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Lack of Adequate Medical Involvement in Patient Centred Information Technology

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Abstract

A pre-requisite to successful systems, recognised in all industries for many years, is adequate user involvement. However, lack of medical involvement continues to be a major reason for the failure of computerised clinical systems. This paper explores why this is the case. It examines the underlying reasons for lack of involvement by doctors and discusses possible solutions.

1. INTRODUCTION

Twenty years ago, Barnett et al identified the *true* problem in realising the potential for improving information processing in medical care. They stated that "the realization of this potential is limited by technological capability and cost, and more importantly, by the difficulty of defining needs in precise and quantitative terms" [Barnett, Bleich, Stack. 1978]. Yet today, the definition of user needs is still quoted as the major reason why systems that have been developed to help doctors are not widely used [Smith, R. 1996]. The fact is that the benefits of clinical information technology still remain largely unrealised. In the UK, the recent Information for Health strategy document shows that the vast majority of acute hospitals (over 75%) have yet to invest in the clinical information systems necessary to support the electronic patient record [Burns, F. 1998]. As Coiera points out [Coiera, E. 1994b] there has been a manifest failure in the adoption of diagnostic systems into routine practice.

A basic pre-requisite to successful systems development, recognised in all industries for many years, is adequate user involvement. The effective use of clinical and electronic patient record systems is fundamentally dependent upon the level of commitment and 'buy-in' [Spours, A. 1996]. However, medical staff involvement has been and continues to be a major problem in healthcare computing. This, the author believes, is *the* major reason for failure of many healthcare IT systems to achieve their true potential.

The assessment of medical information technology has tended to concentrate on proving the technical validity of systems and omitted to look at the effects of their introduction on all aspects of health care [Burghgraeve, P. 1995]. As well as understanding the needs of medical practitioners, we may need new ways of assessing the true impact of healthcare systems on patient care. Also, Coiera believes that, while there has been a strong bias towards the technical component of research projects, the examination of the human elements has been poor [Coiera, E. 1994a]. As he states "Lets understand the problem well before we start to hallucinate solutions".

In order to harness the potential of patient-centred IT, we must understand the underlying reasons for inadequate medical involvement in healthcare computing.

2. REASONS FOR LACK OF MEDICAL INVOLVEMENT IN IT

The main reasons for lack of involvement are discussed below.

Time Constraints

Doctors are busy. Metzger states that a large proportion of their work involves information handling - estimates range as high as 20 to 40 percent [Metzger, J.B. 1996]. Others estimate that the percentage is mush higher. For example, Schmuland reports that physicians spend about 70% of their time gathering, sorting and prioritizing information that matters from that what doesn't [Schmuland,

D. 1999]. The NHS Information for Health Strategy [Burns, F. 1998] estimated that 25% of doctors' (and nurses') time was spent collecting data and using information. While we must accept that available time to be involved in information technology is in short supply, we must also bear in mind that even a small saving in the information handling processes of doctors could have major on-going benefits in time saving.

Reluctance/Fear of IT

There is a common belief that doctors are reluctant to use computers. [Drazen, E.L. 1996a] Drazen believes that this is not borne out by research. She believes that value to the user is the key driver of use. She points to a survey of 85 doctors carried out in the early 1980s which showed that over 80% of them would accept computer systems to support medical records, patient monitoring, diagnostic consults, and therapy consults. Coiera [Coiera, E. 1994a] supports this view, and warns against interpreting resistance to systems being introduced as reactionary stubbornness. A survey of doctors in two acute hospitals carried out by the author confirms the view that doctors are prepared to work with computers in the care of patients.

However, these beliefs are not uniformly accepted. Neame believes that there is a reluctance to take on the changes that technology is bringing to healthcare [Neame, R. 1996]. The factors that he feels contribute to this include intrinsic conservatism - especially in the medical community, anxiety arising from ignorance of technology, absence of any shared vision of the way ahead using technology, and no confidence in the stability of the healthcare IT environment.

Coiera, in the author's view correctly, puts the use of technology by medical personnel in a proper perspective - used well, the new technologies are neither to be feared, loved nor loathed. They are simply to be used. Used badly they do of course waste money and time, cause inefficiency and worse [Coiera, E. 1998].

Perceived Lack of Benefits

The perceived lack of benefits is a major barrier to the future use of patient-oriented systems. The NHS Information for Health Strategy [Burns, F. 1998] states that the impression of failure connected with information management and technology projects coupled with clinicians cynicism about distorted management information priorities presents a potentially major problem for the NHS in developing and implementing information *strategies*. If this creates such a difficulty at the initial planning stage, there is little doubt that the level of difficulty would be compounded by the time of system implementation if not resolved.

Inability to Define Needs

Research shows this to be is a very serious issue that has rarely been dealt with successfully. Johansson and Timpka report that although the importance of user involvement is known, the capturing and formalizing of end-user requirements is not well described and therefore often neglected in software development projects [Johansson and Timpka. 1997]. Drazen [Drazen, E.L. 1996b] points to the lack of detailed studies that indicate what type of computer support is needed, what functions doctors find most beneficial to automate, and where current systems fall short. The lack of success of early order entry/result reporting systems among clinicians is put down largely to the fact that they were designed primarily to suit billing and support department functions [Metzger and Teich. 1996]. They also highlight the importance of design being driven by a detailed understanding of patient care processes - as opposed to addressing individual, unrelated tasks.

Smith [Smith, R. 1996] speculates, perhaps the reason why clinical systems have failed to penetrate routine practice is that they have been designed without any close study of the information needs of doctors. He feels that medical informatics has been dominated by concern with technology and has developed solutions that have to search for problems. A major barrier in this area is that clinical staff are not well equipped to describe system needs [Schneider and Reed. 1996]. They *are*, however, adept at describing how they can and will deliver patient care. The task of identifying user needs has to fit in with this.

Organisational

Systems cannot be developed without considering the organisational environment in which they will operate. This is particularly true of clinical systems where the tendency is increasingly to move to a shared care environment. As Slack and Bleich [Slack and Bleich. 1992] noted, there is a growing belief that the solution to the problem of good clinical computing being the exception rather than the rule, lies more in the realm of politics than in the realm of technology. The findings of a survey to determine why some clinical support system succeed and other fail reveal that the excellence or otherwise of the computer system itself is of relatively little consequence [Hyslop, A. 1996]. The overall clinical system comprises all elements of the clinical processes and people involved in it.

Threat to Professionalism

Technology is often held up as the enabler of shared care. On the negative side, there is a perception that lack of inter-personal trust is a real barrier to the goal of shared care [Pearson, C. 1996]. This, Pearson believes, may stem from the fact that the educational process for health professionals does not strongly promote multi-professional working. Altman refers to the risk that we could create a sense among health care professionals of loss of autonomy and a sense of resentment for information systems [Altman, R.B. 1997]. He further cautions that health informatics cannot lead to a loss of professional pride.

Inability to Match Work Patterns/Processes of Clinicians

Metzer and Teich [Metzger and Teich. 1996] note that, no matter how many advances a patient care information system offers, it still represents a change in the way work is done in clinical practice. The system therefore must not only provide better data entry and retrieval, but also the entire process must serve the user as well or better than it did before. The patient care information system must fit actual patient care processes and work situations. The integration with work practices is obviously of concern to physicians. The findings of a survey carried out among academic physicians [Detmer and Friedman. 1994] showed a concern among those who took part particularly regarding the effect of computers on the doctor-patient relationship.

Hayes [Hayes, G.M. 1998] contends that we have not yet learned to represent computer based medical information in a form that seems intuitive to physicians. He feels that this may be partly due to the 'tension' between controlled data entry that suits the computer and free format data entry that suits the user.

Lack of Awareness of Potential of IT

In order to become effective users of any system, one would expect the "target audience" to have an insight into the value and possible uses of the application to be implemented. There can be no doubt that lack of this awareness would mitigate against the attainment of successful system use and growth. Do clinicians have this awareness of the potential benefit of IT? It would appear that they do not and that we need to ensure that the creation of this awareness is an integral part of patient-centred system design and implementation.

As part of the EDUCTRA Concerted Action (AIM) project [Hasman, A. 1995], a survey was carried out among health professionals in a number of countries to determine their skills in the use of IT and their knowledge with respect to health informatics. The survey concluded that health care professionals generally lack knowledge with regard to the possibilities and limitations of computer systems.

State of Technology

There is much evidence to support the view that technology in itself is not a major limiting factor. However, some believe that there remains a serious mismatch in healthcare between business requirements and the information technology solutions supporting it [Llyod-Williams, D. et al. 1996]. They comment that the consequences of this mismatch include:

- IT is not a core business for health - organisational and external pressures are leaving implemented technology behind.

- Business reengineering is becoming more common but does not always include IT.
- IT in healthcare is still parochial and introverted in it's thinking among purchasers, professionals and in the supply chain.
- The business profile does not match the information profile and both are quite different from the IT profile.

Industry itself can also be very slow to change.

Behavioral Aspects

One possible reason often put forward for the lack of successful systems in routine use is the behaviour of clinicians. There is a perception that active resistance should be expected when implementing clinical applications as if this were an ingrained behavioral response to be expected from clinicians. Even if this were *not* the case, researchers are increasingly focusing on the human dimensions of systems. Rigby and Robins contend that it is now both feasible and desirable for complete information systems to be based upon person attributes[Rigby and Robins. 1996]. Amberg and Graber promote the use of development approaches such as business process modeling that allow for the more accurate specification of models covering structural as well as behavioral aspects of a hospital [Amberg and Graber. 1996].

The rate of change facing physicians e.g. the move to managed care, cost containment etc., may also be a factor. Treister believes that change "toxicity" may be a factor in the reluctance of doctors to take on a new information system - the reluctance may be nothing more than a reaction to the multitude of changes over which the doctor feels little control [Treister, N.W. 1999].

System Design/Implementation Approach

As with any system, the design and implementation approach followed in relation to clinical/patient-focused applications must be a crucial element in determining it's eventual success or failure. Smith cites Nicholas Negropronte, guru of the information age "the big challenge for the next decade is to make computers that know you, learn about your needs, and understand verbal and non-verbal languages.....[We need computers that] exhibit intelligence to such a degree that the physical interface almost goes away. Therein lies the secret to interface design: make it go away" [Smith, R. 1996]. There are few, if any systems, that can yet match this ideal. There may, however, be opportunities to improve the design and implementation approaches that have been applied in the past and continue to be applied.

Training strategies need to focus on the long-term development of an information culture, and not - as in the past - on short-term training designed simply to get people using systems.

Safran [Safran, C. 1994] when speaking on patient-centred computing says, "we must design systems around patients, not technology. We must talk about 'patient servers', not 'client servers'".

3. POSSIBLE SOLUTIONS

The author believes that, if we can overcome the key problem of lack of clinical involvement, we will go a long way towards at last achieving real and widespread benefit from these systems. We cannot leave the resolution of this issue to chance. It is essential that the involvement of clinicians be *planned* for.

Prerequisites to the implementation of patient-centred systems include:

- An acknowledgement by healthcare management of the importance of patient-centred information technology to the future operation of the health services.
- Acceptance that the problem of inadequate medical involvement exists and awareness of the risks associated with not dealing with it - including investment in inappropriate technologies and frustrated staff.
- An honest approach to dealing with problems. A survey among hospital based doctors carried out by the author indicates that there is an acceptance among the vast majority of clinicians that computing in clinical areas will increase. There also appears to be a real willingness to use

information technology in providing patient care. The level of willingness reflected in the survey would suffer if any attempt were made to "hide" problems.

- Developers having a good understanding of the key issues in clinical computing. The developers must also be encouraged to be open to new ways of eliciting information and working with clinicians.
- Giving clinicians exposure to computers. Clinicians who have had no prior exposure to computing cannot be expected to be aware of the potential of computing nor can they be expected to play a full part in the development process.
- Dealing with the key issues that concern clinicians - such as security of and access to confidential patient information.
- Acknowledging the cost of clinical involvement. The cost of freeing up doctors to participate in development projects should not be viewed purely as an additional overhead. Health organisations are often very willing to pay high fees to management consultants in the development of clinical systems. While one cannot argue that such expenditure is of itself wasteful, it would certainly support the view that engaging external management consultants while failing to adequately involve the medical staff who will use the system is certainly wasteful.
- Bringing the medical leaders on board. The people who are most familiar with the work performed in the areas to be impacted by the development are the logical ones to promote change. Their participation will help promote ownership and gain commitment to the implementation process.
- An acceptance that technology is only one factor. The critical factors for system success are the people involved, the readiness of the organisation to accept change and the management of that change process.

The development and implementation of systems to be used in front-line patient care involves a great deal of coordinated effort, communication, commitment and effective management. Ensuring that there is receptiveness in the organisation/department to the development can facilitate the task. The "personality" of the organisation should indicate that it is an environment that welcomes and rewards initiative and fresh thinking.

4. CONCLUSIONS

Why do some information systems fail and others succeed? As Hyslop remarks "the excellence or otherwise of the computer system itself is of relatively little consequence. The overall 'clinical system' comprises all elements of the clinical process and people involved in it"[Hyslop, A. 1996]. The author believes that the most important component to successful patient-centred systems is the appropriate involvement of clinicians.

We can no longer afford the "lottery" approach to patient-centred information system development - a pious hope that, on this occasion, it will work. Practical ways of overcoming the problem of inadequate clinical involvement need to be put in place. Researching the failures and successes of the past provide valuable insight into how this can be achieved.

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