

# A profile of communication in primary care physician telephone consultations:

## application of the Roter Interaction Analysis System

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### ABSTRACT

#### Background

Telephone consultations are a part of everyday practice, there is surprisingly little research on the subject.

#### Aim

To describe the variation of consulting skills within a body of telephone consultations in primary care, highlighting the performance of one method of assessing the process of the consultation — the Roter Interaction Analysis System — with telephone consultations.

#### Design of study

Cross sectional study of 43 recordings of telephone consultations with GPs.

#### Setting

One rural county in the Midlands.

#### Method

Recordings were made of 8 GPs, purposively selected for maximum variance in one region of the UK. Forty-three consultations were coded using the Roter Interaction Analysis System. From the descriptive categories, six composite categories were compiled reflecting a number of domains of interaction in a consultation: rapport, data gathering, patient education and counselling, partnership building, doctor dominance and patient-centredness. Analysis of variance was undertaken to explain variations between consultations for the different domains. Comparison was made to findings from similar work for face-to-face consultations.

#### Results

These telephone consultations feature more biomedical information exchange than psychosocial or affective communication. Length of interaction accounts for much of the variation seen between consultations in the domains of rapport, data gathering, patient education and counselling and partnership. Male doctors are more patient centred in this study. There is the suggestion of more doctor dominance and a less patient-centred approach when comparisons are made with previous work on face-to-face consultations.

#### Conclusions

Although the telephone is increasingly being used to provide care, this study highlights the fact that telephone consultations cannot be taken as equivalent to those conducted face to face. More work needs to be done to delineate the features of telephone consultations.

#### Keywords

communication; consultation; cross sectional study; Roter Interaction Analysis System; telephone; telemedicine.

### INTRODUCTION

Telephone consulting is nothing new,<sup>1</sup> but there is increasing interest in this mode of communication, mainly to manage demand and improve access to health care.<sup>2</sup> In the wake of service developments, researchers have been studying telephone consultations to highlight where they might be effective.<sup>3</sup> Two papers have summarised current knowledge about performance in telephone consultations.<sup>4,5</sup> Both reveal that the majority of studies have concentrated on descriptions of services or evaluations of single practice interventions. There has been some work considering differences between nurses and doctors for outcomes.<sup>6</sup> However, there has been little attempt to look at variation of quality within calls and 'the telephone consultation' has been treated more as a unit than as a process of communication.

One way to study variation in performance is to break the consultation process down further, looking for different elements of performance that can then be linked to outcomes. While there are many instruments that measure process in face-to-face consultations, so far there are no research instruments designed and validated to measure the process of the telephone consultation.

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## How this fits in

It has been shown that telephone consulting can provide a safe alternative to face-to-face consultations in a number of circumstances and that nurses can be as effective as doctors when providing telephone triage. In specific situations, patient satisfaction is not reduced by a telephone consultation as opposed to one face to face. This paper demonstrates that telephone calls feature mainly biomedical talk as opposed to psychosocial talk, that length of call has the greatest correlation with a number of important attributes within a call and that, in this study, male doctors are more patient centred than females ones, irrespective of patient sex.

In an attempt to describe the process involved in telephone consulting, this paper reports on the analysis of recordings of telephone consultations using the most widely used instrument for face-to-face consultations: the Roter Interaction Analysis System (RIAS).<sup>7</sup> This system uses direct coding from audio or videotape. The audio component is treated as the most important source of data to be coded, to such a degree that often there will be only an audio track to code.<sup>8</sup> Reducing a face-to-face consultation to an audiotape record renders it very similar to a recording of a telephone consultation. Thus, the practical application of RIAS to telephone consultations posed no problems.

### METHOD

Eight GPs were purposively sampled for maximum variance in one rural county in the Midlands. The variables considered for doctor choice included age, sex, ethnicity, membership of the Royal

College of General Practitioners, practice location (urban/rural), Townsend score as a measure of local deprivation,<sup>9,10</sup> training status of practice, and practice size. A minimum of five consecutive calls with patients, who gave initial verbal consent, were recorded in their consultations for each doctor during routine days, thus representing a realistic sample of the type of calls made to a GP.

Patient exclusion was either because the GP considered it inappropriate to record for reasons specific to the patient or because the patient did not speak English, was confused or had dementia, a learning disability sufficient to impair the consent process, a severe mental illness, or acute psychosis. Following written consent from both doctor and patient, obtained a few days after the call, recordings were anonymised and transcribed. Demographic details of the patient were recorded as well as a brief reason for the consultation. Finally, a record was made as to whether the doctor felt it was a normal or an unusual call. Ethical approval was given by the local research ethics committee.

Using both the audio recording and the transcript, each consultation was coded by the first author, who had been trained in the use of RIAS. Five calls (12%) were also coded by coders in Professor Roter's department as a means of checking rater reliability. Coding requires division of the conversation into meaningful utterances that each convey a single communicative purpose. Codes are assigned to every utterance to capture the purpose of each according to an exclusive and exhaustive categorisation of possible purposes

### Box 1. Example of a transcript with corresponding RIAS codes and their descriptions.

<b>Patient:</b>	· hhhh er:m my spine's never actually been checked out./ and I feel (.) that (.) maybe it should be
<b>Code</b>	Concern (shows non specific concern) / Criticism (patient shows criticism)
<b>Doctor:</b>	Mmm Hmm?
<b>Code</b>	Back Channel (doctor only code – non directive encourager to indicate attention/desire to hear more)
<b>Patient:</b>	But er:m I basically I need some advice off you? ·hhhhh
<b>Code</b>	?Service (appeals to the doctors authority for a service or medication – patient only)
<b>Doctor:</b>	Sure
<b>Code</b>	Agree (shows agreement or understanding) (0.4)
<b>Patient:</b>	Er:m I::'m (0.4) still in u (0.4) on the er medication that they give me (.) tramadol:: hydrochloride.
<b>Code</b>	Gives-Thera (gives information about treatment)
<b>Doctor:</b>	[[ Mmm hmm?
<b>Code</b>	Back Channel
<b>Patient:</b>	[[·hhhhh erm >'m still experiencing pain.< (.) in my lower to mid back.
<b>Code</b>	Gives-Med (gives information relating to symptoms or medical history)

Transcription key: ·hhh = inspiration each h representing 0.2 seconds of time. (.) = pause of less than 0.2 seconds. (0.4) = pause with the number of seconds recorded. [[ = Both parties start to talk together. >'m still< = utterance spoken faster than the rest. I::'m = prolonged utterance each colon representing 0.2 seconds of time. ? = rising intonation. . = falling intonation. back = stressed word or syllable.

**Table 1. Descriptors of GPs and consultations.**

GP	Age	Sex	Ethnicity	MRCGP/ FRCGP	Training practice	Number of practice doctors	Urban/ rural/ mixed	Urban/ Townsend Score	Number of calls	Average length (min:sec) <sup>a</sup>	Shortest call (min:sec)	Longest call (min:sec)
1	42	M	White British	No	No	3	Urban	2.1	5	2:53	1:48	4:32
2	37	F	White British	MRCGP	Yes	4	Urban	4.1	7	2:28	1:16	6:27
3	60	M	White British	FRCGP	Yes	7	Urban	-2.1	6	4:09	2:21	6:10
4	40	F	White British	MRCGP	No	2	Urban	1.0	5	4:34	3:16	7:12
5	52	F	Asian	No	No	2	Rural	0.6	3	1:31	1:15	1:42
6	31	F	White British	MRCGP	No	6	Urban	4.8	6	3:34	1:35	5:48
7	49	M	White British	No	No	4	Rural	1.1	5	2:13	1:22	4:40
8	34	F	White British	MRCGP	No	6	Mixed	-1.1	6	3:56	2:01	6:58

<sup>a</sup>Variation of length of consultations for doctor not significant.

(Box 1). For this study there were 40 different codes available – it can vary depending on the context of the consultation – two of which are exclusive to patients ('gives psychosocial information' and 'requests service') and 11 to doctors (for example, 'back channel' [Box 1]).

Matching recent work by Paasche-Orlow and Roter,<sup>11</sup> specific categories were combined into composites reflecting four different activities; rapport building, data gathering, patient education and counselling and partnership. Also matching this work, and the work of Mead and Bower,<sup>12</sup> a second pair of composite measures was calculated to reflect doctor dominance (the number of doctor statements divided by the number of patient statements) and patient centredness (the sum of all psychosocial and emotion-related statements and questions divided by the sum of all biomedical statements and questions from both doctor and patient).

Further, composite groups were calculated that summarised all biomedical related exchange, all psychosocial exchange, and a summary of all open and closed questions. For the analysis, length of consultation was categorised as 'short' (1–2 minutes), 'medium' (3–4 minutes) and 'long' (≥5 minutes). One-way analysis of variance was performed with mean counts for each doctor across both the single categories, and the domains. Multivariate analysis was performed for the six composite categories to include doctor sex, patient sex and an interaction between the two. Data was analysed using Minitab v13.

## RESULTS

Forty-three consultations were included for analysis. A majority of the encounters were initiated by the patient telephoning the surgery. In this circumstance, patients were usually called

back by the doctor after surgery, or when there was time. In a few calls, patients were put straight through to the doctor after speaking with the researcher.

Rarely, the doctor initiated the call, usually to report on a test result. In one surgery, number two, the doctor was undertaking a triaging role during the morning. In all others, the doctor was handling calls that were for 'advice' from the doctor. From the content of the calls, it was clear that the patients' expectation of advice was very varied: ranging from desiring information or reassurance through to expecting the doctor to decide if the patient needed seeing and if so, when. Conditions were a mixture of new and existing, reflecting what happens in everyday practice. In a vast majority of calls, because the call was made specifically to one doctor, the doctor knew the patient well.

**Table 2. List of conditions for each consultation**

Condition	Number of occurrences
Respiratory tract infections	7
Medication query	6
Question about chronic condition (colitis, MS, CLL, menopause, IHD, lipids)	6
Issues of contraception	4
Musculoskeletal (whiplash, gout, back pain, fractured spine)	4
Ear, nose and throat infections	3
Viral illness	2
Skin conditions	2
Feeling unwell	2
Chickenpox	1
Mental Health issues	1
Frailty	1

*MS = multiple sclerosis. CLL = chronic lymphocytic leukaemia. IHD = ischaemic heart disease.*

**Table 3. Use of open and closed questions by individual doctors shown as a mean number per consultation**

GP	Mean closed questions	Mean open questions	Ratio of means closed to open	Average length of consultation (min:sec)
1	8.00	0.60	13.33	2:53
2	6.29	0.57	11.04	2:28
3	7.50	1.00	7.50	4:09
4	9.60	1.00	9.60	4:34
5	2.00	0.00	∞	1:31
6	10.50	0.50	21.00	3:34
7	4.00	1.00	4.00	2:13
8	5.17	0.33	15.67	3:56

Practice two, where the doctor was triaging was an exception to this. Reasons for consulting reflected a range of conditions commonly seen in primary care (Table 2). It is worth noting that only one conversation related to two separate issues, the rest were all about one specific topic.

Reliability checking confirmed that there was no significant difference between the experienced coders and the coding author for this study (personal communication). Summary details of individual GPs and their calls are shown in Table 1. There was no significant difference between doctors for length of call ( $F = 1.66$ ,  $P = 0.15$ ) or age of patient ( $F = 0.42$ ,  $P = 0.89$ ). There was also no significant variation in length of consultation between GPs after adjusting for GP sex, patient sex or GP sex interacting with patient sex.

From the RIAS codes, descriptive statistics of the whole collection of consultations were unremarkable except in two cases. Firstly, information exchange on biomedical topics dominated the conversation with little talk of psychosocial topics (Mann–Whitney test  $W = 2494.5$ ,  $P < 0.001$ ). The average ratio of the sum of all talk relating to biomedical topics to the

sum of all talk relating to psychosocial topics was 2.65 (range = 0.733–6.25). There was no significant difference between doctors for all biomedical talk versus all psychosocial talk using one-way analysis of variance ( $F = 1.8$ ,  $P = 0.11$ ). Secondly, doctors used closed questions very much more commonly than open ones (Mann–Whitney test  $W = 2726.5$ ,  $P < 0.001$ ). In her three short consultations, one doctor (number 5) never used a single open question (Table 3).

Comparison of performance between doctors using one-way analysis of variance in single communication categories revealed few significant differences. Such differences were mostly related to relationship building: personal comments, laughter, approval comments, and self disclosure, while a few concerned questioning and informing on ‘other’ (non-central) topics and advising on medical and therapeutic topics. Much of this variation was explained by a single doctor in any category when adjusting for multiple comparisons by Tukey’s method.<sup>13</sup> Comparisons of performance in the different composite categories are set out in Table 4. Significant differences that were found between doctors were explained by variation of performance with one or two doctors only.

## DISCUSSION

### Summary of main findings

In summary, telephone consultations, being brief, feature more biomedical information exchange than psychosocial or affective communication. The length of consultation accounts for much of the variation seen and male doctors demonstrated a more patient-centred approach in this study. There is the suggestion of more doctor dominance and a less patient-centred approach when comparisons are made with previous work on face-to-face consultations.

**Table 4. Results of analyses of variance for composite domains of communication.**

Composite category	Call Doctor (F [P-value])	Doctor length (F [P-value]) <sup>a</sup>	Patient sex (F [P-value])	Doctor sex interacting sex (F [P-value])	with patient sex (F [P-value])
Rapport	1.91 (0.098)	19.8 (<0.001) <sup>a</sup>	0.01 (0.92)	0.03 (0.86)	0.04 (0.84)
Data gathering	3.11 (0.012) <sup>a</sup>	3.45 (0.041) <sup>a</sup>	0.41 (0.52)	1.17 (0.29)	0.53 (0.47)
Patient education and counselling	1.21 (0.32)	11.01 (<0.001) <sup>a</sup>	0.61 (0.44)	0.00 (0.98)	0.00 (0.99)
Partnership	0.64 (0.72)	9.47 (<0.001) <sup>a</sup>	0.40 (0.53)	0.01 (0.91)	0.76 (0.39)
Dominance	1.25 (0.30)	3.23 (0.05) <sup>a</sup>	0.96 (0.33)	0.04 (0.85)	0.68 (0.42)
Patient centredness	2.92 (0.016) <sup>a</sup>	0.88 (0.42)	9.86 (0.003) <sup>a</sup>	2.19 (0.15)	3.02 (0.09)

<sup>a</sup>Significant results.

**Table 5. Comparison of communication performance between American family physicians<sup>a</sup> face-to-face and GPs on the telephone.**

Communication behaviour	Family physician <sup>a</sup>	GP <sup>b</sup>
Data gathering		
Closed-ended questions on biomedical topics	18.6	5.91
Open-ended questions on biomedical topics	3.0	0.49
<i>Ratio of closed to open questions on biomedical topics</i>	6.2	12.06
Closed-ended questions on psychosocial topics	6.8	1.00
Open-ended questions on psychosocial topics	1.5	0.16
<i>Ratio of closed to open questions on psychosocial topics</i>	4.53	6.25
<i>Ratio of questions on all biomedical to all psychosocial topics</i>	2.60	5.52
Patient education and counselling		
Provides biomedical information	37.6	10.44
Provides psychosocial information	7.6	0.16
Counsels biomedical	13.8	4.93
Counsels psychosocial	8	1.02
<i>Ratio of information on all biomedical topics to information given on all psychosocial topics</i>	3.29	13.03

<sup>a</sup>n = 277. <sup>b</sup>n = 43.

### Strengths and limitations of the study

This is the first time any systematic research instrument has been applied to telephone consultations, as well as the first time RIAS has been applied to telephone consultations. Therefore, the paper presents a very different view of telephone consulting than has been previously published. Consultations were taken from everyday practice, so findings relate to real life rather than abstracted role-played situations. The study reports descriptive data and this data comes from a small number of consultations with a majority white British group. It is more an exploratory study than one able to provide certainty. Thus, generalisability of the findings needs to be considered when applying them to other situations. Keeping these limitations in mind, there are interesting observations to make.

### Comparison with existing literature

Being the first of its kind, there are no other studies with which to compare directly. However, there is other work that may inform the discussion. As should be expected in brief interactions, information exchange on biomedical topics dominated, with few psychosocial topics. Howie *et al*, have documented similar findings in face-to-face consultations.<sup>14</sup> This may seem obvious, but a number of the consultations were about conditions with a strong psychosocial component — as is common in primary care.<sup>11,15</sup>

This raises the question of how effective telephone contact can be for psychosocial issues in primary care. One study of the discipline of psychiatry in the US found diagnoses similar between face-to-face interviews and telephone ones in most psychiatric disorders, except for adjustment disorder with depressed mood.<sup>16</sup> It may be that longer telephone consultations facilitate the exploration of psychosocial issues. However, brevity is seen as one

of the strengths of telephone consultations.<sup>4,17</sup>

There have been mixed findings about the correlation of length to patient centredness in face-to-face consultations.<sup>13,18</sup> While the study was small and statistical inferences need to be read with caution, this study did not find a correlation of length with increased psychosocial content or with greater patient centredness for telephone consultations. While there is no work directly addressing this at present, it would seem reasonable to expect patient centredness to be related to context. For example, one might expect less patient-centred care in a resuscitation room. One review paper that highlights two elements of patient centredness operating in chronic illness consultations gives credence to this.<sup>19</sup>

Perhaps the perceived need for brevity in a telephone call serves to challenge patient-centred care. Certainly this study found a preponderance of closed questions, which are typically seen as doctor centred. The finding that male doctors are more patient centred than female ones on the telephone bears more investigation as it is at odds with findings from studies of face-to-face interaction.<sup>20–23</sup> This may just reflect the small sample size, so larger studies are needed.

Five out of the eight categories showing variation between doctors are related to rapport building although there was no significant difference between doctors for the complete composite score for rapport building. The other three categories are about information exchange, two of which are of peripheral information, generally too broad a category to be able to draw conclusions.

The homogeneity of performance between doctors might be simply because of small numbers, but it might also reflect that doctors vary less in their style when using a more formalised

interaction such as talking on the telephone. Homogeneity between doctors for performance is also generally present looking at the composite scores for different domains of the interaction.

Work published in 2003 used RIAs to compare face-to-face consultations of internal medicine physicians with those of family physicians in the US.<sup>11</sup> The authors showed significant differences in a number of aspects of performance when considering doctor communication categories between the two disciplines. While comparison may be influenced by differences in practice between the US and the UK, there is an opportunity to compare GP performance face to face from that study with performance on the phone because the same coding system was used. Testing the coding of the consultations for statistical significance of variations in performance would be invalid because of the differences in setting and samples. However, while not providing certainty, the comparison may be useful to stimulate reflection on what is happening in telephone consultations. The descriptive results compared at Table 5 suggest that performance differs substantially. This takes us back to the idea that telephone conversations feature much more talk about biomedical topics compared with psychosocial topics.

The difference seen in the two settings could be explained in a number of ways. There might be a variation in performance because of the different models of service in the two countries. It might be a difference in the nature of telephone consulting and of consulting face to face, or it might be a limitation in the performance of the assessment instrument. Because telephone consulting requires different performance, with more structure to it, the attributes measured by the current RIAs instrument may not be sufficient as measures of process in telephone consultations. This is an area for future research.

#### **Implications for future research or clinical practice**

As with many studies taking a different approach, this paper raises more questions than it gives answers. It highlights the need to study the communication process in more detail, considering especially the provision of biomedical and psychosocial talk. Further work is needed to validate RIAs in this situation, or perhaps a new instrument is needed, specifically designed to analyse the process of telephone consultations.

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#### **Ethics committee**

The study was given approval by Shropshire Local

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#### **Competing interests**

The authors have stated that there are none

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