Supra-Regional MultiDisciplinary Team Meetings

Barriers and facilitators for the implementation and continuation of supra-regional multidisciplinary team meetings of the managed clinical network oesophagogastric cancer in the North East region of the Netherlands.

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Abstract

Introduction

Regional MultiDisciplinary Team (MDT) meetings are common practice in oncology networks in the Netherlands. Yet, little is known about supra-regional MDT (SMDT) meetings. This study aimed to examine the barriers and facilitators for the implementation and continuation of the SMDT meetings that were introduced by the Managed Clinical Network (MCN) oesophagogastric cancer in the North East region of the Netherlands to discuss the treatment advice of cases that deviate from current guidelines. The results of this study may provide insights for healthcare management in the current landscape with increasing complexity and costs of (cancer) care.

Methods

Three focus groups, with in total thirteen healthcare professionals, and seven observations were performed between February and May 2023. The current level of implementation, barriers and facilitators were identified through content analysis in Atlas.ti. One individual interview with the coordinator of the SMDT meetings was conducted to verify the findings.

Results

Five facilitators and seven barriers are identified. The facilitators include motivators for participation and support from secretaries and a coordinator. Intrinsic motivators are the relevance for the patient, the educational value, the support for the treatment advice and the regional collaboration. An extrinsic motivator is the 'Integral Care Agreement'. Barriers are (1) a lack of completeness in terms of the expertise present and the number of applications, (2) procedural unclarity about which cases are suitable for application, (3) a lack of awareness of the healthcare professionals to structurally sign up cases and attend the SMDT meetings, (4) a moment of time, (5) the time available for the application of cases, (6) missing or incomplete information about the cases and (7) the accessibility of the online platform.

Conclusion

For effective continuation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands, strategies that focus on promoting commitment and structural participation of the healthcare professionals are recommended. Furthermore, the findings may provide a basis for the implementation of potential SMDT meetings in other oncology networks or multidisciplinary healthcare settings for complex cases.

Keywords

Oesophagogastric cancer; oncology networks; supra-regional multidisciplinary team meetings

Table of Contents

1. Introduction

In 2020 about 1.1 million new cases of gastric cancer and about 0.6 million new cases of oesophageal cancer were detected globally [1]. The Netherlands had the highest incidence per number of habitants in Europe in 2020 [2]. Due to common late-stage diagnosis and the aggressive behaviour of the tumours, the prognosis of oesophagogastric cancer is poor. With a global mortality to incidence ratio greater than 0.75 oesophagogastric cancer can be categorized in the group of highly fatal cancers [3].

The most common curative treatment strategy for both tumours is resection (esophagectomy and gastrectomy) with neoadjuvant chemo(radio)therapy for oesophageal cancer and perioperative chemotherapy for gastric cancer [2,4,5]. However, in the Netherlands the probability to undergo treatment with a curative intent for patients with oesophagogastric cancer largely depends on the hospital of diagnosis [6–8]. Moreover, the complexity and costs of cancer care are rising due to for example the increasing incidence and the increased use of expensive drugs and innovative treatment strategies, such as robotic surgery [9,10].

Hence, to ensure the quality, affordability and accessibility of care regardless of the hospital of diagnosis, many oncology networks have been established in the Netherlands over the past few years [11]. Networks can be defined as "a strategic alliance forged around common agendas of mutual advantage through collective action" [12, p.12]. In this context networking involves the collaboration of individual healthcare organisations through knowledge- and resource sharing and the integration of healthcare services with the aim to offer patients diagnosed with cancer the optimal treatment.

Also in other countries numerous oncology networks have been or are currently being established, for example in the United Kingdom and in France [13,14]. Moreover, the relevance of networking to address unequal access to qualified cancer care was acknowledged by the European Union in the Europe's beating cancer plan [15]. In addition, the Dutch government highlighted the relevance to invest more in collaboration between healthcare organisations through the introduction of the 'Integral Care Agreement' in September 2022. Oncology networks were recognised in this agreement as a strategy to ensure accessible, affordable and high-quality cancer care in the future [16,17].

Seventeen hospitals in the North East region of the Netherlands already founded a Managed Clinical Network (MCN) for oesophagogastric cancer in 2008. Within this network multidisciplinary and regional agreements about diagnostics and treatment are formalised and regional MultiDisciplinary Team (MDT) meetings are established. The introduction of the MCN for oesophagogastric cancer resulted in a reduction of variation in treatment, in lead time and in survival between the hospitals in the North East region of the Netherlands [18]. Furthermore, it was found that the implementation of regional MDT meetings for oesophagogastric cancer was associated with more curative resections and improved overall survival [19].

However, the MCN for oesophagogastric in the North East region of the Netherlands experienced that for complex cases regularly no uniform agreement about the treatment advice is reached within the regional MDT meetings [20]. Therefore, this MCN introduced, next to the regional MDT meetings, supra-regional MDT (SMDT) meetings in February 2022. Cases are defined as complex when no treatment strategy can be established based on the current guidelines for oesophagus or gastric cancer [21]. In the SMDT meetings healthcare professionals of three centres in the North East region of the Netherlands meet twice a month via videoconferencing to discuss these extra-protocol cases. An existing template on how to perform regional MDT meetings is used for the setup [22].

To our knowledge, the SMDT meetings of the MCN oesophagogastric cancer in the North

East region are the first SMDT meetings established in the Netherlands. Outside the Netherlands, the United Kingdom is the frontrunner in practicing SMDT meetings. One study performed in the UK reported about the impact of SMDT meetings for germ cell cancers and another study about the impact of the meetings for a complex multi-system fibro-inflammatory disorder. Both studies found that the SMDT meetings improved the decision-making and reduced variation between hospitals [23,24]. To date, no scientific literature about the implementation of SMDT meetings in other countries is available.

Since there is little literature available, this study aimed to examine the factors that influence the implementation and continuation of SMDT meetings. The results provide implications for the functioning and continuation of the SMDT meetings in the MCN oesophagogastric cancer in the North East region of the Netherlands. Additionally, the findings may provide guidance for the implementation of potential SMDT meetings in other oncology networks or multidisciplinary healthcare settings for complex cases. Furthermore, this study may provide insights for healthcare management in the current landscape that focuses increasingly on centralisation and cost containment.

In line with the aim of this study the main research question is formulated below. To answer this research question, six sub-questions are formulated based on the theory that can be found in Appendix A and B.

Main research question*:*

What are barriers and facilitators for the implementation and continuation of the supra-regional MultiDisciplinary Team meetings of the Managed Clinical Network oesophagogastric cancer in the North East region of the Netherlands?

Sub-questions:

1. To what extent are the SMDT meetings effectively implemented within the MCN oesophagogastric cancer in the North East region of the Netherlands?

2. To what extent do characteristics of the SMDT meetings impede or facilitate its implementation and continuation for the MCN oesophagogastric cancer in the North East region of the Netherlands?

3. To what extent do characteristics of the healthcare professionals participating in the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands impede or facilitate its implementation and continuation?

4. To what extent do characteristics of the organisation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands impede or facilitate its implementation and continuation?

5. To what extent do characteristics of the socio-political context impede or facilitate the implementation and continuation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands?

6. What are implementation and continuation strategies for future SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands?

2. Methods

A more detailed description and argumentation on the methods that were used to perform this study can be found in Appendix C.

2.1. Study Design

A qualitative, explanatory study was performed to gain an understanding of the factors that influence the implementation and continuation of SMDT meetings. One case is selected for this study, namely the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands. Three focus groups and seven observations were performed between February and May 2023. At each participating centre one focus group was held. Additionally, one individual interview was conducted with the coordinator of the SMDT meetings.

2.2. Participants Focus Groups

Participants of the focus groups were healthcare professionals participating in the SMDT meetings. Regular attendance at the SMDT meetings was not required. The healthcare professionals were recruited, by email, through purposeful sampling based on two criteria: (1) discipline (preferably one surgeon, one medical oncologist, one radiation oncologist, one gastro-enterologist and one case-manager participated) and (2) membership of the board of the MCN (preferably the member that represents the centre in the MCN board participated in the focus group). The number of participants was limited to six per focus group to ensure that each participant had sufficient time to answer the questions.

2.3. Measures

A total of 32 potential determinants for the implementation and continuation of the SMDT meetings were selected and operationalised based on the Measurement Instrument for Determinants of Innovations (MIDI) [25] and systematic reviews about factors influencing the quality and functioning of oncological MDT meetings [26,27]. The MIDI is not validated yet, however the instrument is based on several theories and models (e.g. [28,29]) and is shown to be suitable for the introduction and evaluation of innovations in Dutch health care [25,30]. All determinants may positively or negatively influence the implementation and continuation of the innovation.

To examine the current level of implementation and the probability for continuation of the SMDT meetings, thirteen criteria were operationalised based on the network effectiveness criteria of Provan and Milward [31] and the existing template on how to perform regional MDT meetings that was used for the setup of the SMDT meetings [22].

The description of the selected innovation determinants and implementation criteria can be found in Appendix D and E.

2.4. Data Collection

All data was collected by the author (LF). To guide the focus groups a semi-structured interview schedule was developed (Appendix F). Based on consultations with members of the MCN board and an expert in the field of oncological MDT meetings, it was determined which topics were most relevant to ask for. The schedule ensured comparability between the three discussions. To identify the causality between the determinants and implementation and continuation of the SMDT meetings, the participants were asked to elaborate on and explicitly state whether they think the factors impede or facilitate the implementation and continuation. The focus groups took place at the participants' place of work and lasted about one hour. Audio from the focus groups was recorded and transcribed verbatim using Amberscript. The transcripts were sent to the participants to provide them with the opportunity to check, adjust or complement their answers. None of the respondents adjusted the transcript.

In addition, the SMDT meetings were observed via the videoconference. An observation form was developed to ensure that the relevant information was registered consistently (Appendix G). The healthcare

professionals were aware of the presence of the researcher.

Lastly, a semi-structured schedule for the individual interview with the coordinator of the SMDT meetings was developed after the analysis of the focus groups and the observations was performed (Appendix H). The aim of the interview with the coordinator was to verify the results of the focus groups and observations. A report of the results was sent to the coordinator in advance. The interview took place online via Microsoft Teams and lasted about 90 minutes. Audio from the interview was recorded and a report of the conversation was made.

2.5. Data Analysis

The collected data from the focus groups was analysed with Atlas.ti. Deductive content analysis was used to code relevant information [32]. A codebook was created based on the theoretical framework in Appendix B. After the deductive analysis, inductive analysis was performed to code information deemed important but which did not fit the determinants or indicators of the framework. Choices in coding were noted and revisited during the data analysis process. In Appendix I the code book and notes can be found.

A determinant was only judged as a facilitator if the gathered data explicitly indicated that it will lead to or promote the implementation and continuation of the SMDT meetings. When a determinant was described in a way which explicitly indicated that it could impede the functioning or reduce the motivation to participate in SMDT meetings it was judged as a barrier.

After the qualitative analysis of the focus groups a small quantitative analysis was performed. This quantitative analysis included identifying how often a determinant was mentioned as an impeding or facilitating factor for the implementation and continuation of the SMDT meetings. Yet, in focus groups it is hard to systematically identify the number of participants that mentioned the barrier or facilitator. Therefore, it was chosen to identify the frequency per centre instead of per participant.

Subsequently, the findings of the focus groups were compared to the findings of the observations. Another small quantitative analysis of the collected data from the observations was performed, including identifying the number of applications and participants per centre. Finally, the findings of the focus groups and observations were verified by the findings of the interview with the coordinator of the SMDT meetings.

2.6. Ethics Approval

According to the Dutch Medical Research Involving Human Subjects Act, ethical approval by a Medical Ethical Committee was not needed for this study. Ethics approval was gained from the Ethics Committee BMS of the University of Twente (reference number 230030). Prior to the focus groups and the interview with the coordinator, the participants were informed about the purpose of the research and the required time investment. Also, participants were informed about the anonymization and storage of their data. Participants gave verbal consent to participate and for audio-recording.

3. Results

In this section first the study sample is described, including the characteristics of the participants of the focus groups, the number of patient cases discussed and the number of healthcare professionals present per observed SMDT meeting. Subsequently, the results of the focus groups and observations are described following the order of the sub-questions. Overviews of the results are provided in Table 4 and 5. Based on the findings, the causal model for the implementation and continuation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands was visualized (Appendix K).

3.1. Study Sample

In total thirteen healthcare professionals participated in the focus groups. The characteristics of the participants of the focus groups are shown in Table 1. In one centre the MCN board member did not participate in the focus group.

In addition, seven SMDT meetings were observed in which eleven patient cases are discussed. In Table 2 the number of patient cases signed up per centre in the period of the observations is presented. Moreover, in Table 3 the number of healthcare professionals present at each observed SMDT meeting is shown per centre. In Appendix J a more detailed overview of the healthcare professionals present per SMDT meeting can be found.

Table 1

Characteristics of Participants Focus Groups per Centre (C)

Discipline	C1	C2	C3
Surgeon	1	1	1
Medical oncologist	1	1	1
Radiation oncologist	1	1	1
Gastro-enterologist	1	-	-
Case-manager	1	-	1
Coordinating Specialized Nurse	-	-	1
Total	5	3	5

Table 2

Number of Patient Cases (N) signed up per Centre (C) per SMDT Meeting

Date SMDT meeting	N	C1	C2	C3
15 February	3	1	1	1
1 March	1			1
15 March	2			2
5 April	2	1		1
19 April	1			1
3 May	2		2	
17 May	1			1
Total	12	2	3	7

Table 3

Number of Healthcare Professionals (N) present from each Centre (C) per SMDT Meeting

Date SMDT meeting	N	C1	C2	C3
15 February	10	4	3	3
1 March	4	1	0	3
15 March	11	6	0	5
5 April	11	4	3	4
19 April	11	6	1	4
3 May	6	2	2	2
17 May	9	5	1	3
Total	62	28	10	24

3.2. Current level of Implementation

In this paragraph the findings on the extent to which the SMDT meetings are effectively implemented within the MCN oesophagogastric cancer in the North East region of the Netherlands are described (sub-question 1). The results of the focus groups and observations are presented in Table 4 per criteria for effective implementation. In the next paragraphs the factors that influence the current level of implementation and strategies to improve this level are elaborated on (sub-questions 2-6).

The findings presented in Table 4 show that according to the interviewed healthcare professionals the criteria building social capital, structural participation, patient cases, expertise, commitment and educational value are currently not entirely fulfilled. In each focus group it was mentioned that for the continuation of the SMDT meetings more commitment of all participants is required to structurally attend and structurally sign up patients. The interviewed healthcare professionals believe that when these requirements are met, the SMDT meetings will enhance the knowledge of the participants and will contribute to (stronger) regional collaborations.

For the other seven implementation criteria the findings suggest that they are (mostly) fulfilled: the interviewed healthcare professionals believe that the SMDT meetings are relevant for the patient and for the accessibility to expertise, they stated that the benefits outweigh the relatively low time investment, that the SMDT meetings minimally conflict with regional MDT meetings and that the expertise present and cases discussed are not redundant. Though, the interviewed coordinator remarked that the time investment for an individual healthcare professional might be relatively low, but that the total costs for the discussion of maximum three patients at an SMDT meeting include the presence of and preparations by at least nine professionals (three from each centre) and administrative support. To date, no cost-benefit analysis has been performed.

Table 4

Overview Findings Current Level of Implementation

Implementation Criteria	Results
Level of analysis: MCN	
Building social capital	The interviewed healthcare professionals stated that to date the SMDT meetings did not result in (stronger) relationships between the participants. Yet, it was mentioned that the SMDT meetings did contribute to connections between the healthcare professionals to for example perform joint multi-centre clinical studies. Stronger relationships would be required for the development of joint clinical standards in the future to minimize variation between centres in the MCN region.
Level of analysis: SMDT meetings	
Structural participation	The observations showed that the number of participants largely differed per SMDT meeting and that centre 1 and 2 are not structurally signing up patient cases.
Patient cases	Ideally each centre signs up one patient. It was stated in the focus groups that all extra-protocol cases are relevant to discuss. The expectation is that this target group is at each centre large enough to sign up one patient for each SMDT meeting. Centre 1 and 2 signed up patients for only two of the seven observed SMDT meetings.
Expertise	At least one surgeon, one medical oncologist and one radiation oncologist from each centre should be present. Preferably, also a radiologist, nuclear physician or pathologist to share and comment on the medical images or lab results. In none of the observed SMDT meetings this requirement was met. For some cases the presence of a gastro-enterologist or a case-manager is desired.
Absence of service duplication	Currently, the cases discussed and the expertise present are not redundant.
Coordinator	The project leader of the MCN, financed by Citrien, coordinated the implementation of the SMDT meetings. From June 2023 the funding of Citrien has been suspended. The secretary of the MCN, financed by the Netherlands Comprehensive Cancer Organisation, will replace the project leader as coordinator of the SMDT meetings.
Commitment	The interviewed healthcare professionals mentioned that the commitment to structurally participate is lacking.
Costs of maintenance	The time investment is according to the healthcare professionals relatively low, since the SMDT meetings only take place twice a month and last 30 minutes. Though, the total costs for the discussion of maximum three patients at an SMDT meeting include the presence of and preparations by at least three professionals of each centre and administrative support. In total, 62 professionals participated in the observed SMDT meetings and twelve patients were discussed.
Level of analysis: Participants	
Cost of services	The healthcare professionals state that the benefits outweigh the relatively low time investment.
Service access	The healthcare professionals believe that due to the knowledge that is shared through the SMDT meetings, the individual centres can expand their expertise and keep up with the latest development. Potentially this might result to fewer second opinions outside the MCN region.
Patient outcomes	The healthcare professionals believe that the SMDT meetings are relevant for the patient. According to them the main benefit for the patient is a treatment advice that is considered and supported by a group of healthcare professionals from different centres throughout the North-East region of the Netherlands. It was mentioned that the SMDT meetings often provided a confirmation of the proposed treatment advice, but also sometimes the gained insights affected the treatment advice.
Educational value	The healthcare professionals recognise the educational value of the SMDT meetings. Yet, it was mentioned that to learn from each other more applications of patients from centres 1 and 2 are needed.
Minimum conflict	The SMDT meetings minimally conflict with regional MDT meetings in terms of time at centre 1 and 3. The short time frame between the regional and supra-regional MDT meetings at these centres is impeding the timely application of patients and preparation by the healthcare professionals. The content of the meetings is according to the interviewed professionals not conflicting.

3.3. Characteristics of the SMDT Meetings

In this paragraph the identified characteristics that facilitate or impede the implementation and continuation of the SMDT meetings are described (sub-question 2).

Facilitator

As presented in Table 4, the healthcare professionals recognise that the SMDT meetings are relevant for extra-protocol patients with oesophagogastric cancer. Accordingly, the relevance for the patient is mentioned as one of the main reasons for the professionals to participate in the SMDT meetings.

Barriers

The interviewed healthcare professionals stated that the lack of structural participation is both impeding the functioning of as their participation in the SMDT meetings. It was mentioned that the patient discussions are much more valuable, for the quality of the treatment advice and their personal development, when the right expertise is present (at least one surgeon, one medical oncologist and one radiation oncologist of each centre). In particular, the professionals of centre 3 emphasized that they are demotivated by the lack of structural application of the other two centres (Table 2).

One barrier for the application of patient cases might be related to the procedural (un)clarity. The healthcare professionals mentioned that they were initially struggling to determine which patient categories are suited for application.

3.4. Characteristics of the Healthcare Professionals

The identified characteristics of the healthcare professionals participating in the SMDT meetings that facilitate or impede the implementation and continuation of the SMDT meetings are elaborated on in this paragraph (sub-question 3).

Facilitators

The educational value of the SMDT meetings, the confirmation or extra argumentation for the treatment advice and the regional collaboration are mentioned as professional reasons to participate.

It was recognised that some extra consideration and support for treatment strategies that were not established based on the guidelines is always helpful. In particular for cases for who no uniform treatment advice can be achieved in the regional MDT meetings, the insights from the other centres and some extra argumentation for the proposed treatment advice are appreciated. Yet, it was mentioned and observed that sometimes the treatment advice seemed to be apparent within the region, but the discussion in the supra-region provided new insights. Therefore, it was stated that for each extra-protocol patient it is relevant to discuss the treatment advice in the SMDT meetings.

Hence, the healthcare professionals mentioned that the SMDT meetings often provided a confirmation of the proposed treatment advice, but also sometimes the gained insights affected the treatment advice.

Barrier

A barrier for the effective implementation and continuation of the SMDT meetings is related to the awareness of the healthcare professionals. The participants of the focus groups believe that the SMDT meetings are not yet part of the routine of many healthcare professionals, due to the in general high work load in healthcare and the relatively low frequency of the SMDT meetings, which negatively affects their attendance and the application of patient cases. The participants of centre 1 mentioned that their member of the MCN board has the most alert mindset for the application of cases, but that more awareness of the other participants is required to increase the number of applications. Also in centre 2 the MCN board member seems to be more aware than the other participants of this centre, since the observations showed that only the

discipline of the board member is structurally attending the SMDT meetings.

3.5. Characteristics of the Organisation

In this paragraph the identified organizational facilitators and barriers for the implementation and continuation of the SMDT meetings will be explained (sub-question 4).

Facilitators

Administrative support of centre 3 was present at each observed SMDT meeting and is according to the participants of the focus groups a facilitator for the functioning of the meetings. Specifically their support by sharing the list with signed up patient cases prior to the SMDT meetings and recording the conclusion on a MDT letter are valued.

Additionally, it was mentioned that the SMDT coordinator plays a crucial role for the implementation and continuation of the meetings, mainly for the organisation of the SMDT meetings and for the simulation of commitment among the participants.

Barriers

The moment of time is in particular by centre 2 emphasized as a major barrier. At this centre the SMDT meetings take place simultaneously with the handovers and are conflicting with days off or other tasks. Hence, this centre has the lowest attendance rate (Table 3). Another timeframe or day would facilitate their participation. However, it was also mentioned that it is a major challenge to identify another moment of time that healthcare professionals of all centres are able to participate.

The time available is also mentioned as a barrier for the application of patient cases. The procedure for the application of patient cases was described as simple, however many data need to be exchanged between the centres which is currently time-consuming. Due to the high work load and often short time frames between the regional and supra-regional MDT meetings, no or incomplete information is often delivered. The observations showed that the information of three patients (25% of the total number of patients discussed) was not shared prior to the SMDT meeting. For the other nine cases that were discussed in the observed SMDT meetings, the patient preferences of four cases were missing and the information about the physical and psychological situation of two cases.

However, not all healthcare professionals think that missing or incomplete information is a barrier for the implementation and continuation of the SMDT meetings. The professionals of centre 1 and 2 believe that preparation and complete information are not required for a well-functioning SMDT meeting. It was suggested that the information does not need to be shared in advance. A clear presentation of the case during the meeting should be sufficient according to them. On the other hand, the professionals of centre 3, who signed up most patients (Table 2), claim that complete information and preparation of the cases are requirements for the medico-legal status of the treatment advices established in the SMDT meetings.

Another barrier the observations and focus groups showed is related to the online platform that is needed for the videoconference. According to the interviewed professionals there were initially issues with the accessibility of the online platforms, because each centre has different regulations about which online platforms are approved. Currently, centre 2 is still struggling to access the videoconference at their workspace. The technical issues are demotivating the professionals to participate.

3.6. Characteristics of the Socio-Political Context

One characteristic of the socio-political context is identified as a facilitator for the implementation and continuation of the SMDT meetings (sub-question 5). No barriers were found.

The identified facilitator is the introduction of the ‘Integral Care Agreement’. Yet, the mentioned influence of this facilitator differs per centre. Centre 2 stated that the introduction of this agreement is the main

reason for them to invest more in networking and regional collaboration. The SMDT meetings are according to them a good instrument to improve the collaboration within the MCN. The other two centres stated that this agreement has little influence on their participation in the SMDT meetings, their main reasons to participate are the educational value and the relevance for the patient. A participant of centre 1 described the agreement as an extra external motivator to participate in the SMDT meetings.

3.7. Implementation and Continuation Strategies

In this paragraph the implementation and continuation strategies that were suggested by the participants of the focus groups for future SMDT meetings will be elaborated on (sub-question 6).

Two strategies were mentioned to ensure that the right expertise is present. The first strategy that was suggested by the participants of one focus group is to invite another centre in the North East region of the Netherlands to participate in the SMDT meetings. This would increase the probability that healthcare professionals from at least three different centres are present. The second strategy is scheduling. In each focus group it was described that healthcare professionals from the same discipline and centre should make arrangements about their attendance at the SMDT meetings and formalise these arrangements within their regular working schedules. This way the healthcare professionals do not have to attend every SMDT meeting, but it is ensured that at least one professional of their discipline and centre is present.

In addition, three strategies were mentioned to facilitate the application of patient cases. First, in all focus groups it was suggested that the determination of which patient case can be signed up for the SMDT meeting should be a standard topic in the regional MDT meetings of each centre. The second strategy is related to the procedural (un)clarity. At the beginning a short list with examples of patient categories that are suited to sign up for the SMDT meetings was established. Yet, the interviewed healthcare professionals think it is not necessary to define which patient categories are suitable. As mentioned before, they stated that it is for every extra-protocol patient relevant to discuss the treatment advice in a SMDT meeting. Therefore, the threshold for the application of patient cases was lowered in February 2023 to all extra-protocol cases, instead of specific, exceptional patient categories. According to the professionals, this lower threshold facilitates the application of patient cases. Third, in two focus groups it was suggested to keep on sending reminders for the application of patient cases prior to each SMDT meeting to increase the awareness. Another mentioned strategy to increase the awareness and commitment of the participants to structurally attend and sign up patient cases is to evaluate the SMDT meetings twice or once a year at an assembly of the MCN.

Furthermore, three strategies were mentioned to ease the application procedure for patient cases and to ensure that the information is complete during the SMDT meetings. Centre 1 mentioned that currently the application is performed by themselves, but that they are considering to assign this task to their secretary. Another centre mentioned that it would be helpful to share the regional MDT letter which includes all relevant information on the screen during the SMDT meetings. The interviewed coordinator suggested that the time needed for the data-exchange might easily be minimized by adding the required information for each patient application to the template of the regional MDT letter. Hence, for each SMDT meeting the regional MDT letter can be exchanged.

Finally, to improve the connection between the participants of the SMDT meetings it was suggested to create an overview with photographs and some information about the professional backgrounds of the participants. This way, it is for everyone clear who the participants are and suggestions for the treatment advice can be judged based on the professional background.

Table 5

Summary and Frequency of identified Facilitators, Barriers and Strategies for the Implementation and Continuation of the SMDT meetings (N = 3 centres). [a]

Facilitators	Barriers	Implementation and Continuation strategies
Characteristics of the SMDT meetings		
• Relevance for patient: A treatment advice that is considered and supported by a group of healthcare professionals from different centres throughout the North East region of the Netherlands. (n =3)	• Completeness: The presence of the right expertise and the number of patient cases signed up for discussion is lacking. (n=3) • Procedural (un)clarity: the professionals were initially struggling to determine which patient categories are suited for application. (n=2)	• Invite another centre in the North East region of the Netherlands to participate. (n=1) • Lowering the threshold for the application of patient cases: All extra-protocol cases are valuable to discuss. Not only specific, exceptional patient categories. (n=3)
Characteristics of the healthcare professionals		
• Professional advantages: The educational value of the SMDT meetings, the confirmation or extra argumentation for the treatment advice and the regional collaboration are reasons to participate. (n=3)	• Awareness: The SMDT meetings are not yet part of the routine of most healthcare professionals, which has a negative effect on structural attendance and patient application. (n=3)	• Determination of which patient case can be signed up during the regional MDT meetings. (n=3) • Reminders for application of patient cases and (half-)yearly evaluations. (n=2) • Overview of participants with images and information about professional backgrounds. (n=1)
Characteristics of the organisation		
• Administrative support: Agenda and MDT letter. (n=2) • Coordinator (n=2)	• Time: Hard to find a moment of time that healthcare professionals of all centres are able to participate. (n=3) • Time: The data exchange for the application of patient cases is currently time-consuming. (n=2) • Information accessible: The relevant information for the patient discussions is often missing or incomplete. (n=1) • Material resources and facilities: The selection of an online platform for the videoconference that is well-functioning and accessible for each centre. (n=3)	• Scheduling (n=3) • Administrative support for the application of patients at each centre. (n=1) • Share the regional MDT letter on the screen. (n=1) • Add all required information for the application to the templates of the regional MDT letters. [b]
Characteristics of the socio-political context		
• National guidelines and policies: The 'Integral Care Agreement' (n=1)		

[a] *In focus groups it is hard to systematically identify the number of participants that mentioned the facilitator, barrier or strategy. Therefore, it was chosen to identify the frequency per centre and not per healthcare professional. In total thirteen healthcare professionals participated in the focus groups.*

[b] *Remark of the interviewed coordinator of the SMDT meetings.*

4. Discussion

In this section first the findings that answer the main research question are described and compared to the available literature. Second, the strengths and limitations of this study are explained. Subsequently, recommendations for future research are provided and finally the practical implications of this study are explicated.

4.1. Main Findings

This study aimed to examine the barriers and facilitators that influence the implementation and continuation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands. Based on the analysis of three focus groups and seven observations, five facilitators and seven barriers are identified.

The facilitators include motivators for participation and support from secretaries and a coordinator. The motivation of the healthcare professionals to participate varies per centre. Professionals of centre 1 and 3 are mainly intrinsically motivated to participate in the SMDT meetings by the relevance for the patient, educational value of the SMDT meetings, the extra argumentation or support for the treatment advice and benefits that can be gained from stronger regional collaboration. In contrast, the professionals of centre 2, who have up until now the lowest attendance rates, are mainly externally motivated to intensify their participation in the SMDT meetings by the introduction of the 'Integral Care Agreement'.

Identified barriers are (1) a lack of completeness in terms of the expertise present and the number of applications, (2) procedural unclarity about which patients are suitable for application, (3) a lack of awareness of the healthcare professionals to structurally sign up patient cases and attend the meetings, (4) a moment of time that the participants of all centres are available, (5) the time available for the application of patient cases, (6) missing information for the patient discussions and (7) the accessibility of the online platform.

The first barrier, lack of completeness, is in line with the results of Walraven et al who found that a high-quality MDT meeting can only be guaranteed if at least one member of each core specialty is present [31]. The core members of the SMDT meetings are a surgeon, a medical oncologist and a radiation oncologist from each centre.

The second barrier, procedural unclarity, was tackled in February 2023 by lowering the threshold to all extra-protocol cases, instead of specific, exceptional patient categories. Yet, the number of applications is still lacking.

Regarding the third barrier, lack of awareness, it is noticeable that in the centres who are not structurally signing up patients, the MCN board members are relatively more aware than the other participants. The board members are likely to be most committed, since the introduction of the SMDT meetings was their initiative. Therefore, the lack of awareness of the other participants might be explained by a lack of commitment. According to Rogers and network theory, the diffusion rate of innovations is usually dependent on influential members of the social system in which the innovation is embedded [28,33]. Hence, influential members might play a crucial role in promoting awareness and commitment among the participants of the SMDT meetings. The surgeon is in general the primary physician for patients with oesophagogastric cancer and therefore the most central actor in the care process. Accordingly, the surgeon is generally the most

influential member in the social system in which the SMDT meetings are embedded. In centre 3 the MCN board member is a surgeon, in the other two centres the MCN board members are a gastro-enterologist and a radiotherapist. This might explain why the commitment in centre 3 is relatively higher, based on the number of applications, in comparison to the other centres. It is recommended to perform network analysis at each centre to determine which member has the most influence. Hence, it should be considered to assign the most influential participants as MCN board members [34]. Moreover, the coordinator may as a central actor in the MCN, together with the board members, use different communication strategies to stimulate commitment. Suggested examples are reminders for application of patients and (half-) yearly evaluations.

To minimize the influence of the fourth barrier, the moment of time, it is recommended to make arrangements with healthcare professionals from the same discipline and centre about the attendance at the SMDT meetings and formalise these within the working schedules. Walraven and colleagues found, in a systematic review about the factors influencing the quality and functioning of oncological MDT meetings, that when the MDT meetings are formalised within the participants working schedule their personal contributions improve [26].

Fifth, the time available is a barrier since the data exchange for the application is currently time-consuming. However, this barrier might easily be solved by adding the required information for each patient application to the templates of the regional MDT letters at each centre.

As a consequence of the data-exchange barrier, the relevant information to discuss the patients is often missing or incomplete. Remarkably, the missing information is only perceived as a barrier by centre 3 that signs up most patients. The claim of this centre that complete information and preparation is required for the medico-legal status of the treatment advice is supported by the findings of Walraven et al. who found that absent information has proven to be a barrier for clinical decision-making within MDT meetings [24]. Also, in the template for the performance of regional MDT meetings it is included that complete information and preparation are success factors [20]. Moreover, the model ‘Tailored Treatment Plan’, which is one of the main themes for regional oncology networks and the ‘Integral Care Agreement’, explains that a tailored plan arises from the combination of three information components [35]. Information about the patient preferences and about the physical and psychological situation, which are currently often missing, include two of the three information components. Therefore, it can be stated that complete information is a requirement for the quality of the treatment advices established in the SMDT meetings. The different perceptions of centre 1 and 2 might be explained by the lack of awareness and commitment of these centres that is described earlier. Another explanation might be the fact that the secretary of centre 3 has supported the SMDT meetings administratively, so the healthcare professionals of centre 3 were not impeded to sign-up patient cases by the data-exchange barrier.

The seventh barrier, the online platform, is also supported by the findings of Walraven et al. who identified that the failure of technological impact negatively effects the functioning of the MDT meetings. Yet, videoconferencing is becoming the standard for MDT meetings since it facilitates the attendance of highly specialized clinicians and minimizes travel time [24]. Hence, it is included in the template on how to perform regional MDT meetings that the conditions for the videoconference should be examined and that the online platform should be tested before the implementation [22]. Despite these instructions that were followed for the implementation of the SMDT meetings, the online platform is currently still not accessible for one centre due to issues with the digital support at this centre. Therefore, more research is needed to examine the digital support and regulations of healthcare

organisations regarding videoconferencing. Based on this research a national policy or guideline could be implemented for all healthcare organisations, so that this barrier will be tackled for all future SMDT meetings.

Another finding of this study is that effective implementation of the SMDT meetings for extra-protocol cases of oesophagogastric cancer in the MCN in the North East region of the Netherlands is currently not optimally achieved. The implementation criteria structural participation by the healthcare professionals, the application of sufficient patient cases, the presence of the right expertise and the educational value are, up till now, not entirely fulfilled. Also, it was found that the SMDT meetings did not yet result in (stronger) regional collaboration. Nevertheless, the healthcare professionals acknowledge the added value of the SMDT meetings for the quality of the treatment advice for extra-protocol cases, the accessibility to expertise and their personal development. Hence, the professionals stated that the benefits outweigh the relatively low time investment. Based on these findings, it can be concluded that continuation of the SMDT meetings is desired. The strategies described before are recommended to ensure effective continuation of the SMDT meetings.

Accordingly, in light of the 'Integral Care Agreement', it can be argued that the SMDT meetings might be a good instrument to strengthen regional collaboration within the MCN, enhancing the accessibility to expertise and quality of healthcare in the region [16]. However, another main theme of the 'Integral Care Agreement' is optimal utilization of the available resources and capacity in healthcare. Taking into account the required time investment of the healthcare professionals, administrative support and a coordinator to discuss a limited number of patients (maximum three per SMDT meeting), the question can be raised whether the total costs outweigh the benefits of the SMDT meetings. Future research to objectify the benefits and perform a cost-benefit analysis is recommended.

Finally, the findings of this study indicate that the causal model for the implementation and continuation of SMDT meetings is cyclical. In contrast with the theoretical framework of Fleuren et al. [30], the results of this study showed that the value of the determinants not only influences the level of implementation but also the other way around. For example, the focus groups showed that due to the lacking expertise present at the SMDT meetings, the healthcare professionals are demotivated to participate. Additionally, the framework of Fleuren et al. does not take into account the influence of an implementation strategy on the value of the determinant. For example, a strategy addressing the procedural unclarity to facilitate the application of patients, such as lowering the threshold to all extra-protocol cases, might cause a transition of the value of the determinant procedural (un)clarity from barrier to facilitator. Hence, it can be stated that this study contributes to the growing discipline of implementation science in healthcare.

4.2. Strengths and Limitations

This study made a contribution to the scarce scientific literature that is available about SMDT meetings. Since little is known, a qualitative method was needed to explore factors influencing the implementation and continuation of SMDT meetings. Face-to-face focus groups provided the best opportunity to gain rich and in-depth insights into the experiences and the perspectives of the different participants [36]. In addition, observations and an individual interview were performed to gain a comprehensive overview of the barriers and facilitators. The use of multiple methods enhanced the reliability of the results by triangulating the data from the different sources.

However, the results of this study should be interpreted in light of several limitations. First, the study focuses on a single case, specifically the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands. Therefore, the generalizability of the results to other settings is restricted. Nevertheless, since regional MDT

meetings are common practice within oncology networks, it is expected that the findings of this study are relevant for the implementation of SMDT meetings in other regional oncology networks. Second, selection bias may have occurred, since the majority of the interviewed healthcare professionals regularly attend and believe in the added value of the SMDT meetings. As a consequence, the results may not be representative for all participants of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands. Third, this study relies on self-reported data collected through focus groups and an interview. The participants may have provided socially desirable answers or may have recall bias. However, this limitation was mitigated by providing participants the opportunity to review and adjust the transcript. Fourth, the decision to analyse the frequency of identified facilitators, barriers and strategies per centre instead of per participant limits the accuracy of the quantified results. Lastly, the interrelations between the determinants and the implementation criteria made choices in coding difficult. Yet, in the theoretical framework (Appendix B) it was already described and recognised that the causal model for the implementation and continuation of the SMDT meetings might be cyclical. Hence, this limitation was mitigated by asking the participants of the focus groups to elaborate on and explicitly state whether they think the factors impede or facilitate the implementation and continuation. When the gathered data provided a description of the current situation, without an explicit statement of a factor that impedes or facilitates the implementation and continuation, it was coded as information about an implementation criterium.

4.3. Recommendations for Future Research

While this study showed that the healthcare professionals believe that SMDT meetings are valuable for the patient, it is recommended to perform a retrospective study to objectively examine the effect of the SMDT meetings on the management of and outcomes for extra-protocol cases of oesophagogastric cancer. Subsequently, research can be performed to determine whether the benefits of the SMDT meetings outweigh the total costs. In addition, it might be valuable to perform pilots of SMDT meetings in other oncology networks. Hence, comparative studies could be performed to gain a deeper understanding of the factors that may influence the implementation and continuation of SMDT meetings. Furthermore, it might be relevant to explore the perspectives of other stakeholders, such as policy makers and health insurers. Insights into the perspectives of these stakeholders may provide a better understanding of the barriers and facilitators for the potential role of SMDT meetings as a healthcare management strategy in the current landscape with increasing complexity and costs of (cancer) care.

4.4. Practical Implications

The findings of this study provide guidance for the continuation of the SMDT meetings in the MCN oesophagogastric cancer in the North East region of the Netherlands. Moreover, the findings may provide a basis for the implementation of potential SMDT meetings in other oncology networks or multidisciplinary healthcare settings for complex cases.

5. Conclusion

For effective implementation and continuation of SMDT meetings, commitment of healthcare professionals to structurally attend and sign up patients is required. To promote commitment, network data can be used to assign the most influential participant of each centre as board member of the oncology network. Moreover, the coordinator may together with the board members use different communication strategies to stimulate commitment, such as reminders for application of patients and (half-) yearly evaluations. In addition, it is recommended to make arrangements with healthcare professionals from the same discipline and centre about the attendance at the SMDT meetings and formalise these within the working schedules.

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Appendices

Appendix A

Theory

The main research question of this study is “What are barriers and facilitators for the implementation and continuation of the supra-regional MultiDisciplinary Team meetings of the Managed Clinical Network oesophagogastric cancer in the North East region of the Netherlands?”. In this section the variables included in the main research question are conceptualized. Based on the conceptualisations a theoretical model (Appendix B) was developed and the sub-questions were formulated.

Oesophagogastric Cancer

Each year about 4000 patients in the Netherlands are diagnosed and about 3000 patients die due to oesophagus and gastric cancer [37]. Oesophagus cancer can be distinguished into two histological subtypes: oesophageal adenocarcinoma (OAC) and oesophageal squamous cell carcinoma (OSCC). The most common histological subtype in the Netherlands is OAC [2]. The incidence of OAC has increased significantly over the past 40 years in Western countries [38]. Obesity and gastroesophageal reflux disease are the two main risk factors that can be attributed to this increase. OSCC is mainly associated with heavy alcohol consumption and smoking [39]. The incidence of gastric cancer is on the other hand decreasing in the Netherlands. Most of this decline can be attributed to the decrease in incidence of Helicobacter Pylori infection, the main causal factor for gastric cancer [2].

The main reason for the poor prognosis of oesophagogastric cancer is that the tumours are often detected in a late stage [40]. Late-stage diagnosis remain common because symptoms in the early stages are rarely present. When oesophagogastric cancer is detected in a late stage, the treatment options are limited and the expected outcomes are poor. The most common curative treatment option for oesophagogastric cancer is resection (esophagectomy and gastrectomy) with neoadjuvant chemoradiotherapy [4,5]. The probability to undergo treatment with a curative intent for patients diagnosed with oesophagogastric cancer largely depends on the hospitals of diagnosis [6,7]. The studies of Putten et al. show that the proportion of patients receiving treatment with a curative intent ranged from 50% to 82% in the period 2010-2013 depending on the hospital of diagnosis. Consequently, the findings showed that a low probability to undergo treatment with a curative intent at the hospital of diagnosis is associated with a low survival rate. The outcomes of the studies of Putten indicate that treatment decision-making for oesophagogastric cancer can be improved.

Surgical approaches for esophagectomy and gastrectomy vary. Robotic surgery is increasingly adopted [9]. Advantages of robotic surgery are the three-dimensional view and increased degrees of freedom at the wrist. Hence, this surgical approach is minimally invasive and may improve technical surgical performance. The study of Kamarajah and colleagues showed that robotic esophagogastric cancer surgery improves textbook outcomes (i.e. 30-day readmission and 90-day postoperative mortality) and long-term survival.

Since many healthcare professionals are involved in the diagnosis and treatment of cancer, MDT meetings are organised in which professionals from different disciplines of the same hospital gather to discuss most optimal treatment strategies. In the national norms established by SONCOS it is included that every cancer patient should be discussed in a MDT meeting before the initial treatment. Also, it is included that at least the following healthcare professionals should be present during the weekly MDT meetings for oesophagogastric cancer: surgeon, medical oncologist, gastro-enterologist, radiologist, radiation oncologist, pathologist, specialized nurse and other involved nurses [41]. However, despite these norms, significant hospital variation for MDT meetings exists. Only 79% of patients diagnosed with oesophagogastric cancer in 2018-2019 were discussed in a MDT meeting [8]. This variation is

undesirable because studies have shown that MDT meetings can significantly improve survival rates and impact management plans and process outcomes for cancer patients [42,43]. Nevertheless, little evidence can be found that MDT meetings improve other patient outcomes besides survival.

Oncology networks

Networks can be defined as "a strategic alliance forged around common agendas of mutual advantage through collective action" [12, p.12]. Networks have become a common mechanism for the delivery of public services, such as health care. In the context of this study networks can be referred to as a group of individual hospitals collaborating through knowledge- and resource sharing with the aim to offer patients diagnosed with cancer the most optimal treatment.

Cooperation within networks has advantages in situations where there is high demand uncertainty, high human asset specificity, high task complexity and high frequency of exchanges [44]. For cancer care there is high demand uncertainty, because the incidence of cancer is increasing and the number of patients per hospital is rarely stable and predictable. Asset specificity involves unique equipment, processes, or knowledge. For cancer care the asset specificity is high, because for example oesophagogastric cancer care involves unique equipment such as the robotic surgery and the knowledge needed to drive the robot. Task complexity is also high in cancer care, because it involves many different specialized inputs to complete the care process. Finally, the frequency of exchanges is high for cancer care, for example patients are often referred to another specialized hospital to receive the right care. Therefore, it might be beneficial for hospitals to cooperate with other hospitals in the region by means of an oncology network.

Many oncology networks have been established in the Netherlands in recent years [11]. Oncology networks are an instrument for healthcare organisations to cope with the increasing incidence, complexity of cancer care and costs [9,10]. Within these networks regional and multidisciplinary agreements are formalised and knowledge and resources are shared. Seventeen hospitals in the North East region of the Netherlands already founded a MCN for oesophagogastric cancer in 2008. The aim of this MCN is to provide easily accessible and equal high quality care for all patients with oesophagogastric cancer across the region. Regional MDT meetings are established in which medical specialists of different healthcare organisations gather to exchange knowledge and discuss most optimal treatment strategies for individual patients. A study showed that the MCN for oesophagogastric cancer in the North East region of the Netherlands resulted in a reduction of variation in treatment, variation in lead time and variation in survival between the hospitals [18]. Furthermore, the study found that providing insight into variation within an oncology network helps to identify areas for improvement in order to achieve a higher level of care. Yet, the overall effect of the established oncology networks in the Netherlands on the quality of care is not indicated [11].

Once a network is established, effectiveness is not self-evident. Cooperation in an oncology network is complex, for example agreements have to be made and formalised about care, finances, referrals and transparently sharing of data. Provan and Milward provide a framework which can be used to evaluate the effectiveness of a network [31]. Three interrelating levels of analysis are distinguished: the community, the network itself and the organisations participating in the network. Accordingly, for each level the key stakeholders are identified. The community is in particular of concern to principals who monitor and function the network and its activities. The network is of most concern to agents, more specifically administrators and service-level professionals of the network. Lastly, the level of the participating organisations is of most concern to the patients, who receive the services provided by the network. Subsequently, Provan and Milward provide effectiveness criteria for each level. This results in the framework presented in Figure 1. These criteria should be considered when evaluating the effectiveness of a network.

Figure 1

Overview Effectiveness Criteria and Key Stakeholders per Level of Network Analysis [31].

Levels of network analysis	Key stakeholder groups	Effectiveness criteria
Community	Principals and Clients • Client advocacy groups • Funders • Politicians • Regulators • General public	• Cost to community • Building social capital • Public perceptions that problem is being solved • Changes in the incidence of the problem • Aggregate indicators of client well-being
Network	Principals and agents • Primary funders and regulators • Network administrative organization • Member organizations	• Network membership growth • Range of services provided • Absence of service duplication • Relationship strength (multiplexity) • Creation and maintenance of network administrative organization (NAO) • Integration/coordination of services • Cost of network maintenance • Member commitment to network goals
Organization/ participant	Agents and clients • Member agency board and management • Agency staff • Individual clients	• Agency survival • Enhanced legitimacy • Resource acquisition • Cost of services • Service access • Client outcomes • Minimum conflict for multiprogram agencies across multiple networks

Supra-regional MDT Meetings

The network for oesophagogastric cancer in the North East Region of the Netherlands introduced, next to the regular regional MDT meetings, supra-regional MDT meetings to discuss complex cases [21]. This is the first SMDT meeting established in the Netherlands. In the SMDT meetings complex cases are discussed so that patients can receive the best treatment advice and the centres can learn from each other [45]. Complex cases who meet the following criteria are discussed in SMDT meetings: Patients who are discussed in a regular regional MDT meeting but for who no uniform treatment strategy can be agreed or for who no treatment strategy can be established based on the current guidelines for oesophagogastric cancer.

The North East region of the Netherlands consists of 3 sub-regions: (1) Groningen and Drenthe, (2) Friesland and (3) a part of Overijssel. From each sub-region one hospital is asked to participate in the SMDT meetings (UMCG, MCL and ZGT). At these hospitals patients can undergo robotic oesophagogastric cancer surgery. In addition, two radiotherapy organisations and one pathology lab are asked to participate. The 'Blauwdruk Optimaal MDO' is used to set up the SMDT meetings [45]. The meetings take place on every first and third Wednesday of the month. The professionals can join via videoconferencing or physically at the ZGT. Chairmanship of the meetings rotates bimonthly.

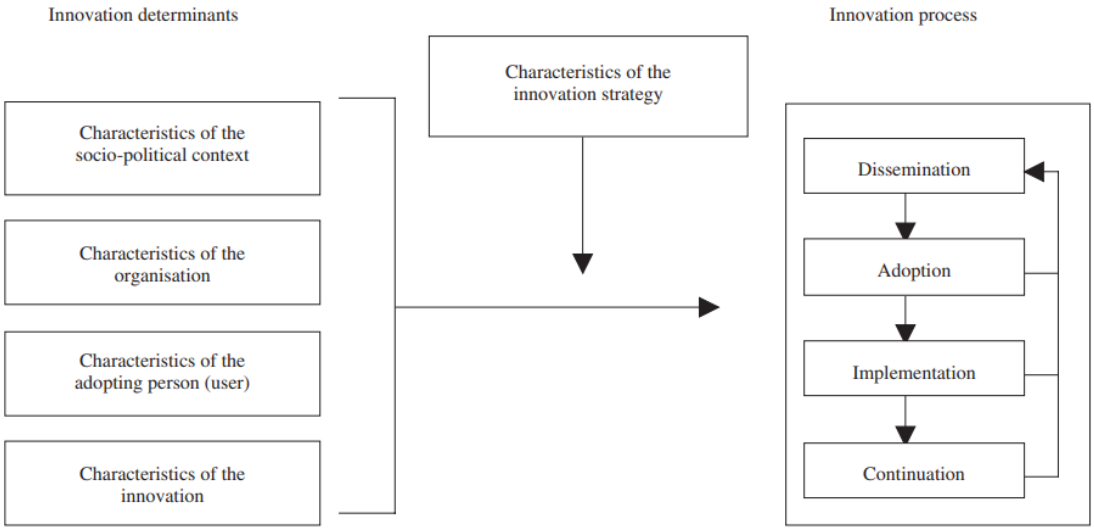
The United Kingdom is the frontrunner in practicing SMDT meetings. One study performed in the UK reported about the impact of SMDT meetings for germ cell cancers and another study about the impact of the meetings for a complex multi-system fibro-inflammatory disorder. Both studies found that the SMDT meetings improved the decision-making and reduced variation between hospitals [23,46]. To date, no other scientific literature about SMDT meetings is yet available.

Implementation and Continuation of Health Innovations

The implementation and continuation of innovations that improve public health outcomes is complex. Fleuren, Wiefferink and Paulussen (2004) provide a generic framework that can be used for the introduction and evaluation of health innovations. In Figure 2 it can be seen that the innovation process consists of four phases. Implementation and continuation are two of the four phases of the innovation process. Each phase can be seen as points at which the intended change may or may not occur. The transition from one stage to the other can be influenced by numerous determinants, which are categorized in Figure 2 into characteristics of the socio-political context (i.e. legislation), characteristics of the organisation (i.e. resources), characteristics of the user (i.e. knowledge) and characteristics of the innovation (i.e. complexity). For successful implementation and continuation of an health innovation it is essential to identify the determinants that can influence the innovation process. These determinants should be taken into account when designing the innovation strategy. Therefore, Fleuren et al (2014) developed The Measurement Instrument for Determinants of Innovations (MIDI). The MIDI provides a comprehensive overview of determinants that influence the implementation of health innovations.

Figure 2

Generic Framework representing the innovation process and related categories of determinants [30].



Factors influencing the Functioning of Oncological MDT Meetings

Two systematic reviews are performed about factors influencing the functioning of regular oncological MDT meetings [26,27]. The factors that were identified through these systematic reviews as barriers or facilitators for the functioning of MDT meetings can be categorized in line with the categorization of the MIDI. Accordingly, in the following sub-paragraphs the identified factors will be elaborated on per category of the MIDI. Only barriers and facilitators for oncological MDT meetings identified in the systematic reviews that might also impede or facilitate the implementation and continuation of SMDT meetings for oesophagogastric cancer are described.

Characteristics of the SMDT meetings

One factor that might impede the implementation of SMDT meetings is compatibility. Walraven et al. describe that oncological MDT meetings are lacking compatibility, because only 28% of MDT meetings take place during regular working hours [26]. The results show that when MDT meetings take place during regular working hours the commitment of healthcare professionals improves.

Another factor that might influence the implementation of SMDT meetings is procedural clarity. A clear agenda and structured case discussions have been shown to improve the functioning of MDT meetings [26]. Agenda's are nearly always present (93%). However, a clearly defined question to begin the structured case discussions which is lacking in half of the MDT meetings. Moreover, both Walraven et al. and Horlait et al. identified that there are discrepancies in expectations of roles and responsibilities between the members of the meetings. This discrepancy is shown to hinder the decision-making [26,27].

Furthermore, both Walraven et al. and Horlait et al. identified that a lack of completeness is a barrier for the functioning of oncological MDT meetings [26,27]. The absence of core members has a negative effect on efficient decision making during MDT meetings. Also, the absence of the clinician that is in charge of the patient discussed has a negative influence on the functioning of the meetings. Hence, a lack of completeness of professionals might be a barrier for the implementation of SMDT meetings. In addition, a lack of completeness of services might also impede the implementation of the SMDT meetings, since nine studies included by Walraven et al. reported that the MDT meetings lack patient centeredness because information on comorbidities and patient preferences is often not discussed.

Characteristics of the healthcare professionals

A barrier both Walraven et al. and Horlait et al. identified for the functioning of oncological MDT meetings is a lack of attendance [26,27]. Both reported that weekly adherence is a prerequisite for the well-functioning of MDT meetings. Walraven et al. found that the attendance rates range from 49% to 90%. Moreover, one study included by Walraven et al. showed that on average 6 to 11 professionals interrupted the meetings by walking in and out.

Another barrier that might impede the implementation of SMDT meetings are poor communication and collaboration skills of the professionals. Horlait et al. identified five studies reporting that poor communication skills led to inadequate information sharing and negatively influenced decision-making. Moreover, Horlait et al. argues that poor interprofessional relationships are a barrier for the well-functioning of MDT meetings. According to eleven studies differences in professional cultures and professional status negatively effected the decision-making. Hence, not all professionals are equally involved in patient discussions [27]. Also, Walraven et al. included one focus group study which showed that professionals often felt inhibited to contribute to the patient discussion. These healthcare professionals perceived that there was insufficient time and respect for their contribution [26]. Accordingly, social support might be classified as a barrier for the implementation of SMDT meetings. On the other hand, two studies included by Walraven et al. reported that attending MDT meetings improves the relationships of healthcare professionals of different disciplines.

Facilitators for the implementation of SMDT meetings might be personal benefits that the professionals can gain through participating. Both Walraven et al. and Horlait et al. identified that the educational value of the MDT meetings motivates professionals to attend [26,27]. The professionals

perceive that in particular the discussion of complex cases contributes to their knowledge. Mainly for junior doctors participation in the MDT meetings has a high educational value. Another personal benefit for professionals identified by two studies included by Walraven et al. is that medical specialists perceive that the MDT meetings provide some medico-legal protection.

Characteristics of the organisation

The time available is identified as a major barrier by both systematic reviews. As mentioned before, the professionals are more likely to attend the MDT meetings when they are planned during regular working. However, it is difficult to identify a time slot during working hours when all required professionals are available [26,27]. Also, a lack of time to prepare the MDT meetings, in particular by radiologists, pathologists and other core members, is perceived as a barrier for the well-functioning of the meetings [26,27]. A survey study included by Walraven et al. found that only 44% of radiologists prepared over 70% of cases prior to the MDT meetings, mainly due to a lack of time [47]. Yet, the required information about radiology and pathology results and patient's comorbidities and preferences to sufficiently prepare the MDT meetings was also often absent. Hence, the lack of accessible information proved to be a barrier for the functioning of MDT Meetings [26].

A lack of support by an administrator was also found to be a barrier for the well-functioning of MDT meetings [26,27]. Four studies included by Walraven et al. showed that administrative support was only available in a minority of MDT meetings. Administrative support is in particular important for SMDT meetings to record decisions and share these with all involved healthcare organisations and professionals. Also, some technical support of the administrator, to facilitate for example video-conferencing and the presentation of medical images, is desirable [27].

Also, both Walraven et al. and Horlait et al. argue that a chairperson is essential for the well-functioning of MDT meetings [26,27]. This chairperson can ensure efficient time management, clarity in role differentiation and can facilitate open and constructive discussions. A rotating chairperson is recommended.

A facilitator for the implementation of SMDT meetings might be performance feedback. Walraven et al. identified nine evaluation tools which aim to improve the functioning of MDT meetings. The use of these evaluation tools can result in small improvements, which might significantly impact the functioning of the MDT meetings [26].

Characteristics of the socio-political context

Horlait et al. argues that national guidelines and programs that prescribe multidisciplinary collaboration enhance the efforts of professionals to participate [27]. In the Netherlands, MDT meetings for all cancer patients is prescribed in the national oncological norms [41]. SMDT meetings are not prescribed. However, for example the introduction of the 'Integral Care Agreement' might stimulate healthcare organisations and professionals to participate [16].

Appendix B

Theoretical Framework

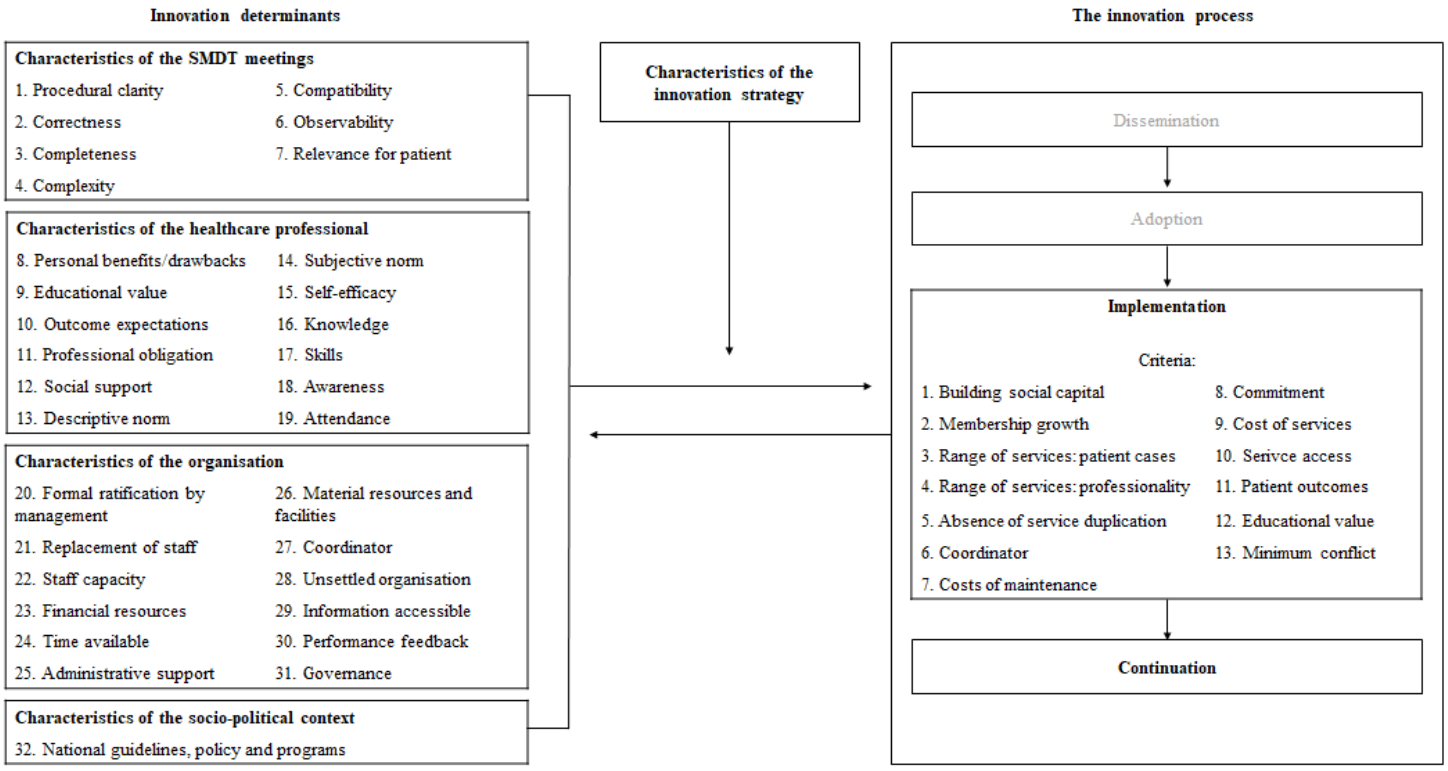
The MIDI of Fleuren et al. [25] and the findings of the systematic reviews of Walraven et al. [26] and Horlait et al. [27] provide together a comprehensive overview of factors that may influence the implementation and continuation of the SMDT meetings of the MCN oesophagogastric cancer in the North East region of the Netherlands. All potentially relevant innovation determinants are included in Figure 3. Only the determinants patient satisfaction and cooperation were excluded from the MIDI since the patient is not directly involved in this innovation. The description of all included determinants can be found in Appendix E. All determinants may positively or negatively influence the implementation and continuation of the innovation.

The framework of Provan and Milward [31] with criteria to evaluate network effectiveness can be used to examine the level of implementation and the probability of continuation of the SMDT meetings. The criteria can be seen as indicators for the well-functioning of the collaboration between the different healthcare organisations and professionals participating in the SMDT meetings. A low value for a certain criterium indicates a lower level of implementation. The criteria that are mainly relevant for the evaluation of networks, but not relevant for the functioning of SMDT meetings were excluded from figure 3. For example, the criteria service integration can be used to evaluate the effectiveness of the MCN oesophagogastric cancer, however service integration is not an objective of the SMDT meetings and is therefore not included. Furthermore, the existing template on how to perform regional MDT meetings that was used for the setup of the SMDT meetings can be used to examine the level of implementation. A description of the included criteria can be found in Appendix F. An evaluation of the value of SMDT meetings to clinical outcomes is beyond the scope of this study.

Moreover, it is important to recognise that the implementation criteria might be interrelated with the innovation determinants. As the framework of Fleuren et al. shows, the determinants influence the implementation and continuation of innovations [30]. However, a certain value for one of the implementation criteria might also influence the members to participate in the SMDT meetings. Therefore, some determinants are overlapping with the criteria. For example, a low value for the criterium range of services might impede members to participate. Hence, a lack of completeness might be classified as a barrier. Theoretically it is therefore expected that the innovation process is cyclic: experiences with the implementation influence the determinants and the determinants influence the implementation.

Figure 3

Theoretical Framework representing the Innovation Process, Criteria for Effective Implementation and Related Categories of Determinants for SMDT Meetings.



Appendix C

Detailed description and argumentation on the methods

It was decided to perform a qualitative study, because it provides flexibility in what to ask for and flexibility in gaining in-depth answers by asking follow-up questions when topics seem relevant [48]. Rich data was needed to gain a comprehensive understanding of factors that influence the implementation and continuation of the SMDT meetings. It was chosen to conduct focus groups with the healthcare professionals instead of individual interviews, because this method enables the participants to complement each other and the group dynamic ensures a focus on the most relevant aspects [36]. Moreover, there are no main power differences that could influence the answers. Additionally, it was expected that the healthcare professionals would be more willing to participate in this more efficient data collection method. Furthermore, it was chosen to perform observations to examine the functioning of the SMDT meetings and interaction between the members in practice. Finally, one individual interview was conducted with the coordinator of the SMDT meetings to verify the results of the focus groups and observations and to discuss recommendations for improvement. The use of these different methods to measure and verify the findings for the same variables contributes to reliability of the results of this study.

It was decided to develop semi-structured interview schemes and not open or structured, because semi-structured schemes offer the possibility to address the factors of the theoretical model ensuring comparability between the focus groups, to ask further about and discuss specific topics and to not leave the entire conversation in the hands of the respondents [36].

Appendix D

Overview of Innovation Determinants [25–27]

Category	No.	Determinant	Description
Characteristics of the SMDT meetings	1.	Procedural clarity	Degree to which the SMDT meetings are described in clear steps/procedures.
	2.	Correctness	Degree to which the SMDT meetings are based on factually correct knowledge.
	3.	Completeness	Degree to which the activities performed or the expertise present during the SMDT meetings is complete.
	4.	Complexity	Degree to which participating in the SMDT meetings is complex.
	5.	Compatibility	Degree to which the SMDT meetings are compatible with the values and working methods in place.
	6.	Observability	Degree to which the outcomes of the SMDT meetings for the patient are visible to the healthcare professional.
	7.	Relevance for patient	Degree to which the healthcare professional believes the SMDT meetings are relevant for their patients.
Characteristics of the healthcare professional	8.	Personal benefits/drawbacks	Degree to which the SMDT meetings have advantages or disadvantages for the members.
	9.	Educational value	Degree to which the healthcare professional recognises the educational value of the SMDT meetings.
	10.	Outcome expectations	Perceived probability and importance of achieving the patient objectives as intended by the SMDT meetings.
	11.	Professional obligation	Degree to which the SMDT meetings fit in with the tasks for which the member feels responsible when doing his/her work.
	12.	Social support	Degree to which the healthcare professional experiences or expects support from important social referents relating to participating in the SMDT meetings.
	13.	Descriptive norm	Degree to which other healthcare professionals participate in the SMDT meetings
	14.	Subjective norm	Degree to which important others influence the healthcare professional to participate in the SMDT meetings.
	15.	Self-efficacy	Degree to which the healthcare professional believes he or she is able to implement the activities involved with the SMDT meetings.
	16.	Knowledge	Degree to which the healthcare professional has the knowledge needed to perform the activities involved with SMDT meetings.
	17.	Skills	Degree to which the healthcare professional has the skills needed to perform the activities involved with SMDT meetings.

	18.	Awareness	Degree to which the healthcare professional is aware of the activities involved with the SMDT meetings.
	19.	Attendance	Degree to which the healthcare professional structurally attends the SMDT meetings as intended.
Characteristics of the organisation	20.	Formal ratification by management	Degree to which the SMDT meetings are formally ratified by management of healthcare organisations and/or the board of the MCN.
	21.	Replacement of staff	Degree to which members of the SMDT meetings can be replaced when absent/leaving.
	22.	Staff capacity	Degree to which the staffing in the healthcare organisations participating in the SMDT meetings is adequate.
	23.	Financial resources	Degree to which financial resources that are needed to implement and continuate the SMDT meetings are available.
	24.	Time available	Degree to which the time that is needed to participate in the SMDT meetings is available.
	25.	Administrative support	The presence of one or more persons to facilitate the activities involved with the SMDT meetings (i.e. through making minutes)
	26.	Material resources and facilities	Degree to which materials and other resources or facilities necessary for the performance of SMDT meetings as intended are available (i.e. software for videoconferencing).
	27.	Coordinator	The presence of one person to coordinate the activities related to the SMDT meetings.
	28.	Unsettled organisation	Degree to which there are other changes in progress that represent barriers or facilitators to the process of implementing and continuing the SMDT meetings (i.e. reorganisation, cuts, other innovations).
	29.	Information accessible	Degree to which information about and for the activities involved with the SMDT meetings is accessible.
	30.	Performance feedback	Degree to which feedback is provided to the members about the progress with the SMDT meetings.
	31.	Governance	The presence of a chairperson during the SMDT meetings to guide the patient discussions.
Characteristics of the socio-political context	32.	National guidelines, policy and programs	Degree to which the SMDT meetings fit in with existing guidelines, policy and programs established by competent authorities.

Appendix E

Overview of Implementation Criteria [22,31]

Level of analysis	Criteria	Description
Community	Building social capital	The collaboration between the healthcare organisations and professionals resulted in (stronger) relationships and trust, eventually increasing the benefits that might be obtained from the SMDT meetings.
Network	Structural participation	Healthcare professionals structurally attend and structurally sign up patient cases.
	Range of services – patient cases	For each SMDT meeting extra-protocol patient cases are signed up to be discussed.
	Range of services – expertise	From each participating centre at least one surgeon, one gastro-enterologist, one medical oncologist and one radiation oncologist is present.
	Absence of service duplication	The cases discussed or the expertise present during the SMDT meetings are not redundant.
	Coordinator	Presence of one person to guide and coordinate the activities related to the SMDT meetings.
	Costs of maintenance	The costs to maintain the SMDT meetings, such as transactions costs and costs of coordinating, are reasonable and payable.
	Commitment	The members are committed to the goals of the SMDT meetings (knowledge enrichment, improving regional collaboration, reducing variation and optimizing treatment advice for extra-protocol cases) .
Organisation/ participant	Cost of services	The costs for participating in the SMDT meetings are relative to the benefits for the individual healthcare professionals and organisations.
	Service access	Participating in the SMDT meetings enhances the accessibility of services for healthcare organisations (i.e. expertise and referrals).
	Patient outcomes	The members believe that participating in the SMDT meetings improves patient outcomes: most optimal treatment plan for extra-protocol cases of oesophagogastric cancer.
	Educational value	Participating in the SMDT meetings enhances the knowledge of the members.
	Minimum conflict	The SMDT meetings minimally conflict with other collaboration initiatives (i.e. other local or regional MDT meetings).

Appendix F

Semi-Structured Interview Schedule to guide the Focus Groups (Dutch)

Zorgverleners aanwezig	**Discipline**	**Aanwezigheid bij SR MDO**
1.	Chirurg	
2.	Oncoloog	
3.	Radiotherapeut	
4.	MDL-arts	
5.	Casemanager	

Introductie 10 min
Hallo, bedankt dat jullie bereid zijn om deel te nemen aan dit onderzoek. Ik ben Lois, master student bestuurskunde en gezondheidswetenschappen aan de Universiteit Twente en het doel van mijn onderzoek is om het supra-regionale MDO voor complexe casuïstiek van slokdarm en maagkanker te evalueren. Deze focusgroep heb ik georganiseerd omdat ik graag wil weten wat jullie vinden van het supra-regionale MDO en wat jullie als belemmeringen en succesfactoren ervaren. Dit doe ik bij ieder deelnemend centrum. Op basis van de uitkomsten kan ik een advies geven over het functioneren en de voortzetting van het supra-regionale MDO. Voordat we starten wil ik jullie vragen of jullie toestemming geven dit gesprek op te nemen, zodat ik het later kan terugluisteren en analyseren. Het transcript zal ik, wanneer deze gereed is, naar jullie toesturen om jullie de mogelijkheid te geven om deze indien nodig aan te vullen of nuances aan te brengen. De opnames zullen daarna worden verwijderd. Gaan jullie hiermee akkoord? [Start opname en vraag nogmaals om toestemming] Ik wil nog graag benadrukken dat er geen goede of foute antwoorden zijn op de vragen die ik zal stellen. Jullie deelname is vrijwillig en jullie antwoorden zullen geanonimiseerd worden. Jullie hebben op elk moment de mogelijkheid te stoppen en jullie mogen altijd om verduidelijking vragen wanneer jullie een vraag niet helemaal begrijpen. Vul elkaar vooral aan als je het met elkaar eens bent of geef het aan als je het niet met iemand anders eens bent. We hebben een uur de tijd om alle onderwerpen te bespreken, dus het kan zijn dat ik jullie moet onderbreken als we te ver afwijken of te lang blijven discussiëren over één onderwerp. Er zijn vier categorieën die ik met jullie wil bespreken: allereerst de inhoud van de supra-regionale MDO's, daarna de professionele factoren, zoals samenwerking, dan de organisatie van het supra-regionale MDO en daarna de invloed van politieke ontwikkeling. Ik wil graag eindigen met een samenvatting van de belangrijkste bevindingen en verbetersuggesties. Hebben jullie nog vragen voordat we beginnen?
1. Allereerst zou ik graag van jullie allemaal kort willen weten wat jullie functie is, hoe lang jullie al betrokken zijn bij het supra-regionale MDO en of jullie wel of niet regelmatig aanwezig zijn.

Kenmerken van de innovatie: de supra-regionale MDO's 10 min

2. Wat vinden jullie van de inhoud van de supra-regionale MDO's?
    a) Bij het begin is er een lijstje met patiënt categorieën opgesteld. Later is er afgesproken om alle extra-protocollaire casuïstiek te bespreken. In hoeverre vinden jullie dat er op dit moment de juiste **casuïstiek** besproken wordt in het MDO?
        i. Wat vinden jullie bij uitstek geschikte patiënt categorieën om te bespreken in het supra-regionaal MDO?
    b) In hoeverre vinden jullie dat de juiste **expertise** aanwezig is bij de MDO's? Overschot of tekort, waarom?
        i. Welke disciplines zouden er minimaal van ieder centrum aanwezig moeten zijn bij het MDO?
    c) Wat denken jullie dat de **toegevoegde waarde** van het supra-regionale MDO is voor de patiënt?
        - In hoeverre wijkt het originele behandeladvies uit lokale/regionale MDO af tov behandeladvies uit het supra-regionale MDO?
        - In hoeverre beïnvloed het supra-regionale MDO het verwijzingsproces voor complexe patiënten tussen ziekenhuizen?
        - In hoeverre draagt het supra-regionale MDO bij aan de deelname aan trials?

3. In hoeverre belemmeren of bevorderen deze inhoudelijke aspecten jullie deelname aan de supra-regionale MDO's?

Kenmerken van de gebruiker: de zorgprofessional 10 min

4. Wat zijn **persoonlijke of beroepsmatige redenen** voor jullie om wel of niet deel te nemen aan de supra-regionale MDO's?
    a) In hoeverre is de **educatieve waarde** (van elkaar leren) een reden voor jullie om deel te nemen? Waarom wel/niet?
    b) In hoeverre is de **regionale samenwerking** een reden voor jullie om deel te nemen? Waarom wel/niet?
        i. Is de band tussen de verschillende specialisten en ziekenhuizen veranderd door de supra-regionale MDO's? Waarom wel/niet?
    c) In hoeverre is de **bevestiging of extra argumentatie** voor het behandelingsadvies voor de patiënt een reden voor jullie om deel te nemen? Waarom wel/niet?
5. In hoeverre wegen de voordelen voor jullie op tegen de (tijds)investering? Waarom wel/niet?

6. Hebben jullie binnen jullie centrum afspraken gemaakt m.b.t. de **aanwezigheid** bij de supra-regionale MDO's? Waarom wel/niet?
    a) Steunen/stimuleren jullie elkaar om deel te nemen?
    b) Wordt jullie deelname beïnvloed door anderen (bijv. bestuur MCN)?
7. In hoeverre beïnvloed de onduidelijkheid over de **aan of afwezigheid** van andere specialisten bij de supra-regionale MDO's jullie deelname? En het functioneren?
    a) Als belemmering: Hoe zouden jullie dit oplossen?

8. Voor een goed functionerend MDO zijn een goede **samenwerking**, effectieve **communicatie** en andere competenties zoals adequaat **voorzitterschap** van belang. Hoe vinden jullie dat dit gaat bij het supra-regionale MDO? Loopt dit goed of verbetering mogelijk?

Kenmerken van de organisatie 15 min

9. Wat vinden jullie van de huidige **aanmeldingsprocedure**?
    a) Vinden jullie de **instructies** duidelijk? (bijv. welke casuïstiek)
    b) Wat vinden jullie van het aanmeldings**formulier**? In hoeverre is de informatie om de patiënt goed te kunnen bespreken compleet? Als niet: wat ontbreekt?
    c) Ervaren jullie belemmeringen of succesfactoren m.b.t. de gegevensuitwisseling?
10. Een aantal supra-regionale MDO's zijn niet doorgegaan omdat er **geen patiënten aangemeld** waren. Waardoor komt dit volgens jullie? (Gebrek aan casuïstiek, belemmeringen m.b.t. de aanmeldingsprocedure, gebrek aan motivatie of tijd?)
    a) Bespreken jullie standaard tijdens het reguliere regionale MDO of patiënten in het supra-regionale MDO besproken kunnen worden? Waarom wel/niet?
    b) Wat hebben jullie nodig om meer patiënten aan te melden?

11. Wat vinden jullie van de huidige **organisatie** van de supra-regionale MDO's?
    a) Wat vinden jullie van het **online platform** voor de videoconference? Suggesties?
    b) Wat vinden jullie van het **tijdstip** en de **frequentie**?
    c) In hoeverre past het supra-regionale MDO naast andere **lokale of regionale MDO's**?
    d) In hoeverre hebben jullie belemmeringen of succesfactoren ervaren m.b.t. de **voorbereiding** van de patiëntbesprekingen?
    e) Bij ieder supra-regionaal MDO is er **administratieve steun** aanwezig. Werkt dit goed of verbetering mogelijk?
    f) Het afgelopen jaar heeft Floor gefungeerd als **coördinator**. Hebben jullie dit als prettig ervaren of zijn er verbeteringen mogelijk?
    g) Wat vinden jullie van de mate waarop het supra-regionale MDO geëvalueerd wordt?
        i. Liever vaker of minder vaak **evalueren**, en waarom?
        ii. Meer/minder behoefte aan terugkoppeling over wat er met het advies van SR MDO is gedaan?
    h) Wordt jullie deelname beïnvloed door het ontbreken van een **financiële vergoeding**?

12. In hoeverre belemmeren of bevorderen deze organisatorische aspecten jullie deelname aan en het functioneren van de supra-regionale MDO's?

Kenmerken van de sociale-politieke context 5 min

13. In hoeverre wordt jullie deelname aan het supra-regionale MDO beïnvloed door **politieke ontwikkelingen** zoals het Integraal Zorgakkoord? Waarom?
14. Andere politieke ontwikkelingen of externe eisen die jullie deelname aan het supra-regionale MDO beïnvloeden? (bijv. Soncos normen en audits, steeds hogere kwaliteitseisen waar jullie aan moeten voldoen, denken jullie bijv. dat jullie deelname bijdraagt aan het voldoen aan deze eisen?)

Wrap-up en verbetersuggesties	10 min

15. Welke categorie beïnvloed volgens jullie het meest het functioneren en de voortzetting van de supra-regionale MDO's? Zijn dit de inhoudelijke aspecten, professionele factoren, organisatorische aspecten of de invloed van politieke ontwikkelingen? Waarom?
16. Wat is voor jullie de belangrijkste reden/motivator om wel deel te nemen aan de supra-regionale MDO's? En wat zijn succesfactoren voor het functioneren (wat werkt goed)?
17. Wat is voor jullie op dit moment de grootste belemmering om deel te nemen aan de supra-regionale MDO's? En wat zijn belemmeringen voor het functioneren (wat werkt niet goed?) Verbetersuggesties?
18. Wat is er volgens jullie concreet nodig om de supra-regionale MDO's in de toekomst voort te zetten?

Afsluiting

19. Hebben jullie verder nog toevoegingen of vragen?

Hartelijk bedankt voor jullie deelname aan dit interview! Mochten jullie nog vragen hebben dan kunnen jullie contact met mij opnemen via de mail.

Appendix G

Observation Form

Date: Start time: End time:

Attendance			
Healthcare professionals present	**Discipline**	**Centre**	**Other notes (i.e. about participation)**
1.	Surgeon	1	
2.	Gastro-enterologist	1	
3.	Medical oncologist	1	
4.	Radiation oncologist	1	
5.	Radiologist, pathologist or nuclear physician	1	
6.	Surgeon	2	
7.	Gastro-enterologist	2	
8.	Medical oncologist	2	
9.	Radiation oncologist	2	
10.	Radiologist, pathologist or nuclear physician	2	
11.	Surgeon	3	
12.	Gastro-enterologist	3	
13.	Medical oncologist	3	
14.	Radiation oncologist	3	
15.	Radiologist, pathologist or nuclear physician	3	

Patient discussions			
No.	**Signed up by (discipline & centre)**	**Patient category (TNM)**	**Reason for discussion / Question**
1.			
2.			
3.			

Likert-scale Score: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree		
Statement	**Score**	**Notes**
All specialists received the information for the patient discussion(s) prior to the meeting (before 14.00h).		
The information for the patient discussion(s) is complete (application form): o basic patient data o results physical examination and/or medical images o medical history o comorbidities o physical and psychosocial situation o patient preferences o reason for discussion/question		
The patient discussions are guided by a chairmen o announces cases o gives the word to the right specialist o guides inter-specialist communication o closes the discussion with conclusion and asks explicitly for approval		
Administrative support is present to facilitate the meetings (by i.e. making minutes, monitoring time, technical support).		
Conclusions of patient discussions are for everyone visibly recorded during the meeting.		
The online platform for video conferencing is working adequate: video connection, image sharing, minimal technical disturbances.		

Appendix H

Semi-Structured Interview Schedule for the Coordinator of the SMDT meetings (Dutch)

Introductie

Hallo, bedankt dat je bereid bent om deel te nemen aan dit onderzoek. Het doel van mijn onderzoek is om het supra-regionale MDO voor complexe casuïstiek van slokdarm en maagkanker te evalueren. Daarvoor heb ik drie focusgroepen georganiseerd, één bij ieder deelnemend centrum. Het doel van dit interview is om de resultaten van de focusgroepen te toetsen en te verrijken. Op basis van de uitkomsten kan ik een advies geven over het functioneren en de voortzetting van het supra-regionale MDO.

Voordat we starten wil ik je vragen of je mij toestemming geeft dit interview op te nemen, zodat ik het later kan terugluisteren en analyseren. Het transcript zal ik, wanneer deze gereed is, naar je toesturen om je de mogelijkheid te geven deze indien nodig aan te vullen of nuances aan te brengen. De opnames zullen daarna worden verwijderd. Ga je hiermee akkoord?
[Start opname]

Ik wil nog graag benadrukken dat er geen goede of foute antwoorden zijn op de vragen die ik zal stellen. Je deelname is vrijwillig en je antwoorden zullen geanonimiseerd worden.
Je hebt op elk moment de mogelijkheid te stoppen en je mag altijd om verduidelijking vragen wanneer je een vraag niet helemaal begrijpt. Het interview duurt één uur.

Heb je nog vragen voordat we beginnen?

Toetsen en aanvullen belemmeringen en succesfactoren

1. In hoeverre komen de resultaten overeen met wat jij had verwacht?
    a) Wat komt er overeen?
    b) Wat komt er niet overeen?

2. In hoeverre denk jij dat de participatie van MDL-artsen en case-managers nodig is voor een goed functionerend supra-regionaal MDO?
    - MDL-artsen alleen aansluiten als ze een casus inbrengen?

3. In hoeverre denk jij dat complete informatie en voorbereiding vereisten zijn voor het goed functioneren van het supra-regionaal MDO?
    - En voor de medico-legale status van het behandelingsadvies)?

Toetsen en aanvullen implementatie strategieën

4. Wat vind jij van de voorgestelde **implementatie strategieën?**

5. Het online platform blijkt nog steeds een belemmering. Het huidige platform werkt niet voor 2. Ik heb gehoord dat jij al een hele zoektocht hebt verricht naar het juiste platform. Wat zou jouw advies zijn voor de volgende coördinator?

6. Het tijdstip blijkt ook een belemmering. Ik heb begrepen dat jullie met het bestuur hebben besloten om geen ander tijdstip uit te gaan zoeken. Waarom?

7. Heb jij een ander idee (dan reminders en evaluaties) om het bewustzijn en commitment te stimuleren?

8. Heb jij een ander idee (dan regionale brief delen op scherm en administratieve steun) om de belemmeringen m.b.t. de gegevensuitwisseling te verminderen?
    a) Hoe wisselen andere regionale netwerken gegevens uit?
    b) Is het een idee om gebruik te maken van een standaard MDO brief voor alle centra?

9. Een ander voorstel dat werd gedaan is om in plaats van de supra-regionale MDO's de andere centra in te bellen tijdens de regionale MDO's. Bijv. centrum 1 belt voor één of twee casussen aan het einde van het regionale MDO centrum 2 en 3 in. Wat vind je van dit voorstel?

Voortzetting supra-regionaal MDO

10. Wat zou, op basis van deze resultaten, jouw conclusie zijn voor de voortzetting van het supra regionaal MDO?
    a) In hoeverre denk jij dat het een succes kan worden in de toekomst?
    b) Wat is daar volgens jou concreet voor nodig?

11. In hoeverre denk je dat het supra-regionaal MDO ook een waardevol middel kan zijn voor andere regionale oncologienetwerken? Waarom?

12. Wat zou jij een ander regionaal oncologienetwerk aanraden dat ook een supra-regionaal MDO zou willen implementeren?

Appendix I

Coding Scheme

Determinants

Three values:

1. Barrier: When it is mentioned that the factor impedes the functioning of or the participation in the SMDT meetings.
2. Facilitator: When it is mentioned that the factor impedes the functioning of or the participation in the SMDT meetings.
3. Implementation strategy: An activity might improve the functioning of or the participation in the SMDT meetings through addressing the determinant.

If it is about a determinant but it doesn't state whether it impedes or facilitates the functioning/ participation and it is not a requirement for the implementation and continuation, it is coded with no value (only the code of the determinant). Example: Het inrichten van de administratieve ondersteuning is een uitdaging, maar er wordt niet gezegd dat deze uitdaging het functioneren belemmert. Daarom neutraal gecodeerd.

Code Group	Determinant	Description	Notes
Characteristics of the SMDT meetings	Procedural clarity	Degree to which the SMDT meetings are described in clear steps/procedures.	Sub codes: - Registration procedure - Instruction for type of patients: when it is about the instructions that are provided or should be provided for which patients can be registered. If it is only a description of which patient categories are suited or about the size of the target group it is coded as neutral at the implementation criterium patient cases.
	Correctness	Degree to which the SMDT meetings are based on factually correct knowledge.	
	Completeness	Degree to which the activities (patient discussions) performed or the expertise present during the SMDT meetings is complete.	
	Complexity	Degree to which participating in the SMDT meetings is complex.	
	Compatibility	Degree to which the SMDT meetings are compatible with the values and working methods in place.	
	Observability	Degree to which the outcomes of the SMDT meetings for the patient are visible to the healthcare professional.	
	Relevance for patient	Degree to which the healthcare professional believes the SMDT	When it is said that the SMDT meetings are valuable for the

		meetings are relevant for their patients.	patient: implementation criteria. When it is the reason/motivation to participate: facilitator.
Inductive	Accessibility	Degree to which participating in the SMDT meetings is accessible.	
	Medico-legal status	Degree to which the SMDT meetings have a medico-legal status	
Characteristics of the healthcare professional	Personal benefits/drawbacks	Degree to which the SMDT meetings have advantages or disadvantages for the members.	Subcodes: - Support treatment advice - Regional cooperation - Educational value (separate code)
	Educational value	Degree to which the healthcare professional believes that the SMDT meetings enhances the knowledge.	When it is the reason to participate: facilitator. When it is said that they have or have not learnt from the SMDT meetings: implementation criteria.
	Outcome expectations	Perceived probability and importance of achieving the (patient) objectives as intended by the SMDT meetings.	Facilitator: When the outcome expectations facilitate their participation. Implementation criteria: when it is said that the SMDT meetings improve patient outcomes, but nothing is said whether this facilitates or impedes their participation.
	Professional obligation	Degree to which the SMDT meetings fit in with the tasks for which the member feels responsible when doing his/her work.	
	Social support	Degree to which the healthcare professional experiences or expects support from important social referents relating to participating in the SMDT meetings.	
	Descriptive norm	Degree to which other healthcare professionals participate in the SMDT meetings	Barrier: the lack of structural participation of others demotivates them to participate
	Subjective norm	Degree to which important others influence the healthcare professional to participate in the SMDT meetings.	Judgment of expertise
	Self-efficacy	Degree to which the healthcare professional believes he or she is able to implement the activities	Preparation is not needed (believes he/she is able to participate without preparing)

		involved with the SMDT meetings.	
	Knowledge	Degree to which the healthcare professional has the knowledge needed to perform the activities involved with SMDT meetings.	
	Skills	Degree to which the healthcare professional has the skills needed to perform the activities involved with SMDT meetings.	
	Awareness	Degree to which the healthcare professional is aware of the activities involved with the SMDT meetings.	
	Attendance	Degree to which the healthcare professional structurally attends the SMDT meetings as intended.	
Characteristics of the organisation	Formal ratification by management	Degree to which the SMDT meetings are formally ratified by management of healthcare organisations and/or the board of the MCN.	Quotations that relate to that the SMDT meetings are optional / no formal arrangements (within schedule).
	Replacement of staff	Degree to which members of the SMDT meetings can be replaced when absent/leaving.	
	Staff capacity	Degree to which the staffing in the healthcare organisations participating in the SMDT meetings is adequate.	
	Financial resources	Degree to which financial resources that are needed to implement and continuate the SMDT meetings are available.	
	Time available	Degree to which the time that is needed to participate in the SMDT meetings is available.	Subcodes: - point of time - time to register cases - time investment (when it is stated that the relatively low investment facilitates participation, otherwise criteria 'costs of maintenance' or 'costs of services'
	Administrative support	The presence of one or more persons to facilitate the activities involved with the SMDT meetings (i.e. through making minutes)	Subcode - data exchange
	Material resources and facilities	Degree to which materials and other resources or facilities necessary for the performance of SMDT meetings as intended are available.	Subcodes: - online platform - room
	Coordinator	The presence of one person to coordinate the activities related to the SMDT meetings.	

	Unsettled organisation	Degree to which there are other changes in progress that represent barriers or facilitators to the process of implementing and continuing the SMDT meetings (i.e. reorganisation, cuts, other innovations).	
	Information accessible	Degree to which information about and for the activities involved with the SMDT meetings is accessible.	
	Performance feedback	Degree to which feedback is provided to the members about the progress with the SMDT meetings.	
	Governance	The presence of a chairperson during the SMDT meetings to guide the patient discussions.	
Characteristics of the socio-political context	National guidelines, policy and programs	Degree to which the SMDT meetings fit in with existing guidelines, policy and programs established by competent authorities.	

Implementation Criteria

Three values:

1. Agree: When quotations are in line with the description of the criteria.
2. Neutral: When a quotation states something that is related to the criterium, but it is not stated whether it is complying or lacking. For example, the expertise that should be present for a well-functioning SMDT meeting is described but it is not described whether this is currently lacking or not.
3. Disagree: When quotations state that the criteria are currently lacking.

Criteria	**Description**	**Notes**
Building social capital	The cooperation between the healthcare organisations and professionals resulted in (stronger) relationships and trust, eventually increasing the benefits that might be obtained from the SMDT meetings.	
Structural participation	Healthcare professionals structurally attend and structurally sign up patient cases.	Membership growth is not a requirement. Based on the findings this criterium was adjusted to structural participation.
Range of services – patient cases	For each SMDT meeting extra-protocol patient cases are signed up to be discussed.	Neutral: type of patient categories
Range of services – expertise	From each participating centre at least one surgeon, one medical oncologist and one radiation oncologist is present.	Neutral: description of disciplines that should be present

		If it is about the participation of centres or disciplines it is coded as expertise, if it is more about the frequency in which they participate it is coded as structural participation.
Absence of service duplication	The cases discussed or the expertise present during the SMDT meetings are not redundant.	
Coordinator	Presence of one person to guide and coordinate the activities related to the SMDT meetings.	
Commitment	The members are committed to the goals of the SMDT meetings (knowledge-sharing, optimizing treatment advice for extra-protocol cases and reducing variation between the centres) .	
Costs of maintenance	The costs to maintain the SMDT meetings, such as transactions costs and costs of coordinating, are reasonable and payable.	
Cost of services	The costs for participating in the SMDT meetings are relative to the benefits for the individual healthcare professionals and organisations.	
Service access	Participating in the SMDT meetings enhances the accessibility of services for healthcare organisations (i.e. expertise).	Quotations related to second opinions and access to expertise.
Patient outcomes	The members believe that participating in the SMDT meetings improves patient outcomes: most optimal treatment plan for extra-protocol cases of oesophagogastric cancer and less variation between the centres.	When it is said that the SMDT meetings are valuable for the patient: implementation criteria. When it is the reason/motivation to participate: facilitator.
Educational value	Participating in the SMDT meetings enhances the knowledge of the healthcare professionals.	When it is said that they have or have not learnt from the SMDT meetings: implementation criteria. When it is the reason/motivation to participate: facilitator.
Minimum conflict	The SMDT meetings minimally conflict with other cooperation initiatives (i.e. other local or regional MDT meetings).	

Patient outcomes and educational value are implementation criteria because these are goals of the SMDT meetings. Support of treatment advice is not a goal but an additional benefit, not a reason for the introduction of the SMDT meeting and therefore not a criterium.

Appendix J

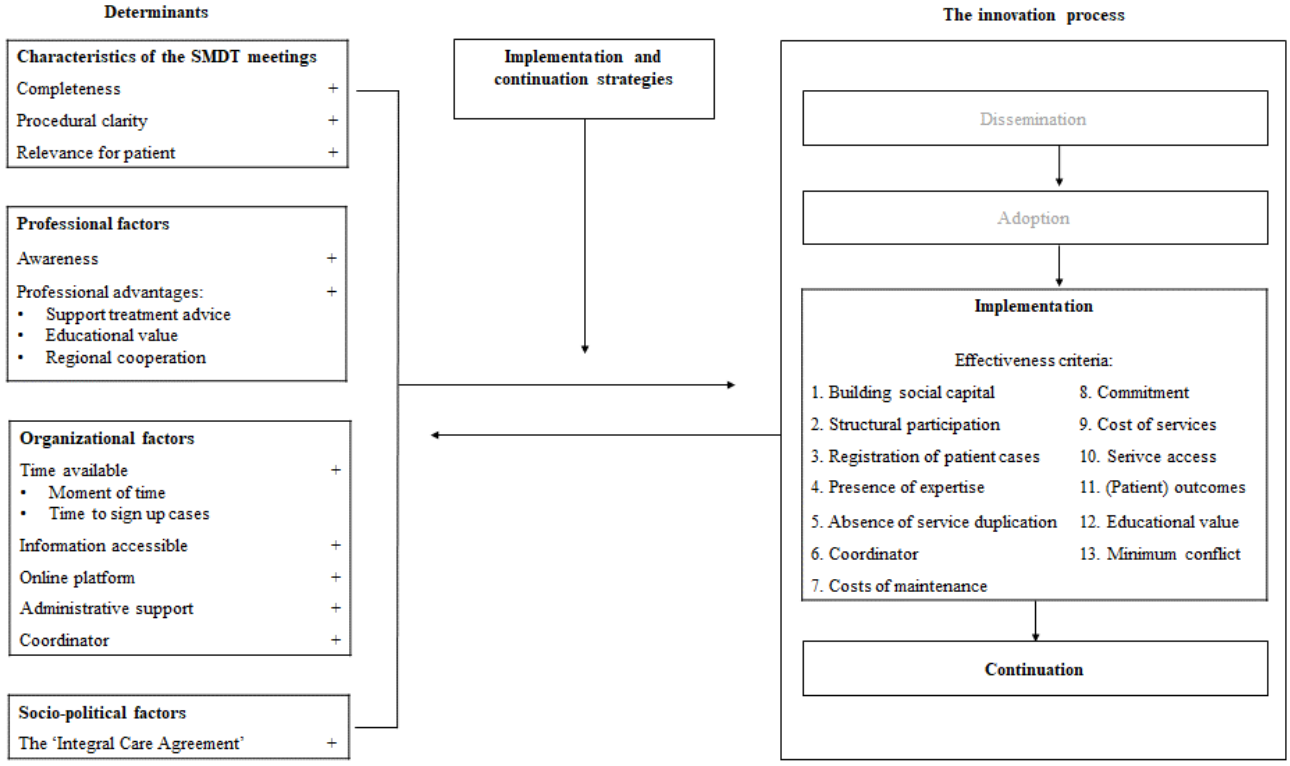
Overview of Healthcare Professionals present at the observed SMDT Meetings per Centre

	Centre 1							Centre 2							Centre 3							Total
	Surg	GE	Med. Oncol.	Rad. Oncol.	Rad., Path. or Nucl. Phy.	CM	T	Surg	GE	Med. Oncol.	Rad. Oncol.	Rad., Path. or Nucl. Phy.	CM	T	Surg	GE	Med. Oncol.	Rad. Oncol.	Rad., Path. or Nucl. Phy.	CM	T	
O1	1	1	1	1	0	0	4	0	0	1	2	0	0	3	1	0	1	1	0	0	3	10
O2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	3	4
O3	2	2	1	1	0	0	6	0	0	0	0	0	0	0	2	0	1	2	0	0	5	11
O4	2	1	1	0	0	0	4	0	0	1	2	0	0	3	1	0	1	1	1	0	4	11
O5	2	1	1	1	0	1	6	0	0	0	1	0	0	1	1	0	0	1	2	0	4	11
O6	0	0	1	1	0	0	2	1	0	0	1	0	0	2	1	0	0	1	0	0	2	6
O7	2	0	2	1	0	0	5	0	0	0	1	0	0	1	1	0	0	1	1	0	3	9

Note: *Surg = surgeon; GE = gastro-enterologist; Med. Oncol. = medical oncologist; Rad. Oncol. = radiation oncologist; Rad., Path. Or Nucl. Phy. = radiologist, pathologist or nuclear physician*

Appendix K

Causal Model for the Implementation and Continuation of SMDT meetings in the MCN oesophagogastric cancer in the North East Region of the Netherlands.



All identified determinants have a positive association with the implementation and continuation of the SMDT meetings.