

Caller resistance to perform cardio-pulmonary resuscitation in emergency calls for cardiac arrest

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Research highlights

- Emergency callers account for their resistance to provide first aid to patients
- Saying that the patient is already dead is a common justification for resisting CPR
- Callers can be persuaded when provided with more context on CPR
- Conversation Analysis can identify strategies to overcome barriers to CPR

Abstract

A key objective of an emergency call for cardiac arrest is to recruit a bystander to perform cardio-pulmonary resuscitation (CPR) until the ambulance arrives. Emergency medical services worldwide work towards increasing the rate of bystander-CPR, and existing research has identified a number of physical barriers to the provision of bystander-CPR. Yet, little is known about the specific ways in which emergency callers resist recruitment to perform basic first-aid, sometimes in the absence of any physical obstacle.

This study investigated 65 emergency calls for cardiac arrest received in Australia in 2014 and 2015, in which the callers initially resisted CPR. We used conversation analysis to examine callers' practices to resist recruitment and call-takers' practices to counter this resistance.

We found that callers who resisted CPR typically provided an account. When callers accounted for their resistance on deontic grounds, they expressed that CPR was not a possible course of action (e.g. "I can't do it"). When callers provided an epistemic account, their justification was based on their knowledge or opinion (e.g. "I think it's too late"). Our findings suggest that epistemic resistance can be a barrier to bystander-CPR. We identified two

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practices used by call-takers to address caller resistance based on epistemics. Providing more context on the purpose of CPR (e.g. “this is to help him in the meantime”) seemed effective in persuading callers to perform CPR. By contrast, aligning with the caller’s epistemic and deontic rights (e.g. “it’s up to you”) did not seem effective in persuading callers.

Keywords

Australia; conversation analysis; emergency call; cardiac arrest; CPR, resistance; epistemics; accounts

Introduction

In everyday talk-in-interaction, participants recruit assistance from others through a continuum of methods (Kendrick and Drew, 2016) which includes explicit verbal methods, such as requests, and more implicit methods, such as hinting (Haugh, 2017). Participants also use non-verbal means to make requests (Rossi, 2014), or can merely display a difficulty, which then occasions an offer of assistance (Kendrick and Drew, 2016).

Emergency calls are instances of institutional talk (Heritage, 2005; Heritage and Drew, 1992), and as such, they critically differ from ordinary conversation, e.g. through reduction and specialization (Wakin and Zimmerman, 2010; Whalen and Zimmerman, 1987). A telephone call to an emergency number is interpreted by call-takers as a request for help “before the first word is spoken” (Zimmerman, 1992: 433). In addition to this institutional expectation that call-takers assist callers, call-takers recruit callers to perform a range of actions, such as unlocking the front door. When the call-taker recognises that the patient is in cardiac arrest, they try to recruit the caller’s assistance in providing basic first aid while the ambulance is on the way. More specifically, the caller – or any other bystander present at the scene – needs to perform cardiopulmonary resuscitation (CPR).

In a previous study of medical emergency calls for cardiac arrest (Riou et al., 2018), we analyzed how call-takers try to get callers to perform CPR. We found that certain linguistic forms seemed more successful in obtaining caller agreement: expressing futurity (e.g. “we’re gonna do CPR”) or obligation (e.g. “you need to do CPR”) was associated to 97% (199/206) and 84% (46/55) caller agreement respectively, while opting for volition (e.g. “do you want to do CPR?”) was associated to 43% (29/67) caller agreement. Overall, it was rare for callers to decline CPR (15% of callers in our data, 65/422 calls). However, this subset of declinations is of particular interest because of how critical CPR is for patient outcomes – it doubles the chance of survival (Riva et al., 2019).

Refusing, declining, and disagreeing are dispreferred responses in part because they threaten social solidarity. Life-and-death emergencies can be considered an extreme case scenario in which to observe the enactment of social preferences through talk-in-interaction. Members of society have a moral obligation to assist someone in danger, which some countries have formalized with a law (duty to rescue). Given the social weight of such a normative expectation, it is unlikely that many callers would refuse CPR plainly and directly, as Laforest and Rioux-Turcotte (2016) discussed in their data in Québec French. Rather, we

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expect callers to provide accounts, i.e. “a statement made by a social actor to explain unanticipated or untoward behavior” (Scott and Lyman, 1968: 46).

It is of critical importance to understand the specific ways in which callers resist CPR, as well as if and how they can be persuaded by call-takers. To this end, we analysed callers’ initial resistance to the initiation of CPR, as well as the subsequent trajectory of calls where the provision of CPR was negotiated between caller and call-taker.

Background

During cardiac arrest, the heart stops pumping entirely. The patient becomes unconscious and stops breathing – another term for it is “sudden death”. When it happens outside of hospital, survival is very low: in 2017, only 9.1% of patients survived to hospital discharge in Western Australia (Bailey et al., 2018) – which corresponds to survival in Europe (Gräsner et al., 2016) and the United States (Mozaffarian et al., 2016). Time is of the essence, as survival rate declines by approximately 10% (Valenzuela et al., 1997) for every minute without treatment, such as cardio-pulmonary resuscitation (CPR) or the use of an external automatic defibrillator (AED). Therefore, it is critical that basic first aid is provided to the patient by the emergency caller – or any other bystander present at the scene – while the ambulance is on the way. When performed by a bystander, CPR doubles the chance of survival (Riva et al., 2019). Bystander-CPR typically focuses on chest compressions (rather than rescue breaths), during which the bystander pushes down on the patient’s chest at short and regular intervals in order to keep the blood flowing. Call-takers play an essential role in recruiting assistance from bystanders and providing them with step-by-step instructions (Bohm et al., 2011).

Given the low survival of out-of-hospital cardiac arrests, few patients recover even if they receive bystander-CPR. Some callers may be aware of these low odds, which in turn may impact how they receive offers and requests to perform first-aid. In our previous cohort study (Riou et al., 2018), we found that callers were more likely to resist CPR when they had already declared that the patient was dead. However, all patients had resuscitation attempted by paramedics and hence were considered by health professionals to be potentially ‘viable.’ In this paper, we explore the issue of caller resistance in more detail, and draw on the distinction between “active resistance” and “passive resistance” previously identified in medical interaction. In the context of advice given to new mothers by health visitors, Heritage and Sefi (1992) identified unmarked acknowledgment (“mm hm”) as a form of passive resistance to advice-giving, in contrast with more active practices, such as assertions of competence. In her study of doctors’ recommendations for non-antibiotic treatment of upper respiratory tract infections in children, Stivers (2005) defined active resistance as initiating a course of action regarding the treatment (e.g. asking about its effectiveness) and passive resistance as failing to align with the doctor’s recommendation.

In this paper, we conceptualize the provision of bystander-CPR during an emergency call as an interactional project pursued by the call-taker. This is based on Levinson's (2013) contrast between “actions” and “projects” in interaction, the latter being a superordinate

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category going beyond the turn-at-talk, and defined as “a course of action that at least one participant is pursuing” (Levinson, 2013: 122). Bystander-CPR involves a variety of sequences and courses of actions (obtaining the caller’s agreement, positioning the patient flat on their back on the ground, doing the chest compressions, counting out loud, adjusting the pace of compressions, etc.). To carry out this interactional project, the call-taker needs to recruit the assistance of the caller. The specificity of the context (a telephone call) means that caller recruitment can only be verbal and explicit.

The study of what constitutes an action in interaction, and the relation between language and action, can be traced back to Austin's (1962) work on performatives and then illocutionary acts, and Searle's (1969) speech act theory – see Drew and Couper-Kuhlen (2014) for a review of this legacy. Action ascription has been studied extensively from a conversation analytical perspective (see Levinson, 2013 for a review), with a focus on contrasting social actions such as directives, requests, offers, suggestions, and proposals. Requests and directives have been compared on the basis of entitlement and contingency: while requests orient to the recipient’s willingness and/or ability to perform the desired action (Curl and Drew, 2008), directives do not (Craven and Potter, 2010). Schegloff (2007: 84) argued that offers are preferred over requests, observing that participants prototypically decline offers but accept requests. This analysis was qualified by Kendrick and Drew (2014), who conceded “a symbiotic relationship” between offering and requesting, but not a general preference for offers over requests.

Despite the rich literature on the topic, we did not choose a specific action term, such as “request” or “directive”, to analyse the turns in which call-takers initiate bystander-CPR. Instead, we use the ad hoc term “CPR-opening”, as in our previous study (Riou et al., 2018). This analytical choice resonates with Enfield and Sidnell's (2017) critique of what they call a “binning” approach of action. They argued that a speaker does not need to categorize an action (i.e. as a request, as a suggestion, etc.) to respond to it, and that it can be more fruitful for the analyst to focus on how participants respond to action, rather than attempting to categorize these actions. In addition, our data critically differs from the existing literature on talk-in-interaction in that we focus on one specific project throughout our dataset, i.e. the provision of bystander-CPR. The term “CPR-opening” allows us to investigate how a similar interactional project is negotiated, irrespective of linguistic design and interactional environment.

This study draws on the extensive literature on epistemics and deontics in interaction. The deontic domain has to do with ability, possibility, and necessity: “deontic authority relates to decisions and obligations and is concerned with who can set the rules about what should be done” (Kent, 2012: 713). The study of deontics has particularly focused on asymmetrical interaction, such as elderly care (Heinemann, 2006), disability care (Antaki and Kent, 2012) and parent-child interaction (Antaki and Kent, 2015; Craven and Potter, 2010). Speakers adapt the form of their requests depending on how much entitlement they claim and to what extent they acknowledge the contingencies of their co-participants. Emergency calls display a

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complex deontic landscape, as a range of actions, including CPR, are typically initiated by the call-taker but carried out by the caller.

The epistemic domain has to do with “the knowledge claims that interactants assert, contest and defend” (Heritage, 2013: 370). Speakers are acutely aware of knowledge imbalances (who knows what and who has a right to claim knowledge), which affects turn design and action ascription. For example, epistemic status is crucial to interpret a turn as a question vs. a statement (Heritage, 2013b, 2012). A variety of epistemic stance markers are mobilized, such as *I think* (Kärkkäinen, 2003), *I don’t know* (Lindström et al., 2016; Weatherall, 2011), and turn-final *or* (Drake, 2015). Emergency calls are characterized by a twofold epistemic asymmetry: only the caller has sensory access to the patient, while it is typically the call-taker who has the greatest expertise in how to help them. To capture the complexity of this type of “knowledge gap” Grimen (2009), the emerging distinction between the epistemics of expertise vs. the epistemics of experience can be useful (Heritage, 2013a; Lindström and Weatherall, 2015).

Materials and Methods

We used a subset of a corpus of 424 emergency calls collected for our previous retrospective cohort study on CPR negotiation (Riou et al., 2018). The SJA-WA OHCA database, maintained by the Prehospital, Resuscitation & Emergency Care Research Unit (PRECRU) at Curtin University, contains all cases of paramedic-verified out-of-hospital cardiac arrest in Western Australia since 1996. We used a pre-defined protocol for data collection, first identifying all the calls for out-of-hospital cardiac arrest received in Perth by St John Ambulance Western Australia between January 2014 and December 2015, then applying exclusion criteria. More details on data collection can be found in our previous study (Riou et al., 2018). For the purpose of the present paper, what most needs highlighting is that all 424 calls of the corpus correspond to cases where (1) the call-taker recognised cardiac arrest during the call, (2) the paramedics confirmed cardiac arrest upon arrival, and (3) the paramedics attempted to resuscitate the patient.

We considered that callers initially agreed to perform CPR if they provided verbal confirmation or acknowledgement (e.g. “okay”, “alright”, “yeah I can try it”), or relevant embodied action (e.g. starting the chest compressions, as evidenced through audible signs). The present paper focuses on the subset of 65 calls in which the caller did not initially agree to perform CPR, irrespective of the ways in which this was expressed. In 24 calls, the call-taker eventually persuaded the caller to perform CPR, and in 20 of those, bystander-CPR actually occurred before the paramedics arrived.

We transcribed the calls following the system devised by Jefferson (2004) for conversation analysis, using normalised orthography and prosodic annotations inspired from Szczepek Reed (2011). The list of transcription symbols can be found in the appendix. The calls were discretely segmented in turn-constructive units (TCUs) following the guidelines presented in Selting (2000). Each numbered line in the transcripts corresponds to a TCU.

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Approval for the study was granted by the Human Research Ethics Committee of Curtin University (HR128/2013) and the SJA-WA Research Advisory Group.

Accountability and resistance to CPR

We found that explicit refusals to perform CPR were not very common, with 18/65 cases. Even rarer (2/65) were cases where the callers refused explicitly and did not provide at any point during the call an account for their refusal. An example is shown in (1), in which the false-starts and hesitations (l.2) contribute to display the caller's accountability (Robinson, 2016) for the inappropriateness of her response.

(1) SJA106 (l. 102-107)

- 1 Call-taker <<h> d- d:o you want to do CPR darling, >
(.)
- 2 Caller ↑no- no l h .h h l-
- 3 Call-taker <<h> it's okay, >
4 that's alright,
5 %I'm right here with you,%
6 it's okay Either way darling.

More typically, callers accounted for their explicit refusals, as in (2).

(2) SJA579 (l. 54-60)

- 1 Call-taker <<h> so have you just ↑found him? >
(..)
- 2 Caller yea:h h
- 3 Call-taker %okay alright=%
4 =is there a defibrillator available.
(.)
- 5 Caller no [he's- he's] gone.
- 6 Call-taker [%alright.%]
7 (..)
8 okay.
9 alright,
- 10 Caller [he's gone.]
- 11 Call-taker [did] (.) did- <<h> did you want to start CPR? >
(..)
- 12 Caller ((SIGHS))
- 13 [no].
- 14 Call-taker [t-] (un)til the ambulance gets there ↑no?
- 15 Caller nope,
→ 16 nah he's gone,

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In response to the CPR-opening l. 11 (“did you want to start CPR?”), the caller initially delivers a type-conforming answer (“no” l.13) (Raymond, 2003), though prefaced with marked delay and a loud sigh. He then he delivers an account (“he’s gone” l.16) when the call-taker makes a second attempt (l.14). Interestingly, the same assessment of the patient’s state was used just a few seconds earlier (“no he’s- he’s gone” l.5) in response to the call-taker’s inquiry about the availability of a defibrillator (l.4). The caller accounts for his negative response to two possible courses of action (using a defibrillator if there is one, and performing CPR) by implying their irrelevance, as further suggested by his exasperated sigh (l.12).

Rather than explicitly refusing to perform CPR, callers more often display resistance in implicit ways, such as in example (3).

(3) SJA310 (l. 59-76)

- 1 Call-taker < <h> do you want to (.) try: anything? >
2 o::r like tr- a- attempt CPR?
3 < <f> °or anything that-° >
4 .h try and see anything?
5 we can do anything?
→ 6 Caller put- well I haven't TRIED that.
7 Call-taker do you want to d- do you want to go ↓through that?
→ 8 Caller .h well h I don't know whether I'm- I'm capable of DOing that,
9 I'm eighty (.) .h [three and a] half myself.
10 Call-taker [okay:.]
11 Caller I'm a bit shaken up at the moment.
12 Call-taker okay.
13 [alright sir.]
14 Caller [I'm sor]ry to [↑say that but.]
15 Call-taker [< <h> no no no, >]
16 th- it's- it's completely up to you sir.
17 #↑you know what you're capable of#.

The caller initially withholds a response to five consecutive attempts (l.1-5) from the call-taker to initiate CPR. Then, the caller delivers a *well*-prefaced transformative answer (“well I haven't TRIED that” l.6). With this type of response, a speaker retroactively adjusts the question posed to them (Stivers and Hayashi, 2010). Here, instead of providing a type-conforming answer (i.e. agreeing or not agreeing to do CPR), the caller responds that he has not tried CPR. When the call-taker makes another attempt (“do you want to d- do you want to go ↓through that?” l.7), the caller delivers another *well*-prefaced transformative answer (“well h I don't know whether I'm- I'm capable of DOing that” l.8), this time expressing his concern of not being able to perform CPR, for which he then provides two deontic accounts, one referring to his age (“I'm eighty (.) .h three and a half myself” l.9) and one to his emotional state (“I'm a bit shaken up at the moment” l.11). *Well*-prefaces are routinely used in dispreferred responsive turns (Heritage, 2015; Schegloff and Lerner, 2009). As such, *well*-prefacing in the two

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transformative answers (l.6; 8) foregrounds the caller's resistance in the earliest possible slot of his turns. In sum, the caller passively resists CPR without ever explicitly refusing. The call-taker eventually aborts her interactional project and the caller immediately expresses his accountability to cooperate with an apology ("I'm sorry to say that but" l.14).

Accounts are a traditional feature of dispreferred responsive turns (Heritage, 1988; Pomerantz and Heritage, 2013) along with delays and prefaces (but see Kendrick and Torreira, 2015). With accounts, "second speakers invoke contingent knowledge of their own circumstances to account for the lack of a positive response" (Heritage, 1984: 272). For example, a speaker may provide an explanation or justification as to why they do not accept an offer. Following the call-taker's first CPR-opening, most (57/65) of the callers who initially declined CPR did so with an account. Two categories of meaning can be identified in callers' accounts to decline CPR: deontics and epistemics. The numeric results are summarized in Table 1 and discussed in the following section.

Table 1: Caller turn design when initially declining CPR, by caller final response

	Caller persuaded	Caller not persuaded	Total
Deontic account (e.g. "I can't do it")	10	10	20
Epistemic account (e.g. "I think it's too late")	7	21	28
• Call-taker strategy #1: providing more context on CPR (e.g. "this is to help him in the meantime")	4	3	7
• Call-taker strategy #2: aligning with the caller's deontic and epistemic rights (e.g. "it's up to you")	2	10	12
• Neither strategy #1 nor strategy #2	3	18	21
No account in caller's turn	7	10	17
TOTAL	24	41	65

Deontic resistance

When a caller provides an account based on deontics, they express that they are unable to perform CPR. For example, the patient is lying on a bed, and they are too heavy for the caller to roll them onto their back on the floor. Out of the 57 callers who responded to the first CPR-opening with an account, 20 did so on deontic grounds, as in (4) and (5). Deontic accounts typically contained the contracted negative modal auxiliary "can't".

(4) SJA300 (l. 149-150)

- 1 Call-taker you need to do CPR until the ambulance gets [there.]
→ 2 Caller [but we] ca:n't ge- we
can't MOVE him.

[Type here]

(5) SJA386 (l. 79-81)

- 1 Call-taker <<h> so do you want to attempt CPR? >
(..)
- 2 Caller u::m look <<f> I've only got one hand. >
- 3 so I can't really DO much.

The medical literature contains extensive research cataloguing the different types of physical barriers to CPR (Ho et al., 2016; Linderoth et al., 2015; Nuño et al., 2017 inter alia). A typical obstacle is when the patient cannot easily be positioned flat on their back on a hard surface. Call-takers are trained to suggest ways of overcoming such barriers, such as pulling at the sheets if the patient is on a bed, or calling a neighbour for help. It should be noted that the existence of a physical obstacle did not necessarily mean that the caller resisted CPR. For instance, in (6), the presence of a physical barrier is not presented as an impasse making CPR impossible, but rather as an obstacle which needs to be overcome as part of the interactional project.

(6) SJA085 (l. 80-86)

- 1 Call-taker if you are- ARE able to get a neighbour to get him on the floor we can help you with CPR:.
(.)
- 2 Caller .h #o:kay#.
(.)
- 3 Call-taker because it's TOO soft on the BED to do CPR=
4 =unless you can try and (.) pull him to get him on the floor:.
- 5 Caller I'll TRY to.
- 6 just one second?

In this paper, we only focus on cases where the caller resisted CPR, which in some instances was done on deontic grounds. CPR eventually occurred in 8 of the 20 calls with a deontic account. In 1 of these cases, what the caller presented as an obstacle was their absence of CPR training, which could be easily resolved by the call-taker's reassurance that they would provide step-by-step instructions. In the 7 remaining cases, a major physical obstacle needed to be overcome to position the patient, who was either on a bed or a couch, or inside the toilet. Thus, even though CPR was presented as impossible in the caller's responsive turn, this was not always an interactional impasse. In (7), the caller initially presents the patient's position as a major obstacle (l.4; l.7), but then quickly and successfully overcomes this barrier.

(7) SJA722 (l. 162-198)

- 1 Call-taker what we need to do: i:s start (.) doing CPR=
2 <<f> =are you able to roll him on his back at all? >
(.)
- 3 Caller ((SIGHS))
- 4 (.) .h he's so: h- I CA:N'T (.) get him (.) over.
- 5 Call-taker you can't?

[Type here]

- 6 %no:,%
(.)
- 7 Caller %I can't get him over.%
- 8 Call-taker ↑alright lovey.
- 9 I mean I can help you: it's: just you tell me what you're doing and the:n
I'll know what I can- I can give.
- 10 .h <<h> there's no way you can get on the bed and push him over onto
his back? >
(.)
- 11 Caller I'm trying to pull him over.
- 12 Call-taker ↑yeah?
- 13 okay,
- 14 I'm just trying to help you.
- 15 ((5secs 300ms))
- 16 Call-taker <<h> how big is your hubby love, >
(..)
- 17 Caller u::m h (.) .h one thirty- one forty kilos?
- 18 Call-taker o:kay.
- 19 <<h> no worries. >
- 20 .h alright.
- 21 .h (.) <<h> a:re we: at all- have you try- you tried to get him over= >
- 22 =i- is he over or is he not.
(.)
- 23 Caller almost got it.
- 24 ((5secs))
- 25 <<exp> got him on the FLOOR. >
- 26 Call-taker great.
- 27 that's great,
- 28 is he on his back?
(..)
- 29 Caller yeah.
- 30 Call-taker (.) a:lright
- 31 now listen carefully I'm gonna tell you how to do resuscitation okay:?
(..)
- 32 Caller °yeah°.

Epistemic resistance

When a caller provides an account based on epistemics, they make a claim based on what they know – or think they know. In our data, 28 callers accounted for their resistance on epistemic grounds, as in (8) and (9).

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(8) SJA676 (l. 76-78)

- 1 Call-taker would you like to attempt some CPR with your dad.
→ 2 Caller no he's dead.
→ 3 I ↑know he's dead.

(9) SJA779 (l. 359-360)

- 1 Call-taker < <h> are you willing to do CPR? >
(..)
→ 2 Caller h darling ↑I think it's too LATE.

In their epistemic accounts, callers expressed the view that it would be futile to attempt CPR, as they considered it was too late and the patient was already dead. Callers used an epistemic stance marker, such as “I think” (or “I don’t think”) and “I know”, in 17/28 epistemic accounts. It is important to reiterate here that paramedics attempted to resuscitate all the patients of the dataset, and so, none of them were considered to be obvious deaths.

The practice of resisting CPR based on epistemic grounds is further evidenced by cases such as (10). The call comes from the car park of a shopping centre where a patient is unconscious in his car. The caller was attracted to the scene by the cries of the patient’s wife.

(10) SJA299 (l. 206-218)

- 1 Call-taker < <h> we're gonna do: resuscitation. >
2 we're gonna [try and help him.]
→ 3 Caller [he’s uh he’s-] he's been here for hours apparently.
4 Call-taker okay.
5 < <h> do you believe that he's beyond any help? >
(..)
→ 6 Caller I'd say I think so yea:h.
(.)
7 Call-taker °o:kay°.
8 (.) .h a:lright.
9 Caller ↑okay.
10 (.) < <f> okay okay. >
11 we ? (.) < <h> have someone here who knows CPR [hang on.] >
12 Call-taker [okay] alright.

The caller initially resists CPR with an epistemic account on the patient’s supposed viability (“he’s been here for hours apparently” l.3). When the call-taker requests a confirmation (“do you believe that he’s beyond any help?” l.5), the caller reiterates his claim (“I’d say I think so yea” l.6), though downgraded with the contracted form of the modal auxiliary “would” and the stance marker “I think”. However, when another bystander joins the interaction and it so happens that this person is trained in CPR, the caller does not seem to consider CPR as futile anymore. Cases like this suggest that refusal (or fear) to do CPR can be camouflaged as a belief that that patient is beyond help.

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Only 6 out of the 28 callers who provided an epistemic account eventually performed CPR. This suggests that the caller's perception of the patient's viability can be a barrier to bystander-CPR. We identified a call-taker practice which seemed to be effective to persuade callers who resisted CPR based on epistemic grounds. This is when call-takers provided more context on CPR, explaining that its purpose is to help the patient while the ambulance is on the way. When using this practice, call-takers typically resorted to expressions of simultaneity such as "in the meantime" and "while". In (11), the call-taker's attempt to initiate CPR ("are you willing to do CPR sir" l.1; "would you like me to t:ry and give you some instructions to see if we can start CPR" l.10) are initially met with resistance from the caller, who delivers four turns (l.3;4;7;8) in which he expresses his belief that the patient is beyond help. However, the caller eventually agrees to perform CPR after the call-taker presents CPR as a course of action while waiting for the ambulance ("I can give you some instructions while the ambulance is on the way:." l.21).

(11) SJA577 (l. 82-110)

- 1 Call-taker < <h> are you willing to do CPR sir= >
2 =I can give you [some instructions,]
3 Caller [no he- he- he-] he's- there's nothing there.
4 [there's ↑nothing the:re.]
5 Call-taker [°o:kay°.]
6 < <h> do you believe that he's beyond any help? >
7 Caller he- ↑he- there's nothing there,
8 his eyes are wide open and there's nothing.
9 Call-taker o:kay.
10 would you like me to t:ry and give you some instructions to see if we can
start CPR=
11 =or would you prefer not to.
12 Caller .h I- I don't know what to DO;,
13 Call-taker [I can give you so-]
14 Caller [like I- I don't] [know- I- I-]
15 Call-taker [what's your ↑name] sir.
(.)
16 Caller .h s:orry?
17 Call-taker what's your ↑name.
(..)
18 Caller ((NAME)).
19 Call-taker ((NAME))?
20 Caller [yes,]
→ 21 Call-taker .h ((NAME)) [I can gi]ve you some instructions while the ambulance is on
the way:.
22 < <h> would you like me to do that? >

[Type here]

- 23 Caller [please please please.]
24 Call-taker <<h> or would- [do you believe he's beyond any- yeah?]>
25 [okay.]
26 Caller [please.]

In (12), the call-taker explains that CPR is something to do “until the ambulance crews come” (l.4), but also corrects the caller’s expectations that the patient would swiftly regain consciousness from chest compressions alone (l.15;17), when the main objective of bystander-CPR is to maintain blood flow until more advanced resuscitation can be carried out by the paramedics.

(12) SJA259 (l. 63-88)

- 1 Call-taker u:h do you wanna do CPR?
(..)
2 Caller I think it's too late.
(.)
3 Call-taker ? %okay,%
→ 4 w:ell I can help you until the ambulance crews come=
5 =they're on their way?
6 <<h> do you wanna attempt [to do CPR? >]
7 Caller [yeah yeah just wait.]
8 just wait.
9 yeah [just wait.]
10 Call-taker [unhunh?]
(46.4 SECONDS OMITTED WHILE CALLER WALKS AWAY FROM THE PHONE AND ASKS ANOTHER BYSTANDER TO PERFORM CPR))
11 Caller hello?
12 Call-taker unhunh?
13 Caller yeah we're trying to do CPR nah but unfortunately it's not working I
[don't think.]
14 Call-taker [y:ea:h.]
15 you ↑have to (.) keep going?
16 Caller [o:h,]
17 Call-taker <<h> [you can't] just do it [for a few minutes?>]
18 Caller [okay okay,]

Among cases of epistemic resistance to CPR, callers were persuaded to do CPR in 4/7 calls where call-takers provided more context on CPR. By contrast, only 2 callers were persuaded to do CPR in the 21 calls where the practice was not used. When call-takers provide more context on CPR, as seen l.21 in (11) and l.4 in (12), they reframe the caller’s understanding of CPR rather than directly addressing the caller’s epistemic right in knowing that CPR would be futile. The call-taker counters an epistemic claim based on experience, by means of an epistemic claim based on expertise – while neither aligning nor disaligning with

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the caller's epistemic and deontic rights as the person who has physical and sensory access to the patient. We argue that this call-taker practice can be persuasive precisely because it side-steps the caller's epistemic claim.

By contrast, in 12 of the 28 calls with epistemic resistance to CPR, call-takers used another practice, using phrases such as "it's up to you", "it's your choice", or "that's fine". An example can be seen in (13), where the project of bystander-CPR reaches an impasse quickly after the call-taker uses the practice in question.

(13) SJA171 (l. 109-114)

- 1 Call-taker we need to do CPR.
(..)
- 2 Caller I think you'd be wasting your time?
3 (..) he doesn't- he's not responding in any way.
- 4 Call-taker okay ma'am well it's up t- < <h> i- [it's up to] you? >
5 Caller [XXX]
6 (.) .h (.) yeah,

Such a practice operates both on the epistemic and the deontic domains: the call-taker aligns with the caller's epistemic claim that the patient is not viable, and confirms their deontic right to withhold assistance. This practice does not seem to be an effective way to persuade callers. The caller was persuaded to do CPR in only 2/12 calls in which the call-taker used the practice of aligning with the callers' epistemic and deontic rights, while the caller was persuaded in 4/16 calls where the call-taker did not use it.

The two call-taker practices that we identified (providing more context on CPR; aligning with the caller's epistemic and deontic rights) are not mutually exclusive. They are both used in example (14), highlighting the complex epistemic and deontic negotiation which can occur when callers and call-takers discuss the provision of CPR. The caller has just found his relative lying unconscious inside the house, and he is calling from outside.

(14) SJA375 (l. 101-119)

- 1 Call-taker < <h> do you want me to talk you through CPR? >
(.)
- 2 Caller ↑u::m I think it's- ((SIGHS))
3 (..) ((SIGHS)) she's all cold and that I (.) she's cold eh like-
4 < <h,f> I don't know, >
- 5 Call-taker I can talk you through and we can do it together until the crews turn up,
6 and then they can make the decision what to do when we get there?
(..)
- 7 Caller it really scares the shit out of me eh,
8 I don't want to go in there.
- 9 Call-taker ↓alright,
10 okay no ↑I'm-
→ 11 < <h> it's your dec- it's your choice. >

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- 12 okay?
13 < <exp,f> but I CAN help you if you want me to. >
 (...)
14 Caller I dunno I think-
15 .h < <h> I just tried to check her pulse. >
16 a:nd (.) XXX her whole arm's freezing cold and,
17 °and just-°
18 Call-taker .h (.) alright.

The caller initially resists CPR on epistemic grounds, suggesting that it is too late for CPR because the patient is cold to touch. The call-taker counters this epistemic account with the practice identified above, i.e. providing additional context on CPR (“I can talk you through and we can do it together until the crews turn up” l.5). The caller then provides a different reason for resisting CPR: he is afraid to be in the same room as the patient (“it really scares the shit out of me eh, I don't want to go in there” l.7-8). The caller’s change of justification retroactively strengthens the evidence that providing more context on CPR is an effective counter to epistemic accounts. When the epistemic account cannot be maintained anymore due to this call-taker practice, the caller verbalizes the real obstacle that he is facing. Only then does the call-taker use the second practice, aligning with his deontic rights (“it's your dec- it's your choice” l.11). The call-taker aborts the interactional project of bystander-CPR a few seconds later.

Conclusion

In this study of 65 emergency calls for cardiac arrest, we described two ways in which callers resisted an interactional project initiated by the call-taker, namely, bystander-CPR. With deontic accounts (e.g. “I can’t do it”), callers justified their resistance based on the presence of a physical or contextual obstacle. When callers gave an epistemic account (e.g. “I think he’s dead”), they claimed access and rights to knowledge based on their sensory proximity to the patient, expressing their views that the patient was beyond help. We identified two practices used by call-takers to address resistance based on epistemic grounds. The first strategy consists in providing more context on CPR, i.e. saying that it is a procedure to help the patient while the ambulance is on the way (e.g. “this is to help him in the meantime”). Our findings suggest that this practice has the potential to persuade some callers to do CPR. This is not the case of the second strategy we identified in the data, by which call-takers align with the callers’ epistemic and deontic rights (e.g. “it’s up to you”). Instead of persuading callers, this second strategy seemed to halt bystander-CPR as an interactional project.

Emergency medical services worldwide work towards increasing the rate of bystander-CPR, and existing research has identified a number of physical barriers to the provision of bystander-CPR. Yet, little is known about the specific ways in which emergency callers express their refusal to perform CPR, sometimes in the absence of any physical

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obstacle. Future research is necessary to determine to what extent callers' assessments of the patient's viability is a barrier to bystander-CPR. By contrast with physical barriers, a barrier of this type can only be overcome through interaction. The combined contribution of this paper and our previous one (Riou et al., 2018) alludes to a domino effect. Callers who declare that the patient is dead are more likely to decline CPR. In response to such statements, call-takers more commonly frame CPR in volitional terms (e.g. "do you want to do CPR?"), which in turn is associated with lower caller agreement than other linguistic modalities such as futurity and obligation. The perception of patient viability emerges as a central force bearing on the trajectory of calls. It is precisely this core issue which is targeted by the effective countering strategy identified in this paper (i.e. providing more context on CPR). Our aim was not to find ways to convince all callers to perform CPR against their wishes or beliefs, as ultimately, performing CPR remains the caller's prerogative. However, it is crucial to understand how CPR is negotiated and resisted, so that interactional roadblocks can be explicitly addressed, and resolved where appropriate. The complex dynamic of resistance and persuasion in emergency calls needs to be better understood before informed decisions can be made from medical and ethical perspectives.

Our study expands current knowledge on resistance in medical interaction through our focus on resistance displayed by bystanders rather than patients. Our findings consolidate Landmark et al.'s (2015) analysis of the negotiation of epistemic and deontic rights in secondary care consultations. More generally, our study contributes to the recent research investigating how speakers accomplish resistance and persuasion interactionally (Humă et al., 2019; Sikveland and Stokoe, 2016).

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Ethics approval

The study was approved by the Curtin University Human Research Ethics Committee (HR128/2013) and the St John Ambulance Western Australia Research Advisory Group.

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Appendix – Transcription conventions

<u>Symbol</u>	<u>Definition</u>
→	target line referred to in the text
(.)	micro pause
(..)	short/medium pause
(...)	longer pause
:	lengthening
=	latching
[]	overlap with following turn
[]	overlap with previous turn
↑	pitch upstep
↓	pitch downstep
< <l> >	lower register level
< <h> >	higher register level
< <exp> >	expanded register
< <f> >	faster tempo
.	unit-final falling contour
?	unit-final rising contour
,	unit-final contour slightly rising or falling
-	unit-final level contour or mid-unit truncated contour
.h	in-breath
h	out-breath
ʔ	glottal stop
WORD	louder volume, shouting
°word°	lower volume, whispered segment
%word%	creaky segment
#word#	breathy
@word@	smiling or laughing voice
((LAUGHS))	non-linguistic sound or anonymised content
XXX	unintelligible segment

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