

BMJ Open Implementing an enhanced recovery after thoracic surgery programme in the Netherlands: a qualitative study investigating facilitators and barriers for implementation

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ABSTRACT

Objectives This study aims to elucidate determinants for successful implementation of the Enhanced Recovery After Thoracic Surgery (ERATS) protocol for perioperative care for surgical lung cancer patients in the Netherlands.

Setting Lung cancer operations are performed in both academic and regional hospitals, either by cardiothoracic or general thoracic surgeons. Limiting the impact of these operations by optimising and standardising perioperative care with the ERATS protocol is thought to enable reduction in length of stay, complications and costs.

Participants A broad spectrum of stakeholders in perioperative care for patients with lung resection participated in this study, ranging from patient representatives, healthcare professionals to an insurance company representative.

Interventions Semistructured interviews (N=14) were conducted with the stakeholders (N=18). The interviews were conducted one on one by telephone and two times, face to face, in small groups. Verbatim transcriptions of these interviews were coded for the purpose of thematic analysis.

Outcome measures Determinants for successful implementation of the ERATS protocol in the Netherlands.

Results Several determinants correspond with previous publications: having a multidisciplinary team, leadership from a senior clinician and support from an ERAS-coordinator as facilitators; lack of feedback on performance and absence of management support as barriers. Our study underscores the potential detrimental effect of inconsistent communication, the lack of support in the transition from hospital to home and the barrier posed by lack of accessible audit data.

Conclusions Based on a structured problem analysis among a wide selection of stakeholders, this study provides a solid basis for choosing adequate implementation strategies to introduce the ERATS protocol in the Netherlands. Emphasis on consistent and sufficient communication, support in the transition from hospital to home and adequate audit and feedback data, in addition to established implementation strategies for

Strengths and limitations of this study

- Strength: our research approach using semistructured interviews with a wide range of stakeholders and subsequent thematic analysis to identify facilitators and barriers for successful implementation of the Enhanced recovery After Thoracic Surgery protocol makes our approach transferable to other fields, countries and contexts.
- Strength: data triangulation; due to interviews with a wide range of stakeholders, we were able to obtain different perspectives on the Dutch situation.
- Limitation: the interviewers were both surgical healthcare professionals; we tried to limit bias with the semistructured nature of the interviews and the use of a predetermined topic list.
- Limitation: no hospital board members and only one health insurance representative were interviewed, which might have biased the results by potentially under-reporting of sociopolitical factors, like reimbursement and costs.

ERAS-type programmes, will enable a tailored approach to implementation of ERATS in the Dutch context.

INTRODUCTION

Lung cancer has the highest incidence of cancer diagnoses and is the leading cause for cancer deaths worldwide.¹ The cornerstone of curative treatment of non-small cell lung cancer (NSCLC) is surgical resection; due to advanced stages at presentation or limited physical condition of the patients, this treatment can only be offered to approximately 20%–25% of new patients with NSCLC.² Anatomical lung resections, however, are associated with a considerable length of stay and postoperative complications that can contribute to significant morbidity.^{3 4}

Long-term outcome and disease-free survival are worse in patients with major pulmonary complications.³⁻⁵ In addition to these clinical outcomes, pulmonary complications affect patient-centred outcomes and healthcare costs.⁶

Therefore, focussing on optimal recovery after surgery is essential. Limiting the impact of operations by optimising and standardising perioperative care, as propagated by the Enhanced Recovery After Surgery (ERAS) Society, has shown to reduce length of stay, complications and costs in several other surgical fields. Limited series of ERAS-type programmes show promising results in patients with lung resection.⁷⁻¹¹

In absence of a Dutch clinical guideline on perioperative care in patients with lung resection, practice variation exists for these patients.¹² This variation in perioperative care is associated with variation in clinical outcomes, for example, length of stay and complications.^{3,4} Due to the mandatory registration in the Dutch national lung surgery audit, reliable national data are available regarding the number of anatomical lung resections per year (over 2200), length of stay (4–8 days) and complications (30%) in the Netherlands.^{3,4}

Based on recent recommendations of the first guideline from the ERAS Society and the European Society of Thoracic Surgeons concerning this patient group, a Dutch protocol was developed.¹³ This protocol is aimed at optimisation and standardisation of perioperative care for lung resection patients, and, as a consequence, reduction of practice variation: the Enhanced recovery After Thoracic Surgery (ERATS) protocol.¹³

ERAS-type programmes rely applying a set of evidence-based care interventions perioperatively.⁷ While individual components might not have a significant effect, the combination of these small improvements is thought to work synergistically.¹⁴ Correlation between overall high compliance rates with ERAS-type protocols and better outcomes support this notion.^{10,15,16} However, successful and sustained implementation of a complex multidisciplinary perioperative care protocol to achieve high compliance is challenging.^{17,18}

In order to implement the ERATS protocol successfully, implementation strategies need to be developed that tackle existing barriers and embrace facilitators. Since facilitators and barriers are dependant on context, it is important to examine them specific to type of care and the healthcare system for which the protocol is intended. Therefore, this study aims to elucidate the facilitators and barriers for succesful implementation of the ERATS protocol in the Netherlands. These insights can be used to develop tailored implementation strategies to support implementation in practice.

METHODS

In this qualitative study, semistructured interviews were conducted with a broad spectrum of stakeholders in perioperative care for patients with lung resection.

Participants

We purposively recruited the following stakeholders in perioperative care for patients with lung resection: patient representatives, healthcare professionals (HCPs), healthcare managers at departmental level, data managers, a representative of an electronic medical record (EMR) company and a representative of a healthcare insurance company. The subjects were selected in consultation with the patient advocacy group Longkanker Nederland (Lung Cancer the Netherlands) and the multidisciplinary ERATS working group of the Dutch Society for Lung Surgery (NVvL). As the majority of lung resections in the Netherlands is performed in larger, non-academic teaching hospitals by general thoracic surgeons, the HCP subjects were mostly recruited from such teaching hospitals. The remainder of the anatomical lung resections is performed mainly in the eight academic medical centres and a few regional hospitals. HCPs from academic medical centres, a regional hospital and a cardiothoracic surgeon were interviewed to broaden the perspective and ensure a representative sample for the Dutch situation.

Patient and public involvement

Longkanker Nederland has been involved in the ERATS project, prior to this problem analysis and the director (LB) participates in this study as an author. They have participated in the development of the ERATS protocol and the design of the ERATS trial that will follow this problem analysis. The subjects, including two patients and a Longkanker Nederland representative, were selected in consultation with Longkanker Nederland. All participants will receive a copy of the article, when published.

The ERATS programme

Like all ERAS-type programmes, ERATS consists of a combination of evidence-based care interventions that are thought to work synergistically.^{7,8} As an illustration: ERATS relies on preparing patients preoperatively, by giving detailed information about what to expect regarding the operation and recovery period, by limiting the fasting time and by avoiding prolonged recovery from anaesthesia by limited use of anxiolytic medication. During the operation, hypothermia is avoided, medication is given against pain and nausea. Opioids are used as sparingly as possible to avoid side effects. Postoperatively, patients will be stimulated to mobilise and resume a normal diet early: to sit in a chair and have a normal meal on the day of operation; chest tubes, urinary catheters, intravenous lines, epidural catheters, etcetera are avoided as much as possible or removed as early as possible, based on clear, protocolled instructions. The combination of interventions is expected to lead to a reduction in length of stay, complications, readmissions and cost.^{10,19}

Interview content/procedure

A topic guide, based on the model of Fleuren *et al*, served as the framework for the semistructured interviews^{20,21} (online supplemental table 1). This model

describes determinants of innovation that influence the adoption, implementation and maintenance of an innovation within the healthcare sector. It recognises four different categories: the determinants related to the innovation itself, factors concerning the users/HCP, determinants regarding the organisation and the sociopolitical context.²⁰ Depending on the role of the subject, different aspects of the topic guide were explored more or less extensively. When no new insights were discovered in the last three interviews, it was considered that sampling saturation was reached.

Process

During a 3-month period (October–December 2019), the first author (EMvM) conducted 14 interviews, with occasional assistance of CTIdB. EMvM is a general thoracic surgeon, working in a teaching hospital and lead of the national ERATS implementation effort; CTIdB is a resident in general surgery. Two interviews were conducted as a face-to-face group interview, the remaining 12 were conducted one-to-one, mostly by telephone. Audio was recorded from all interviews and additional notes were taken during the sessions.

Analysis

With verbatim transcription of the recordings, two of the authors (EMvM and FvN) created a consensus-based codebook (online supplemental table 2), by analysing two interviews independently.²² This codebook was used to code all interviews in ATLAS.ti V.8 (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany). Next, the codes were sorted and grouped together into different themes, following a thematic analysis by two of the authors (EMvM and FvN).²³ To detect patterns in responses as well as for data triangulation, data were organised according to subject group as well: patient representatives, nurses, case manager, physicians, management/supportive within hospital, supportive outside hospital (insurance/EMR).²⁴ The most relevant and illustrative quotes were selected after discussion among the research team.

Ethics

All subjects received study information for participants in writing, informing them of their right to withdraw their cooperation without explanation. Confidentiality was secured by limiting access to the transcripts and data to two of the authors (EMvM and FvN), erasing recordings of the interviews after transcription and erasing identifying information from the transcripts.

RESULTS

In total, 14 interviews were conducted with the stakeholders as summarised in [table 1](#). The healthcare managers we interviewed represented a quality improvement department, a hospital's oncology centre and a clinical surgical department. Interviews lasted on average 43 min (range 25–68 min).

Table 1 Subject characteristics (N=18)

Characteristics	N
Gender	
Male	8
Female	10
Age	
20–29	1
30–39	8
40–49	3
50–59	4
>60	2
Occupation	
General thoracic surgeon	2
Cardiothoracic surgeon	1
Anaesthesiologist	2
Pulmonary physician	2
Nurse	2
Case manager	1
Healthcare manager	3
Patient representative	3
Electronic medical record specialist	1
Health insurance company representative	1
Years active in current role	
0–2	8
3–5	3
5–10	2
>10	5
Organisation type of healthcare professionals/ healthcare managers	N=13
Academic medical centre	2
Teaching hospital	10
Regional hospital	1

The identified determinants, both facilitators and barriers, were organised thematically into five themes involving implementation of the ERATS programme. Each of the themes was divided in subthemes (*italic*), as it is described in [table 2](#).

Theme 1: communication HCP patient

This theme relates to all communication between HCPs and patients, and how this can affect implementation.

Consistent and sufficient information flow

Many stakeholders, the patient representatives, nurses and case manager, in particular, mentioned providing patients with sufficient and consistent information as an important factor for ERATS implementation. ‘*everything was clear and every question was answered, often before the question was even asked. They knew what you would experience every day. That gives confidence*’ (patient 2). Receiving information that was consistent with information from

Table 2 Thematical organisation of identified determinants for implementation of the ERATS protocol in the Netherlands

Theme	Subtheme
Communication HCP patient	<ul style="list-style-type: none"> ▶ Consistent information ▶ Liaison in the transition hospital-home ▶ Use of patient experiences
HCP professional competencies and experience	<ul style="list-style-type: none"> ▶ Different competencies and experience of a multidisciplinary team of HCPs ▶ Accessibility and empathy of HCP ▶ Coordination between HCP's/hospitals
Patient factors	<ul style="list-style-type: none"> ▶ Patient autonomy ▶ Situation at home ▶ Physical condition and age
Factors influencing change in perioperative care delivery	<ul style="list-style-type: none"> ▶ Support for change ▶ Teamwork ▶ Available time for HCPs ▶ Data gathering and feedback
Usability of the ERATS protocol	<ul style="list-style-type: none"> ▶ Concise multidisciplinary protocol ▶ Clear goals ▶ Flexibility ▶ Clear logistics

ERATS, Enhanced Recovery After Thoracic Surgery; HCP, healthcare professional.

other HCPs was deemed an important facilitator as well. The other side, inconsistency or lack of information as a barrier creating confusion rather than confidence, was only mentioned by patient representatives, nurses and case manager.

Support in the transition hospital-home

Patient representatives as well as HCPs mentioned the presence of a case manager as a facilitator. This was mentioned explicitly in the context of the transition from hospital care to further recovery at home.

Again, while many HCPs appreciated the presence of a case manager, the potential downside of the lack of a case manager in postdischarge care only was mentioned by those closest to the patients: patient representatives, nurses and the case manager.

Use of patient feedback

Different forms of patient feedback, as contributor to quality improvement, were mentioned, ranging from formalised lists of patient-reported outcome measures to the ability to speak to an HCP about personal experiences. *I just want to tell someone what went wrong and hope a next patient will not have the same experience again* (patient 1). Using this feedback was considered to be a facilitator for implementing change in perioperative care at the patient level as well as at management and the insurance company level.

Theme 2: HCP professional competencies and experience

This theme encompasses the competencies of individual HCPs, both regarding HCPs' medical expertise as well as HCPs' communicator skills regarding accessibility and empathy.²⁵

Different competencies and experience of a multidisciplinary team of HCPs

HCPs having the medical expertise to deliver the necessary care within their role were mentioned as an important facilitator in protocol implementation, and sometimes the lack of expertise was mentioned as a barrier ... *often they, one more than the other, will dig their heels in. It will also depend on the training level [of the nursing staff] [...] I have found that having a good team on the nursing ward is essential for patient wellbeing* (patient 1). Participation of HCPs with many years of experience was judged to enhance protocol implementation by being able to tailor the generic protocol to individual needs within a certain bandwidth.

Accessibility and empathy of HCP

Accessibility and HCP's empathy—or the lack thereof—were mentioned as facilitators and barriers, respectively. However, not all HCPs were automatically expected to be able to provide these qualities all the time, as long as all needs were met by the team as a whole. ... *it would have been nice if he [physician] would have been more empathetic; sometimes he tries to be and I crack up laughing, thinking "Oh, it's so silly what you're saying now", but I like him and I can take it. My emotional issues I share with the oncology nurse* (patient 1).

Coordination between HCPs

Good-quality handovers and coordination between HCPs lead to a consistent treatment plan. The experience of being treated by one team with one clear plan is expected, but when this coordination among HCPs is lacking, it is deemed a barrier for implementation.

Theme 3: patient factors

The third theme concerns the baseline physical and psychological condition of the patient before surgery as well as the social context of the patient; these factors were predominately put forward by the patient representatives.

Patient autonomy

Patient autonomy was mentioned by patients as well as several HCPs as a tool in perioperative care; respecting patients' autonomy in making the decision to undergo surgery was mentioned as an example of how to achieve motivation for the perioperative care programme. Empowering patients with information about preoperative preparation and sharing this responsibility with patients were deemed another factor that influences implementation.

Situation at home

When the home situation does not allow for early discharge after surgery, this poses a potential barrier, influencing the willingness of a patient to actively participate. Young parents, with small children or a partner with special needs, were mentioned as an example, as were

older patients. *The feeling of being discharged from hospital before they were ready. That is not good, obviously. That stings* (pulmonary Pphysician 2).

Physical condition and age

While age was mentioned by some, the physical condition was mentioned by surgeons and patient representatives alike. Since patients, considered for lung resections, already are screened for the physical ability to undergo such a resection, the comments mostly referred to the physical ability after surgery or limitations in daily life. ... *the fitter you are, going into an operation, the easier your recovery will be* (patient 2). Physical condition and age, however, can influence the expectations of the HCPs as well as the expectations of the patients regarding their ability to adhere to the ERATS protocol.

Theme 4: factors influencing change in perioperative care delivery

In order to implement the ERATS protocol, HCPs have to be able to change the way they work. The facilitators and barriers who were mentioned mainly not only concern determinants at the HCP's team level but also organisational factors associated with the change process.

Support for change

Implementation of ERATS cannot be achieved by HCPs alone; support from management is essential to adopt a multidisciplinary protocol. At management and insurance company level, socioeconomic factors will come into play, where the benefits at the level of individual patients should also translate into cost-effectiveness. ... *the patient is number one, quality of medical care is two and cost is three. Those are the three pillars of our "sensible care" programme [...] a protocol like the one you have developed [ERATS] follows these pillars seamlessly* (insurance representative).

Teamwork

Having a multidisciplinary team that works according to the same protocol was generally considered a facilitator, generating support for individual HCPs to follow ERATS. Previous negative experiences by individual HCPs or perceived contraindications for ERATS, like advanced age, can limit the willingness to implement ERATS. *but this "you've had a big operation, so take it easy for another day"—approach to patients will keep emerging. So old habits and old emotions* (pulmonary physician 2).

The perceived benefits of ERATS and the team effort to achieve multidisciplinary improvement in care were mentioned as facilitator. Another facilitator mentioned was having a clear implementation plan, aided with training sessions, educational materials for both HCPs and patients, so all HCPs know when ERATS has started.

Available time for HCPs

Not having time to gather the ERATS team and discuss implementation is one barrier, perceived extra work by ward nurses or physiotherapists in delivering ERATS

another. *Everybody is so busy; nobody has time to sit down and discuss topics like this [ERATS]—(surgeon 2).*

The realisation of the expected benefits of following the ERATS protocol, like reduction of complications, regarding workload can act as a facilitator as well: *when a patient catches pneumonia, it will mean a lot more work [for the nurses] [...], than just helping them mobilise early'* (quality improvement officer).

Receiving support by colleagues, leadership and management, declaring ERATS implementation a priority and providing logistic and administrative support was mentioned as a facilitator. Even though insurance companies do not want to get involved in specific medical decisions, they can act as a facilitator by supporting quality improvement projects like ERATS implementation in their contract negotiations.

Data collection and feedback

Insight into the effects of ERATS helps to inform patients about what to expect after an anatomical lung resection. And in turn, it also aids implementation by helping HCPs understand the consequences of their actions. *We never look at 30-day outcome data, we're quite bad at that. We really are focused on short term effects.[...] We have difficulty understanding the influence of all our actions in the operating theatre on the 30-day outcome'* (anesthesiologist 2).

The work necessary for data extraction from EMRs, data processing and structured feedback sessions poses a significant barrier. While EMR companies are working on better data extraction capabilities, for now, lack of automated data extraction is deemed a barrier.

Theme 5: usability of the ERATS protocol

While all interviewees agreed on knowledge of the protocol by the HCPs as a facilitator, the HCPs also acknowledged the potential barriers created in case of a voluminous, unclear and/or inconsistent protocol.

Concise multidisciplinary protocol

Clear instructions on procedures and guidelines were mentioned by all interviewees. Having one multidisciplinary protocol was mentioned as a facilitator in eliminating different styles of different HCPs and, therefore, a facilitator in adopting ERATS. Specifically, standardised, rather than physician dependent, use of minimally invasive surgical techniques and clear step-by-step instructions regarding pain management were mentioned specifically as determinants of successful implementation.

Clear goals

Another subtheme touched on having clear recovery goals to work towards by following the protocol. By informing patients and HCPs about these goals, they can be engaged to help achieve them. In contrast, sending mixed signals, due to lack of clarity of the goals of the protocol, was deemed a barrier.

Flexibility

While many of the responses mentioned the benefits of a clear and concise protocol, flexibility to deviate from the protocol was mentioned as a facilitator as well. Being able to tailor the protocol to specific needs of specific patients was mentioned as a factor to achieve acceptance and implementation of ERATS, noting that ERATS should be a method and not a goal in itself. *I think it's a perfect plan [ERATS] and I think a lot of it is very good, as long as there is room for exceptions* (patient 1).

Clear logistics

The ERATS protocol is thought to provide guidance and enhance the logistic preoperative processes, while keeping time to surgery to a minimum. Postoperatively, well-prepared patients are expected to be able to adhere to the clear daily goals, resulting in a predictable postoperative period.

DISCUSSION

Our qualitative study identified facilitators and barriers for successful implementation of the ERATS protocol in the Netherlands, which were organised, through thematic analysis, into five themes. Most facilitators and barriers reinforce findings in previous publications; most notably the necessity of a multidisciplinary team, with leadership from a senior clinician and support of an ERAS-coordinator as facilitators; lack of feedback on performance and absence of management support as barriers.^{17 18} Our study puts emphasis on the potential detrimental effect of inconsistent communication, the lack of support in the transition from hospital to home and the barrier posed by lack of accessible audit data.

The main references for our findings are the consensus statement on training and implementation published by the ERAS Society and a systematic review of barriers to and facilitators of implementing enhanced recovery pathways, which was based on the Consolidated Framework for Implementation Research (CFIR).^{17 18 26}

The first theme, concerning communication between HCPs and patients, was very prominent in our interviews. In contrast to the accepted facilitator of consistent and sufficient communication, patient representatives in our study also stressed the potential barrier posed by poor or inconsistent information regarding ERATS.^{17 18} The same pattern was observed regarding support in the transition hospital to home, which was viewed as a facilitator by all; the lack of support in this transition was reported as a barrier by those having to compensate for its absence: patients, their representatives and nurses. The importance of extending support beyond the hospital walls has been described previously, but it does not feature in the consensus statement nor the systematic review.^{17 18 27} Our finding and the omission in both publications suggest a possible blind spot for HCPs regarding continuation of care after discharge. Empowering patients in preparation for discharge as well as active postdischarge surveillance

has been shown to reduce ER visits and readmissions in patients with ERAS.^{28 29}

Support by management and department leadership was mentioned as essential facilitator for change in our study and is unequivocally supported by the literature.^{17 18} Lack of easily accessible audit and feedback data, to regularly evaluate ERATS implementation as well as patient experiences, was emphasised as a barrier; being able to show consequences of certain actions to HCPs, to provide patients with real data on what to expect and to justify investments in time and resources to management and insurance companies, was stressed to be a key facilitator.

Having a clear and concise multidisciplinary ERATS protocol used across different specialties was thought to aid consistent execution by all involved.^{18 27} High levels of protocol adherence are important to achieve the intended benefits for the patients.^{10 15 16} This is, however, at odds with the call for some flexibility by some of our interviewees and in the previously mentioned patients as partners' study.²⁷ When individualised information or care for specific needs of a patient can be provided, high protocol adherence can still be achieved in a satisfactory manner for the patient.

Our study adds to the body of knowledge regarding potential facilitators and barriers and their potential solutions for ERATS implementation, as discovered in the Dutch situation. In addition to the suggestions from the ERAS Society consensus statement and the systematic review, several other implementation strategies can be selected.^{17 18} Even though there is no undisputed way to select implementation strategies, projects like the Expert Recommendations for Implementing Change have created a set of well-defined implementation strategies for (CFIR)-based contextual barriers that can be deployed.^{30 31} The description of our methodology makes our approach transferable. This potentially aids analysis of the local situation and ERATS implementation in other contexts.^{17 18}

The main take-aways from our study are that implementation strategies for ERATS in the Netherlands should put emphasis on communication between HCPs and patients supported by educational materials, preparing patients as well as family members, to be active participants. Special provisions should be made to extend ERATS care beyond hospital wards, especially after discharge. Additional strategies should include optimisation of data collection, analysis and feedback to the ERATS Teams to regularly evaluate ERATS implementation data as well as patient experiences. Early measurable effects from implementation will motivate ERATS Teams during implementation and regular standardised evaluation of feedback data is thought to help continuous quality improvement.^{32 33} Providing IT support and adequate data management will also provide data to justify the resources deployed for ERATS implementation.³⁴ The specific attention to these determinants will help tailor implementation strategies to the Dutch situation. A Dutch implementation study, the

multicentre ERATS trial, is currently ongoing to evaluate these implementation strategies.

Strengths and limitations

One strength of our study is data triangulation; using a wide range of stakeholders, we were able to obtain different perspectives on the Dutch situation. By definition of qualitative research is not generalisable, in addition, the results of our analysis are specific to the Dutch sociopolitical context. Yet, the research approach with semistructured interviews and thematic analysis makes this approach transferable to other fields, countries and contexts.

Another limitation is that the interviewees were both surgical HCPs; we tried to limit bias with the semistructured nature of the interviews and the use of a predetermined topic list. Also, no board members and only one health insurance representative was interviewed, which might have biased the results. For this reason, sociopolitical factors, like reimbursement and costs, might have been underreported.

CONCLUSION

Based on a structured problem analysis among a wide selection of stakeholders, this study identified specific facilitators and barriers for implementing the ERATS protocol in the Netherlands. Based on our study, emphasis on consistent and sufficient communication, support in the transition from hospital to home and adequate audit and feedback data, in addition to known general guidelines on implementing ERAS-type programmes, will enable a tailored approach to implementation of ERATS in the Dutch context.

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