

Primary care

Evidence based guidelines or collectively constructed “mindlines?” Ethnographic study of knowledge management in primary care

John Gabbay, Andrée le May

Abstract

Objective To explore in depth how primary care clinicians (general practitioners and practice nurses) derive their individual and collective healthcare decisions.

Design Ethnographic study using standard methods (non-participant observation, semistructured interviews, and documentary review) over two years to collect data, which were analysed thematically.

Setting Two general practices, one in the south of England and the other in the north of England.

Participants Nine doctors, three nurses, one phlebotomist, and associated medical staff in one practice provided the initial data; the emerging model was checked for transferability with general practitioners in the second practice.

Results Clinicians rarely accessed and used explicit evidence from research or other sources directly, but relied on “mindlines”—collectively reinforced, internalised, tacit guidelines. These were informed by brief reading but mainly by their own and their colleagues’ experience, their interactions with each other and with opinion leaders, patients, and pharmaceutical representatives, and other sources of largely tacit knowledge. Mediated by organisational demands and constraints, mindlines were iteratively negotiated with a variety of key actors, often through a range of informal interactions in fluid “communities of practice,” resulting in socially constructed “knowledge in practice.”

Conclusions These findings highlight the potential advantage of exploiting existing formal and informal networking as a key to conveying evidence to clinicians.

Introduction

The promotion of evidence based health care has resulted in several dilemmas. Firstly, proponents advocate importing explicit knowledge from the world of research and incorporating it into practice,¹⁻³ whereas the parallel vogue in the industrial sector has emphasised methods to promulgate practitioners’ tacit knowledge or “knowledge in practice.”⁴⁻⁸ Secondly, many clinicians are concerned that the evidence based healthcare movement may undervalue the importance

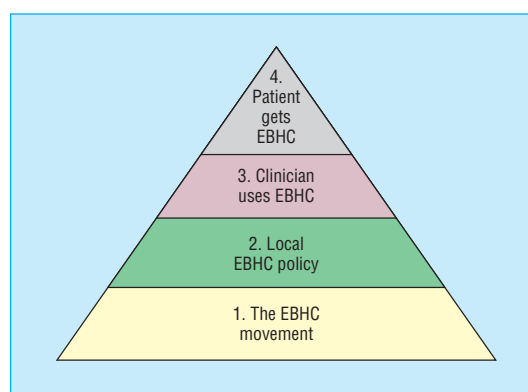


Fig 1 Four levels of evidence based health care

of tacit clinical knowledge in practice by promoting prescriptive guidelines that encourage “cookbook” practice. Thirdly, the overwhelming influence of local context on attempts to change clinical practice has presented almost insuperable challenges to the search for simple generalised techniques for implementing research evidence.⁹⁻¹² Fourthly, the evidence from psychologists about the role of shortcuts such as “scripts,” “heuristics,” and “rules of thumb” in clinical decision making,¹³⁻¹⁵ has been generally forgotten in the over-rationalist model implicit in evidence based health care.

Successful implementation of research evidence will require a deeper understanding of the processes of collective “sense making” by which knowledge, both explicit and tacit and from whatever sources, is negotiated, constructed, and internalised in routine practice. Figure 1 is a helpful way to consider evidence based health care at four separate levels.

Our research aimed to study explicitly the ways in which general practitioners (GPs) and practice nurses use evidence in their day to day decisions about the management of patients, both at an individual level (levels 3 and 4) and in their collective discussions about best practice (level 2), and how these interact. We were interested to understand the social and organisational

Wessex Institute for Health Research and Development, Community Clinical Sciences, University of Southampton, Southampton SO16 7PX

John Gabbay
professor of public health

School of Nursing and Midwifery, University of Southampton
Andrée le May
reader in nursing

Correspondence to:
J Gabbay
j.gabbay@soton.ac.uk

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processes by which evidence, information, and knowledge—tacit or explicit—become transformed into knowledge in practice.

Methods

Ethnography underpinned the data collection, analysis, and interpretation phases of our study. We purposively selected and gained access to two highly regarded general practices. “Lawndale,” where we did our main ethnography, is a rural teaching practice in the south of England; the practice population is relatively elderly and middle class. “Urbchester” is a contrasting, university based, innercity practice in the north of England, which treats a high proportion of unemployed and immigrant patients as well as students. We used Urbchester to expand and check out our findings from Lawndale.

In Lawndale we studied all of the practitioners (nine doctors, including one GP trainee; three nurses; and a phlebotomist) and associated administrative staff intermittently over two years. We analysed their use of information and knowledge in clinician-patient interactions in the general practitioners’ surgeries and nurses’ clinics as well as in practice meetings. We collected data through non-participant observation and semistructured formal and informal interviews, supplemented where appropriate by documentary review of guidelines or practice protocols. Typically, we would briefly discuss a clinical encounter to explore why the clinician believed he or she had acted in a particular way. The observations and informal interviews were detailed in fieldwork notes; four of the formal interviews were tape recorded and transcribed.

We also used unstructured non-participant observation to study a range of other clinician-clinician and clinician-support staff interactions in Lawndale practice meetings in which practice policy was formulated. Three of these meetings were recorded and transcribed; we documented the others by using written fieldwork notes. Our complete dataset therefore included individual clinical and general policy making encounters, with an auditable trail of fieldwork notes and thematic analyses (see bmj.com).

We analysed our records thematically by coding each piece of information in the fieldwork notes and interview transcripts and allocating these to emerging themes (independently by JG for GP focused data and by ALM for nurse focused data); both researchers then discussed and iteratively reviewed these as the themes developed. Our analysis was informed by several theoretical frameworks rather than being a simple grounded theory approach. We were not testing any hypothesis or preconceived models. During this process, we noted incidents atypical of the emerging model, which we used to further develop the analysis.

From such preliminary analysis we derived a theoretical model of the ways in which evidence and information became built into clinical or policy decisions. We used data collected from our observations and interviews in the Urbchester practice to confirm the model’s transferability. We then “tested” the credibility of this emerging model with the research participants in Lawndale and subsequently also at seminar presentations with other practitioners from a range of sectors, which helped us to refine the model.¹⁶

Results and discussion

Use of guidelines

We found that the individual practitioners did not go through the steps that are traditionally associated with the linear-rational model of evidence based health care¹⁻³—not once in the whole time we were observing them. Neither while we observed them did they read the many clinical guidelines available to them in paper form or electronically, except to point to a laminated guideline on the wall to help explain a decision. The GPs told us that they would look through guidelines at their leisure, either in preparation for a practice meeting or to ensure that their own practice was generally up to standard. The nurses would turn to guidelines when faced with an unfamiliar problem, and once familiar with the procedure would rarely, if ever, look at the guideline again. Although the practice’s computer system allowed direct access to several expert systems and to the internet, GPs very rarely used them. Their own average estimates were that they might use such facilities less than once every week; even then it would probably be only to download information to give to patients. We never saw them use such systems to solve a clinical problem in real time.

Networks

The practitioners nearly always took shortcuts to acquiring what they thought would be the best evidence base from sources that they trusted, including popular free magazines mailed to practices. The shortcut to the best up to date practice was—for the GPs—through their professional networks among other doctors. The nurses relied more on localised links between themselves, the practice doctors, and the community nurses linked to the surgery.

Networking was vital in order to know which colleagues to trust. A great deal of the social interaction and professional comings and goings between doctors, nurses, and other practice staff (and beyond) could be seen as a way of checking out who or what were the most authoritative and trustworthy sources and ascertaining what “they say.” However, our participants rarely if ever questioned whether “they” (authoritative sources) practised the linear-rational process traditionally linked to evidence based health care or if their views were rooted in explicit research evidence. In contrast, the views relayed by pharmaceutical representatives, and to a lesser extent the centre of the NHS, were regarded with considerable scepticism, although that did not necessarily mean that they were without influence, as the practitioners themselves admitted. The local primary care trust pharmaceutical adviser had, however, earned the respect of the practitioners and was a highly trusted source.

“Mindlines”

Thus clinicians relied on what we have called “mindlines,” collectively reinforced, internalised tacit guidelines, which were informed by brief reading, but mainly by their interactions with each other and with opinion leaders, patients, and pharmaceutical representatives and by other sources of largely tacit knowledge that built on their early training and their own and their colleagues’ experience. The clinicians, in general, would refine their mindlines by acquiring tacit knowledge from trusted sources, mainly their col-

leagues, in ways that were mediated by the organisational features of the practice, such as the nature and frequency of meetings, the practice ethos, and its financial and structural features, including the computer system.

When describing what we call mindlines, clinicians told us that they were “stored in my head” but could be shared and tested and then internalised through discussion, while leaving room for individual flexibility, especially when taking account of patients’ needs and views. In those rare challenging cases in which practitioners felt they did not have a ready mindline, they would later read up or ask around so that they could develop one for the future.

Mindlines were therefore iteratively negotiated with a variety of key actors, often through a range of informal interactions in fluid communities of practice, interactions with and experience of patients, and practice meetings. The result was day to day practice based on socially constituted knowledge (fig 2).

When formulating a practice protocol for the management of a given condition, clinicians relied on one of the partners with a special interest in that field to produce a summary of current best practice (see bmj.com). These discussions sometimes resulted in modification of the computerised protocols that were available to prompt clinical actions, but which were not often actually needed as they had already been internalised through the discussions.

Conclusions and implications

Transferability of the model

Further similar work will be needed to determine the transferability of our findings to other centres. We know of other practices, for example, where partners make more use of online information in their day to day practice and practices where very little communication occurs between the clinicians. Our model may not apply in such different organisational structures and cultures. Nevertheless, the two practices used were acknowledged to be among the best in their localities; our results therefore strongly suggest that it is unrealistic to expect even the best clinicians to rely on the full process of evidence based health care promulgated by its advocates.

Knowledge in practice

We need to recognise that clinicians usually work not with explicit codified knowledge (such as guidelines)

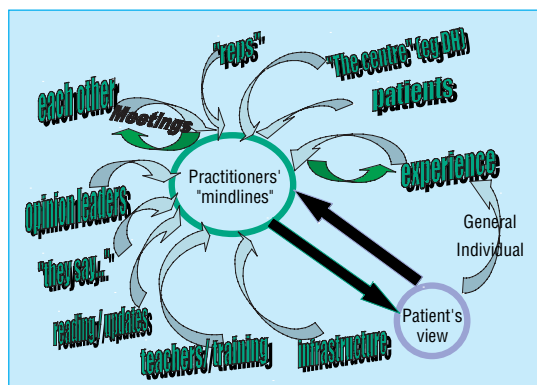


Fig 2 Construction of mindlines

What is already known on this topic

Considerable work has been done to elucidate the factors that help to get research into clinical practice

A large knowledge management literature from other sectors indicates that tacit rather than explicit research based knowledge underpins much professional work

Very little detailed observation of the ways in which clinicians derive and use their knowledge in practice, either collectively or individually, has been reported

What this study adds

Primary care clinicians work in “communities of practice,” combining information from a wide range of sources into “mindlines” (internalised, collectively reinforced tacit guidelines), which they use to inform their practice

This has important implications for the dissemination and use of clinical research findings

but with “knowledge in practice,” which the practitioners we studied instinctively and continually developed, comparing their own and each other’s tacit and explicit knowledge as they refined their mindlines. In doing so, the practitioners we studied omitted any explicit checks of the quality of the evidence base, but relied instead on their “communities of practice.”¹⁷ This was a social process that entailed a range of largely local “actor networks” (human, paper, and electronic) as sources of evidence.^{18 19} Thus, to return to the dilemmas that we listed in our introduction, mindlines, because they encapsulate tacit and explicit knowledge sources, are a buffer against rigid cookbook adherence to codified knowledge; and because they emerge from practitioners’ communities of practice and actor networks, they may be the key to designing generalised techniques for implementing research that capitalise on, rather than try to factor out, the power of local context.

We believe that mindlines are more complex than the “heuristics” and “rules of thumb” described elsewhere, as they are not simple cognitive shortcuts.^{14 15} Although similar to the concept of “scripts,”¹³ mindlines seem to be more reliant on professional interactions. They are more flexible and more like internalised guidelines—hence our new term. Although mindlines may seem to be a dangerous shortcut when compared with the formal model of evidence based health care, their use is unsurprising as practitioners do not have the time (nor usually the skills) to rigorously review all key sources of knowledge themselves. Thus the real skill of the practitioner might be expected to be that of learning reliably from the knowledge of trusted sources either individually or through working in a community of practice.

Implications

If this is the case, we need to make sure that the knowledge of the key opinion leaders, from medical or nurs-

ing school onwards, is based on research and experiential evidence and wherever appropriate follows the evidence based healthcare model. Training in critical appraisal of research might therefore be usefully targeted at opinion leaders to whom most practitioners turn for knowledge and should acknowledge and capitalise on the role of networks and communities of practice.^{20 21}

If our findings are correct, practitioners have a collective professional responsibility to ensure that mindlines are based on research evidence wherever possible. In order to do this, the potential of networking as part of continuing professional development must be recognised and fostered, and appropriate information must be targeted, through a variety of routes, to the relevant individuals. This also has important implications for the dissemination of new clinical research findings by using not the sources of knowledge that researchers and the government think practitioners should use but the actual sources that they do use.

We thank Dale Webb, who carried out some of the formal interviews. Above all we thank the staff of "Lawndale" for their forbearance in allowing us to "hang around" over all this time and learn so much from them about the day to day practice of primary care. Thanks also to the "Urbchester" GPs for the very fruitful time spent there.

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- 1 Muir Gray J. *Evidence-based healthcare: how to make health policy and management decisions*. Edinburgh: Churchill Livingstone, 1998.
- 2 Haines A, Donald A, eds. *Getting research into practice*. London: BMJ Books, 1998.

- 3 Trinder L, Reynolds S, eds. *Evidence-based practice: a critical appraisal*. Oxford: Blackwell Science, 2000.
- 4 Davenport TK, Prusak L. *Working knowledge: how organisations manage what they know*. Boston: Harvard Business School Press, 1998.
- 5 Polanyi M. *Personal knowledge: towards a post-critical philosophy*. London: Routledge and Kegan Paul, 1958.
- 6 Polanyi M. *The tacit dimension*. London: Routledge and Kegan Paul, 1967.
- 7 Nonaka I, Takeuchi H. *The knowledge creating company: how Japanese companies create the dynamics of innovation*. Oxford: Oxford University Press, 1995.
- 8 Lave J. The values of quantification. In: Law J, ed. *Power, action and belief: a new sociology of knowledge?* (Sociological Review Monograph 32.) London: Routledge and Kegan Paul, 1986.
- 9 Dopson S, Fitzgerald L, Ferlie E, Gabbay J, Locock L. No magic targets! Changing clinical practice to become more evidence based. *Health Care Manage Rev* 2002;27:35-47.
- 10 Le May A, Mulhall A, Alexander C. Bridging the research practice gap: exploring the research cultures of practitioners and managers. *J Adv Nurs* 1998;28:428-37.
- 11 Fitzgerald L, Ferlie E, Wood M, Hawkins C. Interlocking interactions, the diffusion of innovations in health care. *Hum Relat* 2002;55:1429-49.
- 12 Ferlie E, Fitzgerald L, Wood M. Getting evidence into clinical practice: an organisational behaviour perspective. *J Health Serv Res Policy* 2000;5:96-102.
- 13 Hamm RM. Medical decision scripts: combining cognitive scripts and judgement strategies to account fully for medical decision making. In: Hardman D, Macchi L, eds. *Thinking: psychological perspectives on reasoning, judgement and decision making*. London and New York: John Wiley and Sons, 2003:315-45.
- 14 Andre M, Borgquist L, Foldevi M, Molstad S. Asking for 'rules of thumb': a way to discover tacit knowledge in general practice. *Fam Pract* 2002;19:617-22.
- 15 Andre M, Borgquist L, Molstad S. Use of rules of thumb in the consultation in general practice—an act of balance between the individual and the general perspective. *Fam Pract* 2003;20:514-9.
- 16 Lincoln Y, Guba R. *Naturalistic inquiry*. Beverly Hills: Sage, 1985.
- 17 Brown JS, Duguid P. *The social life of information*. Boston: Harvard Business School Press, 2000.
- 18 Latour B. *Science in action: how to follow scientists and engineers through society*. Boston: Harvard University Press, 1988.
- 19 Callon M. Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Briec Bay. In: Law J, ed. *Power, action and belief: a new sociology of knowledge?* (Sociological Review Monograph 32.) London: Routledge and Kegan Paul, 1986.
- 20 Coleman JS, Katz E, Menzel H. *Medical innovation, a diffusion study*. Indianapolis: Dobbs Merrill, 1966.
- 21 Locock L, Dopson S, Chambers D, Gabbay J. Understanding the role of opinion leaders in improving clinical effectiveness. *Soc Sci Med* 2001;53:745-57.

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Buddha and evidence based medicine

The *BMJ's* efforts to highlight the evidence for evidence based medicine reminds us of its origins.¹ I believe that evidence based medicine has been around us much longer than we think. One of its oldest proponents was the great Indian philosopher, the Buddha.

The Buddhist aim of eliminating suffering coincides with the objectives of medicine.² The emphasis on compassion finds natural expression in the care of the sick. In the Buddhist monasteries it was laid down that the monks must undertake the nursing of the sick. According to a story in the *Mahavagga* the Buddha himself first showed the precept.³ One day, when he was taking his daily round in the monastery, he noticed an unattended monk suffering from stomach disorder, covered in his own excreta. The Buddha immediately asked one of his disciples to fetch water and washed the monk with that water and laid him down on his bed. Then the Buddha addressed the monks: "Ye, O Bhikkhus [monks], have no mother and father to wait upon you. If you wait not one upon the other, who is there, indeed, who will wait upon you? Whosoever, O Bhikkhus, would wait upon me, he should wait upon the sick."⁴

Another fragment from the *Anguttra Nikaya* or "Collection of Gradual Sayings" reads:

Yes, Kalamas, you may well doubt, you may well waver. In a doubtful matter wavering does arise. Now look you, Kalamas. Be ye not misled by report or tradition or hearsay. Be not misled by proficiency in the collections [citing the authority of religious texts], nor by mere logic or inference, nor after considering the reasons, nor after reflection on and approval of some theory, nor

because it fits becoming, nor out of respect for a recluse (who holds it).

But if at any time ye know of yourselves: these things are profitable, they are blameless, they are praised by the intelligent; these things, when performed and undertaken, conduce to profit and happiness — then, Kalamas, do ye, having undertaken them, abide therein.⁵

This sutta shows the importance of mistrusting hearsay and tradition long before odds ratios and cost effectiveness analyses came into existence.⁶ The outcomes that the Buddha desired 2000 years ago—"profit" and "happiness"—on a more universal scale are the same that evidence based medicine needs to strive for in the years to come.

Sonal Singh *resident physician, Unity Health System, Rochester NY, USA*

- 1 Straus SE. What's the E for EBM? *BMJ* 2004;328:535-6.
- 2 Duncan AS, Dunstan GR, Welbourn RB. "Buddhism", *dictionary of medical ethics*. London: Darton, Longman, and Todd, 1981.
- 3 Vignyan Prasar. Great scientists of ancient India: Jivaka Kaumara-Bhrtiya. www.vignyanprasar.com/dream/may2000/article1.htm (accessed 24 May 2004).
- 4 Kashyap BJ, ed. *Mahavagga (Nagar-Pali text)*. Nalanda, 1980.
- 5 Kalama sutta (*Anguttara nikaya*, Tika Nipata, Mahavagga, sutta No 65). [Translated as: Soma Thera. *Kalama Sutta: the Buddha's charter of free inquiry*. Kandy: Buddhist Publication Society, 1981]
- 6 Rosselli D. The Buddha and the search for evidence. *Med J Aust* 2002;176:404. (www.mja.com.au/public/issues/176_08_150402/rosselli_letter.html)