

Refereed papers

Identification of high-quality consultation practice in primary care: the effects of computer use on doctor–patient rapport

Nick Booth MA MB BS MRCP DCH

General Practitioner and Health Informatics Consultant, Social Informatics Group, Centre for Health Services Research

Paul Robinson MA MBBS FRCGP MMed

General Practitioner and Honorary Research Associate, Sowerby Centre for Health Informatics at Newcastle School of Population and Health Sciences, Newcastle University, Newcastle-upon-Tyne, UK

Judy Kohannejad BA(Hons) MA

Research Associate, Social Informatics Group, Centre for Urban and Regional Development Studies, Newcastle University, Newcastle-upon-Tyne, UK

ABSTRACT

If the practitioner uses a clinical computer during consultation with the patient there may be adverse effects on the quality of interpersonal communication in the consultation. Greatbach *et al* showed in 1995 that these adverse effects might be minimised when the practitioner is well-practised and able to put in the background the tasks involving the computer.¹ In the subsequent seven years, as clinical computer systems have become more sophisticated, the clinician may be called on to pay more attention to the content displayed on the computer screen.

This study shows that this required level of attention cannot be put in the background, and that general practitioners (GPs) are not able to multitask at this level. Clinicians can use specific communication skills to manage the consultation, so that they are not called on to concentrate on the computer screen and the patient at the same time. The two tasks can be accomplished in the same consultation, but not simultaneously.

Keywords: computer use, GP behaviours, multitask

Introduction

If the universal admission of the computerised patient record into the sacrosanct ground of the consultation is to be successful, it must not be at the expense of the doctor–patient relationship. The National Health Service (NHS) in England's information strategy encourages increasing reliance on information technology, and implicit in this is the widespread expectation that clinicians will use computers during patient contact.² Research in the 1990s indicated that although common tasks such as prescribing could be made safer, this might have some deleterious effects on the process of the consultation. This could be recovered with practice and experience, enabling the practitioner to put their computer

use 'in the background'.³ Teaching about the general practitioner (GP) consultation since the 1960s has emphasised the importance of rapport between doctor and patient, and rapport has been found to be important in achieving positive outcomes from consultation.^{4–6} However, in the late 1990s and early 21st century, there is an increasing expectation of using information technology to access knowledge, share evidence and collect comparative data for governance.⁷ These new tasks require the clinician to attend to the material on the computer screen, and this more engaged computer use cannot be put in the background in the way that routine, mechanised tasks can be. There is little evidence to guide clinicians in how to continue to offer rapport with patients whilst additionally spending time to achieve these new tasks.

The aim of the study described in this paper was to define the skills that enable effective computer use in the consultation, by observing expert users. This study is part of a larger project, which developed a teaching programme to disseminate these skills. The level of analysis of this phase of the work was individual items of skill; we were not trying to compare one practitioner's overall behaviour with that of other practitioners.

Methods

The research team is constituted as follows: JK has a background in ethnography and has no previous experience of analysing GP consultations; NB and PR are both GPs and are both ex-trainers with experience of teaching communication skills to GP registrars.

We used a communication skills approach to characterise doctor and patient engagement with the computer during the consultation.

We obtained appropriate ethical approval for this study. Sampling was purposive: the intention was to observe GPs who were accustomed to using the computer in the consultation and who worked in practices that were used to videotaping consultations. We approached two GP trainers' groups in Northumberland and one in Yorkshire asking for GPs who regularly used the computer during the consultation and felt comfortable doing so. The ten recruited GPs (from this pool of 47) were sent a letter explaining the aims of the project. A letter for patients (which included details of the ultimate wiping of the tapes after use by the project research team) and a consent form, which was signed before and after the consultation, were also sent to the practices.

The GP subjects videotaped a surgery and sent the tape for analysis by the researchers. All the tapes were viewed in full by each member of the research team. We held three meetings at which we viewed tapes and discussed our constructs: two other ethnographers from other projects also attended these meetings. The initial selection of consultations for detailed analysis was made by this group. Criteria for selection were to reflect the range of consulting styles and room layouts (we selected consultations from nine of the GPs); to include consultations with patient alone and where there was also a friend or relative present; and to look closely at consultations where we thought that rapport was particularly strong, and particularly weak. Ten selected consultations (from a total of 137) were transcribed by the research team (JK and PR). The tapes of these consultations were reviewed, and further columns were added to the transcriptions (by PR) describing the doctor-patient interaction, and

comment/interpretation, with accurate temporal relationships.

A grounded theory methodology was used throughout, and we drew on theory from conversation analysis to understand these interactions; this was used to develop theory of what constituted data for this project and also a categorisation of the skills observed.⁸⁻¹⁰

External validation of the constructs of communication skills produced in this part of the study was validated by one of the authors (SM Kurtz) of the Calgary-Cambridge Referenced Observation Guide.¹¹ Further construct validity was provided by another phase of the overall study, which is not reported here in detail. In this part of the work we videotaped consultations held with GPs and patient simulators, and used a stimulated recall methodology in facilitated discussions with GP and simulator immediately after the consultation. These discussions were themselves recorded and transcribed.

Results

What constitutes the data?

In the early stages of the research there was discussion about whether the videotapes themselves, the research team's discussions of them or the transcriptions constituted the data to be analysed in the project. Our attention was focused on moments of transition in the consultation when the doctor's attention switched between the patient and the screen. It was clear that there was often a considerable lead-in time before the switch: we noticed behaviours contributing to a switch of attention (see Controlling, Responsive/opportunistic, Ignoring, discussed below) up to 40 seconds before the switch took place. This behaviour is described in the middle column in our three-column transcriptions, which are our preferred means of presenting our data (see Boxes 1, 2 and 3).

General findings

Only one of the ten GPs habitually recorded information on the computer as he went along. All the others did as much data entry as possible after the patient had left the room.

One consistent use of the computer in observed consultations was to check on medication history and to produce prescriptions, where relevant. It was particularly noticeable that in all the study practices, use of paper records was very much in evidence, more so than the computer in most cases. This was despite

Box 1 Transcript illustrating how the doctor controls the consultation around their use of the computer

Verbatim transcript

(dialogue in bold occurs during computer use)

P: . . . it's just an *intense* hard pain [brings clenched fists together in front of chest] like as if somebody's just going like URG [pushes fists together] like that – as if there was a lump there [pushes fist into chest].

D: Aha.

P: . . . a heavy lump, and, as I say, nothing I seem to take budes it [leans forward] until it feels like going [laughs]. And touch wood [bangs flat palm on desk], one thing I don't get is heartburn.

D: Have you had any thoughts yourself what might be causing it or what it might be?

P: Well . . . I just . . . the only thing I could think of, is it indigestion, but I hardly think it's indigestion when I'm just sitting maybe two or three hours . . . or even four hours after I've eaten . . .

D: Yeah.

P: . . . and I don't eat anything after about five o'clock at night. I used to have a biscuit and a cup of tea about nine [pats desk with palm], but I found *that* started it off. But other than that . . . usually meals don't do it [shakes head]. Mm.

D: In this sort, this sort of situation, sometimes people, when people have this sort of pain they think about the heart. Was that something that crossed your mind?

P: Well, I must admit, I mean, I've had it so many times now [puts fist to chest], I've realised it can't be my heart [shakes head and laughs]. But it, it, I thought about it in the early days, I thought: Oh my God, I'm having a heart attack, it's *really intense*. Yes, mm.

D: It's that bad? [Patient nods. Doctor glances quickly at screen and back to the patient whilst talking. Patient continues to look at the doctor] Yeah . . . it doesn't sound like the Zoton tablets are really doing much for it anyway, one way or another.

P: Well, it's funny, before [doctor looks away from patient back to screen whilst she is talking and taps keys. Patient looks away from doctor towards window], before when I took them [doctor turns his head to look at patient again], if I took them for a day or two it sort of cleared it up.

D: Aha [looks back at screen whilst patient talks, nodding occasionally, returns gaze to the patient by end of her sentence].

Doctor–patient interaction

Doctor still most of time, but now is more animated (especially arm/hand gestures) when he is speaking
Attention and mutual gaze is uninterrupted
Doctor still

Comment and interpretation

Gathering information, understanding patient's perspective

Gathering information, understanding patient's perspective

First glance does not interrupt flow, and patient continues to look at doctor
Patient turns head away on second occasion as doctor taps keys

Box 1 Continued**Verbatim transcript**

(dialogue in bold occurs during computer use)

P: You see, I've been taking them regularly with those tablets for my legs [continues to talk to doctor even though his gaze is diverted to the screen]. And I'm going on holiday next . . . week after next [laughs], and I don't want it to start there.

D: May I just pop you up on the couch so I can just examine your tummy now and listen to your heart as well [doctor points towards couch. Patient gets up and takes off coat].

Doctor–patient interaction**Comment and interpretation**

Instruction and interesting metaphor

Box 2 Transcript illustrating opportunistic/responsive behaviour**Verbatim transcript**

(dialogue in bold occurs during computer use; that in italics occurs during use of a paper record)

D: [Seven-second pause] Well, your blood pressure is very good.

P: Good.

D: It's very good.

P: So does that mean I can have a rest?

D: [Laughs] Come and sit down.

[Doctor and patient return to seats and into camera view]

D: Let me just see what we've got you on and have a think about it.

P: Zestril and those water, water pills.

D: Yeah, yeah [typing and looking away from patient at screen]. You see I don't want your blood pressure to go up too high [stops typing, glances briefly at patient].

P: No.

D: Because it, there could be a risk of having a stroke [again, types during sentence but stops typing and looks at patient at the end] and um [looks down and begins typing].

P: Is there, is there anything else that won't pull my hair out?

D: Yeah, well I think there should be [stops typing; nodding and looking at patient].

P: Because it says on the, er, instructions it'll cause hair loss in some cases [doctor glances quickly to screen and back to patient whilst she talks].

D: Okay, well I think it does, you're right, um [doctor glances back at screen and taps key]. I, I [looks quickly at patient and back to screen] certainly think it would be worth thinking about a different pill; see if we can, er, [studies screen] do something for you.

Doctor–patient interaction**Comment and interpretation**

Instruction
Doctor typing, but suspends keyboard action to fit in with the dialogue

Responds

Doctor talks more slowly to cover looking at the screen

Responds

Box 2 Continued**Verbatim transcript**

(dialogue in bold occurs during computer use;
that in italics occurs during use of a paper record)

P: I feel so ashamed about it, you see.

D: [Doctor looks back at patient] Why?

P: Well, I daren't go anywhere and tidy me hair
if it comes out.

D: Oh, I see, I see [doctor looks back to screen and
taps keys]. Okay, if you're not happy with the Zestril,
I'll certainly stop that for you, alright? [Glances to
patient and back to screen] Why don't we just stop it
and [looks back to patient] you come back and . . .

P: Yeah.

D: . . . see me in a month.

P: Yeah.

D: And we'll see how you're doing.

P: Yeah.

D: Alright? [still looking at patient]

P: And just take the water pills.

D: And just take the water pills [glances back to screen].
Have you got plenty of those? [Looks back at patient]

P: Well, I had the, erm, . . .

D: . . . repeat prescription, yeah, okay [looks to screen
and types]. So if we stop the Zestril . . .

P: . . . for a month.

D: Yeah [still typing and looking at screen], and we'll
see you in a month [looks back to patient] and see
how you're doing [stops typing and looks at patient].
Alright?

P: Yes [patient gets out of seat].

D: Yes, and you need some more of these drops
[looks down at piece of paper and picks up packet].

P: Yes.

**Doctor–patient
interaction****Comment and
interpretation**

Explanation and
planning

Patient clarifies

Doctor clarifies

Doctor can talk and
type, but stops typing
when listening and
responding

Box 3 Transcript illustrating ignoring behaviour**Verbatim transcript**

(dialogue in bold occurs during computer use)

P: That sounds fine, yeah, yeah. So just take, carry on,
you said, three paracetamol at the onset for . . . migraine.

D: [Doctor typing] And one of these.

P: And one of those, yeah, okay, okay.

D: You can always take another one fairly soon
afterwards, under the tongue. You don't have to, um,
swallow them [glances at patient and then turns
body around in chair]. Do you want me to have a look
at your knee? [Points to couch]

**Doctor–patient
interaction****Comment and
interpretation**

Explanation and
planning

Speech again slower
when typing

Box 3 Continued**Verbatim transcript**

(dialogue in bold occurs during computer use)

P: Um . . . well, yes.

[Doctor slides in chair across room and pulls curtain around couch. Patient gets up and walks behind curtain]

D: What I'll do is pull this so, er, no one can see you. Just take your tights off [doctor returns to desk and begins typing in silence].

P: Okay [speaks from behind curtain – sounds unsure].

D: Okay, one second. Just jump on the couch [carries on typing for further 35 seconds then goes behind curtain].**D: [Comes out talking and returns to computer] There's no sign of inflammation, so . . . [typing].**

P: [From behind curtain] I've just started going swimming so maybe I was a bit enthusiastic. I don't know but . . . I had a year of hardly any exercise and I needed to get out and do something.

D: We can just do one or two blood tests and the nurse can run you through them [still typing].**Do you need any more, anything of any more?**

P: [Behind curtain] No, I don't think so.

D: Excellent [printer noise obliterates conversation. Patient returns from behind curtain] . . . I don't think it's a concern if you do [turns to patient].

P: No [picks up coat].

Doctor–patient interaction**Comment and interpretation**

Doctor is typing and patient is behind curtain

Explanation and planning

Doctor seems to ignore cues from the patient and is bent on proceeding with his plan and attending to prescription writing
Doctor sits, patient stands

the deliberate selection of GPs who volunteered that they were frequent or habitual users of the electronic GP record. Access and visibility of the computer screen (that is, the relationship of the computer screen to the doctor and the patient) also seemed to be an important issue.¹² There was a wide spectrum of different configurations, ranging from one GP whose screen was not visible to the patient at all to another whose screen was easily visible by the patient; with the latter configuration, patients occasionally questioned both spelling and accuracy of what they saw on the screen.

General practitioner behaviours

We observed three types of doctor behaviour specifically related to the issue of handling patients during computer use:

1 *Controlling*. The GP actively manages the consultation, either by directing the patient not to interrupt during concurrent computer use, or by the GP otherwise influencing the flow of the consultation.

In the example in Box 1, the doctor, who had been sitting still and listening, starts to make summarising comments. These are followed by head movements and tapping on the keyboard. The doctor alters the dynamic of the dialogue and then indicates transfer of attention by gesture. The effect of this is to create space within the consultation where the GP can safely attend to the computer without risk of losing rapport, by eliminating opportunities for the patient to talk when the GP's concentration is diverted.

- 2 *Responsive/opportunistic*. The GP makes use of gaps in the emergent flow of the consultation. This behaviour type is on a continuum from the doctor who glances opportunistically at the computer screen whilst a patient is talking, to the doctor who always allows the patient to speak and lead that part of the consultation, resisting any temptation to use the computer, which might potentially interfere with the patient's interaction (see Box 2).
- 3 *Ignoring*. Some doctors seemed to lose rapport with the patient whilst engaging with the computer. We observed several instances in which the GP, while

engrossed in interactive tasks with the computer (for example, generating a prescription or completing a data-entry template), did not respond at all to an intervention or interaction from the patient (see Box 3).

More detailed communication skills were observed to underpin the controlling and responsive/opportunistic behaviours. These fall into three groups of strategies used by GPs to manage the transition of attention between the patient and the screen:

- 1 *Signposting*. The doctor indicates verbally or non-verbally that they will be using the computer. This can include an explanation of why the computer is being used, and permission may be asked of the patient to use the computer or the GP may choose to share the screen with the patient in order to discuss/explain information.
- 2 *Chatter*. Some doctors maintain the rapport with the patient whilst they are using the computer. They do this by initiating general conversation (about the weather, for example) and giving verbal and non-verbal cues to the patient that they are listening.
- 3 *Responding every time*. The doctor responds to the patient every time that they speak, by stopping typing and turning to face the patient.

Most of the GPs in our sample demonstrated different behaviours in this respect, and used different strategies in different consultations and different parts of the same consultation. A number of specific communication

skills were found to underpin these observed behaviours and strategies. These were mapped to the Calgary–Cambridge Guide and the following supplements to the Guide are suggested in Box 4.¹¹

Discussion

The piece of work that this paper describes is the first part of a three-phase project. The second phase consisted of facilitated interviews with GP and patient simulator, and the third phase was the development of a training package for the dissemination of the communication skills described in the first phase. The strength of this approach is that we have looked at the issues from three different points of view. One difficulty that it creates for authors is that our thinking has been influenced by all phases of the project and it is sometimes difficult to isolate one piece of evidence that supports our more general conclusions.

Although previous work has shown that mundane computer tasks can be effectively put in the background with experience, this study has shown that, as tasks become more complex, they may become increasingly intrusive to the doctor–patient relationship, and in some cases may lead to a clinician apparently ignoring the patient and what they are saying. The issue of multitasking (see Box 5) became one of the main conceptual foci of the project.

Box 4 Competencies

Develops and maintains rapport

- Adapts behaviour to take into account relative position of doctor, patient and computer
- Maintains open posture when using computer
- Uses verbal and non-verbal behaviour to indicate when attention is being paid to the computer screen
- Controls, or takes advantage of, the structure of the consultation in order to minimise risk of patient talking when doctor's attention is on the computer
- Responds to patient cues when attending to the computer

Involves the patient

- Explains why the computer is being used
- If the computer is to be used as an information source, negotiates the use of such information with the patient
- Lets the patient read information from the screen when appropriate

Explains and plans

If using screen-based information (shared screen, patient information leaflet, etc.)

- Checks that patient can see the screen clearly
- Remains quiet and gives the patient time to read the text
- Checks that the patient has understood the text
- Gives patient opportunity to ask questions
- On a busy screen indicates (points, etc.) relevant information

Box 5 Dictionary definition of *multitask*

A useful dictionary definition we have used here is:

Multitask: *n.* Often used of humans in the same meaning it has for computers, to describe a person doing several things at once . . . The term 'multiplex', from communications technology (meaning to handle more than one channel at the same time), is used similarly. (*The Jargon Dictionary*. info.astrian.net/jargon)

In the research project we gathered enough evidence to convince us that, because of difficulties with multitasking, the safest way to proceed with the consultation is to try to ensure that the practitioner will not be required to attend to the patient at the same time as they are engaged with the computer, and vice versa. As well as evidence that is typified by the extract in Box 3, we saw an example of failure to multitask in one consultation in phase two of the project, and other examples have arisen in teaching. Greatbach *et al* showed that the task of using the computer to generate a prescription was initially disruptive to the consultation, but as the practitioner developed expertise in this aspect of computer use, so the task could be 'put in the background' and carried out without disruption to interpersonal communication. This is analogous to the way that a novice car driver needs to pay full attention to the tasks of driving and so is not able to participate in conversation at the same time, whereas the experienced driver can drive on 'automatic pilot' and engage in other cognitive activity while safely directing the car.

Our suggestion here is that more intense and engaged uses of the computer that are now available and expected (decision support, access to clinical evidence) cannot be put in the background, because they are interactive and require more intensity of thought and processing by the GP. We feel that different practitioners have different thresholds of distraction where there are two or more channels of activity to focus on; indeed some computer-based prescribing activity, observed in our set of videoed real consultations, did appear to cause sufficient distraction so that the clinician lost rapport and missed patient cues. To use a metaphor from *The Inner Consultation*, the computer hijacks the 'second brain' and leaves the consultation unattended.¹³

It is important to consider what such observations imply in relation to the special situation of the GP consultation. Since the 1960s and earlier, the GP consultation has been seen as an occasion where much psychological, social and physical problem content can be uncovered and explored, revealing often considerably different problems from those first presented by the patient. The tasks confronting the modern GP in the consultation are exhaustively explored in

undergraduate and postgraduate study, in vocational training schemes and in professional examinations. In addition the medical detail required for a generalist to keep up to date has been described as unmanageably vast.¹⁴ This leads to requirements to abide by guidelines and service frameworks, paying attention to the evidence base, perhaps with the necessary support of decision support systems; and the requirements to be patient-centred and accountable are leading to data entry requirements in all patient contacts, to enable clinical audit and performance management. This takes place in a primary care service where practitioners are under increasing pressures which impinge on their time to see patients.

There is concern that the computer may be one of many factors leading to overload of the interaction between doctor and patient with non-clinical tasks (however important), and possibly forcing an alteration of style or content in order to fit such tasks into a finite time allocation. An alternative might be rejection of the technology in the face-to-face patient encounter. Many of the doctors in our study were vocational trainers, and role models for the future generation of GPs. Many appeared to use the computer minimally, if at all, during the taped consultations, despite all volunteering participation on the basis of relative computer expertise. In subsequent piloting of the training package, we noted a reluctance of GP trainers to encourage real-time interaction with the computer, and many advised their GP registrars not to use the computer for summative assessment in videoed consultations.

This study has highlighted the problems of fitting more and new tasks into the relatively restricted time available for one-to-one interaction with patients. The common assumption of clinicians, that they have the ability to multitask, is an illusion. We are convinced that maintenance of rapport and joint use of the computer by both clinician and patient in a consultation is achievable, and a readily acquirable skill. We believe that our teaching materials go some way to facilitating such skill acquisition, but that more work is needed on the nature of knowledge transfer at the point of clinical care – not only from technology to clinician and patient, but also from clinician to patient.

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CONFLICTS OF INTEREST

None.

ADDRESS FOR CORRESPONDENCE

Dr Nick Booth
Greencotes
Warden
Northumberland NE46 4SS
UK
Email: n.s.booth@cantab.net

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