



Multidisciplinary meetings at the emergency department: A conversation-analytic study of decision-making



Lucas M. Seuren^{a,*}, Wyke Stommel^b, Dieneke van Asselt^c, Özcan Sir^a, Martijn Stommel^d, Yvonne Schoon^{a,c,e}

^a Radboud University Medical Center, Department of Emergency Medicine, Geert Grooteplein Zuid 22, 6525 GA, Nijmegen, the Netherlands

^b Radboud University, Center for Language Studies, Erasmusplein 1, 6525 HT Nijmegen, the Netherlands

^c Radboud University Medical Center, Department of Geriatrics, Geert Grooteplein Zuid 10, 6525 GA, Nijmegen, the Netherlands

^d Radboud University Medical Center, Department of Surgery, Geert Grooteplein Zuid 10, 6525 GA, Nijmegen, the Netherlands

^e Radboud University Medical Center, Radboud Institute for Health Sciences, Geert Grooteplein Zuid 28, 6525 GA, Nijmegen, the Netherlands

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ABSTRACT

Multidisciplinary meetings (MDMs) have become an established part of many medical disciplines. Much research has been done to investigate the conditions under which they work best. This research, however, has been mostly retrospective and has had little consideration for the actual workings of MDMs. The aim of this study was to determine how Multidisciplinary Teams (MDTs) come to a shared decision and thus how they organize MDMs moment by moment. For this purpose we recorded twenty MDMs at the Department of Emergency Medicine (ED) of the Radboud University Medical Center in The Netherlands between November 2017 and June 2018. These meetings, contrary to those discussed in the literature, were scheduled ad-hoc as patients were seen at the ED and were conducted by small MDTs of between three and six participants, always involving a surgeon, a geriatrician, and an emergency physician.

Using Conversation Analysis we found that despite the ad hoc nature of these meetings, teams collaboratively developed a structure that was grounded in everyday medical practice and reached a decision in on average slightly over 10 min. First they do a case presentation in which they share the patient's medical history and results of the physical examination and any medical tests. They subsequently agree on a differential diagnosis, and then develop a work plan. Finally, the decision is often formulated to invite confirmation and make it an interactionally shared decision. The benefit of having an MDM was evidenced by discussion of patients' frailty in particular: it was sometimes omitted during the case presentation, but then consistently requested by the geriatrician. And as we show, it was occasionally invoked as a definitive argument for deciding between surgical or conservative treatment.

Our analysis suggests that MDMs can have added value in other disciplines where it is feasible to schedule meetings ad hoc.

1. Introduction

Multidisciplinary Team Meetings (MDMs) have become an established part of medical decision making in various disciplines such as oncology (Basta et al., 2017; Blazeby et al., 2006; Lamb et al., 2011b, 2011c; Soukup et al., 2018), pediatrics (White, 2002), and hospice care (Wittenberg-Lyles et al., 2010; Wittenberg-Lyles, 2005). In some countries, such as the UK and the Netherlands, multidisciplinary teams (MDTs) are mandatory in cancer care (Department of Health and Social Care, 2011; SONCOS, 2018). This has led to a burgeoning field of

research, aimed at investigating whether MDMs and MDTs are beneficial to patient care (Basta et al., 2017; Blazeby et al., 2006; Fleissig et al., 2006; Look Hong et al., 2010b; Taylor et al., 2010, 2012), how they are experienced by participating practitioners (Hartgerink et al., 2014; Lamb et al., 2014; Look Hong et al., 2009; Saini et al., 2012); and how they can best be integrated into standard practice (Lamb et al., 2014; Lanceley et al., 2008; Look Hong et al., 2010a; Wright et al., 2009).

The primary goal of MDMs is generally to come to a shared decision for the patients who are discussed; cases are presented not simply to

* Corresponding author. University of Oxford, Nuffield Department of Primary Care Health Sciences, Radcliffe Observatory Quarter, Woodstock Road, Oxford OX2 6GG, United Kingdom.

E-mail address: lucas.seuren@phc.ox.ac.uk (L.M. Seuren).

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inform other team members, but to get their input in order to improve patient care. Since MDMs take up such a central role in medical practice, it is crucial to understand how decisions are reached. This will contribute to optimizing MDMs using evidence-based practice of what makes a good MDM, and additionally it can help with training new physicians, social workers, and other participants in these best practices (Soukup et al., 2018).

The benefit of MDMs, according to clinicians that participate in these meetings, is that they improve decision making and lead to more coordinated care (National Cancer Action Team, 2010). In a recent systematic review Soukup et al. (2018) provided a list of do's and don'ts for well-functioning MDMs in oncology, where MDTs meet on a regular basis and are made up of medical specialists, specialist nurses, and coordinators. These recommendations include practices such as incorporating patient choice, co-morbidity, and psychosocial factors into the decision-making process.

While these practices have been shown to be important for patient care in MDMs, studies have so far provided no insights into how they could and should be implemented into the decision making process. For example, practices such as 'guaranteeing equal participation' and 'communicating effectively' may be important, but it is unclear what would be good procedures for these practices. In order to be able to answer questions such as these and improve MDMs, a first step is to determine how meetings are currently organized. That is, by studying MDMs as they are conducted, we can identify interactional practices members use to both structure the interaction and address problems while working towards an action plan (Heritage, 2010).

To our knowledge, previous studies have focused only sporadically on the communicative strategies used by teams during MDMs and only in oncology. They have shown that adequate participation by nurses is not guaranteed and that team members have to actively engage them (Amir et al., 2004; Coombs and Ersner, 2004; Lamb et al., 2011a), as well as how in the process of decision-making physicians use different forms of authority (Dew et al., 2015). These studies did not, however, address how participants manage a structural organization of the meeting in terms of the various activities of decision-making moment by moment. While Dew et al. (2015) show what activities make up an MDM, they do not describe how teams organize these activities.

In order to understand how decisions are reached in MDMs it is important to analyze how they come to a decision, step by step. We examine this question using a heretofore unstudied form of MDM. Prior work has focused on MDMs that are scheduled regularly, mostly in cancer care, and in which large groups of fifteen to forty clinicians and non-clinical professionals such as social workers take part. Studies on MDMs in cancer care have recurrently pointed out that one of the factors that determines their effectiveness is their organizational structure. In a large group a chair is required to guide the decision-making process and to make sure that the team works well (Fleissig et al., 2006). In contrast, the meetings discussed in this study took place at the Department of Emergency Medicine (ED), were scheduled ad-hoc, and teams consisted of three to six participants, with none of them acting as chair. By using video recordings of actual meetings we investigate how teams organize these meetings on a micro level, meaning utterance by utterance, and how in doing so they bring about an overall structural organization that is geared towards a specific goal: a shared decision (Robinson, 2013; Veen and de la Croix, 2017).

2. Methods

2.1. Data collection

Between November 2017 and June 2018, we recorded 20 MDMs at the Department of Emergency Medicine (ED) of the Radboud University

Table 1
Descriptive characteristics of the MDMs analyzed.

MDM characteristics	Frequency (N)	%
Patient gender (male)	12	60
Complaints		
Abdominal pain	16	80
Overall malaise	2	5
Back pain	1	5
Obstipation	1	5
Diagnosis ^a		
Malignancy	3	15
Pyelonephritis	3	15
Cholecystitis	2	10
Small bowel obstruction	2	10
Obstipation	2	10
Others	8	40
Admitted to hospital	14	70
Decision reached in MDM ^b		
Additional Diagnostics	11	57.9
Treatment	5	26.3
Discharge (outpatient)	3	15.8
Implementation of MDM decision ^b	18	94.7
Participants in MDM		
All three specialisms present	17	85
Only geriatrician and surgeon	2	10
Only geriatrician and ER physician	1	5

^a Only conditions that were diagnosed in at least two MDMs are mentioned.

^b For one case the recording cut off during the presentation and did not include the decision.

Medical Center. In 17 cases one of the researchers was present at the meeting, and in the others one of the team members managed the recording. These MDMs were conducted for older patients between 70 and 95 years ($M = 82.3$, $SD = 6.2$, $Mdn = 80.5$) who presented with abdominal pain. The MDMs were part of a health care improvement project, which aimed to reduce the length of stay at the ED and to provide appropriate care to elderly visiting the ED. The MDTs consisted of three to six participants. The policy was to have three consultants present—a surgeon, a geriatrician, and an emergency care physician—but in three cases only two took part. On occasion, one or more residents, physician-assistants, and interns also took part in the MDM. Patients spent between 112 and 465 min at the ED ($Mdn = 259$) before they were either admitted or discharged. Detailed characteristics of the MDMs are presented in Table 1.

The meetings lasted between five and 20 min ($M = 10.6$, $Mdn = 10.9$), resulting in a total dataset of 3.1 h. We video-recorded the MDMs using one stationary camcorder aimed at the participants to capture their faces and upper bodies in the picture. In five cases one or multiple members were not completely visible on camera, and in one case the team was too large to continuously capture the entire team on camera.

Institutional Review Board approval for the study was obtained (File number Medical Ethical Committee: 2017–3974), and we received permission from all participants involved to record and analyze the meetings. The transcripts of the data have accordingly been anonymized: names have been replaced by ((name)) and we refer to the participants by their institutional roles such as *surgeon* or *SUR*.

2.2. Data analysis

The analysis of the MDMs was done by LMS with input from WS using the method of Conversation Analysis (CA) (Heritage and Maynard, 2006). CA is an inductive, qualitative method that relies on recordings of social interaction to examine the verbal and embodied practices with which participants collaboratively organize these

Table 2
Transcription conventions (Jefferson, 2004).

Symbol	Meaning
.; ~ ?	Turn-final strongly falling, medium falling, flat, slightly rising, medium rising, or strongly rising intonation
(.)	Hearable “micropause” of less than 200 ms
(1.0)	Hearable silence of 1s
> Fast <	Greater than and lesser than signs enclose faster talk
<u>Stress</u>	Underlining marks emphasis
↑↓	Arrows show upsteps and downsteps in pitch of a single syllable
Lo::ng	Colons show stretching of the prior sound
Cu-	Hyphens indicate a hearable cut-off
Talk = Talk	Equal signs indicate latching between turns
[Talk]	Square brackets enclose overlapping talk
(Talk)	Transcriber unsure of accurate transcription
“Soft”	Degree signs enclose quiet speech
LOUD	Capitals mark louder speech
.hhh	Hearable inbreaths
Hhh	Hearable outbreaths
£Smile£	Pound symbols enclose “smile voice”
#Creaky#	Number signs enclose “creaky voice”

interactions and make themselves understood. Researchers using this method study the design of individual turns of talk (Drew, 2013), the systematic ways in which participants organize turn-taking, that is, who talks when (Sacks et al., 1974), as well as the larger sequential organization of interaction, that is, the agendas or activities of a particular encounter (Robinson, 2003).

The recordings were transcribed by one of the team members (LMS) using conversation-analytic conventions developed by Jefferson (2004), see Table 2, and a clinician was consulted to ensure medical terminology was adequately transcribed. As our data are in Dutch, we present the original transcriptions with a line-by-line translation into English. Since the manner of speaking is in Dutch, we only use some conventions in the English translation, mainly those that are relevant for possible turn completion.

The aim of the analysis was to get an overview of the activities in MDMs and examine how team members structure these activities. As we analyzed the data inductively, we had no expectations about either the number or the content of the activities. Using the practices through which participants propose moving to a new activity, we developed a description of the overall structural organization of the MDMs. Our main focus was on the verbal contributions, but we also took embodied behavior such as gaze into consideration where relevant.

3. Findings

The MDMs we examined were small, organized ad-hoc, and not systematically organized: participants came together to discuss a case, without discussing at the start how they were going to do that, or what constituted a successful MDM. Although, they would have had prior experience of decision-making and medical handovers, this was not discussed in the interaction. In other words, participants in these MDMs may have relied on familiar activities such as the case presentation, but had to manage which activities to use and how to organize the interaction. As we demonstrate, they collaboratively and relatively unproblematically worked through an implicit structure, and developed a highly organized way of working, culminating in a shared decision about the case (Veen and de la Croix, 2017). The overall structure is captured in Fig. 1. Both the openings and closings were very brief, generally lasting only the few seconds it took the team to sit down and turn the camera on and off respectively, and so we do not discuss them in our analysis.

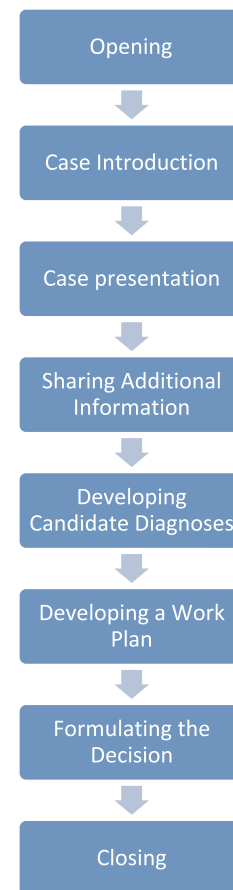


Fig. 1. Structural organization of MDMs.

As we demonstrate in this article, participants orient to these activities as distinct parts of the implicit organizational structure: (i) they made use of specific interactional practices to transition between these activities, and (ii) the activities revolved around different actions. By carrying out the activities in this order, teams showed that they were concerned with first sharing information about the case, so that all members could participate in subsequent discussions. They subsequently used this information to come to one or several possible diagnoses, and form a work plan, which could consist of one singular course of action, such as a specific form of treatment, or various scenarios depending on the results of additional diagnostic tests. A move to possible closure was achieved by formulating the future course of action and inviting confirmation, in other words, by making the decision public and shared.

3.1. Case introduction

After opening the meeting, the first activity was to establish the case. While one or more participants may have talked to the patient before the MDM, only one had what we could call *primary access* (Heritage, 2012). They had taken the patient's history and had done a physical examination, and thus took or were given responsibility for introducing and presenting the case. This participant was generally either a physician-assistant (PHA) or resident (RES), and in one case a medical intern (INT). They sometimes initiated the introduction themselves, as in excerpt (1), but it was also often done in response to a request by the surgeon (SUR) or the geriatrician (GER), as in excerpt (2).

(1) 0623-00:00.0: abdominal pain and fever

- 01 INT: eh meneer ((naam)) is een achtentachtig
uh mister ((name)) is an eighty eight
- 02 jarige man die hier is in verband met
your old man who is here because of
- 03 (.) buikpijn en koor:ts;
(.) abdominal pain and fever;

(2) 0628-01:26.4 : vomiting and abdominal pain

- 01 GER: °wil jij (de) patiënt even brengen°?=
will you briefly present the patient?
- 02 PHA: =ja ik zie meneer ((naam)), een meneer:
=yeah I see mister ((name)), a mister
- 03 tweeëntachtig jarige mis:- patiënt,
eighty two years old mis- patient,
- 04 woonachtig in 't verpleeghuis,°die werd
living in the nursing home, who was
- 05 ingestuurd met verdenking braken° .hhh
referred with suspicion of vomiting .hhh
- 06 en buikproblemen
amd abdominal problems

The formulation of the case varies between (1) and (2), but in both cases the introduction makes clear the patient's name, sex, age, and reason for referral. Although the reason for referral is frequently stated after the patient's history, stating it as part of the introduction makes it immediately clear to the team why they are discussing this case, and thus what they should focus on when listening to the case presentation.

This way of starting the case presentation in these MDMs was very consistent: we found only one exception where the introduction was skipped entirely. In that case the resident started by presenting the physical examination. The start of this MDM is shown in excerpt (3). In lines 8–10 the resident announces that he will focus on the physical examination.

(3) 0644-00:05.1

01 GER .hhhh wij weten al een ↑beetje van:
.hhhh we already know a bit about

02 (0.2) waar die meneer vandaan komt
(0.2) where that mister comes from

03 en dat soort dingen, maar [we zijn
and that sort of things, but [we are

04 RES: [ja
 [yeah

05 GER: heel benieuwd naar jouw bevindingen;
very curious about your findings;

06 want die (0.2) e::h niemand heeft hem
because those (0.2) uh nobody has him

07 nog echt onderzocht;=
yet really examined;=

08 RES: =lichamelijk onderzoek.=
=physical examination.=

09 GER: =j:[a.
 =y[eah.

10 RES: [(zal'k) met name: (.) e:h (0.2)
 [(shall I) in particular (.) uh (0.2)

11 (vertellen), .hhh
 (tell), .hhh

Although this excerpt deviates from an otherwise consistent pattern, it actually confirms that an introduction needs to precede the case presentation, and that the first step in MDMs is to share information about the case. The geriatrician opens the MDM in lines 1–7 by saying that they already know a little bit about the patient, and that they are very curious about the resident's findings as none of them has done a full examination. She thus makes clear that an introduction is no longer necessary and suggests that the resident start with the physical examination, because the other team members have no knowledge about the patient's physical condition.

3.2. Case presentation

After introducing the patient, a resident, physician-assistant, or intern presented the case. This presentation consisted of a set of sub-presentations in a regular order. The presentation started with the patient's history, including any previous admissions for related complaints, and the reason for the current admission. After that the results of the physical examination were presented. This could be very extensive, as physicians could report on the findings from a range of diagnostic tools. The third step consisted of lab results and, where relevant, imaging tests. In their presentation of both the physical examination and lab results, physicians focused on abnormal findings as those were potentially diagnostically relevant. This meant that presentations varied significantly between MDMs, and there was rarely an orientation to specific tests that had to be reported on (but see extract (5) below). A complete presentation was thus not pre-specified but an interactional accomplishment. In addition to these three steps, physicians could also report on the patient's psychosocial state, meaning his or her cognitive functions, activities in daily life, and frailty. But this

step was frequently missing and when it was presented, it was not done in a fixed position, or as one coherent unit. The various parts that made up the patient's psychosocial state could be presented during the patient's history if it was crucial to that history; for example, if the patient had had a stroke, this might have had an impact on the patient's self-reliance. If the psychosocial factors were not part of some prior medical condition, they were presented either between the patient's history and the results of the physical examination, or at the end of the presentation.

The variation in this part of the presentation is noteworthy, as it is precisely where the added value of an MDM shows: participants consistently used the patient's psychosocial state in their decision for either conservative or surgical treatment, and thus also to determine whether any additional diagnostic tests were necessary (see excerpt (12) below). PHAs who work in the Department of Geriatrics always presented it, but residents, interns, and other PHAs sometimes did not. If they omitted this step, either the geriatrician or surgeon requested it before moving on with the next activity and explained the added value of knowing the patient's psychosocial state and personal preferences. Other relevant geriatric domains such as co-morbidity and polypharmacy were generally already included in the patient's history.

Case presentations were sometimes done in one long, uninterrupted turn, but in some cases they were co-constructed by multiple participants. This occurred most frequently when the initial presentation was done by a resident or physician-assistant in training. Consider for example the following excerpt. The discussion took place immediately after the physician-assistant had presented the physical examination. The geriatrician asks in line 1 for the additional examination, using the adverb *dan* 'then' to show that she is moving to a next step.

(4) 0631-03:53.4: additional examination

- 01 GER: °aanvullend onderzoek dan°?
additional examination then?
- 02 PHA: .pt we hebben een: (.) thoraxfoto
.pt we have made (.) a chest x-ray,
- 03 gemaakt, we hebben (een) lab hebben we
we have (a) lab have we
- 04 ingezet, en een ECG, .hhh ehm (0.5) op
deployed, and an ECG, .hhh uhm (0.5) on
- de thoraxfoto zien we eigenlijk g[een:
the chest x-ray we see actually n[o

Further evidence that the case presentation was co-constructed by the participants is shown in the next excerpt, where the geriatrician asks about a specific test that the resident has not yet presented: the rectal examination. The results of this test are elicited a number of times—we found it in five out of twenty MDMs.

not use this question as a follow-up question, which would treat the presentation as complete. She elicits a necessary part of the case presentation.

In addition to asking questions, specialists often also volunteered additional information to which they might have privileged access. This

(5) 0649-06:17.1: rectal examination

- 01 RES: ze heeft absoluut zorg no:dig,
she absolutely needs care,
- 02 °denk [ik ook wel°.
I also [think that.
- 03 GER: [en heb je nog een rectaal
[and have you also done a rectal
- 04 tou_↑cher gedaan?
examination?
- 05 RES: nee. °(niet gedaan). nee.°
no. (didn't do). no.

After explaining that the patient cannot go to the bathroom on her own, the resident formulates the upshot in line 1: the patient is definitely in need of social care. The geriatrician then asks whether the resident also did a rectal examination, using the conjunction *en* 'and' to show the question is part of the ongoing activity of presenting the case (Heritage and Sorjonen, 1994). As in excerpt (4), the geriatrician does

again shows that the case presentation was a collaborative construction, not only the responsibility of the physician or physician-assistant who examined the patient, and that its primary function was to provide participants with access to the relevant information. Consider the following excerpt where the physician-assistant presents the case, to which the geriatrician then contributes.

(6) 0628-01:59.8: fecal vomiting

- 01 PHA: e::hm:: 't braken is met name dat
uhm the vomiting is particularly that
- 02 hij afgelopen e:h nacht en vanochtend
he past uh night and this morning
- 03 drie (0.2) bekkentjes vol met .h
three (0.2) little bowls full of .h
- 04 br:uin braaksel heeft (aangif)- heeft
brown vomit has (aangif)- has
- 05 overgegeven (0.2) .hh en de
vomited (0.2) .hh and the
- 06 ontlas[ting-
defe[cation-
- 07 GER: [>verpleeghuisarts< zei:
[>nursing home physician< said
- 08 daarbij dat z::ij dan dacht aan
thereby that she then thought of
- 09 °°fecaal braken°°.
fecal vomiting.

The physician-assistant has been explaining that the patient was admitted to the hospital because she started vomiting and had diarrhea in response to antibiotics. In lines 1–5 he tells that in just the past night the patient brought up brown vomit multiple times. He then moves on to talking about the patient's defecation, but the geriatrician interrupts to add that the physician in the nursing home thought it was fecal vomiting. Notice her use of the adverb *daarbij* 'thereby' with which she refers back to the vomiting mentioned by the physician-assistant. She thus adds to his presentation, making it a co-construction.

3.3. Sharing additional information

Once the case presentation had been brought to completion, the participants either discussed the case by asking questions, or the specialists made their own contribution. Contributions by specialists were infrequent in our data, because they often had not examined the patient themselves—it was done in only five out of twenty cases. In the cases where they did contribute, they recognizably design their contributions as additions to the case presentation. See for example excerpt (7):

(7) 0627-03:20.0: Additionally

- 01 GER: en (nou) aanvullend kan ik in ie'
and (well) additionally I can in any
- 02 'val want ik heb net even met 'r
case because I have just to her briefly
- 03 gesproken, eh en ze heeft (cardiaal)
spoken, and she has (cardiac)
- 04 eig'k de reuma is goed onder
actually the rheumatism is well under
- 05 controle? geen actieve klachten
control? no active complaints??

Prior to excerpt (7) is a short discussion of the presentation of the case so far in which the geriatrician produces a series of questions about the patient's medication, and in which the surgeon states that the patient experienced slight pain when pressure was applied to her abdomen. Subsequently the geriatrician adds what she knows. She formulates this as an addition to the case presentation using the conjunction *en* 'and' and the adverb *aanvullend* 'additionally'.

While the addition complements the case description, it constitutes a new activity in the structure of the MDM. This is evidenced in part by a discussion of one and a half minutes that precedes excerpt (7), in which the geriatrician poses follow-up questions and the resident proffers some possible explanations of the symptoms. Furthermore, the geriatrician focuses on her specialty: after excerpt (7) she goes on to say that the patient is still very active, self-reliant, and has no cognitive

complexity of the case. Team members discussed at least one possible diagnosis, and in sixteen cases (75%) more than one.

If a diagnosis was introduced, it could either be proffered (as in excerpt (8)) or it could be elicited (as in excerpt (9)). In both cases the team used the case presentation and additional information to come to a set of possibilities or a single possibility of what might be ailing the patient: diagnoses were proposed, subsequently discussed, and then either accepted or rejected into the differential. In excerpt (8) the surgeon has just asked a series of questions about the patient's age, leukocytes, and CRP. After the physician-assistant has answered, the surgeon moves into the differential diagnosis in line 1 by suggesting that the patient has ischemia of the bowel. He thereby starts a discussion of whether ischemia is indeed a possibility, and what would be the implications for this patient.

(8) 0629-01:23.2: ischemia

- 01 SUR: naja met dat hoge lactaat en die
well with that high lactate and that
- 02 [eh en [die diarree
[eh and [that diarrhea
- 03 GER: [ja [ja
[(yeah) [(yeah)
- 04 SUR: die ze dan blijkbaar heeft, <of in ie'r
that she than apparently has, or at
- 05 'val: [frequente ontlasting,=
least [frequent defecation,=
- 06 GER: [ja
[yeah
- 07 GER: =en: niemand [is z-
=and nobody [is s-
- 08 SUR: [het kan ook
[it can also
- 09 darmischemie zijn.
be bowel ischemia.
- 10 ERP: 'kwou net zeggen je moet ischemie
I just wanted to say you should
- 11 niet uitsluiten.=
not exclude ischemia.=

disorders.

After the case presentation was brought to completion, specialists could make their own contributions that added to, but were not part of, the case presentation. This was, however, not frequently done in our data.

3.4. Establishing differential diagnosis

Both the case presentation and the sharing of additional information were done in service of the next activity: establishing a differential diagnosis. By moving on to the underlying condition the team revealed that they had enough information to establish a possible diagnosis. The length of the differential diagnosis varied, as it depended on the

With his turn-initial *naja* ('well yeah') in line 1, the surgeon shows that he is moving on from the case presentation to a new activity (Mazeland, 2016). He then articulates two symptoms, *high lactate* and *diarrhea*. With the demonstratives *dat* and *die* ('that') he "points" to those symptoms, indicating that they were presented by someone else, here the physician-assistant. His diagnosis, which he presents in line 7-9, thereby comes off as an upshot of the case presentation. The surgeon thus starts the differential diagnosis by proffering a possible diagnosis, and grounds that possibility in the case presentation. In doing so he also reconfirms the structural order of the activities: he now has adequate information to move on with the next step of the meeting.

An elicited diagnosis can be found in excerpt (9). The geriatrician asks the physician-assistant who presented the case to provide the

diagnosis. Note in particular her use of the rather minimal syntax in her request in line 1 which has neither a subject nor predicate.

(9) 0647-05:54.7.0: Diagnosis

01 GER: dus [differentiaaldiagnose ((PHA naam))?
so [differential diagnosis ((PHA name))?

02 ERP: [(maar)
[(but)

03 (1.0)

04 PHA: .hhhh pf:: (0.5) .pt ftsja, met een- met)
.hhhh pf (0.5) .pt yeah, with a- with

05 diarree:£, (1.1) ja toch misschien een
diarrhea, (1.1) yeah maybe a

06 gastroentorite- dus een eerdere
gastroentorite- so an earlier

07 gastroentoritis; (0.5) doorgemaakt (da's
gastroentiritis; (0.5) passed (that's

08 ook) () heeft nu ook geen buikpijn
also) () has now also no abdominal

09 en alleen z'n drukpijn ja mocht 't toch
pain and only his tenderness yeah still

10 misschien: a- (.) appendicitis,
possible a- (.) appendicitis,

Immediately prior to this excerpt the team has been talking about the lab results. The geriatrician moves into the differential diagnosis in line 1. She makes her turn recognizable as an upshot of the case discussion with her turn-initial *dus* 'so' (Heritage and Watson, 1979), but she does not proffer a diagnosis herself. Instead she invites the physician-assistant to provide the differential diagnosis. After a second of silence, and some non-lexical sounds indicating that she is thinking about it—the long inbreath and subsequent outbreath (line 4)—the physician-assistant provides a number of options which she grounds both in the patient's symptoms and history.

Notice that in both excerpts (8) and (9) the diagnosis is presented as a candidate diagnosis. The surgeon in excerpt (8) says that it *can* be ischemia, which the ER physician confirms by saying they should not exclude it. Similarly, the physician-assistant in (9) uses the adverb *misschien* 'maybe' in lines 5 and 10 to show she is providing possibilities.

We thus see that having shared information about the case, the team continued with the differential diagnosis. This discussion could be initiated by one of the specialists proffering a candidate diagnosis, or asking the resident or physician-assistant who presented the case for their perspective. These candidates then provided the basis for subsequent discussion.

3.4. Discussion of work plan

The main function of MDMs in the ED was to come to a shared decision about a future course of action for the patient. This meant that after the differential diagnosis, the team developed a work plan given the differential diagnosis. This work plan consisted of additional diagnostic tests, treatment, or a combination of both. We found only one case where the patient was discharged, but even in that case follow-up appointments were scheduled. The nature of the decision depended on a number of factors: (i) whether the patient was up to treatment given his or her psychosocial state, (ii) the patient's preferences in terms of possible treatments—conservative or surgery, (iii) the number of candidate diagnoses, and (iv) the certainty with which these diagnoses were established. In the simplest case we found, the team quickly established that the patient was so frail that conservative treatment—palliative-symptomatic care—was the only option. In more complex cases, the team developed scenarios for a number of diagnostic tests and follow-up actions given the possible results of those tests.

As with the differential diagnosis, one way the team moved into the treatment discussion was by one of the specialists proposing a future course of action (Huisman, 2001). These proposals can take many forms (Couper-Kuhlen, 2014), but in most cases the specialist would formulate a course they would select. Take for example the following excerpt in which the geriatrician states her preference.

(10) 0628-07:22.1: Scenarios

- 01 GER: e:hm wat zouden dan de scenario's
uhm what would then the scenarios
- 02 zijn.=ik denk zelf dat (.) dat mijn
be.=I think myself that (.) that my
- 03 voorkeur zou in ie'r 'val wel uitgaan
preference would at least be
- 04 naar: eh zeg maar gewoon een
to uh so to speak just a
- 05 conserva[tief beleid, in de
conserva[tive policy, in the
- 06 SUR: [((starts nodding))
- 07 GER: [zin van .h behandelen v[oor: sepsis,
[sense of .h treating f[or sepsis,
- 08 ERP: [((starts nodding)) [ja
[yeah
- 09 GER: .h e:h en eventueel e:h eventueel een
.h uh and possibly uh possibly
- 10 GER: hevel geven [als dat
give a decompression tube [if that
- 11 SUR: [ja 'kzou 'm
[yeah I would
- 12 GER: no[dig is.
is ne[cessary.
- 13 SUR: [zeker
[certainly
- 14 ERP: [zou'k
[would I
- 15 SUR: ['kzou 'm zeker een hevel geven.
[I would certainly give him a decompression tube.
- 16 ERP: [zou'k zeker doen:,
[I would certainly do {that},

Preceding this excerpt the geriatrician has summed up the differential diagnosis, a typical activity-closing move (Heritage and Watson, 1979), and in line 1 she moves into the treatment discussion. Although she uses question-type syntax with *wat* 'what', she leaves no room for an answer, and instead says she prefers conservative treatment. Both the ER physician and surgeon agree: they start nodding during the geriatrician's proposal and subsequently reinforce her suggestion of a

decompression tube. The design of their turns with *zeker* 'certainly' displays their independent epistemic authority with regard to this treatment and thus contributes to the "sharedness" of this decision.

So one way of moving into the treatment discussion was for a team member to make a proposal. The alternative was for a specialist to request one from the physician-assistant, resident, or intern, as in the following extract, which took place shortly after excerpt (9).

(11) 0647-06:39.1: Proposal

01 SUR: .pt dus wat zou je voorstel zijn om nu
 .pt so what would be your proposal now

02 te doen.
 to do.

03 (0.9)

04 PHA: e:::hm (1.4) .hh jah_ (1.6) 'kzou
 uhm (1.4) .hh yeah_ (1.6) I'd

05 zeggen dan denk ik toch een echo maken;
 say then I think still do an ultrasound;

After the physician-assistant has presented her differential diagnosis, the surgeon asks her to propose a course of action. He explicitly asks for a proposal (*voorstel*), and shows that it is an upshot of the diagnosis with his turn-initial *dus* 'so' (see also excerpt (9)). In doing so the surgeon sets up a teaching environment: the physician-assistant, who is still in training, gets to make a proposal, but this proposal is open to subsequent evaluation, meaning approval and feedback, by the surgeon and geriatrician. In response, after a few silences and some hesitation markers, the physician-assistant proposes an ultrasound.

This was part of a broader activity shift in these MDMs. Whereas the physician-assistants, residents, or interns were given epistemic primacy

over the case presentation—they had examined the patient—the consultants as senior physicians were given epistemic primacy over the diagnosis and work plan. By volunteering suggestions or eliciting and evaluating suggestions from the junior doctors the consultants oriented to that expertise (Stevenson et al., 2018).

The work plan is an activity in which the advantage of the MDM can be most clearly evidenced. Proposals were based on the patient's condition, and on occasion these arguments were made explicit. In the following case, the patient's psychosocial state had been presented at the start of the meeting, and the geriatrician subsequently moves into the work plan by proposing conservative treatment, because the patient is particularly vulnerable.

(12) 0639-05:55.3: Conservative

- 01 GER: -> maar dan hebben we een hele kwetsbare:
but then we have a very vulnerable
- 02 (0.9) man, (0.3)
(0.9) man, (0.3)
- 03 -> waarvoor we gaan (voor) denk ik voor
for whom we'll go (for) I think for
- 04 -> palliatief symptomatisch beleid en dat
palliative symptomatic care and that
- 05 is laxeren,
is to laxate,
- 06 (0.4)
- 07 CHI: ja
yeah
- 08 (0.3)
- 09 GER: -> en met de hevel, (0.5) opereren
and with the drain, (0.5) operating
- 10 -> (lijkt me niet).
(I don't think so).
- 11 CHI: .hhh nee: nou ja goed,
.hhh no well yeah okay,
- ((5 lines elided))
- 17 CHI: =we hebben geen aanwijzingen dat 't een
=we have no indications that it is a
- 18 (strangulaat) is of ander acuut probleem
(strangulate) or another acute problem,
- 09 is, dus ik denk dat we (alle)
is, so I think that we have (all)
- 20 tijd hebben ook om conservatief te doen,
the time to treat conservatively,
- 21 onafhankelijk van z'n: frailty,
independently of his frailty,

The geriatrician's proposal in lines 1–10 is taken up by the surgeon, who first moves to provide a counterproposal with his turn initial *nee* 'no' and *nou ja* 'well yeah'. He then refers to some talk that took place prior to the MDM (data not shown), before agreeing with the geriatrician's proposal in lines 17–21. The surgeon invokes the patient's frailty as well, but states that his decision is independent of it. Instead he agrees because there is no evidence that the patient has an acute problem, that is, a problem that would require immediate surgery. Whereas the geriatrician bases her proposal on the patient's psychosocial state, the surgeon agrees based on the patient's biomedical state. Both invoke their specialties in the decision-making process, complementing each other's arguments.

We have shown that the team moved into a treatment discussion by one of the specialists either making a proposal for a future course of action or eliciting a proposal. In both cases, it was only the first step in

what could be a long discussion. Even in cases like (9) where the other team members immediately concurred, the team continued to discuss alternative scenarios. The work plan was thus launched with a proposal, but immediate acceptance did not mean the matter was closed. Decision making is an interactional process and it is often not possible to pinpoint the exact moment a decision has been reached (Huisman, 2001).

3.5. Formulating the decision

We have argued so far that while these meetings were scheduled ad-hoc without a pre-specified structure, the participants showed that they have a shared goal by collaboratively working toward a *shared* treatment decision. While this discussion did not culminate in one moment where the decision was made, in all but two cases the team did turn it into an interactionally shared decision. One of the consultants

formulated the decision, inviting confirmation by the other consultants, who through that confirmation made the decision shared. By demonstrating that a decision had been reached they came to a point of possible closure: the business of the meeting could be brought to completion and thereby the meeting itself.

The following case provides a clear example. Because the patient had a high frailty score the surgeon and geriatrician quickly agreed on conservative treatment. But they did not close down the meeting at that point. Instead the team discussed how to implement treatment. Following this discussion, the geriatrician formulates their decision in lines 2–7.

(13) 0639-09:37.8: Palliative-symptomatic

01 GER: en dan e:h hebben we ('t) beleid
and then uh we have the policy

02 afgesloten. e:h dat we 't palliatief
finished. uh that we it palliative

03 conserva- palliatief symptomatisch
conserva- palliative symptomatic

04 beleid is_=wij zijn hoofdbehandelaar
policy is_=we are main practitioner

06 enneh (0.4) we gaan 'm eh
and eh (0.4) we will eh

07 kl[ysmer[en.
give [him an [enema

08 SUR: [ja. [ja
[yes [yes

The geriatrician announces in line 1 that they've closed the work plan ('policy'). By subsequently formulating the decision, she provides an opportunity for the rest of the team to confirm that this was their decision. The surgeon in line 8 provides confirmation—other members could agree, but in our data only the consultants did so consistently—thereby supporting the decision. Following this confirmation, the team brings the meeting to a close.

By formulating the decision the geriatrician thus accomplishes two points. First, by eliciting confirmation the decision becomes a shared decision. Second, by subsequently closing the conversation the team shows that a shared treatment decision was the goal of the meeting. Formulating the decision and inviting collaboration is thus a recognizable step towards closure (Schegloff and Sacks, 1973).

4. Summary

The structure of MDMs we have discussed here was an interactional accomplishment. It did not require a chair who set an agenda, but was accomplished by the team in real-time. Consequently, there was no formal defense of order: team members might skip steps or move too quickly from one activity to the next. But even in cases where this happened, we found that other members intervened. This shows that in these small MDMs, participants revealed an implicit understanding about the order of activities. For adequate participation of all team members and efficient decision making in terms of time spent on a case, no formal chair or structure was required. By focusing on the goal of a shared decision, the team collaboratively came to an ordered structure

in which they first shared information about the case, then discussed the differential diagnosis, and finally discussed and made their decision for a future course of action shared.

5. Conclusion

Multidisciplinary Team Meetings (MDMs) have become established practice in many clinical disciplines. Our study contributes to an expanding line of research into the added value of MDMs by (i) studying an unstudied type of MDM—small-scale MDMs that were organized ad-hoc at the Department of Emergency Medicine, and (ii) using video

recordings to provide an inductive analysis of these meetings, focusing on the minutiae of participant behavior and communication.

By using video recordings we were able to provide a detailed description of how MDMs are organized. Research on MDMs has had little attention for their actual workings (Soukup et al., 2018). Instead studies have used surveys and interviews to determine which conditions need to be met for MDMs to function effectively (Kidger et al., 2009; Look Hong et al., 2010a, 2010b; 2009; Walsh et al., 2011). Our analysis demonstrates the added value of using video recordings of MDMs to describe how MDTs operate: by recording the interaction it becomes available for repeated viewing, which makes it possible to bring to light the fine-grained practices through which participants organize the interaction. While we recognize that recording equipment may be perceived as an additional hurdle (Kidger et al., 2009), both to researchers and MDT members, prior work has shown that the presence of recording equipment is acceptable to the participants (Taylor et al., 2012).

We demonstrated that even without a chair or discussion of a structure at the start, team members had no problem organizing MDMs and coming to a shared decision regarding a future course of action for the patient. In line with previous work by Veen and de la Croix (2017), we find that participants developed a consistent order of activities, even if one had not been specifically prescribed for this type of group discussion. MDTs started an MDM with the case presentation by sharing information pertinent to the case, so that other members could participate in subsequent discussion. This was accomplished by having the team member who had examined the patient—typically a physician—

assistant, resident, or intern—provide a case presentation. This presentation consisted of the patient's reason for admission, medical history, and the findings of the examination. Following the case presentation, specialists who had also examined the patient before the meeting added their findings concerning their specific domain.

Following the case presentation the team made a differential diagnosis. This was launched by one of the specialists either proposing a candidate diagnosis or asking the member who presented the case for their candidate diagnosis. After at least one, but sometimes multiple, candidate diagnoses had been agreed upon, the team moved to decide on a future course of action. In this work plan activity, the team considered not only the patient's medical condition, but also his or her psychosocial condition, the patient's frailty, and his or her preferences in terms of how invasive treatment could be. Based on these factors, the team could decide to discharge the patient, do additional diagnostic tests, or to treat the patient. As with the differential diagnosis, they moved into this activity by a specialist either proposing a specific next action or asking the presenting member for their proposal. Specialists then often, although not always, moved into closure by formulating the decision they perceived that the team has established, thereby offering it up for confirmation by the other specialist(s). In doing so, they made explicit what the decision was, and turned it into a shared decision.

These findings make two important contributions to the study of MDMs and MDTs. First prior work has been aimed at MDMs that are organized on a regular basis, involve possibly large groups of participants—both clinicians and non-clinicians—and where multiple cases are discussed. We have focused instead on MDMs that are organized ad hoc, involve between three and six participants, and deal with a single case.

Second, we demonstrated that even without the systematicity that MDMs in oncology and other disciplines have, and in spite of recommendations from the literature that a chair is necessary to provide this systematicity, teams have no problems coming to a clear structural organization (Veen and de la Croix, 2017). Likely they adopted the basic structure advocated for medical handovers (Reason, Story, Vitals and Plan). This suggests that there can be added value to implementing MDMs in other disciplines in case the meetings are scheduled ad hoc.

Our study also shows that future research should pay more attention to the details of MDMs, which means that researchers should make use of video recordings whenever feasible. Some questions that future studies should focus on are the position and the manner in which team members introduce the patient's psychosocial state. We showed that there was no fixed position for this to be introduced, if it was mentioned at all, but that it was recurrently oriented to in the decision-making process. How and where in the overall structural organization team members invoke the patient's frailty, cognitive state, and physical activities will provide more insight into the added value of MDMs. Additionally, future studies should address the value of MDMs as a teaching environment, comparing them for example with consultations between junior and senior doctors (Stevenson et al., 2018). Not only can specialists learn from each other, but they can be of value to the education of interns, residents, and physician-assistants in training. MDMs can be recognized as one form of on the job training.

Sharing knowledge and expertise through MDMs can be an easy and valuable contribution to patient care. Research has shown that MDMs are evaluated positively by patients and clinicians alike, and that they can have a significant impact on patient care (Basta et al., 2017; Blazeby et al., 2006; Fleissig et al., 2006; Look Hong et al., 2010b; Taylor et al., 2012, 2010). An evidence-based approach to medicine requires that we understand if, where, and how MDMs optimally contribute to patient care. Our study provides a first step into investigating the inner workings of MDMs, and shows that much can be learned by focusing on the minutiae of the interaction. If we are to improve MDMs, insights in how they are accomplished by real teams provide a valuable starting point.

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