

## Conference paper

# A knowledge management-based intranet: asset or EBM liability?

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### ABSTRACT

This paper summarises the presentation given at the British Computer Society Primary Health Care Specialist Group annual conference 2004. It outlines the four years of experience gained in implementing a knowledge management-based intranet across a local health community. Consideration is given to definitions of knowledge management and

evidence-based medicine. The paper outlines the potential impacts and actual results over the four-year period, with reference to the wider issues involved.

**Keywords:** evidence-based medicine, health community intranet, knowledge management

## Introduction

St Helens and Knowsley Health Informatics Service appointed a Clinical Knowledge Manager in 2000. The production of a structure to support the three trusts (one acute trust, two primary care trusts) in their journey towards becoming learning organisations was the prime objective. This focused around the development of an intranet based on knowledge management principles.

## Knowledge management

Knowledge management (KM) suffers from an excess of definitions, which results in it becoming an ontological conundrum. The Knowledge Management Sub Programme Board of Cheshire and Merseyside Strategic Health Authority defines KM as being 'primarily concerned with continual service improvement and the delivery of benefits to the community'. In order to achieve this, the definition includes two key drivers: 'Firstly the need to share information, good practice, lessons learnt and know-how. Secondly to facilitate access to multiple internal and external sources of electronic, paper-based and people-based resources'.

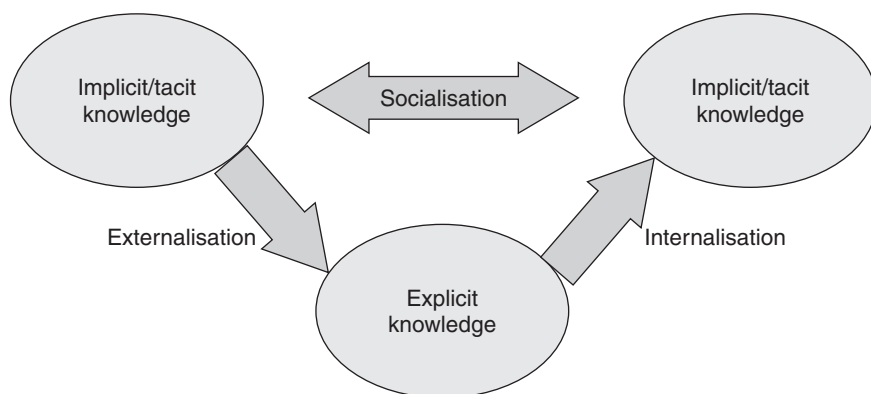
This definition maps against seminal work from Nonaka and Takeuchi who used the knowledge cycle to illustrate the two states of knowledge – implicit within individuals; and explicit, present in artefacts

such as paper or electronic resources – and the three methods by which that knowledge is mobilised (see Figure 1).<sup>1</sup>

One strength of this definition is that it does not fall prey to the myth of knowledge that amassing larger and larger amounts of data produces a smaller volume of information which in turn produces a smaller amount of knowledge. This is a flawed logical process that has contributed to the failure of many databases intent on generating knowledge through the process of data mining. The answers that emerge from data do not always produce knowledge, and completely ignore knowledge that cannot be made explicit.

## Why is the implicit so important?

Illustrating the importance of implicit knowledge is as easy as riding a bike. The simple set of instructions required to ride a bike (place bottom on seat, right foot on right pedal in the one o'clock position, both hands on handlebars, transfer body weight to right foot, place left foot on left pedal, adjust steering to suit, maintain circular motion with feet on pedals) should mean that anyone able to comprehend the instructions can ride a bike. The reality is that it is not possible to make explicit the actual instructions on the complicated actions required to maintain balance and



**Figure 1** Mobilisation of knowledge (figure created using the data of Nonaka and Takeuchi)<sup>1</sup>

steering. They are tacit and are transferred through the process of socialisation that parents impart to their children by running along behind the bike while keeping a hand on the saddle and correcting the child's instability.

This concept is clearly illustrated in any performance activity such as riding a bike, playing a sport, playing an instrument, inserting a CVP line, or removing an appendix. Armed with the appropriate explicit knowledge we can all know *how* to do it – but few of us could do it with skill. Within the commercial world of knowledge management these are not new ideas; this silent implicit knowledge is regarded as of equal, if not more, value than formal explicit knowledge, and is perhaps best embodied by the concept of knowledge capital.

## The project to date

The St Helens and Knowsley Health Community Intranet seeks to capture implicit knowledge by making the details of its contributors available through a directory service called Peoplepages. These contributors exist as groups or departments who can create a web community. To date there are over 160 communities online. Many of these communities are departmental in origin, some are transient in nature, some are non-functioning entities devoid of content that were apparently set up for vanity reasons.

## Theoretical objection

The concern that a KM-based intranet could be an evidence-based medicine (EBM) liability arises from the hierarchy of evidence contained within the key concepts of EBM.

Evidence-based medicine is the drawing together of best external evidence, personal expertise and patient preferences to make a decision about patient care.

From the point of view of EBM, there is a theoretical objection that making implicit knowledge available through an intranet will promote dissemination of anecdote or ideas that are incorrect or wrong, because those ideas are not peer-reviewed or subject to any scrutiny.<sup>2</sup> It is this removal of filters imposed within the rigour of scrutiny and publication that acts as a theoretical deterrent to the use of an intranet to support EBM.

During initial development of the local health community intranet, the 'lessons learned' component of the intranet was dismissed as a means to disseminate anecdote. One consultant colleague posed the question 'What happens if a consultant publishes complete rubbish on the intranet?', to which the respondent answered 'You find out the rubbish he's been telling his staff for years'. Although seemingly facetious, the logic is sound: drawing attention to an erroneous belief or practice is one way of correcting that error. The KM perspective uses the context of the publisher as a means of augmenting the filters, supporting the recipient with context as proxy for validation through rigour.

Within the local health community intranet the potential exists for individuals to publish without scrutiny, but no information is published without context. Within the intranet studied there is the possibility for any individual to publish information that is clearly marked as an individual submission, and the further opportunity exists to seek the individual's profile in terms of professional role and responsibilities as well as work-related skills and specialist interests. There is also the possibility to publish through a 'web community': this is an electronic communal area that requires approval from an administrator before the document is available for viewing to the wider community.

The secondary *a priori* hypothesis to be tested is that even when given the opportunity to publish as individuals, the tendency is to seek peer support and publish through a community; and further, that when

individuals publish they do so with non-contentious information rather than heresy.

## Method

The content of the St Helens and Knowsley Health Intranet ([nww.sthkhealth.nhs.uk](http://nww.sthkhealth.nhs.uk)) was analysed for document subject, author and publication route. This included all the documents ever published, not just those currently in date. The individual submissions were further analysed in light of the hierarchy of evidence. The total current content of the intranet was searched for keywords based on the hierarchy of evidence and common organisational documents.

## Results

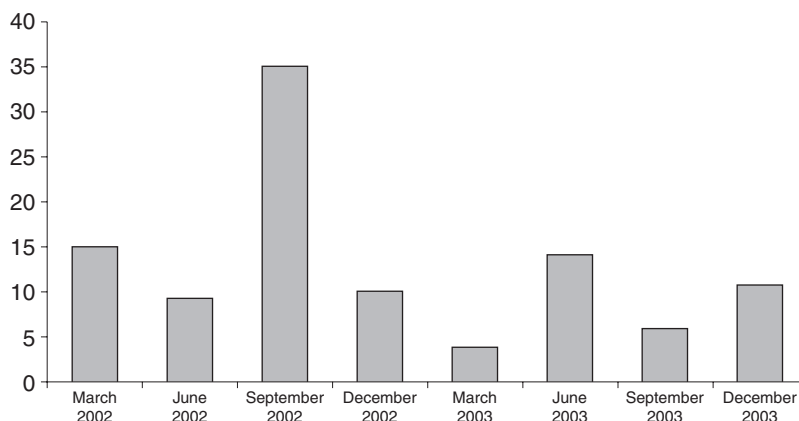
The initial document distribution shows that the vast majority of documents have passed through an approval process: overall only 2.9% of documents were submitted as individual items, with the majority coming through trans-organisational groups, classified in Table 1 as 'other'. These groups include informatics and cancer services (see Table 1).

Analysis of date of entry into the system (see Figure 2) shows no trend in submission dates, with a mean of 13 per quarter, standard deviation 9.6.

Within the intranet system, individuals are given the opportunity of stating the document's author; this is designed to allow for the possibility that individuals might find information created by others, and wish to

**Table 1** Source of documents

	Individual	Community	Total	Total documents (%)
St Helens PCT	31 (3.2%)	948 (96.8%)	979	22.6
Knowsley PCT	3 (0.5%)	545 (99.5%)	548	12.6
St Helens and Knowsley Hospital	29 (1.6%)	1834 (98.4%)	1863	42.4
Other	62 (6.6%)	883 (93.4%)	945	21.8
Total	125 (2.9%)	4210 (97.1%)	4335	100



**Figure 2** Number of individual submissions per month

draw it to the community's attention. For all of the 125 documents published as individual submissions, it was possible to identify an institution as author in 39 cases (31.2%); examples included guidelines from the British Society of Gastroenterology, and the Northwest Medicines Information Team. For a further 85 documents (68%) the job title of the individual submitting the document validated the document content, for example Trust press officer publishing a newsletter from the Trust, or an information analyst publishing the joint performance monitoring report. There was only one document that was deemed inappropriate: a staff member published details of a house for sale.

Considering the original hypothesis that an intranet based on KM will lead to dissemination of information that dilutes or inverts the hierarchy of evidence to facilitate the practice of EBM the 125 individual submissions were assessed for clinical content and, further, for the place of such content in the hierarchy of evidence.

There were 96 non-clinical documents (76.8% of the individually submitted documents) and 29 (23.2%) clinical documents. Of these 29 clinical documents, seven were classified as guidelines and the remainder were information sources. All the guidelines were either local adaptations of nationally accredited protocols, or the protocols themselves, for example the British Society for Gastroenterology guidelines for investigation of iron deficiency anaemia.

## Overall content

The entire intranet was searched for keywords related to EBM, and also the artefacts generated by an organisation. The results suggest that the proportion of 'best external evidence' contained within the organisational intranet is small (see Table 2).

## Discussion and conclusions

### Is an intranet an EBM liability?

This sampling of the content of one knowledge-based intranet produces results open to interpretation. There is very little evidence as recognised by the hierarchy of EBM contained within the document depository; thus the first hypothesis that a KM-based intranet will dilute or invert the hierarchy of evidence to facilitate the practice of EBM is partly proven. The finding that fewer than one percent of documents are labelled as evidence, trial evidence or the results of a randomised controlled trial suggests that the organisation does not

**Table 2** EBM content

Keyword	Number	%
Minutes	338	10.87
Report	309	9.94
Policy	213	6.85
Audit	150	4.82
Agenda	121	3.89
Guideline	85	2.73
Study	13	0.42
Trial	10	0.32
Evidence	10	0.32
Randomised controlled trials	0	0.00
Totals	3110	100

publish that kind of information within its intranet. That does not mean that it excludes or prevents access to those sources. It is possible for users of the intranet to access the library section that links to best external evidence sources such as the National electronic Library for Health (NeLH) and the Northwest Knowledge Portal, Aditus, both of which focus heavily on best external evidence.<sup>3,4</sup>

The second hypothesis that individuals choose to publish with peer support is proven fully. Fewer than three percent of the documents ever published to the intranet were uploaded without some approval process within a web community.

### Should this be a cause for concern?

Given that the required evidence for EBM is residing outside the corporate intranet in such providers as the Cochrane Collaboration, Medline, NeLH and local evidence-based portals such as Aditus, the question arises whether these databases are too successful at standing alone.<sup>3-6</sup> Is a corporate intranet serving a different body of users from a knowledge portal such as Aditus? It is my contention that this is a cause for concern. It illustrates the potential for organisational knowledge to develop apart from EBM, the consequent risk being that EBM and best evidence are not driving the organisation. This issue can be illustrated by an anecdote from a recent Commission for Health Improvement report on one local Trust. The clinicians quoted 450 hip fractures in the last year, the managers

said 125 hip fractures in the last year; clearly someone was wrong! Unravelling the data, the discrepancy was found to occur at the point of origin of the figures: 450 were counted by the audit department from case notes, but 125 were counted by the information department from the patient administration system or PAS. The difference occurred when the clinical coders correctly coded 325 fractures as 'spontaneous', that is, fractures occurring where pathology other than trauma was the prime aetiological factor (in other words, an osteoporotic hip fracture counted as non-traumatic). Unfortunately the pragmatic clinicians coded all hip fractures as traumatic. Given the huge differences in information available to clinicians and managers, it is not difficult to see how misunderstandings can arise.

### What should be done?

Intuitively the answer appears to be the merger of evidence and organisational knowledge; this concept within our local health community is referred to as intelligence. This intelligence allows an organisation to facilitate the comparison of where it currently is with where it should be in order to try and develop an organisational approach which sees the National Health Service (NHS) as a 'learning organisation'.

The new General Medical Services Contract poses a similar threat in terms of separation of evidence and information.<sup>7</sup> The NHS wishes to performance-manage primary care using data held in clinical computer systems; however, the benchmarks measured need to be evidence based, and when such information is generated the organisation needs to assimilate the knowledge created. When the information and the evidence are not congruent, the organisation needs to know it and to act on this intelligence. Finally, then, is a KM-based intranet an EBM liability? The answer,

based on evidence and experience, is 'Not yet, but if we forget the evidence in our organisational "learning" it soon will be one'.

### REFERENCES

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- 3 National electronic Library for Health: [www.nelh.nhs.uk/knowledge\\_management/](http://www.nelh.nhs.uk/knowledge_management/)
- 4 Aditus: the Northwest Knowledge Portal: [www.aditus.nhs.uk](http://www.aditus.nhs.uk)
- 5 Cochrane Collaboration: [www.cochrane.org](http://www.cochrane.org)
- 6 Medline (PubMed): [www.ncbi.nlm.nih.gov/entrez/query.fcgi](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi)
- 7 New General Medical Services Contract: [www.bma.org.uk/ap.nsf/Content/Hubthenewgmscontract](http://www.bma.org.uk/ap.nsf/Content/Hubthenewgmscontract)

### CONFLICTS OF INTEREST

None.

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