Patterns of elicited information vis-à-vis caller types in Danish medical emergency communication

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• The **112 call – its structure and content**, with particular attention to **elicited information**. A focus on elicitation means examining the nature of **Question-Answer sequences**.

• **The research question is built around the caller as a key variable** – how do variations in caller types influence the nature of elicited information (and, consequently, the decision-making process, especially the timing)?

• The findings will point to ways in which call takers can be made aware of the interactional variations due to caller types and how such variations can be handled efficiently.
• The interface of communicative efficiency and communicative vulnerability in 112 calls

  ▪ **Communicative efficiency** (on the part of the call taker) – time taken to *elicit relevant information* from the caller to make a decision following established criteria.

  ▪ **Communicative vulnerability** (on the part of the caller) – inability to articulate symptoms and to respond to the call taker’s elicitations in precise terms; becoming anxious and inattentive.
CHARACTERISING MEDICAL EMERGENCY COMMUNICATION
• Medical emergency communication as a complex communication environment, targeted at risk assessment and delivery of help [dispatch of ambulance]

  ▪ At the call-taker’s end (e.g. managing information on various computer screens; inputting and conveying relevant ongoing information; targeting questions at the third party)

  ▪ At the caller’s end (e.g. mediated responses; soliciting and incorporating responses of co-present others; carrying out actions as instructed and reporting outcomes)
INFORMATION EXCHANGE
(elicited and volunteered information)

RISK ASSESSMENT
(criteria-based Danish Index System [A-E])

DECISIONAL OUTCOMES
(dispatch of ambulance [with/without siren]; Optional: sending paramedic, doctor; transfer to on-call doctor etc.)
Three strands in the literature (not confined to emergency medical calls):

- the interactional structure of the call (e.g. Whalen and Zimmerman 1990; Zimmerman 1992; Wakin and Zimmerman 1999)

- the interplay between expertise and expert systems (e.g. Greatbatch et al. 2005; Tjora 2000)

- the interactional management of information and advice sequences (e.g. Pettinari and Jessopp 2001; Goode and Greatbatch 2005; Tracy 1997; Monzoni 2009; Paoletti 2012; Kevoe-Feldman 2019)
• Call takers have to manage the absence of co-presence – when their ears become their eyes (Pettinari and Jessopp 2001)

• The importance of listening for background information and attention to the caller's concerns; ‘transposing caring’, whereby the verbally explicit activity (e.g. detailed questions, specific instructions) is a direct transformation of what the nurse would do in a co-present situation.

• The quantity and quality of information directly elicited and voluntarily offered are typically managed through question-answer sequences.
• **Medical emergency communication as an activity type** (Levinson 1979; Sarangi 2000)

• It is goal-oriented (to give/get help under emergency) and to achieve this goal it is structured even though the content may vary according to the nature of the call and the medical condition involved.

• The participants (e.g. the caller and the call taker) have activity-specific roles with certain constraints on how to participate, e.g. the call taker asks many questions and the caller is expected to respond to the questions in a relevant manner.
As an activity type, **medical emergency communication resembles many other types of encounters, especially clinic consultations** with regard to symptoms presentation and history taking, but **primarily it is a service encounter**.

Like many other service encounters, it concerns help seeking and help providing – both being articulated explicitly:

- Please send an ambulance; I need an ambulance; I need help urgently etc.
- The ambulance is on its way; I have already sent help etc.

Within a call, the sequence of help seeking and help providing can occur repetitively as indications of urgency, anxiety and as reassurance, respectively.
• With patients as callers, it can be very brief and restricted to the help seeking and help providing sequence, with clinical issues backgrounded.

N: you have called 112 (.) how can I help you?
PT: yes (...) hurry (. ) hurry
N: [((^^^^^^^)]
PT: [((^^^^^^^)] I cannot go on
N: no (. ) just talk to me for a little while (. ) just talk to me for a little while ((call muted by call centre))
PT: yes
N: what is the problem?
PT: it is shortness of breath
N: it is shortness of breath (. ) yes
PT: yes
N: do you have COPD?
PT: hurry (. ) I cannot go on any longer (...) I am hanging up (hangs up the phone)
Medical emergency communication resonates with legal cross-examination when we consider the specific ways in which questions are framed and followed up in order to elicit very precise responses.

Equally, there are similarities between medical emergency communication and classroom interaction in the ways in which the call taker acknowledges receipt of responses and offers some kind of instant feedback [initiation-response-feedback [IRF] pattern].

Also, at times medical emergency communication is like therapeutic/counselling interaction whereby the call taker displays active listening through minimal response tokens or offers explicit reassurance tokens as well as advice.
DATA & METHOD
The main data corpus includes **400 emergency medical calls about breathlessness/dyspnoea** from two different regions – the Capital Region and Nordjylland – for purposes of representativeness rather than systematic comparison.

The voice logs, which were routinely archived, were randomly selected.

The voice logs (originally in Danish) were first transcribed and then translated for analysis.
Among the 400 calls from both regions, the callers fall into 6 categories:

- Patient as caller
- **Spouse/partner as caller**
- Child/parent/other family members as caller
- **Professional carer as caller**
- Friend/acquaintance (e.g. roommate) as caller
- Stranger/witness as caller
Across the two regions, the following is the distribution of caller types.

<table>
<thead>
<tr>
<th>Caller type</th>
<th>Number of calls</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>105</td>
<td>26.25</td>
</tr>
<tr>
<td>Spouse/partner</td>
<td>103</td>
<td>25.75</td>
</tr>
<tr>
<td>Child/parent/other family member</td>
<td>70</td>
<td>17.5</td>
</tr>
<tr>
<td>Professional carer</td>
<td>69</td>
<td>17.25</td>
</tr>
<tr>
<td>Acquaintance/friend</td>
<td>38</td>
<td>9.5</td>
</tr>
<tr>
<td>Stranger/witness</td>
<td>15</td>
<td>3.75</td>
</tr>
</tbody>
</table>
If we combine the spouse/partner and family member category, the percentage is significant (43.25%).

Our focus is on the calls comprising *spouses/partners* and *professional carers*. The elicitation trajectories are quite different when the patient is the caller.

Professional carers include: home nurse, assistant, GP, on-call doctor, on-call doctor calling on behalf of home nurse, social worker etc.

Our analytical approach integrates theme-oriented discourse analysis (Roberts and Sarangi 2005) and activity analysis (Sarangi 2010).
DATA ANALYSIS
• Opening

• Problem elicitation/presentation

• Details about medical condition

• Announcement of help

• Elicitation/presentation of locational details

• Closing

Some of the phases are repeated within a call; the actual call is more nuanced.
### STRUCTURE OF A TYPICAL 112 CALL

<table>
<thead>
<tr>
<th>Actions</th>
<th>Turns</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Opening (nurse and caller)</td>
<td>(01-02)</td>
</tr>
<tr>
<td>• Problem elicitation/presentation</td>
<td>(03-08)</td>
</tr>
<tr>
<td>• Detailing about medical condition</td>
<td>(09-22)</td>
</tr>
<tr>
<td>• Announcement of help</td>
<td>(23)</td>
</tr>
<tr>
<td>• Opening (nurse and patient)</td>
<td>(23-30)</td>
</tr>
<tr>
<td>• Detailing about medical condition</td>
<td>(31-36)</td>
</tr>
<tr>
<td>• Announcement of help</td>
<td>(37)</td>
</tr>
<tr>
<td>• Elicitation/presentation of locational details</td>
<td>(37-39)</td>
</tr>
<tr>
<td>• Closing</td>
<td>(40-42)</td>
</tr>
</tbody>
</table>
ANALYSIS

• Elicitation of information dominates the opening phases, i.e., Problem presentation and Details about medical condition. This is also the case when seeking locational details.

• The 112 calls are generally made up of two repertoires – ‘medical repertoire’ and ‘contingent repertoire’ (see Gilbert and Mulkay 1984) – which map on to elicited information.

• While ‘medical repertoire’ refers to presentation of symptoms, intensity of pain and treatment regimes, ‘contingent repertoire’ refers to other situated factors, including the articulation of the immediacy and locational details. Both the repertoires may be upgraded as part of the help seeking process.
• **Question contents** (medical and contingent repertoires) can be mapped on to the structural phases of the encounter

  ▪ Opening of the call

  ▪ Establishing symptoms: quality/nature of symptoms; duration of symptoms; experience of pain

  ▪ Medication/treatment; general health/illness history

  ▪ Social background and other aspects
<table>
<thead>
<tr>
<th>Medical repertoire</th>
<th>Contingent repertoire</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Colour of face/lips</td>
<td>• Keeping talking until the ambulance arrives</td>
</tr>
<tr>
<td>• Breathing pattern</td>
<td>• Ambulance response time</td>
</tr>
<tr>
<td>• Other symptoms</td>
<td>• Location details</td>
</tr>
<tr>
<td>• Level of pain</td>
<td>• Access to floors, if not ground floor</td>
</tr>
<tr>
<td>• Posture</td>
<td>• Unlocking/opening of door (especially when the patient is the caller)</td>
</tr>
<tr>
<td>• Medical history</td>
<td></td>
</tr>
<tr>
<td>• Current medication</td>
<td></td>
</tr>
<tr>
<td>• Instructions</td>
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</table>
Through elicitation questions, call takers try to establish two key aspects – **breathing patterns** and **facial colour** – as well as level of pain, pre-existing condition, medication.

The callers’ responses can range between **ignorance, vagueness, intuitive guess** and **precision**.

At times, a series of follow up questions may be asked to elicit an adequate response (especially when spouses/partners are callers).

When patients are callers, face colour is not a topic and the breathing pattern can be listened to rather than being asked about.

On occasions, information about symptoms is volunteered by the callers (usually by professional carers).
• Question types

- Wh-questions (open-ended): How is her breathing? What’s the colour of her face?
- Alternative questions: Are his lips pink or blue?
- Yes/no interrogatives (also called ‘polarity questions’): Is he in too much pain? Is she sitting up? Is she breathing noisily?
- Declarative questions: so you are in pain? It hurts when you breathe?
- Tag questions
- Negative interrogatives
- Yes-preference questions
- No-preference questions
During medical emergency communication, elicited information through open questions (wh-questions) may not be forthcoming in a precise manner, thus requiring follow-up closed questions (especially, yes/no questions)

03 N: how is his facial colour?
04 CL: it is (. ) not good
05 N: no (. ) when you say that (. ) what (. ) what (. ) what is he then? (. ) is he pale or is he blue around the lips or what is he?
06 CL: yes (. ) so it does not look good (. ) and he is not either (. ) he feels very very poorly
07 N: yes (. ) is he blue on the lips too?
FINDINGS: HANDLING THE CALL & THE CALLER
• Elicitation questions can be

• known information questions (Mehan 1979) as in classroom encounters and in cross-examination; and

• unknown information questions as in clinic communication

• Both types occur in emergency medical communication (known information question is common with spouse/partner).

• Elicitation questions can be very technical when the caller is a professional carer.
HANDLING THE CALL[ER]

• Use of open questions and closed questions to maximise picture-building and minimise absence of co-presence.

• Chained or embedded question patterns (e.g. open questions leading to closed questions; closed questions followed by closed questions)

• Question-Response-Instruction/Advice sequences (Q-R-I/A)

• Certain types of responses warrant instruction/advice – at times accompanied by offline commentaries (explanations)

• Instruction/advice follows announcement of help.
• Spouses/partners as callers may

• Lack knowledge to offer adequate responses.

• Avoid giving responses to elicited questions – leading to call takers explicating the purpose behind asking such questions (e.g. assessment of condition and dispatch of appropriate help)

• Redirect questions to the patient to assess the condition.
- When spouses/partners as callers fail to provide adequate responses concerning symptoms, this may compromise risk assessment. On such occasions, call takers tend to offer symptom descriptions for confirmation by callers.

- On other occasions, call takers routinely ask to talk to the patient – at least to listen to their breathing to assess the patient’s condition as part of risk assessment.
• With spouses/partners, call takers seem to repeat questions and use extensive confirmation checks through repetition when relevant information is not forthcoming or is deemed inadequate.

• Occasionally, spouses/partners volunteer ‘social’ and ‘personal/intimate’ information (e.g. “we have just returned from [place]”; “he is not a man you can get many words out of like this”; “he doesn’t like me calling but he told me to”).
Professional carers as callers may be calling from different locations, triggered by an emergency call button.

Professional carers often legitimise the call – being asked by GP, on-call doctor.

Occasionally, call takers want to speak to the patient.

Professional carers sometimes mention at the start what is needed in terms of decision.

Professional carers use a number of technical words; they offer assessments; they seem to pre-empt what preparatory work has to be done (patient sitting up; windows open).
• Professional carers formulate the symptoms in more precise terms, which will trigger a particular elicitation trajectory.

• When the problem formulation is precise and detailed, there may not be a need for elicitation questions and help can be dispatched without delay.
A continuum of responses

**Ignorance** (‘I don’t know’, ‘I can’t tell’) – these are answers and do not count as responses, which is necessary for next actions (decisional outcomes) as well as listening directly to the patient’s breathing.

**Vagueness** (‘it looks normal’, ‘it seems okay’; ‘things like that’) – these responses are not that helpful but allow call takers to mobilise their intuition; intuitive expertise affords navigation through differential symptoms presentations.

**Intuitive guess** (responses that are closer to being precise).

**Precision** (usually accomplished voluntarily or jointly via closed and open questions as well as confirmation checks).
CATEGORISATION OF FACIAL/LIP COLOUR

Categorisation of facial colour
- Normal vs. dissonant/out of the ordinary
- Pink, blue, slight blue, grey
- Pale
- Cold vs. hot
- Sweaty vs. dry
- Cyanotic
- Etc.

Categorisation of breathing
- Normal vs. difficult/troubled
- Noisy, rattling, boiling
- Fast/faster than normal
- Short of breath
- Struggling to breathe
- Etc.
CONCLUSION
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• Emergency medical communication amounts to managing various levels of contingencies – which are both uncertain and unique – requiring the call taker to adjust to what may be called “the communication contingencies”.

• Each call is unique in some sense, even if it concerns the same complaint, e.g. reporting of breathlessness. Systemic rule-following (e.g. the criteria based emergency dispatch protocol) has to be matched with ‘intuitive expertise’.

• Balancing the standardisation of procedure, including triage and use of algorithm, in eliciting information on the one hand and the uniqueness of caller responses on the other is integral to efficient service delivery.
• One of the main communication contingencies is the caller himself/herself.

• There are generic differences in patterns for calls made by professional carers and spouses/partners as well as calls made by patients.

• The structural/interactional trajectories of the calls are different across caller types, which can influence the decision about dispatch of help.

• The caller’s relationship with the affected individual influences the nature of question-answer-instruction-advice sequences (in terms of elicited and volunteered information) and the decisional outcomes.
CONCLUSION

• The findings show that call takers adjust to the caller variable in terms of eliciting/confirming information about the medical condition for diagnostic purposes, while attending to personal and locational details.

• However, they may not systematically establish at the outset the relationship of the caller to the patient as a way of steering the interactional trajectory.

• A systematic comparison of professional carers, family members and patients themselves reveals interesting insights which can form the basis of professional training.
• Characterising call-handling expertise

- To discriminate between caller types.
- To use various communication strategies selectively and strategically.
- To elicit adequate information in order to be able to assess risk according to the Danish Index System.
- To be able to think fast, visualise the scenario and act intuitively, especially in the absence of co-presence.
- To coordinate simultaneously delivery of help involving the ambulance service and paramedics.
- To reassure the caller.


