

Soft networks for supporting evidence based practice

© Jill Russell, Trish Greenhalgh,
Petra Boynton, Marcia Rigby

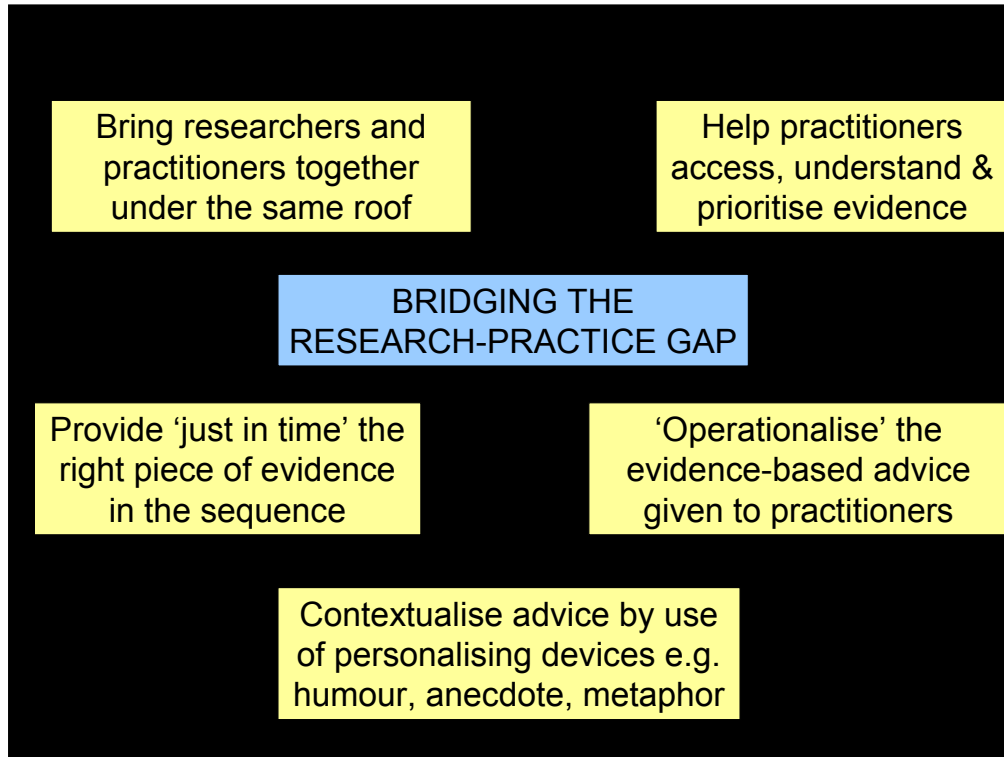


Most of you will be very familiar with the stepwise sequence of evidence-based decision making, which is all about how we clinicians manage to track down the right research when we need it in clinical decision-making.

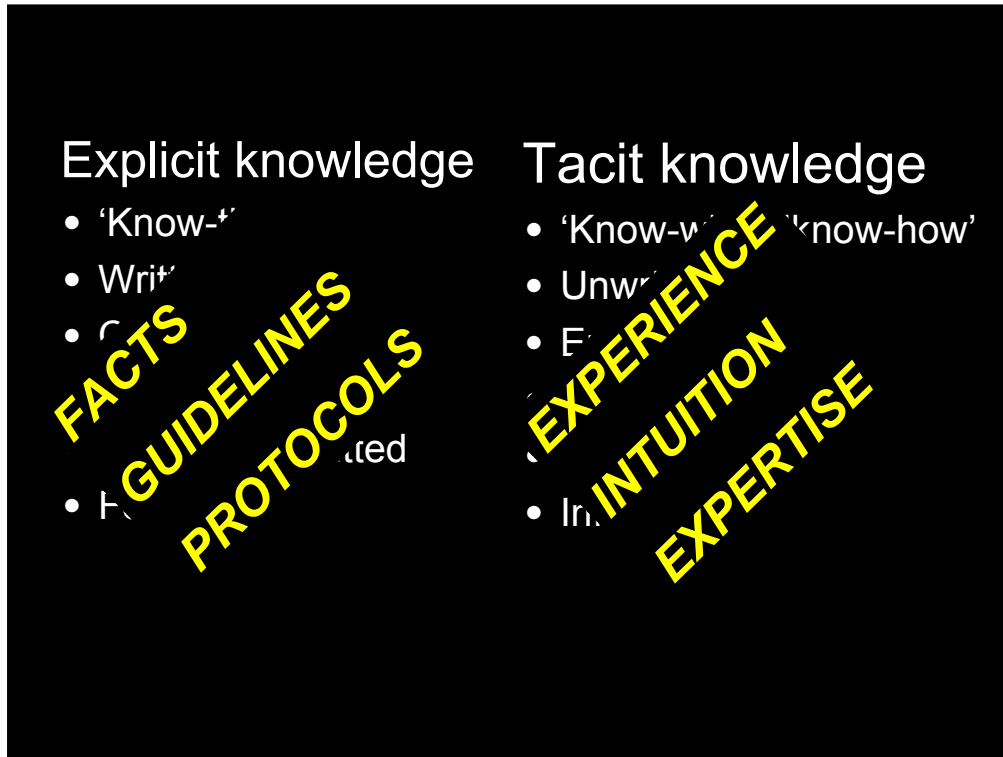
You begin by asking a focussed clinical question, then search the literature for evidence, then weigh up the evidence you find to decide whether it is scientifically valid and generalisable to your own patient, implement the findings, and evaluate your success. Of course, if you don't find what you need to know from a thorough search of the literature, you've identified a topic for more research – and hence the cycle continues.



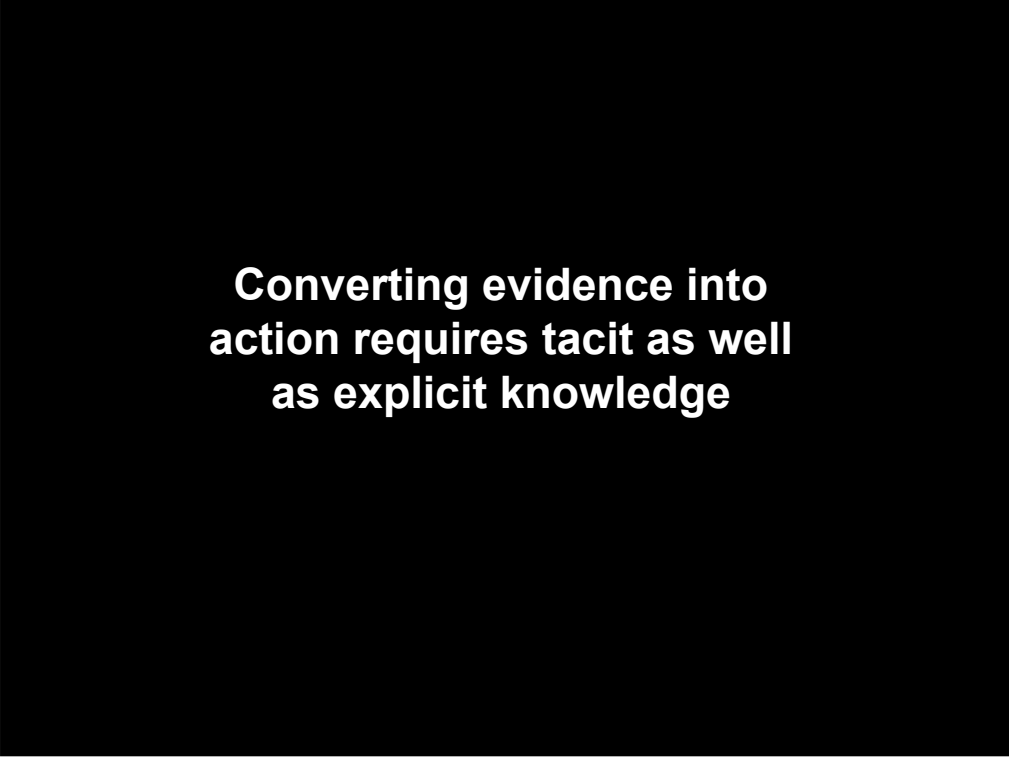
Here are some well known causes of the research-practice gap. Researchers and practitioners are often said to inhabit “different worlds” – one focussing on theoretical, ‘ivory-tower’ thinking in which everything can be ‘controlled for’, and the other the world of practical action in the grubby real world. The volume of evidence is vast, and rising at a rate which none of us can keep pace with. Research evidence tends to be strong on ‘what works’ – but weak on how to make it work. Research evidence is usually irritatingly devoid of context and ignores local politics and key resource issues. And finally, there may be good evidence for one aspect of the problem you want to solve, but no evidence at all for another aspect. All this tends to make us reject research evidence – and even not to bother looking for it in the first place.



...and here are some evidence-based solutions to those problems. We need to encourage researchers and practitioners to inhabit one another's worlds. We need to provide practical help for practitioners in accessing and interpreting evidence. We need to 'operationalise' the evidence-based advice we give practitioners so that they actually know what to do rather than just a theoretical answer. We need to take account of that difficult interface between research evidence and messy local context – and one good way of doing that is to tell stories and even have a laugh about some of the absurdities of the real world. And finally, we need to make sure that evidence arrives at precisely the right time in the decision-making sequence. The question we've been asking in this study is "to what extent can an email network achieve these objectives"?



As a bit of background to the work I'm presenting, we should think of knowledge in two broad categories (though a lot of knowledge has elements of both). Explicit knowledge consists of hard facts – the sort of stuff we learn in formal learning situations like school and university, and the sort of stuff that gets put into guidelines and distributed. Tacit knowledge is a much softer concept. It comprises unwritten, embodied, practical and contextual knowledge; it's generally passed on in informal spaces such as corridors and coffee queues. Explicit knowledge is about knowing the facts; tacit knowledge is about 'knowing the ropes' and making things happen.



**Converting evidence into
action requires tacit as well
as explicit knowledge**

The research into knowledge utilisation (take guideline implementation for example) is increasingly finding that converting evidence into action requires tacit as well as explicit knowledge. And more and more research is attempting to look at this elusive form of knowledge. The problem is that – as I’ve explained – tacit knowledge is knowledge that can’t be formalised, written down, officially transmitted (e.g. in an email attachment), or measured. Hence the research community is having all sorts of problems trying to pin it down.

C.H.A.I.N. – the vision 1997

- Email network and website
- NHS ‘family of organisations’
- Voluntary, free, closed
- Forum for informal support and exchange of ‘know-how’ and ‘know-what’

Let’s go back to the mid 1990s, when David Evans had a vision for something that would help people in a service environment make evidence happen. He wanted to capture and enhance some of the excellent informal support and knowledge exchange that we all knew occurred. He wanted an email network that was voluntary and informal, that people would not be threatened or intimidated by, and which could serve as a vehicle for exchanging the sort of knowledge that you couldn’t put into a textbook or guideline. David didn’t express his plans in exactly those terms at the time, but looking back I think this was what he was trying to capture.

C.H.A.I.N. – 2002

- 3000 members
- Academics and service
- Share interest in ‘research into practice’
- All members register interest areas
- Tight central input / co-ordination
- Popular with members but little evidence of ‘value for money’

By 2002 when this study began, CHAIN had 3000 members, some academic and some service, all of whom shared an interest in ‘research into practice. Members of CHAIN registered for particular topic areas (such as diabetes or postgraduate education) and received targeted emails on those topics. A tight central team (currently David and Wendy Zhou) vetted and edited all the emails. The service was popular with its members but there was little evidence of value for money and CHAIN’s funding was about to be pulled.

Previous evaluation (KF)

- Quantitative
- Graphs and pie charts
- Demographics
- Taxonomy of message content
- Advice on where to take CHAIN next

A previous evaluation, done by the Kings Fund, had focused on quantifying the types of messages and describing the demographics of the members. We found the quantitative data useful, but we didn't agree with the recommendations which we didn't think followed from the data they had gathered. This early evaluation had not addressed what we felt was the central question, which is what exactly happens in CHAIN and how successful it is.

Illuminative evaluation (UCL)

- Predominantly qualitative
- Description and interpretation not measurement and prediction
- Aim: to explore not just WHAT the messages were about but WHY they were sent, from WHOM and what HAPPENED to them

We took a qualitative approach, known as illuminative evaluation. Illuminative evaluation is a form of naturalistic inquiry, which uses a range of qualitative methods to explore an initiative as a whole; its rationale and evolution, its operations, achievements and difficulties. It is concerned with description and interpretation rather than measurement and prediction. As illuminative evaluators we adopted an open-ended and collaborative approach to inquiry, exploring perceptions and experiences, and working with stakeholders to progressively clarify and agree C.H.A.I.N.'s critical processes. In particular, we sought to document the *types* of knowledge exchanged within the C.H.A.I.N. network, the *social processes* by which knowledge is exchanged, and *how* the knowledge captured from this network began to help health professionals address the research-practice gap in their own work.

For more on this methodology, see Parlett M, Hamilton D. Evaluation as illumination: a new approach to the study of innovatory programmes. In Hamilton D, ed. *Beyond the numbers game: a reader in educational evaluation*, London: Macmillan, 1972.

Evaluation – methods

- ‘Tracking’ emails from start of thread to finish
- Interviews with CHAIN staff
- Virtual focus groups

We did three main things: we tracked emails (by emailing people and asking where they forwarded them); we interviewed CHAIN staff and watched them at work in their central office; and we held virtual focus groups with a random selection of CHAIN members.

Evaluation – key results

- ‘Life cycle’ of a message
- Experience of being a CHAIN member
- Types of knowledge exchanged (w.r.t. tacit-explicit taxonomy)
- ‘Critical success factors’ (to the extent that it was perceived as successful)

The main findings from our evaluation can be divided into four areas as listed here.

Life cycle of a message

'I have been asked to document the Primary Care Clinical Audit Criteria (including milestones) for each of the National Service Frameworks. This seems a big job to tackle on my own and I wondered if any C.H.A.I.N. members had already done this work and would be willing to share it.'



Here's an example of the life cycle of a CHAIN message. Here is a posting by someone working in a primary care trust. She has a fairly typical 'evidence into action' task to do, and posts a message in CHAIN sharing her anxieties about where to start and what to do. She's asking if there's anyone out there who's had "a problem like this",

Life cycle of a message

5 replies

- Useful web link to online toolkit
- Asking for further clarification
- Copy of data tool PLUS worked example
- Collection of various resources listed in 2-page document: “just what I wanted” PLUS offer to help out more if needed
- Asked her to share what she got with them

She got five replies. Not five hundred notes – just a manageable number. One provided a web link to an online resource. One asked for more information, which probably helped her articulate her problem better. One sent a copy of a tool plus a worked example (“here’s what we did with this in our trust”). One correspondent had pulled together lots of information in a 2-page document. And finally, a very common response, one person had nothing to offer but had a similar problem and was interested in getting a copy of any useful results.

Experience of being in CHAIN

- 'Emails relevant and useful' [*no spam*]
- 'Expands my network' especially across professional / organisational boundaries
- 'In here' not 'out there' [*identity*]
- 'Overwhelmed by the generosity of responses' [*reciprocity*]
- 'It's my security blanket' [*new lurkers*]

We found that people liked being members of CHAIN, for several reasons, which I've illustrated in the next few slides.

Effective targeting

“The huge advantage of CHAIN is that it works! When my email tells me I have a message from CHAIN, I know that it will be relevant to me.”

[“I keep getting messages I don’t want”]

Most of them found the emails relevant and useful. The exceptions were often people who had not set up their membership very carefully, or who had moved jobs since setting up their membership and were hence receiving emails targeted at someone with different needs.

Boundary spanning

“My personal network tends to be limited to people in similar fields to me [public health]. I don't tend to know nurses, academics or social researchers, whereas C.H.A.I.N. has all of them as members.”

[NB weak ties]

The expression “expands my network” was used by several respondents, and people seemed to feel ‘linked up’ rather than dumped in a sea of other people. The research literature from social network theory on the strength of weak ties is relevant here. We often get more information from ‘friends of friends’ (people we don’t know directly but know through a third party) than we do from the friends themselves, since we already share a lot of knowledge with people we’re closer to. Hence, ‘networking’ (putting people in touch with one another) is increasingly seen as critical for the exchange of knowledge. CHAIN seems to do that very effectively.

CHAIN culture and identity

“Although I have not as yet used the network to answer any of my queries, I feel that it is a valuable resource there to use when needed and am more than willing to help and support any other network member with their queries.”

CHAIN’s culture is one of mutual helping – something the sociologists call ‘reciprocity’. An expression that was commonly used was “overwhelmed by the generosity of responses”.

Reciprocity

“I have met with many excellent people at conferences, and have tried to maintain links via email. But people are not very responsive to this, unless you are someone who has written a good book or given the conference presentation. Whereas in C.H.A.I.N., I have found that you can be anybody and anyone will reply.”

As we saw in the earlier example, CHAIN members went to a lot of personal trouble to put together replies for people posting requests for help. Considering they didn't even know the person, and were usually from a different organisation, this generosity and reciprocity was a surprising and very interesting finding.

Security blanket

"I have not used C.H.A.I.N. much but it is a security blanket! I am a novice researcher and not a natural one! Knowing there are a bunch of people out there who would if I asked and if they could share their expertise with me is comforting."

A lot of people, especially new CHAIN members and less senior people, told us they got a lot out of 'lurking' (reading the messages but not replying to any). Following the threads often allowed them to 'learn the ropes' of their job or operationalise a task in a way that was not possible by reading more formal guidance.

Types of knowledge exchanged

“I want to make contact with others working in local cardiac networks”

Making friends

I'm now going to talk you through examples of the sort of knowledge that gets exchanged in CHAIN. Here's one example: the sender wants to “make contact with others working in local cardiac networks”. At this stage, he is just seeking to make friends. He doesn't – yet – want to exchange any particular knowledge.

Types of knowledge exchanged

“I’m introducing some protected learning time for primary care staff in our PCT. Has anyone done this and got any lessons to share?”

Seeking informal stories

In this example, the sender is looking for informal stories about a particular complex task – introducing protected learning time in primary care. You can see from the way this posting is phrased that the person doesn’t want a load of theory – he or she probably has that already – they want examples of practicalities and problems from those who’ve actually done it.

Types of knowledge exchanged

“Does anyone have any literature that wouldn't show up in the main databases on elder abuse in the UK for a bibliography we're producing?”

Seeking formal knowledge

This person is seeking a particular subset of formal knowledge that is hard to get hold of – the so-called ‘grey literature’, and she considers CHAIN a good place to go for this type of knowledge.

Types of knowledge exchanged

“I’m about to start work on developing a clinical effectiveness strategy for my PCT and am looking for examples of strategies from other PCTs”

*Seeking ‘articulated’
hands-on knowledge*

And here’s a request for ‘articulated’ hands-on knowledge – that is, the sender seeks knowledge that has already been worked through on a practical level and then formalised into a local strategy document. Again, the sender has probably already identified formal guidance in the literature on how to establish a clinical effectiveness strategy, but he or she wants to supplement that formal knowledge with a formalised version of local knowledge.

I’ll come back to these different types of knowledge later in this talk. Now I want to move on to what people valued in CHAIN.

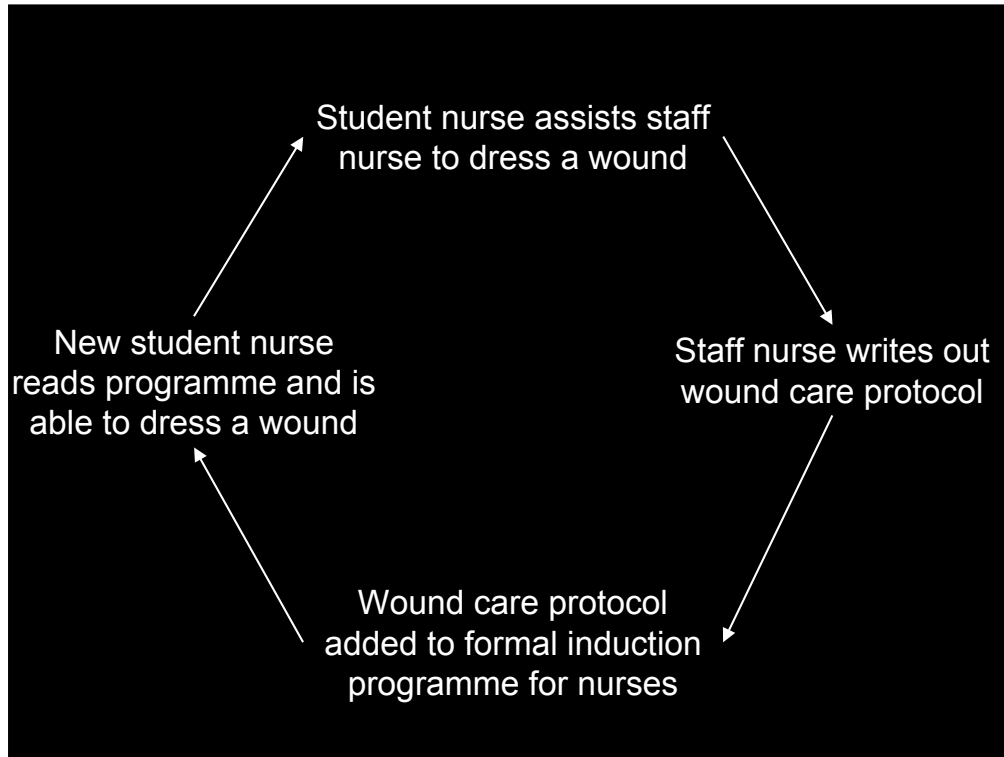
CHAIN: Key success features

- Restricted membership, strong culture
- Informality (“everyone’s so nice”)
- Reciprocity (“everyone’s so helpful”)
- Personalisation of knowledge
- Tight targeting and editing by centre
- ‘Legitimate peripheral participation’

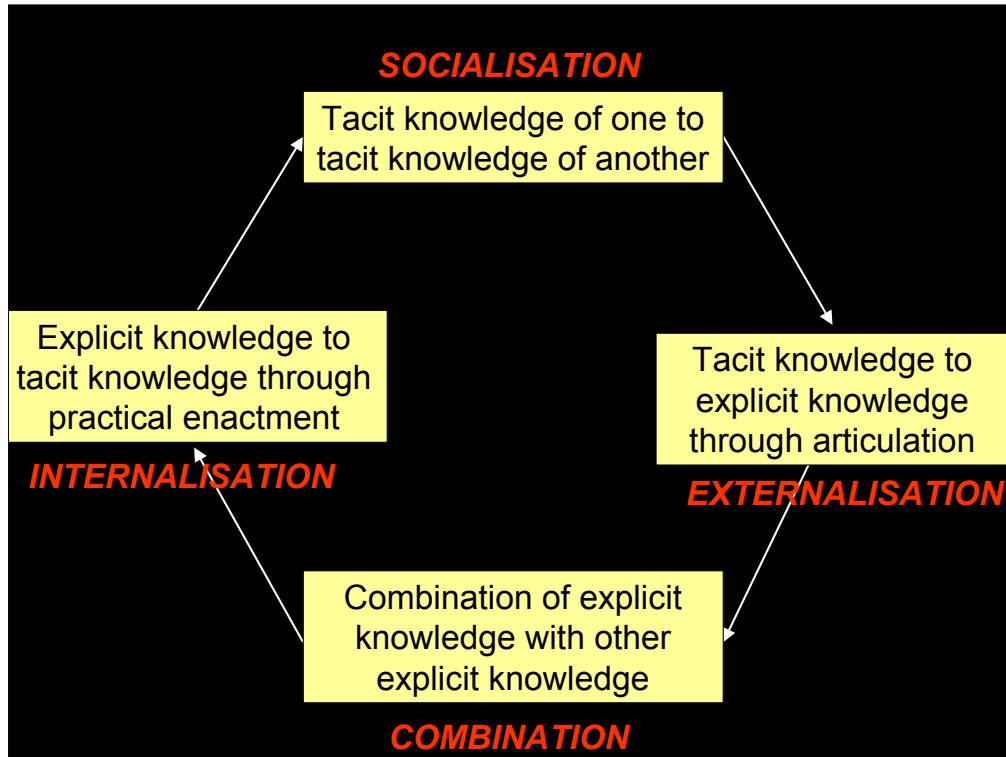
From the focus group data, we found that these were the main things people valued about CHAIN. They liked the fact that CHAIN was a closed membership organisation – you had to work in the NHS or in a relevant academic institution. They liked the informality and reciprocity, and the fact that members took care to personalise the knowledge sent by adapting it to what they knew of the circumstances and background of the receiver. They also liked the fact that every initial message was vetted by David and Wendy. And finally, the lurkers, who as I said were often very new and fairly junior, liked lurking – a level of input which sociologists call ‘legitimate peripheral participation’.

The knowledge utilisation cycle (Nonaka)

I want to introduce a theoretical model which helps explain our findings. It was originally developed by Nonaka, who studied the exchange of knowledge in Japanese businesses. Nonaka's model has not been used at all to look at knowledge exchange in the NHS (we searched the entire Medline database and did not find him!) but it fits our data very well so we hope soon to publish a paper looking in more detail at Nonaka's work and applying it to knowledge exchange in the public sector.

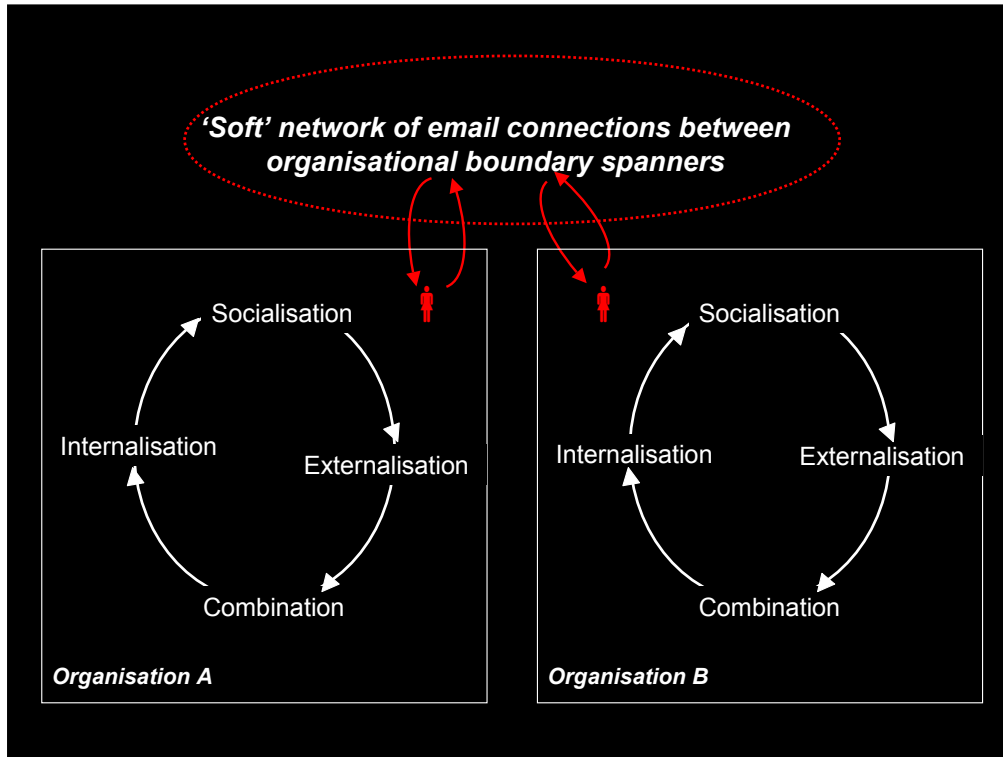


Consider this example of a new student nurse who has been attached to a more experienced staff nurse for her induction on a busy surgical ward. Like most of us on a new job, she's got a lot to learn. She starts by assisting the more experienced nurse in dressing a wound, and learns quite a bit on the job. She also, of course, makes friends with her colleague and begins to develop a social relationship in which she will later be able to seek informal knowledge. Next, the staff nurse writes out a protocol for wound care – perhaps jotting it down on an envelope to remind the student of the key points, and then later more formally as a resource for the next new recruit. This protocol might subsequently be added to a larger induction pack and used as part of a formal training programme. Finally, if a new nurse finds herself on the ward without someone to show her what to do, she may read the relevant page in the induction pack and be able to convert these formal instructions into actually dressing a wound. All these are examples of different knowledge utilisation tasks.



When the student nurse assists the more experienced nurse in dressing a wound, she's acquiring tacit knowledge directly from the tacit knowledge of another professional. When the staff nurse writes out a protocol for wound care, she's converting her own tacit knowledge to explicit knowledge. When written-down knowledge is added to other written-down knowledge, this is of course the accumulation and systematising of formal knowledge. Finally, the difficult task of reading the induction manual and becoming able to do the practical task of dressing the wound is an example of converting explicit knowledge to tacit knowledge. This last form of knowledge conversion is particularly difficult – but not impossible if the formal knowledge is annotated with practical, informal advice. Delia Smith is an expert at packaging such advice (“I find it useful when breaking an egg into a bowl to hold it firmly between thumb and forefinger”), which is why many of us find her cookery books are more useful than the old-fashioned books (“break an egg into a bowl”).

These four knowledge conversion (or knowledge creation) activities are known, respectively, as socialisation, externalisation, combination, and internalisation. The earlier examples from our evaluation of CHAIN can be classified as one of these basic types of activity.



Here's how we think CHAIN works, based on Nonaka's model. In any organisation, knowledge (that is, organisational knowledge rather than the knowledge that stays in individuals' heads) needs to be created. This happens through the various activities of socialisation, externalisation, combination and internalisation described earlier. In our jobs, we read and write instructions, show colleagues how to do things, put them in touch with others who can show or tell, and organise formal training for defined individuals or groups. But sometimes the organisation lacks a critical bit of knowledge and gets stuck in its knowledge creation cycle. This is where the red people in this diagram come in. They are the organisational boundary spanners. They have links beyond the organisation – such as friends, professional bodies, and membership of networks like CHAIN. To be effective, they have to identify *and articulate* what it is their organisation needs, target their request to a source outside their organisation, capture the knowledge offered by these sources, and feed it back into their own organisation at the right point in the knowledge creation cycle.

Conclusion

In conclusion, although the visible face of CHAIN is a collection of rather fragmented and seemingly very casual email messages, there is actually a highly complex process of knowledge creation and exchange going on.

© The ideas presented here are being written up for publication. Thank you for respecting the usual pre-publication confidences.