be completed by the end of March 1998.<sup>3</sup>

However, the need to provide national data sets was not the only driving force behind the implementation of CIS's. The NHS Management Executive actively encouraged the development of information systems that were in line with the core elements of the NHS Information, Management and Technology (IM&T) Strategy. These elements were that the system should be person based, provide data derived from operational information as a by

product, be integrated within and between organisations and secure in terms of confidentiality in the collection, handling and transmission of data.

Despite being under funded in terms of information technology, community trusts have made great strides in the last ten years in developing CISs to support the delivery of healthcare. However, little independent research has been carried out on the extent of information system use in community trusts. The aim of this paper is therefore to describe the preliminary findings of a research project designed to gauge the level of CIS development and implementation within community trusts in England and Wales.

## **2. Scope and Objectives of Research**

When taking the decision to procure an information system Central Nottinghamshire Healthcare (NHS) Trust (CNHT) were keen to embrace the key elements of the National IM&T Strategy. CNHT wanted to develop a system that was patient-based, provided information for clinicians and as a by product information for management, utilised portable technology so there was only one point of data entry and could also produce the community MDS when it was implemented. However, it was felt by the Trust that there was a lack of information to guide them in the best way of developing and implementing the CIS in the manner that CNHT wanted. It was also acknowledged by senior management at CNHT that the implementation of a CIS would cause a considerable level of organisational and cultural change throughout the Trust. With these issues in mind CNHT took the initiative and approached The Business School at Loughborough University to establish a research link.

The research link was designed with two principal objectives. The first objective was to provide support and advice, with regard to the implementation of a CIS at CNHT. The

second objective was to carry out research studying the organisational impact of implementing an information system within a community trust. It was envisaged that by addressing these two objectives a set of best practice guidelines for the introduction of information systems in community trusts can be established. The research would therefore be of value both in its academic contribution to the study of information systems and in its practical benefits to other community trusts that are implementing or are thinking about implementing a CIS.

In the first stage of the research project a questionnaire survey was conducted to objectively compare the practices and methods being applied at CNHT with those in other community trusts. More specifically, the objectives of the survey were to investigate: the number of trusts that are were intending to implement CISs; the main drivers for adopting this technology; the level of implementation achieved so far; and the scope and functionality of the CISs currently being used. The preliminary results of the first stage of the research are provided in this article.

### **3. Methodology and Results**

The questionnaire was sent to all Community, Mental Health and Learning Disability Trust IM&T managers in England and Wales. The scope and content of the questionnaire was established through interviews with members of staff at CNHT and the NHS Executive Information Management Group, and by reviewing the relevant academic information systems literature. A draft version of the questionnaire was pre-tested by several academics and five IM&T managers at Community Trusts.

A total of 236 questionnaires were sent out and 136 were returned giving a very high response rate of 58%. Of the 136 respondents 117 stated that their Trust provided community services and only these respondents' questionnaires have been included in the analysis. Of the 117 respondents, 82 had bought or developed a CIS; 48 had partially implemented their system and 34 had fully implemented their system. Of the remaining 35 respondents that stated they had not bought or developed a CIS, only 5 stated that their trust had no intention to purchase a CIS within the next two years. These results indicate that the uptake and application of CIS's is well underway throughout England and Wales.

The survey identified nine distinct aims that may have influenced a trusts' decision in deciding whether to adopt a CIS. Each respondent was asked to specify which aims were set as explicit objectives for their CIS or the explicit aims that would be set for their CIS when it was developed. The respondents were then asked to rank the explicit aims for their CIS in the order that they perceived them to be most important. Table 1 presents the results of this ranking. In order to compare the overall ranking of the aims a weighted average rank (WAR) was computed for each aim. A low WAR value indicates a high level of perceived importance associated with that aim and vice versa. It should be noted that the WAR was computed using ordinal data and while this means that a WAR of 2.0 is better than a WAR of 4.0, it is not necessarily twice as good.

Table 1 indicates that the aim that is perceived to be of most importance in influencing the uptake and application of CISs is enabling staff to monitor clinical activity in order to improve their clinical effectiveness. The second most important objective identified by respondents was fulfilling the information requirements of Health Commissioners and GPs. The third most important objective was providing data needed for management purposes,

from data generated by the care delivery process. The objectives that were least important were producing cash releasing cost improvements, developing a system that is capable of linking to other systems external to the Trust and providing the community MDS.

Incorporating security systems to protect patient confidentiality was also given a low ranking on average. It is interesting to note that it is now the information needs of both clinical and non-clinical staff within trusts and local agencies that are being given a high priority and not the centrally required data sets.

When it came to the acquisition of CIS's the vast majority of trusts have opted to purchase a system. In total, 29 different system packages were recorded from the respondents. Table 2 shows the most common systems in use: the most popular being the Comwise system from Systems Team (CNHT being one of the users); PIMS from KPMG; Swiftcare from EDS and PHC from Protechnic. Only eight Trusts that responded to the survey had developed their own system in-house.

In terms of the functionality of systems, 48% of the respondents stated that their CIS used portable technology to support the practitioner in the field. This result suggests that changes in clinical working practices may have been taking place within trusts with information technology (IT) playing a more significant role during contact between healthcare professionals and patients. Furthermore, 74% of respondents stated that information could be shared between different professional groups within the Trust using the CIS. This sharing of information may also influence clinical working practices and improve the opportunities to provide holistic healthcare to patients.

#### **4. Conclusions**



The results show that the use of information systems in community healthcare is now commonplace with the vast majority of community trusts having implemented or intending to implement a CIS. There is a considerable range of information systems being adopted with no single supplier completely dominating the CIS market although Systems Team solutions are the most common. The primary driver of most Trusts using a CIS is to allow clinicians to improve the way they carry out their work by providing them with easier access to better information. The second most common driver for a CIS, providing data as a by product of the care delivery process, is in line with the national IM&T strategy. Similarly, the need to share information between different groups has been addressed by trusts as encouraged by the IM&T policy guidelines. However, this integration was only supported within Trusts as the systems ability to link to other systems external to Trusts was given, on average, a low priority. This low priority implies that trusts are looking more at their local needs rather than preparing for national IM&T strategies such as the national NHS database. Similarly, the need to produce the Community MDS was given a low priority indicating that Trusts have not been developing systems primarily designed just to help with the contracting process. It was also clear that the majority of Trusts did not aim to create any cash releasing opportunities by implementing an information system.

It appears that despite the economic pressures on community trusts, they have still been trying to achieve the more difficult aims of improving healthcare in terms of their information systems, rather than using IT for purely cost cutting exercises or number crunching. This conclusion suggests that IT may be beginning to have a direct impact on the way that health care is managed and delivered in the community sector. If this is the case, it is important to investigate the extent that IT is modifying working practices and

organisational culture and the effectiveness of these changes. It is envisaged that this research project will now directly address these issues.

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Table 1 Aims set for Community Information Systems within Trusts

Aim	Frequency (N = 117)	WAR	Number of Times the Aim was Ranked								
			1	2	3	4	5	6	7	8	9
Enabling staff to monitor clinical activity in order to improve their clinical effectiveness	89	2.66	34	17	17	10	1	2	5	1	2
Fulfilling the information requirements of Health Commissioners and GPs	97	3.30	15	18	17	13	20	8	4	1	1
Providing data needed for management purposes from data generated from the care delivery process	98	3.58	16	13	15	14	14	6	6	4	0
Sharing information between different professional groups	86	4.38	10	13	13	12	12	2	12	10	2
Providing an longitudinal electronic record for patients	82	4.38	15	10	11	9	4	13	8	7	5
Incorporating security systems to protect patient confidentiality	84	4.52	14	4	9	13	15	11	8	8	2
Providing the NHS Community Minimum Data Sets	95	5.23	10	7	7	13	11	10	17	14	6
Developing a system that is capable of linking to other systems external to the Trust	75	5.36	3	9	6	11	7	10	13	11	5
Producing cash releasing cost improvements	46	6.33	3	2	4	4	3	5	5	4	16

Note: The WAR is calculated by multiplying the rank by the number of responses, that are then summated and divided by the number of respondents identifying it as an explicit aim.

Table 2 Types of Information Systems used by Community (NHS) Trusts

Name of System	Supplier	Number partially implemented	Number fully implemented	Number of Trusts using the system
Comwise	Systems Team	8	10	18
PIMS	KPMG	7	1	8
Swiftcare	EDS	5	3	8
PHC	Protechnic	6	1	7
Comway	Systems Team	2	4	6
Comcare	Siemens-Nixdorf	0	6	6
Totalcare	AT&T	2	4	6
Continuum	Peak Systems	3	0	3
ACT Medysis	ACT	0	1	1
RICHS	HBO	1	1	2
Various	in-house	6	2	8
Other	Other	8	1	9
Totals		48	34	82