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Implementation of Quality Improvement Collaboratives: The case of the Danish Healthcare Quality Programme

PhD dissertation

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Contents

List of Original Papers

This PhD dissertation is based on the following four scientific papers:

Paper A **The Danish Health Care Quality Programme: Creating change through the use of quality improvement collaboratives**
Kathrine Carstensen, Anne Mette Kjeldsen, Stina Lou, and Camilla Palmhøj Nielsen
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Paper B **Implementation through translation: A qualitative case study of translation processes in the implementation of quality improvement collaboratives**
Kathrine Carstensen, Anne Mette Kjeldsen, Stina Lou, and Camilla Palmhøj Nielsen
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Paper C **Engaging health care professionals in quality improvement: a qualitative study exploring the synergies between projects of professionalisation and institutionalisation in quality improvement collaborative implementation in Denmark**
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Paper D **Distributed leadership in health quality improvement collaboratives**
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Throughout this summary, the papers are referred to as Paper A, Paper B, etc. The papers are provided in Appendices 1-4.

List of Abbreviations

BMI: Body Mass Index

IHI: Institute for Healthcare Improvement

MUSIQ: Model for Understanding Success in Quality

PDSA: Plan-Do-Study-Act

QIC: Quality improvement collaborative

QI: Quality improvement

QIC Fractures: QIC on upper femur hip fractures among people aged 65 years and older

QIC Diabetes: QIC on children with diabetes

WHO: World Health Organization

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English Summary

Worldwide, quality and safety in healthcare remain key challenges. In the search for effective quality improvement strategies, policymakers and healthcare authorities have increasingly turned their attention towards collaborative, bottom-up approaches where healthcare professionals are actively engaged in developing and implementing quality improvement. The quality improvement collaborative (QIC) approach represents one such approach that has become widely applied. A QIC is a learning collaborative that convenes teams of healthcare professionals from various organisational settings to enhance their services within a targeted healthcare topic. Evidence concerning the effects of QICs shows positive but varying and contextual results. To be able to comprehensively understand these results and support the development of the QIC approach and its successful implementation across diverse healthcare contexts, it is necessary to investigate the implementation of QICs in specific settings.

Drawing on a qualitative case study focused on the use of QICs within the Danish national healthcare quality programme, this PhD dissertation therefore investigated how QICs are implemented as a professional-driven implementation approach to quality improvement in healthcare. The dissertation comprises four research papers and is based on triangulated qualitative empirical data collected through 39 individual and focus group interviews with 99 employees and managers involved in the implementation of two nationwide QICs. Furthermore, observations have been made of 34 meetings (approx. 60 hours in total) central to their implementation, and relevant documentary material has been collected.

The dissertation demonstrates a strong commitment among healthcare professionals driving the QIC implementation. This commitment is evident from their wide engagement and active agency in the implementation process. The professionals' engagement is formed by a fruitful integration of the professions' projects of professionalisation and institutionalisation. This integration is facilitated by the bottom-up approach to implementation, the participation of local coordinators in the local QIC implementation process and the QICs' clear focus on development and delivery of high-quality patient care. In terms of their active agency, the professionals, together with local and regional coordinators, engage in rich translations of QICs to tailor them to their specific organisational contexts. Furthermore, the professionals engage in highly aligned, bottom-up and emergent distributed leadership practices

related to the arrangement of their teamwork, the division of tasks and roles within their QI team, and the aims and methodology of the QIC implementation. This approach is experienced as crucial for the progression of the QIC implementation and the achievement of the QIC outcomes.

Despite the professionals' strong commitment, implementing QICs bottom-up is not without challenges. Examples of radical translation practices, misaligned distributed leadership practices and lacking professional engagement point to the vulnerability of this approach. To accommodate this vulnerability, implementation support from local coordinators and formal managers is crucial. Formal managers possess important responsibilities regarding the prioritisation and legitimisation of the local QIC implementation, the framing of the QICs to promote professional engagement and decision-making regarding acceptable translations of the QIC intervention. Local coordinators play an important role as facilitators of the local QIC implementation process by offering processual and methodological support and by promoting engagement by reducing tensions between the professions' professionalisation and institutionalisation projects. Finally, the dissertation underscores the significance of organisational complexity in QIC implementation. Implementation of QICs in cross-professional and cross-organisational/ cross-sectoral settings requires greater implementation effort and support from formal managers and local coordinators, but may also potentially bring about distinct benefits.

The dissertation extends current QIC implementation research. Furthermore, it offers new insights and identifies important attention points for the continuous development of the QICs as a professional-driven approach to quality improvement in healthcare and for creating the best circumstances for their successful implementation across diverse healthcare settings.

Dansk Resumé

Kvalitet og sikkerhed i sundhedsvæsenet er centrale udfordringer over hele verden. I deres søgen efter effektive strategier for kvalitetsudvikling har beslutningstagere og sundhedsmyndigheder i stigende grad rettet opmærksomheden mod netværksbaserede bottom-up-tilgange, hvor de sundhedsprofessionelle medarbejdere inddrages aktivt i udviklingen og implementeringen af kvalitetsforbedringerne. Lærings- og kvalitetsteams (LKT) er et eksempel på sådan en tilgang, som anvendes bredt. Et LKT er et læringsnetværk, der består af en række lokale forbedringsteams med ledere og medarbejdere fra forskellige relevante afdelinger og enheder, som arbejder struktureret med at forbedre kvaliteten af et udvalgt klinisk område. Eksisterende forskning vedrørende effekten af at anvende LKT viser positive, men varierende og kontekstafhængige resultater. For at kunne opnå en fyldestgørende forståelse for disse resultater og blive i stand til at understøtte den fortsatte udvikling af LKT-tilgangen og dens vellykkede implementering på tværs af forskellige organisatoriske kontekster i sundhedsvæsenet, er det nødvendigt at undersøge implementeringen af specifikke LKTer.

Med udgangspunkt i et kvalitativt casestudie af anvendelsen af LKT inden for det danske kvalitetsprogram for sundhedsvæsenet har denne ph.d.-afhandling derfor undersøgt, hvordan LKT implementeres som en tilgang til implementering af kvalitetsudvikling i sundhedsvæsenet drevet af sundheds-professionelle. Afhandlingen består af fire forskningsartikler og er baseret på trianguleredе kvalitative empiriske data. Data er indsamlet på baggrund af 39 enkeltpersonsinterviews og fokusgruppeinterviews med 99 medarbejdere og ledere involveret i implementeringen af to landsdækkende LKTer, observationer af 34 møder (ca. 60 timer i alt) centrale for LKTernes implementering, og relevant dokumentarisk materiale.

Afhandlingen viser, at de sundhedsprofessionelle tager et stort ansvar for at drive LKT-implementeringen. Dette ansvar afspejles i deres engagement og aktive handlekraft i implementeringsprocessen. De sundhedsprofessionelles engagement formes af et positivt samspil mellem professionernes professionaliserings- og institutionaliseringsprojekter. Det samspil understøttes af bottom-up-tilgangen til implementering, deltagelsen af kvalitetskoordinatorer i det lokale implementeringsarbejde, og LKTernes tydelige fokus på at skabe høj kvalitet i patientbehandlingen. Hvad angår de sundhedsprofessionelles aktive handlingskraft, viser resultaterne, at de i betydelig grad deltager sammen med regionale og lokale

kvalitetskoordinatorer i oversættelse af LKTerne og derved tilpasser dem til deres specifikke organisatoriske kontekst. Desuden deltager de sundhedsprofessionelle i velafstemte, spontant distribuerede ledelsespraksisser. Disse ledelsespraksisser vedrører særligt distribuering af teammedlemmernes roller i, rammer for og ønskede resultater af deres lokale forbedringsarbejde, og har en oplevet betydning for fremgangen og resultaterne af deres LKT-implementering.

Til trods for de sundhedsprofessionelles store engagement og aktive handlekraft, er bottom-up-implementering af LKT ikke uden udfordringer. Tilgangens sårbarhed tydeliggøres gennem eksempler på radikale oversættelsespraksisser, ikke-afstemte distribuerede ledelsespraksisser og tilfælde af begrænset fagligt engagement. For at begrænse denne sårbarhed er opbakning fra og aktiv deltagelse af formelle ledere og lokale kvalitetskoordinatorer i implementeringsprocessen afgørende. De formelle ledere udfylder en central rolle i forhold til prioritering og legitimering af den lokale LKT-implementering, rammesætningen af LKTet med henblik på at fremme de sundhedsprofessionelles engagement, samt beslutninger om, hvad der er acceptabelt med hensyn til niveauet for og typer af oversættelse af LKTet. De lokale kvalitetskoordinatorer spiller en væsentlig rolle som facilitatorer af den lokale LKT-implementering ved at yde procesfacilitering og metodeunderstøttelse. Desuden understøtter kvalitetskoordinatorerne de sundhedsprofessionelles engagement ved at nedtone og opløse konflikter mellem professionernes professionaliserings- og institutionaliseringsprojekter. Endelig understreger afhandlingen betydningen af organisatorisk kompleksitet for LKT-implementeringen. Implementering af LKTer i tværfaglige og tværorganisatoriske/ tværsektorielle sammenhænge kræver en større implementeringsindsats og tydeligere opbakning og involvering fra formelle ledere og lokale kvalitetskoordinatorer, men rummer samtidig potentiale for større udbytte.

Med disse resultater udbygger afhandlingen den nuværende LKT implementeringsforskning. Samtidig bidrager afhandlingen med nye perspektiver og vigtige opmærksomhedspunkter i forhold til den kontinuerlige videreudvikling af LKT som en tilgang til kvalitetsudvikling i sundhedsvæsenet, og til at skabe de bedste forudsætninger for LKTernes vellykkede implementering på tværs af forskellige organisatoriske kontekster i sundhedsvæsenet.

Chapter 1: Introduction

Worldwide, the quality and safety of healthcare remain key challenges. Patients are exposed to clinical risks, low-quality treatment and unjustified variations in quality of care (1-3). In addition, a growing body of evidence shows discrepancies between actual clinical practices and recommended standards (4-8). In response, policymakers and healthcare authorities are actively seeking effective strategies for enhancing healthcare processes and patient outcomes. Attention has increasingly turned towards various approaches to quality improvement, such as 'Lean Methodology', 'Total Quality Management', 'Six Sigma' and several others (1, 2, 9-12). However, critics suggest that many of these approaches have been developed in settings outside healthcare, and therefore often are resisted by healthcare professionals (5, 10, 13, 14). Furthermore, a pivotal insight gained from more recent healthcare improvement research is that improving quality of healthcare requires development of organisational setups that promote knowledge sharing, coordination of improvement activities and cultivation of a supportive improvement culture (1, 4, 5, 15). In addition, there is growing recognition of professional engagement as an essential precondition for the success of quality improvement initiatives. It is becoming evident that many 'top-down'-driven initiatives face challenges in achieving their stated aims because they not sufficiently succeed in engaging the professionals (1, 14, 16). Considering these lessons, policymakers have turned to collaboration-based approaches where healthcare professionals are engaged in implementing quality improvement 'bottom-up'. Such bottom-up approaches provide professionals with the responsibility for setting agendas and driving the implementation of the quality improvement (QI) initiatives, in alignment with policymakers' and healthcare authorities' intentions (11, 17).

The quality improvement collaborative (QIC) approach represents one such approach to collaboration-based, bottom-up quality improvement that has become widely applied in both hospital settings and at the health system level (4, 8, 11, 15, 18). In general, a QIC is a learning collaborative that brings together teams of healthcare professionals from various organisations to work in a structured way to improve their services within a specific healthcare topic. QIC engages the teams in a series of meetings aimed at familiarising them with clinical best practice within the topic chosen and quality improvement methodology. These sessions provide a platform for the teams to share their ideas for and experiences of implementing

changes in their own local settings (8, 13, 15, 18-20). In addition to their stated capacity in accelerating quality improvement, the significance of QICs lies in their proposed ability to create professional engagement and agency in the QIC implementation. Evidence concerning the effectiveness of QICs generally shows positive but varying and contextual results (4, 18, 19, 21). Despite these results, in-depth knowledge regarding QIC implementation, including its inherent context-specific activities, processes and practices, is lacking. This gap in knowledge impedes a thorough understanding of their effects. Consequently, a call has been made for research that illuminates the processes of QIC implementation and what actually happens when setting up and implementing QICs in specific contexts (20, 22-26).

This dissertation aims to answer this call by qualitatively investigating how QICs are implemented as a healthcare professional-driven quality improvement approach within a national Danish programme for quality in healthcare. Hereby, the dissertation contributes with a comprehensive, in-depth understanding of the QIC implementation process, which is paramount for further development of QICs as an approach to quality improvement, and for ensuring their successful implementation across diverse healthcare settings.

To establish the context and further argue for the relevance of this PhD dissertation, the rest of this introduction provides a brief outline of the use QICs as an approach to implementing quality improvement in healthcare. This includes a presentation of how QICs are used in the Danish healthcare system to implementation of the Danish quality programme. Furthermore, the chapter provides an outline of existing QIC implementation literature and highlights the knowledge gaps within this literature. Thereafter, the aim and the research questions of the dissertation are presented. The chapter ends with an overview of the chapters of the dissertation.

QIC as a quality improvement approach in healthcare

The QIC approach originated in North America in the late 1980s, with the earliest well-documented QICs being the "Northern New England Cardiovascular Disease Study Group" and the "Vermont Oxford Network" (4, 12, 15). The QICs became more formalised with the “Breakthrough Series Collaborative”, established by the ‘Institute for Healthcare Improvement’ (IHI) in 1995 (4, 15, 27). Since then, various modifications of the QIC approach have been developed. However, when comparing these modifications, a general consensus on the main features of the approach exists (13, 15, 19, 25). These main features are presented in Box 1 below.

Box 1. Main features of Quality Improvement Collaboratives*

- A **focused healthcare topic**, for example specialised palliation, stroke treatment or treatment of children with diabetes.
- Participation of **several multi-professional teams** from different healthcare organisations committed to improve their services within a specific healthcare area and share how they made their improvements.
- A **set period**, typically 12–18 months.
- **Evidence** of large variations in services within the chosen healthcare area, or of gaps between current and best clinical practices.
- The presence of an **expert faculty** with clinical and improvement experts who provide the teams with knowledge about evidence for improvement, changes that have worked successfully at other organisational sites and quality improvement methodology.
- The participating teams apply '**plan–do–study–act (PDSA) cycles'** to implement small scale improvement initiatives and evaluate their effect.
- The participating teams track their performance by setting **measurable targets and collecting data**.
- The participating teams engage in **learning sessions** at least twice, for one-three days, to learn the improvement methodology, share their changes, results and experiences, and discuss a strategy for disseminating their experiences, spreading their changes and improvements.
- Between learning sessions, the participating teams are provided with **methodology and process support** by the collaborative organisers, e.g., through visiting quality improvement facilitators, emails and telephone meetings.

* The features are outlined based on condensation of descriptions of QIC features from Øvretveit et al. (2002)(13), Wells et al. (2018)(19), de Silva (2014)(25), and Martin & Dixon-Woods (2022)(15).

The QICs have emerged as a dominant approach for quality improvement across diverse healthcare systems and across a broad range of organisational settings and clinical specialities (4, 15, 19, 25). This widespread use of the QIC approach is further unfolded in Paper A (Appendix 1).

As already briefly highlighted, evidence of the effectiveness of the QIC approach generally demonstrates positive but varying and contextual outcomes. A recent (2018) systematic review concludes that the QICs "(…) *were largely effective in reaching their stated aims, with 83 % claiming improvement in some of the clinical processes and outcomes investigated*" (Wells et al. 2018, p. 236)(19). Similar conclusions were made in other systematic reviews, such as those by Garcia-Ellorio et al. (2019)(21), Atkins et al. (2023)(28) and Zamboni et al. (2020)(18). However, challenges persist within the studies contributing to the evidence. A major challenge, highlighted by several systematic reviews, is the scarcity of information regarding the QIC implementation processes (4, 7, 15, 23). As Martin & Dixon-Woods (2022) notes:

> *"QICs have some of the features of 'black boxes': complex interventions with many components, which are often not made*

> *clear, and whose role in triggering the mechanisms that result in intended (and unintended) change is often left under-theorised or unexamined."* (Martin & Dixon-Woods 2022, p. 15)(15)

This lack of knowledge regarding implementation hampers interpretation of the effects of the QICs and opportunities for achieving positive QIC outcomes. Another challenge exacerbating this difficulty is the variability in the implementation and operation of complex interventions, such as QICs, which tend to vary across organisational contexts rather than following a linear and uniform trajectory (15, 20, 29, 30). These challenges are exacerbated by another limitation highlighted in several systematic reviews, viz. that many of the primary studies included in the reviews provide insufficient descriptions of the contents of the QIC intervention, including how it was implemented and if it was implemented as intended. The insufficiency of these descriptions further hampers interpretation of the QIC effects of (7, 15, 19, 23).

The use of QICs in the Danish healthcare system

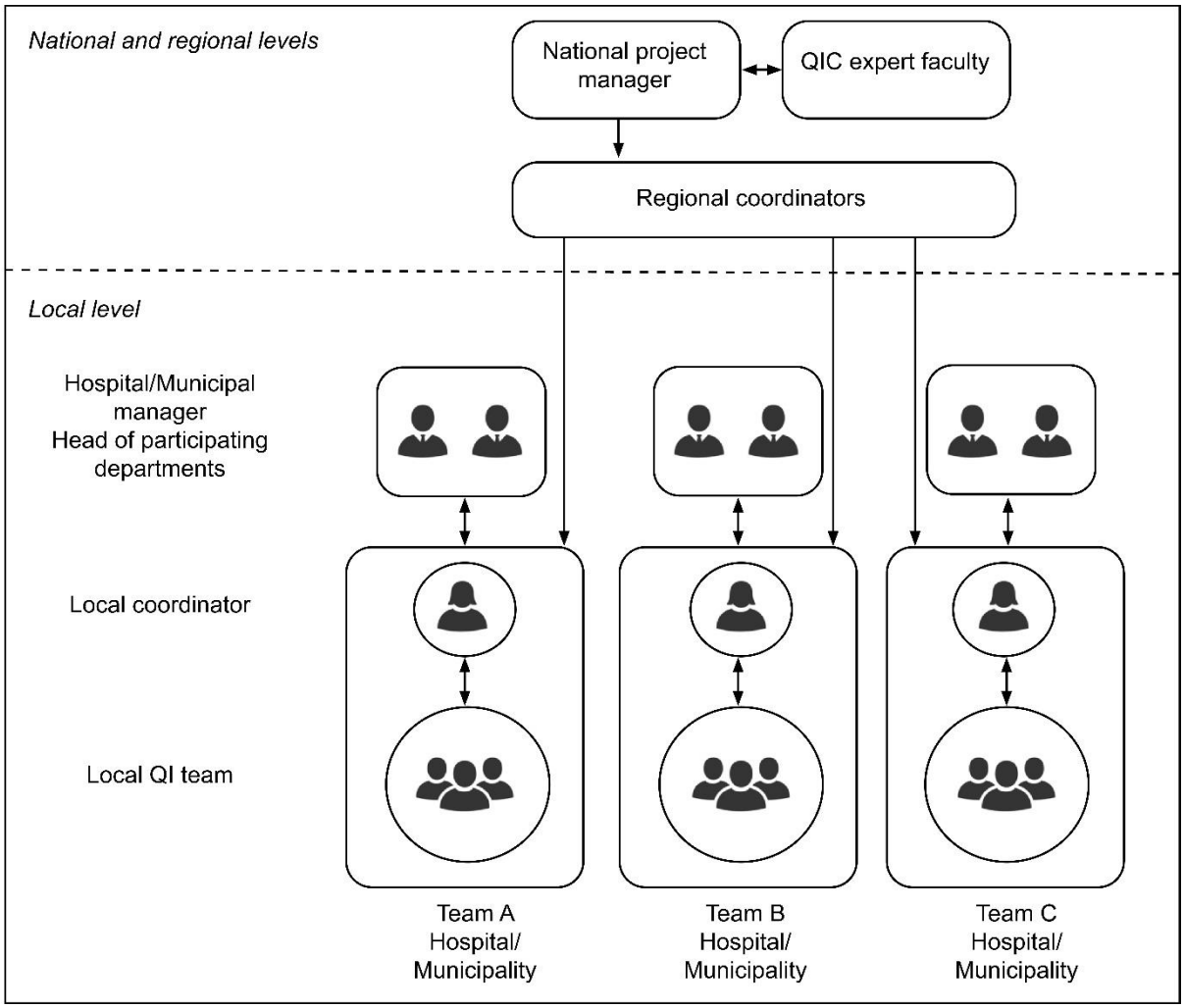
In Denmark, the QICs were introduced as an approach to implementation of quality improvement at a national level in 2015 (31). They were introduced as part of a new Danish healthcare quality programme, developed by the Danish Government together with the stakeholder organisations for the Danish regions and municipalities. The quality programme was introduced with the aim of "*accelerating the improvement of the quality of the entire Danish healthcare system*" (Dansk Selskab for Patientsikkerhed 2014, p. 7)(31, 32). It also aimed to address the disengagement with the existing quality improvement work among healthcare professionals, who often perceived them as bureaucratic and disconnected from their clinical practice (33, 34). Thus, the introduction of QICs was driven by a key political intention to introduce a more bottom-up-driven approach to quality improvement. This approach aims to acknowledge the expertise of healthcare professionals and empower them to take responsibility for the development and implementation of quality improvement (33, 34). The quality programme and its political objectives, along with the rationale behind the decision to apply QICs, are described in further details in Paper A.

Although the QIC approach has previously been applied in various local and regional quality improvement projects (35-37), the quality programme represents, within a Danish context, the inaugural use of QICs as approach to implementation of quality improvement as part of a nationwide, government-initiated programme aimed at enhancing the quality of the entire healthcare system. Furthermore, Denmark stands among the pioneers in applying QICs to the implementation of nationwide quality

programmes. Only a handful of other countries in Northern Europe (e.g., the Netherlands and United Kingdom), have utilised QICs as the foundation for national quality improvement initiatives (23). This makes Denmark and the Danish quality programme an interesting case for studying QICs as an approach for implementing nationwide healthcare quality improvement.

As highlighted in Paper A, the political objective of introducing QICs as a bottom-up-driven approach to quality improvement is reflected in the organisational set-up of the QICs. Thus, although the QICs are initiated at the national level and participation is mandatory for the five Danish regions, the individual regions are responsible for implementing the QICs together with the participating local sites. The overall organisation of the QICs within the quality programme is displayed in Figure 1.

Figure 1. The overall organisation of the QIC approach within the Danish healthcare quality programme*



* Figure 1 is a combined and adjusted version of figures presented in Papers A (Appendix 1) and Paper D (Appendix 4). The icons are borrowed from www.colourbox.dk.

The organisational set-up displayed in Figure 1 is presented in detail in Paper A. Here, I highlight the most important and distinctive features of the QICs. The structure of the QICs largely adheres to the general main features presented in Box 1 (31). Depending on the healthcare topic under consideration, the QIC may either be solely hospital-based or cross-sectoral, incorporating QI teams from hospitals, municipal healthcare providers and, in some instances, general practice. All QI teams include employees with various professional backgrounds relevant to the specific QIC, and from various departments/organisational units, if relevant. I vary between QI teams whether the managers of the participating employees are part of the team or provide support from the sideline. To provide leeway for QI teams to tailor the QIC to their local context, the objectives of the QICs are deliberately formulated in broad terms. Methodologically, the QICs rely on the principles of the Breakthrough Series Collaborative. However, for the same reasons as with the QIC objectives, the regions and local sites are provided with methodological latitude, allowing them to apply additional quality improvement methods and tools. Finally, during the implementation period, the QI teams receive implementation support from regional and local coordinators. These coordinators are typically quality improvement consultants employed in the region or the participating hospital/municipality. At an overall level, these coordinators are responsible for providing process facilitation and methodological support (31, 38). A more thorough description of the coordinators' roles is provided in Paper B (Appendix 2) and Paper D (Appendix 4).

Main areas of research in QIC implementation literature

Within the QIC literature, most studies evaluating the QICs have investigated their effects rather than their implementation processes. As already mentioned, the limited knowledge about QIC implementation processes challenges the interpretation of the effect results. Several researchers have therefore highlighted the need for opening the 'black box' of QIC implementation (15, 20, 23, 39). In response to this call, a small yet growing body of literature has emerged to expand our insights into the QIC implementation process. This literature primarily comprises two strands of studies; one focused on identifying implementation facilitators and barriers, and contextual factors influencing QIC outcomes; the other investigating aspects of the QIC implementation process in specific settings. In the following, I introduce these two strands of literature, outlining their main insights and highlighting the existing research gaps that the dissertation aims to address.

Facilitators and barriers to successful QIC implementation

The first strand of literature primarily consists of systematic reviews and a few qualitative studies (4, 8, 18, 24, 26, 28, 40-43). Common among these studies is an implementation science approach to implementation, influenced by medical sciences (44), focused on identification of contextual factors that either facilitate or hinder successful QIC implementation and outcomes. In particular, the studies focus on contextual factors within three broad categories: the characteristics of the QIC intervention and implementation processes, the inner setting of the participating sites and their outer setting.

Regarding the characteristics of the QIC intervention and implementation processes, five main factors emerge consistently across the studies. First, studies point to the importance of adaptability and flexibility in the QIC intervention for successful implementation. This is due to the potential it offers for tailoring the intervention to meet the diverse needs of various sites (24, 28, 42). Second, one study emphasises the significance of the level of complexity involved in the QIC processes, with complex QIC processes (e.g., those requiring multi-professional coordination) being more difficult to implement and less likely to result in positive outcomes (24). Third, studies consistently highlight the healthcare professionals' positive engagement as a critical contributor to QIC implementation and outcomes. Likewise, they identify insufficient engagement as a barrier (4, 8, 18, 24, 28, 40, 41). Fourth, studies highlight the support from external facilitators as critical to successful QIC implementation (4, 18, 22, 24, 28, 42). Finally, stability and a multidisciplinary composition of the team are emphasised as significant for the QIC implementation and outcomes (18, 26, 28, 43).

In regard to the inner setting of the participating sites, three factors stand out. First and foremost, the studies collectively underscore the positive association between formal leadership support and enhanced QIC implementation and outcomes (18, 24-26, 40, 43). Similarly, the negative implications of missing support from formal managers on QIC outcomes are highlighted (24, 26). Second, the prioritisation of the QIC intervention within the participating sites, including resource availability, is emphasised as a key determinant of success (8, 18, 24, 28). Finally, studies highlight the negative impacts on QIC outcomes of structural changes in the participating sites during the implementation (18, 24).

Finally, in terms of the outer setting, the studies mainly point to the positive influence on QIC implementation and outcomes of alignment between the QIC intervention and existing national priorities and quality strategies. Such alignment is stated to promote formal leadership support and professional engagement in the QIC implementation (8, 18, 24).

In summary, the findings of this first strand of QIC implementation literature provide important insights into the contextual nature of QIC implementation and outcomes. They highlight the influence of a multitude of contextual factors stemming from both the inner and outer settings of the participating sites, along with the characteristics of the QIC intervention and implementation processes. However, the findings leave several questions unanswered. Most importantly, as contextual factors are presented at an aggregated level, questions persist regarding the underlying mechanisms through which they exert influence. For example, which formal leadership practices are needed to support successful QIC implementation and achieve the desired outcomes? Or, what engages professionals in QIC implementation? To answer these questions and provide a more nuanced understanding of how various contextual factors influence QIC implementation and outcomes, this dissertation argues, aligned with calls for research made by other scholars within the QIC literature, that in-depth investigation of how QICs work and are implemented in specific settings is needed (18, 20, 23, 26, 29).

The processes of QIC implementation

The second, though somewhat smaller, strand of QIC implementation literature provides nascent insight into the implementation of QICs in specific settings (20, 29, 45-48). Based on qualitative case studies and ethnographic research, these few studies are characterised by a more dynamic perspective on implementation, inspired by social science (44). Their common aim is to explore specific stages of the QIC implementation process or specific elements of the QIC intervention and implementation process.

The processes of adjustment of the QICs during their implementation in local contexts constitute the primary area of research within this strand of literature (20, 29, 45). The findings collectively show how the QICs are not implemented linearly across organisational settings but rather are shaped and adjusted in accordance with the local contexts. Broer et al. (2010) illuminated how these adjustment processes led to a shift in the focus of the QIC content during the implementation process (20). Furthermore, the findings by Stoopendaal & Bal (2013) showed how the participating QI teams actively adjusted the QIC intervention in response to local negotiations and various translation practices. Adjustments were undertaken to ensure local embeddedness and to sustain improvements (29). The participating QI teams' adjustment practices to make the QIC fit the local context were also a key finding in the study by Dixon-Woods et al. (2013). This study furthermore pointed to the broader influence of the local context for the QIC implementation process and the outcomes hereof. Thus, the QIC programme evaluated in the study had a variable impact on the

various participating sites, and the authors showed how this variation was influenced by the inner and outer contexts of the participating sites. For example, past experiences with quality improvement and the extent to which the local managers succeeded in creating local commitment to the QIC implementation were key contextual factors influencing the programme's impact on local practices (45).

A further key finding of the study by Dixon-Woods et al. relates to the engagement of professionals in QIC implementation (45). This topic is a second, though very limited, area of research within this second strand of literature (45, 46). Dixon-Woods et al. found that local QIC participants were more reluctant to engage in the implementation when they perceived the QIC as a "(…) *bureaucratic intrusion into professional work, or deemed it irrelevant to their concerns and interests*" (Dixon-Woods et al. 2013, p.9)(45). Lalani et al. (2018) added to this perspective of professional engagement by showing how an important aspect of the clinicians' 'inherent motivation' to participate in the QIC implementation related to the possibilities for professional development provided by the QIC. Furthermore, the authors highlighted the importance of clearly communicating the QIC's positive benefits to the patients to keep clinicians motivated (46). Local managers and 'implementation champions' were key facilitators of this communication (45, 46).

Facilitation of professional engagement and the local QIC implementation constitute a third and final small area of research within this second strand of literature. In particular, the importance and role of external facilitation have been emphasised (46-48). The studies by Burton et al. (2020) and Bidassie et al. (2015) both highlight a general appreciation of external facilitators among the local QI teams, particularly with regards to their guidance and methodological support during the implementation process (47, 48). This guidance and support were further shown to positively contribute to the QI teams' engagement in the QIC implementation (similar finding by Lalani et al. (46)). Finally, Bidassie et al. (2015) identified a shift in facilitation activities during the implementation period, conforming with the evolving needs of the QI team. They furthermore underscored the importance of offering guidance for the QI teams to manage implementations tasks independently rather than completing them on their behalf, thereby enabling the QI teams to assume responsibility for the QIC work (47).

In summary, the findings from this second strand of QIC implementation literature provide nascent insight into some of the central elements and processes inherent in and related to the implementation of QICs in specific settings. However, considerable knowledge gaps remain. First, while the findings of the adjustment processes involved in QIC implementation point to a dynamic and changeable nature of the QICs and active agency among the participating professionals, they do, however,

provide very limited insights into the specificities of these dynamics and this agency. For example, limited insights are available for the specific strategies and practices for adjustment applied by the local QI teams, the underlying rationales of such adjustments and how they may be influenced by the local context and the wider organisation along with other levels of the QIC intervention and implementation process. Furthermore, given the centrality of healthcare professionals' engagement and agency for driving the QIC implementation, it is surprising that current literature provides hardly any insight into these areas, leaving multiple questions unanswered. For example, when do the participating professionals experience that the QICs correspond with their professional interests and what constitute these interests? Moreover, what characterises the professionals' agency in QIC implementation in regard to their organisation and leadership of the local QIC work? Finally, questions remain unanswered regarding the roles of formal managers and external facilitators in framing and supporting the QI teams' bottom-up implementation and the outcomes hereof. Given these knowledge gaps, this dissertation argues that thorough empirical investigation is required that deepens our comprehension of the implementation of QICs in specific settings. In particular, there is a need for enhancing our comprehension of healthcare professionals' engagement and active agency in implementing QICs bottom-up, including their translation practices and organisation and leadership practices. Furthermore, to enhance our understanding of the QICs as a professional-driven implementation approach, the dissertation contends that it is imperative to understand the implementation at the frontline professional level within the broader context of a multi-level implementation process characterised by interdependence among various levels of implementation.

Aim and research questions

Based on the overview of the existing QIC implementation literature and the identified knowledge gaps, the aim of this dissertation is to investigate the following overall question:

> *How are quality improvement collaboratives implemented as a healthcare professional-driven implementation approach to quality improvement in healthcare*?

To provide a comprehensive understanding of QIC implementation, the dissertation examines the implementation process from four distinct perspectives: the policy perspective, the perspective of QIC contents, the professional perspective and the

organisational perspective. These perspectives are reflected in the specific research questions, which this dissertation addresses:

1. What characterises the introduction and early implementation of the Danish healthcare quality programme and the use of QICs as an approach to the implementation of quality improvement within the programme?
2. What characterises the dynamics of the translation processes inherent in QIC implementation? And which implications for translation do participating actors experience the translation processes to have?
3. What characterises the projects of professionalisation and institutionalisation forming healthcare professions' engagement in QIC implementation? And which synergies and tensions can be identified between the projects given the framing of and opportunities afforded by the QICs?
4. How is leadership within QICs characterised by aligned distributed leadership practices? And how do these practices relate to healthcare professionals' experiences with progress and achievements in the QI work?

The research questions correspond with the aims of the four research papers forming the core of the dissertation (Appendices 1-4). The research questions have been addressed through a qualitative case study exploring the implementation of two specific QICs within the Danish healthcare quality programme, based on triangulated qualitative data. The applied design and methods are further unfolded in Chapter 2.

The PhD dissertation seeks to contribute to the QIC implementation literature and the future planning and implementation of QICs by providing a comprehensive and in-depth understanding of the implementation process of specific QICs. Providing such an understanding is critical to the continuous development of the QICs as a healthcare professional-driven approach to quality improvement in healthcare and for creating the best conditions for their successful implementation across diverse healthcare settings.

Outline of the dissertation

Besides this first chapter, the dissertation contains five chapters. In **Chapter 2**, I present the applied design and methods. I introduce the qualitative case study and the abductive research approach on which I base the dissertation. Moreover, I present the case and its embedded sub-cases forming the dissertation's empirical background. Furthermore, I outline the process of collecting and analysing the qualitative empirical data within the case study. In **Chapter 3**, the theoretical perspectives that have

informed the data collection and analysis of data are presented. I introduce Scandinavian institutionalism as the overall theoretical framework, and the strategically selected theoretical perspectives applied in approaching the four research questions. **Chapter 4** provides a summary of the dissertation's key findings structured around the four research papers. In **Chapter 5**, the contributions of the dissertation's findings to the QIC implementation literature and to theory are discussed. Furthermore, the chapter discusses the dissertation's methodological strengths and limitations and the validity and generalisability of the findings. Finally, **Chapter 6** presents the dissertation's main conclusions and discusses the perspectives and potential implications of the findings for future research, policy and practice.

Chapter 2:
Design and Methods

This chapter presents the central methodological considerations made in relation to the research design, data collection and data analyses. The chapter aims to allow readers to assess the strength of the study design and its empirical material and analysis. The chapter mainly presents the considerations common for the dissertation's four research papers, while the paper-specific considerations are evident from the individual papers (Appendix 1-4).

A qualitative single case study

This PhD dissertation is founded on a qualitative case study design. Following the definition from Simons (2009), the qualitative case study facilitates "(…) *an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a "real life" context*" (Simons 2009, p.21, in Thomas 2011, p. 512) (49, 50). Thus, the case study design provides a valuable methodological foundation for revealing and understanding the multiple facets, levels, and practices of the QIC implementation process. Furthermore, the qualitative case study allows for analysis of how these multiple facets, levels and practices are shaped, how they interact with each other, and the actors involved in the implementation process (50-53). The case study design's capacity to contextualise phenomena within real-life settings allows for exploration of the various contextual factors that may influence the QIC implementation. As evident from Simon's definition, a characteristic feature of the case study is its versatility in allowing for a triangulation of various data collection methods, including qualitative interviews, observations and document studies. This triangulation of methods enables the findings to become extensively anchored (50, 53). Furthermore, the qualitative methodology underpinning the case study enables exploration of the perspectives of the actors involved in QIC implementation. Thereby it becomes possible to explore the diverse interests, experiences, practices and strategies employed by healthcare professionals and other stakeholders involved in the QIC implementation process (52, 54). Though the main strength of a case study may be 'particularisation' as proposed by Stake (1995, p.8)(51) and in-depth understanding of the case itself, the case study is also characterised by its potential for analytical generalisability. Thus, by leveraging 'thick

descriptions' of the case and its context, along with the use of theory as a framework to compare case study findings, valuable insights can be generated. Hereby the case study approach enables the production of knowledge that is both recognisable and transferable to other similar contexts (51, 53, 55). I return to the discussion of the analytical generalisability of the case study in Chapter 5.

As outlined in Chapter 1, the case chosen for this PhD dissertation is concerned with the use of QICs within the Danish national healthcare quality programme. For a detailed case description, I refer to the description of the quality programme and the QICs in Chapter 1 and to Paper A. Besides addressing the policy level of the QIC implementation, a main aim of Paper A was to provide a comprehensive presentation of the Danish quality programme, the organisation and application of QICs within the programme, and to portray the application of the QICs in the context of both international trends for healthcare system development and the use of QICs internationally.

The case study takes form as a single case study with two embedded sub-cases (56). Thus, instead of investigating the implementation of QICs within the quality programme at an overall level, for example based on general perspectives of and experiences with QIC implementation within the programme, I investigate the implementation of two specific QICs under implementation within the quality programme. The ability to immerse myself into these sub-cases provides a possibility for investigating the QIC implementation process both within and across the sub-cases. This approach contributes to enhancing the understanding of the case by adding nuance and depth (56).

Selection and description of included sub-cases

The two sub-cases included in the qualitative case study are 'QIC on children with diabetes' (QIC Diabetes) and a 'QIC on upper femur hip fractures among people aged 65 years and older' (QIC Fractures). These choices were made using a diverse case selection strategy, where cases were selected to represent variation along relevant dimensions. This approach facilitated exploration of various characteristics related to the QICs with potential significance for their implementation process (51, 55, 57). Table 1 below provides an overview of the main characteristics of QIC Fractures and Diabetes in regard to their contents, methodology and organisation, and their similarities and differences in relation to these characteristics.

Table 1. Characteristics of the included QICs*

	QIC Fractures	QIC Diabetes
QIC objectives	To ensure that +65-year-old patients with hip fracture across the country receive equal, high-level treatment and rehabilitation *Three focus areas* 1. Optimisation of patient admission 2. Optimisation of patient care during hospitalisation 3. Recommendations for mobilisation and rehabilitation after discharge	To ensure that all children and adolescents with type 1 diabetes in Denmark receive individualised and optimised treatment *Three focus areas* 1. Optimised treatment for children with newly diagnosed diabetes 2. Optimised treatment for children with poorly regulated diabetes 3. Optimised treatment for adolescents in transition to outpatient clinics for adult patients
QIC measures	a. Reduction of mortality—reduce the 30-day mortality rate by 20% b. Reduction of morbidity—improve patients' general health after a hip fracture	a. Improvement of regulation of HbA1C b. Unchanged Body Mass Index (BMI) or reduced BMI at population level c. Share of completed World Health Organization (WHO)-5 well-being schemes in connection with consultations
QIC methodology	Model for Improvement, including use of quality improvement charters, driver diagrams, and PDSA cycles Model for Understanding Success in Quality (MUSIQ)	Model for Improvement, including use of quality improvement charters, driver diagrams and PDSA cycles MUSIQ
Implementation period	April 2018 to November 2020	March 2020 to September 2022
Organisational complexity	Cross-sectoral organisation with participating QI teams from hospitals and municipalities spanning multiple departments and/or organisational units	Hospital-based organisation with participating QI teams often embedded in existing department structures
Composition of local QI teams	Professionals from multiple hospital departments (e.g., orthopaedic, acute, anaesthetic, geriatrics) and municipal healthcare provider organisations (e.g., rehabilitation, nursing)	Professionals from paediatric hospital departments and specialised, hospital-based diabetes centres Narrow combination of professions; mainly physicians and nurses, in few

	Broad combination of professions including physicians, nurses, physiotherapists, occupational therapists and care assistants	teams also psychologists, nutritionists and social workers
Implementation support	National learning sessions and project management	National learning sessions, webinars and project management
	Expert faculty with clinical and improvement experts	Expert faculty with clinical and improvement experts
	Regional coordinators in each region	Regional coordinators in each region
	Local coordinators participating in the QI teams	Local coordinators at participating sites

*Table 1 is a combined and adjusted version of characteristics tables presented in Papers B (Appendix 2), Paper C (Appendix 3) and Paper D (Appendix 4).

The cases were selected based on their variation in relation to mainly two characteristics. *First,* they were selected to represent variation in relation to the timing of the implementation period. At the time of data collection, QIC Fractures was in the late stage of its implementation, while QIC Diabetes was in its early stage. As it was not possible within the timeline of the PhD study to follow the implementation of QICs from their initiation to their end, this difference in timing provided the best circumstances for providing insights into the different stages of the implementation process. *Second,* the two QICs were selected to represent variation in relation to the organisational complexity and composition of the participating local QI teams. As evident from Table 1, the QIC Fracture teams are substantially more complex than the QIC Diabetes teams in terms of cross-professional, cross-organisational and cross-sectoral collaboration. Apart from these differences, the two QICs are organised and implemented similarly and in accordance with the general organisation of the Danish QICs within the quality programme, presented in Chapter 1 and displayed in Figure 1.

In this dissertation, the overall case perspective is the QIC implementation process within the Danish quality programme. In relation hereto, the individual papers represent different lenses on this case perspective. These perspectives include the policy perspective, the perspective of QIC contents, the professional perspective and the organisational perspective. These different lenses facilitate a broader and more nuanced understanding of the full QIC implementation process.

An abductive research approach

The PhD dissertation draws on an abductive research approach (58, 59). The core principle of abduction is the iterative and equal engagement with the empirical data and theory throughout the entire research process (58-61). Thus, as a research approach, abduction "(…) *involves an ongoing reflection on data and its positioning against different theories such that data can contribute to and develop further the chosen research questions*" (Ahrens & Chapman 2006, p. 820 in Conaty 2021, p. 3)(61, 62). This iterative interplay between the empirical data and theory has been the very cornerstone in my research process and a main reason for choosing the abductive research approach. I believe that this interplay contributes to a more nuanced understanding of the QIC implementation process by providing space for both the emergence of novel findings and expected findings to be part of the data collection and analysis (61). Furthermore, the iterative nature of the abductive research approach allows for ongoing adaptation of the research process in response to emerging findings (58-61). Such flexibility is valuable when studying a complex and not yet well-understood phenomenon, such as QIC implementation, where new perspectives and patterns presumably will emerge during the research process. The abductive research process is further unfolded when presenting the data collection, particularly the process of data analysis, below.

A key aspect of the abductive research approach concerns theory's role in the research process. At a general level, abduction presupposes the engagement and familiarity with theory – and existing research literature – from the beginning of and throughout the entire research process (58-60). As Thompson (2022) states:

> "*A researcher adopting an abductive methodology does not enter the field with an open mind, as theoretical understanding sets parameters to what they are initially looking for, which aims to prevent the discovery of abstract and arbitrary results irrelevant to the research question*" (Thompson 2022, p. 1411)(60)

Importantly, this engagement with theory is not undertaken for the purpose of theory testing or intended to determine the empirical data collection and analysis (61, 63). Rather, as evident from Thompson's statement, theoretical perspectives serve as sensitising and heuristic tools that inform the research process and thereby enhance the empirical exploration of the phenomenon of interest (52, 59, 60, 63). In line with this understanding of theory, this PhD dissertation is based on a theoretical framework founded on core tenets of Scandinavian Institutionalism and three strategically

selected theoretical perspectives (translation theory; institutional, organisational studies of professions; and distributed leadership literature). This framework has contributed to developing and focusing the research questions and the research process. Furthermore, it has provided guidance in the empirical data collection and data analysis (59). The theoretical framework is presented in Chapter 3, while the role of theory is further unfolded in the presentation of the process of data analysis at the end of this chapter.

Data collection

Consistent with the principles of qualitative case study design, the empirical data for the PhD study were gathered through a triangulation of qualitative methods (56, 64, 65). The triangulation of methods enables the findings to become comprehensively supported. Furthermore, it allows for a more nuanced study of the QIC implementation process, which I considered beneficial to capture the complexity of the QIC implementation process (53, 64). Concretely, I applied a combination of qualitative interviews, observations and document collection. The weighting of the methods, and the data generated by them, differed between the individual research papers. An overview of the empirical data and methods applied in each of the four research papers is presented in Table 2.

Table 2. Data collection methods and empirical data applied in the individual research papers

	Data collection methods	**Empirical data***
Paper A	Collection of documents Qualitative interviews	Documentary material regarding the Danish healthcare quality programme and the general use of QICs within the programme, and international research literature regarding the use of QICs in healthcare Short interviews with selected regional coordinators
Paper B	Qualitative interviews Participant observations Collection of documents	Thirty-nine qualitative interviews with national project managers, expert faculties and chairmen, regional coordinators, local coordinators and local QI teams Participant observations of 32 meetings Documentary material regarding the implementation process and central elements of the QIC intervention
Paper C	Qualitative interviews	Twenty-three qualitative interviews with QI teams and local coordinators

Paper D	Qualitative interviews Participant observations Collection of documents	Thirty-three qualitative interviews with QI teams, regional coordinators and local coordinators Participant observations of 34 meetings Documentary material regarding the planned and formal distributed leadership practices within the QI teams

* If nothing else is stated, the empirical data stems from both QIC Fractures and QIC Diabetes

Qualitative interviews

Qualitative interviews involved 39 semi-structured focus group and individual interviews with 99 key actors involved in implementing the two QICs at the national, regional and local levels. The interviews aimed at providing nuanced insights into the QIC implementation process, including its inherent levels, processes and practices, and the meanings and experiences related to these (66). An overview of the completed interviews is provided in Table 3. In addition, Appendix 5 provides more detailed insights into the interviews and the informants.

Table 3. Overview of interviews conducted (39 interviews with 99 informants)*

	QIC Diabetes	**QIC Fractures**
National project managers	1 (2) **	1 (1)
Regional coordinators	5 (5)	5 (6)
Local coordinators	5 (9)	- ***
Expert faculty	1 (3)	1 (5)
Expert faculty chairman	1 (1)	1 (1)
QI teams	8 (23)	10 (43)
In total	21 (43)	18 (56)

* Table 3 is an adjusted version of an overview of interviews table presented in Paper B.
** Number of interviews (number of participants)
*** The local coordinators in QIC Fractures participated in the focus groups with the QI teams. This different mode of interviewing local coordinators is due to differences in the organisation of the two QICs.

In the selection and recruitment of interview informants, I was assisted by the regional coordinators. They contributed with their specific knowledge on the implementation of QICs within the Danish quality programme, its development, organisation and actors, both generally and in relation to the specific QICs under implementation. I took this knowledge into consideration in the selection of the groups of informants invited for interviews. Furthermore, the regional coordinators assisted in establishing contact

to the selected groups of informants. In the recruitment of QI teams for interviews, I sought to solicit participation of teams from across the five Danish regions and from differently sized hospitals (university hospitals and smaller hospitals) in QIC Diabetes, and from hospitals and municipalities in QIC Fractures. This diversity was sought to capture geographical and organisational variation across the QI teams and thereby increase the analytical generalisability (66). Likewise, I aimed to include local coordinators from each region to capture potential geographical variation in the enactment of their role and their perspectives on the QIC implementation process.

The interviews were held from February to June 2020 for QIC Fractures, and from June 2021 to January 2022 for QIC Diabetes. This timing implied that most interviews were conducted by video because of the prevailing Covid-19 restrictions. I return to the consequences of the Covid-19 pandemic for the data collection in Chapter 5. Before conducting the interviews, informants were consistently informed about the study and the interview, and written consent was obtained (see Appendix 6 for the written information and consent to participate form). With the permission from the informants, the interviews were recorded digitally, and later literally transcribed and anonymised. All interviews lasted between 45 minutes and 1 hour and 30 minutes.

For all interviews, I applied a semi-structured interview guide adapted according to the different groups of informants (66). The interview guides were structured around the research questions, the existing research literature, the collected documentary material, field notes from participant observations and the theoretical framework. However, in line with the abductive research approach, the interview guides were refined during the data collection process in tandem with my initial analysis of the collected data, the ongoing readings of theoretical literature and my growing knowledge of the field. Furthermore, the semi-structured approach allowed for leeway for following up on emergent perspectives brought up by the informants (60). The interview guides applied are presented in Appendix 7.

Participant observations

Participant observations were made at various meetings central to the two QICs' implementation process at the national, regional and local levels (e.g., national learning sessions, regional meetings with participating local sites, meetings in the expert faculty and meetings in the local QI teams). In total, I observed 34 meetings, totalling approximately 60 hours. The observations allowed insights into the various implementation activities, processes and practices as they unfolded. This encompassed aspects that may be easily taken for granted or of which the actors may be unaware, yet are important to understand the QIC implementation process (67-69).

The participant observations were conducted as scheduled, and I was granted access from January 2020 to September 2022. Due to the Covid-19 pandemic, most planned meetings were unfortunately cancelled, both in QIC Fractures and QIC Diabetes. Some meetings were converted into video meetings; however, the number of observations was notably reduced. Furthermore, the video format limited the possibilities for active participation such as informal interactions with the meeting participants during breaks. Thus, in most meetings, I participated as an observer (70, 71), which is further discussed in Chapter 5. During the observations, I wrote field notes. These field notes consisted of a combination of factual information and reflective thoughts and ideas to support my interpretations (69). As evident from Table 2, the observations were mainly applied in Papers B and D. Here, the observations contributed to contextualising and corroborating interview findings (64, 72), e.g. they improved my understanding of the meeting structures in the QI teams and my attention to the significance of the organisational complexity of the QI teams for their distributed leadership practices. More broadly, the observations facilitated familiarisation with the 'native language' of the field, thereby enhancing the foundation for in-depth discussions about the QICs and their implementation, both during interviews and when presenting my preliminary findings (68, 69, 72).

Collection of documentary material

Finally, I collected a variety of documentary material about QIC implementation within the Danish quality programme at a general level and on the two specific QICs under investigation. These documents included, among others, minutes from meetings, flow charts, role descriptions and policy documents regarding, e.g., descriptions of QIC organisation and work processes. Generally, these documents provided insights into the formal aspects of the QIC implementation process and the embedded activities, actors, processes and practices. Furthermore, they constituted important components in contextualising the interviews conducted and observations made, and thus contributed to augment the knowledge obtained from these methods (64, 73). For example, in Paper D, policy documents and role descriptions regarding key implementers' roles and responsibilities in the QIC implementation process, provided contextual information regarding the QI teams' distributed leadership practices. Likewise, in Paper B, role descriptions, QIC project descriptions and QIC methodology presentations was analysed together with interview transcripts and field notes to provide insights into the types of translation taking place in the QIC implementation process.

Data analysis

The process of data analysis was informed by the abductive research approach (58-60) and reflexive thematic analysis, as presented by Braun & Clarke (2006, 2019, 2021, 2023)(74-77). Thus, the analysis took form as an ongoing, iterative process of interpretation that began with the formulation of the research questions and ended with the publication of the individual research papers. In line with abductive analysis, this process generally involved a continuous going back and forth between theory and empirical data. This implied ongoing re-reading and assessment of the data and relevant theoretical literature. This, in turn, allowed the empirical data and theoretical perspectives to mutually inform each other (54, 59, 60, 78).

At the more practical level, the analytical process involved systematic – though back and forth – processes of coding to develop themes, structured around the key areas of exploration in relation to the research questions (74, 76). The specific processes of coding and theme development varied between the research papers and are described in detail there (Appendices 1-4). However, I wish to highlight two more general points regarding the data analysis that apply across the papers.

First, in line with reflexive thematic analysis, the process of coding and theme development was a reflexive decision-making process in which some patterns, meanings and realisations were accentuated and investigated further in depth, while others were sidelined. As highlighted by Braun & Clarke (2019):

> "[Themes] *reflect considerable analytic 'work,' and are actively created by the researcher at the intersection of data, analytic process, and subjectivity. Themes do not passively emerge from either data or coding; they are not 'in' the data, waiting to be identified and retrieved by the researcher*" (Braun & Clarke 2019, p. 594)(75).

To actively engage with this inherent intentionality and subjectivity, I discussed both the coding and emerging themes with the team of supervisors. Furthermore, I strove to make the decision-making processes regarding the crafting of the codes and themes transparent to enhance the validity of the analysis and findings (75, 77). I return to the question of validity in Chapter 5.

Second, though theory was part of the analysis process in all research papers, the extent to which the analysis was informed by theory varied. In Paper A and Paper B, I applied the theoretical framework as a heuristic tool with which to read and interpret the emerging codes and themes. In Paper C and D, theory guided the research process from the data collection onwards, e.g., by informing the interview guide. In the

process of analysis, I actively applied the theoretical framework to develop theoretically informed codes, which also led to a more theory-driven theme development, inspired by more deductive thematic analysis approaches (76, 77). Chapter 3 presents the theoretical framework and perspectives applied in the research papers. Additionally, a more comprehensive description of how the theory was applied in the analysis of each of the papers can be found within the individual papers (Appendices 1-4).

I wish to end this chapter by acknowledging that during the time of my PhD study, the field of reflexive thematic analysis has significantly expanded and developed. This development triggered considerable debate about the use of reflexive thematic analysis, including conceptual and processual (mis)understandings and unreflective use of the approach (75-77). It is, however, outside the dissertation's scope to go further into this debate.

Ethics approval

As evident from the four research papers (Appendices 1-4), the PhD dissertation was conducted in compliance with the 'Declaration of Helsinki' and registered in the 'Register of Public Research Projects' in the Central Denmark Region (file no. 1-16-02-285-19). The 'Central Denmark Region Committees on Health Research Ethics' assessed that the dissertation was not a health research study according to the 'Consolidation Act on Research Ethics Review of Health Research Projects, Consolidation Act number 1083 of 15 September 2017 Sect. 14'. Therefore, the dissertation did not require further consideration by an ethics committee.

Chapter 3:
Theoretical Framework

This chapter serves to briefly present and account for the theoretical framework and the key theoretical concepts and perspectives that have guided the formulation of the PhD study along with the data collection and analysis. With this presentation, I hope to establish a common ground for understanding and engaging with the results and the discussion of the results in the subsequent chapters.

Scandinavian institutionalism

As already stated, the PhD dissertation is based on a social science theoretical framework, which contributed to the development of the PhD study and provided guidance in the process of collecting and analysing its empirical data (59, 78). The theoretical framework draws on core assumptions from neo-institutional organisation theory, more specifically from the branch of Scandinavian institutionalism (79-85). At an overall level, Scandinavian institutionalists are interested in understanding how new (public) reforms and organisational ideas affect organisational practices. In particular, they focus on the processes of adoption and how organisational actors make sense of and respond to the introduction of a reform or idea, how their sense making and responses affect daily organisational practice and how their daily practices affect the reform or idea being implemented (83, 86, 87).

Four core assumptions within Scandinavian institutionalism have contributed to the development of the present PhD study. *First*, following from the overall theoretical interest, Scandinavian institutionalism provides a theoretical perspective for investigating how healthcare professionals, managers and administrators respond to the introduction of QICs as a new approach to quality improvement, how they make sense of and implement the QICs in their daily practices and how the QICs are affected by this sense making and these practices. *Second*, the Scandinavian institutionalist concept of translation (79, 82, 88) enables a closer look at contextual variation in implementation. Without going into details with the concept here, which I will return to below, Scandinavian institutionalism investigates the process of translation by which reforms and ideas "(…) *are adapted to local contexts as they travel across time and space*" (Lamb & Currie 2012, p. 219, in Øygarden & Mikkelsen 2020, p. 222)(89, 90). In other words, reforms and ideas may become

heterogeneous when implemented in various contexts because organisational actors tend to translate the reform or idea differently and in accordance with their local context (80, 88, 91). In that sense, Scandinavian institutionalism provides a theoretical perspective for investigating differences in QIC implementation across organisational levels and contexts (83, 91-93). *Third,* a key characteristic of Scandinavian institutionalism is a clear emphasis on the organisational actors and their active agency in implementation processes, for example in terms of their engagement in translation (83-85, 88). The emphasis fits well with the 'bottom-up' political objectives of introducing QICs both internationally and in the Danish quality programme. Moreover, it provides a theoretical perspective for investigating the healthcare professionals' key role in driving the QIC implementation. *Fourth*, Scandinavian institutionalism emphasises the embeddedness of institutions within specific contexts. Thus, this strand of theory recognises the importance of that context for the shaping of the institutions and their behaviour. As highlighted by Boxenbaum & Pedersen (2009), organisational ideas obtain different meanings when implemented in different organisational contexts, "(...) *because meaning derives exclusively from connection to other elements in the organizational context*" (Boxenbaum & Pedersen 2009, p. 191)(83). In this way, Scandinavian institutionalism provides a theoretical awareness of the importance of the context, which is important when investigating the implementation of QICs in specific settings.

In summary, the strength of applying a Scandinavian institutionalist perspective in the investigation of the QIC implementation process is that it provides a theoretical framework for understanding the dynamics of and variation in the QIC implementation within and across organisational levels and settings because it recognises the active agency of the organisational actors and acknowledges the importance of context. The Scandinavian institutionalist theoretical framework has provided valuable guidance in the development of the PhD study and the empirical data collection and analysis. Furthermore, it has offered an alternative conceptual framework for those of the existing QIC implementation studies, thereby bringing about new perspectives.

Strategically selected theoretical perspectives

To further inform the exploration of the four implementation perspectives of interest, particularly the perspective of content, the professional perspective and the organisational perspective, I strategically selected three theoretical perspectives to supplement the core insights from Scandinavian institutionalism. These perspectives include perspectives from Scandinavian translation theory, organisational studies of

professions and distributed leadership literature. Below, I briefly present these theoretical perspectives and how they adhere with the Scandinavian institutionalist framework. A more detailed presentation of the individual theoretical perspectives is evident from the research papers (Appendices 1-4).

Implementation through translation

To address the perspective of the contents of the QICs in the QIC implementation process, Paper B draws on the work of the Scandinavian institutionalist Kjell Arne Røvik (2016a, 2016b, 2023)(82, 88, 94). This involves exploring the participating QI teams' and local and regional coordinators' understandings and practices related to the implementation of the QIC objectives and measures, along with the use of the QIC methodology and the organisation of their implementation roles.

Røvik provides a conceptual framework for understanding what happens when organisational ideas, such as QICs, are translated during their implementation. With a focus on unfolding the organisational actors' translation strategies and practices, Røvik draws specific attention to the translations that take place during the implementation of the organisational idea in specific organisational contexts (82, 88, 94). Hereby, Røvik offers a fruitful theoretical perspective for exploration of the perspective of contents of the QICs in the QIC implementation process. With a foundation within Scandinavian institutionalism, Røvik's translation perspective furthermore fits the dissertation's overall theoretical framework. In particular, the translation perspective corresponds with the Scandinavian institutional understanding of organisational actors as active agents in implementation processes. From a translation perspective, they are expected to intentionally translate the organisational idea during its implementation to tailor it to the specific organisational context (79, 85, 88). These translation practices imply another important insight that corresponds with Scandinavian institutionalism, namely that because of their context-specific translations, organisational ideas may become heterogeneous when implemented in different contexts. This leads to variation in implementation across organisational settings (79, 88, 91).

In exploring the perspective of the contents of the QICs in the QIC implementation process, Paper B draws on three key aspects of Røvik's conceptual framework. First, the understanding of the organisational actors' translation practice as a rule-based activity guided by underlying modes and rules of translation (82, 88). Second, the understanding that translation and the application of specific translation modes and rules are influenced by various contextual conditions, including the translatability and transformability of the idea being implemented and the degree of

similarity between the context from which the idea originates and the context in which it is being implemented (82, 85, 88). Third, the understanding that translation, in terms of the application of specific translation modes and rules, can be decisive for the outcomes of the implementation process (88, 94). A more detailed presentation of Røvik's translation perspective and its application in the analysis process is evident from Paper B.

Professional engagement as projects of professionalisation and institutionalisation

To address the professional perspective in the implementation of QICs, in terms of the professionals' engagement in the QIC implementation process, Paper C draws on theoretical perspectives from institutional, organisational studies of professions.

In line with Scandinavian institutionalism, the institutional, organisational perspective on professions, proposed by scholars such as Muzio et al. (2013), Scott (2008) and Suddaby & Viale (2011), draws attention to the active agency of professions in institutional change processes (86, 95, 96). At its core, the theoretical framework posits that institutional change, such as the introduction and implementation of QICs as a quality improvement approach, constitutes an intricate process characterised by interconnected and frequently overlapping 'projects' of professionalisation and institutionalisation (86, 95). Thus, on one hand, QIC implementation is to be understood as a project of professionalisation. This is accomplished, by offering healthcare professions possibilities for development of their professional practices and reinforcement of their status as a profession. On the other hand, QIC implementation embodies a project of institutionalisation in terms of the healthcare professions' meaning making and integration of the QIC framework and its underlying political objectives into their professional practices. The suggested overlap and interconnectedness between the two projects suggest that they are interrelated. Importantly, in relation to the professions' agency in the context of institutional change, the theoretical perspective proposes that when professions experience this interrelatedness as positive, they are inclined to engage in institutional change processes, such as the implementation of QICs. With these theoretical propositions, the institutional, organisational perspective on professions offers a suitable theoretical perspective for exploring the professional perspective in the implementation of QICs.

To further enhance the empirical exploration and understanding of the professions' projects of professionalisation and institutionalisation, Paper C adds perspectives from the neo-Weberian sociology of professions (95, 97) and neo-institutional profession research, particularly the work by Scott (2008) (86, 96). A

more detailed presentation of the applied institutional, organisational perspective on professions and these additional theoretical perspectives, along with their application in the analysis process, is evident from Paper C.

Distributed leadership

Finally, to address the organisational perspective of the QIC implementation process, in terms of the QI teams' organisation and leadership practices in the context of the local QIC implementation, Paper D draws on the concept of distributed leadership.

Distributed leadership conceptualises leadership as a collective phenomenon in which leadership is distributed among different organisational actors to organise concerted action and exercise influence within and across organisational levels (98, 99). This makes distributed leadership a suitable perspective for exploring the organisational perspective of the implementation process of QICs. In particular, the implementation activities are here performed across departments, organisations and professions and therefore require coordination and competencies spanning organisational levels and boundaries (100, 101). The distributed leadership perspective fits with Scandinavian institutionalism by providing a distinct focus on the participating actors' active engagement in leadership, their leadership practices and the division of roles and influence among the actors rather than their initial role positionings (102).

In the exploration of the organisational perspective of the QIC implementation process, Paper D particularly draws on three related aspects of the distributed leadership perspective. First, the understanding that distributed leadership practices must be aligned to foster positive outcomes (103-106). Second, the understanding that alignment of distributed leadership practices involves alignment within various domains, including the understandings of the aims and methods of the performed activities, the scope and structures of the collaboration and the role and task distribution (107). Finally, the understanding that aligned distributed leadership can be accomplished through both informal and spontaneous practices and formal and planned practices (103, 106). A more detailed presentation of the distributed leadership perspective and its application in the process of analysis is evident from Paper D.

Chapter 4:
Main Findings

This chapter provides a summary of the dissertation's main findings, structured around the four research papers and the research questions they have aimed to address. A detailed presentation of the findings appears from the four research papers (Appendices 1-4). In Chapter 5 and 6, I discuss the findings' contributions to the QIC implementation literature and implications for future research, policy and practice.

The Danish Healthcare Quality Programme and its use of QICs

Paper A aimed to illuminate the policy perspective of the QIC implementation process by investigating what characterises the introduction and early implementation of the Danish healthcare quality programme and its use of QICs as an approach to the implementation of quality improvement within the programme.

The findings show how the introduction of the QIC approach within the Danish quality programme represent the inaugural use of QICs as approach to the implementation of a national health care system reform for quality improvement in Denmark. Furthermore, the introduction of QICs marks a turning point in the approach to quality improvement in healthcare in Denmark. Thus, more than previous approaches, it emphasises the role of healthcare professionals as drivers of the quality improvement processes and the importance of a network-based approach to quality improvement. The findings show how the QICs and the quality programme in this sense reflect a global trend within healthcare governance focused on collaboration-based and bottom-up driven implementation of quality improvement. The findings furthermore illustrate how the political decision to introduce the QICs as part of the quality programme was inspired by previous positive experiences with QIC implementation in Denmark and internationally. Even so, the decisions were made without the support of evidence-based discussions of the effectiveness of QICs.

With respect to the organisation of the QICs, the findings reveal a novel organisational structure compared with previous applications of QICs within the Danish healthcare system and their typical usage internationally. This set-up promotes cross-regional and inter-professional collaborations and requires joint cross-regional leadership. The implementation of the individual QICs largely follows the structure and process of the Breakthrough Series Collaboratives.

Based on the international research literature and preliminary experiences of applying QICs within the quality programme, the paper concludes with a suggestion for a future research agenda revolving around QIC implementation. In particular, the findings point to the importance of investigating the various activities, processes and practices embedded in QIC implementation and their influences on the implementation and functioning of the QICs.

Translation processes inherent in QIC implementation

The aim of Paper B was to provide insights into the QIC contents perspective of the QIC implementation process by investigating the dynamics of the translation processes inherent in their implementation. Additionally, its aim was to illuminate the implications of these translation processes as perceived by the participating actors.

Drawing on Scandinavian institutionalism and Røvik's theoretical framework for analysing translation of organisational ideas, the findings show how translation is an integral part of QIC implementation. The translation processes particularly involve translation of key implementers' role descriptions, the QIC contents and QIC methodology. Translation takes place at both the regional and local levels of the QIC and is performed by the regional coordinators, the local coordinators and the QI teams. The findings demonstrate an interrelatedness of the translations performed. This means that translations made by actors at one level of the implementation process, e.g., regional coordinators, influence the translation practices performed by actors at other implementation levels, e.g., local coordinators or QI teams who participate in the same implementation processes.

In the translation of all three components, translators draw on various copying, modifying and radical translation strategies and practices. These strategies mainly manifest as variants of modification. The translations are motivated by various strategic and pragmatic rationales, contingent on particularly five contextual features of the actors' organisational contexts: former and ongoing improvement projects; quality improvement methodology already in use; available resources and competencies; and organisational needs and priorities. In addition to these features, the transformability of the QICs forms an important contextual condition. Finally, the findings show that translations are influenced by the degree of organisational complexity within the QICs. Thus, in QIC Fractures, translations were performed in direct response to its inter-sectoral and multi-professional organisation.

In terms of the experienced implications of the translation processes, the findings show how the diverse translations executed by regional and local actors led to multiple versions of QICs, varying in degree of heterogeneity. Furthermore, the

findings suggest that translations may have positive implications for the professional engagement and organisational institutionalisation of the QICs, but they may also have negative implications for achieving the anticipated QIC outcomes.

Healthcare professions' engagement in QIC implementation

The aim of Paper C was to address the professional perspective of the QIC implementation process by examining the projects of professionalisation and institutionalisation that shape healthcare professions' engagement in QIC implementation. It also aimed to examine the synergies and tensions between the projects, considering the framing of and opportunities provided by the QICs.

Drawing on institutional, organisational studies of professions, the findings show how professionals engage widely in QIC implementation. This engagement is shaped by a fruitful interaction between the projects of professionalisation and institutionalisation of the participating professions. The professionalisation project focuses on self-oriented possibilities for professional expertise contributions along with professional recognition and development. Meanwhile, the institutionalisation project centres around enhancing the processes and outcomes of healthcare and advancing the approach to quality improvement. The projects only to a very limited extend differ between the professional groups.

Similarly, the findings reveal only few tensions between the professionalisation and institutionalisation projects. These tensions particularly revolve around an experienced clash between the methodological and administrative work required by the QICs and the types of work that most professionals consider within their mono-professional expertise. The professionals consistently link the experienced tensions to a decreasing engagement in QIC implementation, which challenges the progress of the QIC implementation.

The findings show that the fruitful interaction between the professionalisation and institutionalisation projects is promoted by three factors harboured by the QIC framework. First, the bottom-up approach to implementation embedded in the QIC framework. Second, the participation of QI specialists and their active agency in reducing tensions between the two projects. Third, and finally, the clear focus on enhancing the quality of the patients' care and care outcomes, key to the QIC approach. Furthermore, the bottom-up approach to implementation and the participation of QI specialists appear to be key factors in resolving potential inter-professional tensions in QIC implementation.

Aligned distributed leadership practices in QIC implementation

The aim of Paper 4 was to address the organisational level of the QIC implementation process by investigating how leadership within QICs is characterised by aligned distributed leadership and how this relates to healthcare professionals' experiences of progress and achievements in their quality improvement work.

Drawing on leadership literature on distributed leadership, the findings demonstrate how leadership in local QI teams is characterised by aligned distributed leadership. This means that their leadership activities are highly distributed in alignment with emergent, negotiated practices related to the structure of the teamwork, the task distribution and leadership roles within the QI team and decision-making regarding the QIC aims and methodology. The findings show how the QI teams perceive the aligned distributed leadership practices as important determinants for the progression and achievement of the desired QIC outcomes. Despite the high level of alignment, the findings also reveal how the emergent distribution of leadership constitutes a vulnerable practice, which in some cases lead to misaligned distributed leadership. Such misalignment is consistently linked by the QI teams to lacking implementation progress and deficiencies in reaching the local QIC goals.

The findings demonstrate the significance of organisational complexity in relation to the establishment of aligned distributed leadership. Thus, attempts to establish aligned practices appear more challenging in the complex QIC Fracture teams than in the less complex QIC Diabetes teams. The findings, however, reveal experiences of more informal benefits of the distributed leadership in QIC Fractures. These gains translate into improved inter-professional and inter-organisational/inter-sectoral communication and collaboration.

Despite general highly aligned distributed leadership practices, the findings show that distributed leadership practices cannot stand alone. Support from and active participation of formal managers are important for the prioritisation and legitimisation of the QIC implementation in the participating departments, and for the horizontal alignment with other departments. Furthermore, the local quality coordinators play a pivotal role in facilitating the QI activities, particularly in the more complex QIC Fracture team.

In summary, by shedding light on different perspectives and different interdependent levels of the implementation process, the findings of the papers together contribute to a comprehensive and nuanced understanding of the full implementation process of the QICs as a professional-driven approach to implementation of quality improvement within the Danish healthcare quality programme.

Chapter 5: Discussion

In the present chapter, I discuss the contribution of the dissertation's findings to the existing QIC implementation literature. Subsequently, I discuss the theoretical contributions of the dissertation. I end the chapter by discussing key methodological considerations in relation to the study design, data collection methods, research process along with the validity and generalisability of the findings.

Discussion of the findings and their contribution to the QIC implementation literature

As the findings of the individual research papers are discussed in each paper, I focus the present discussion on three overall findings that transcend the papers along with their contribution to the QIC implementation literature.

A bottom-up approach to QIC implementation enabling professionals to engage as active drivers of implementation

As evident from Paper A, the Danish quality programme introduced the QICs with the key political aim of furthering a bottom-up and healthcare professional-driven approach to quality improvement. Papers B-D collectively point to how this political ambition has largely succeeded and contribute to the QIC implementation literature by illuminating how this bottom-up approach is experienced to contribute to the QIC implementation process and its outcomes.

The dissertation shows that the participating professionals find the bottom-up approach to be a highly valued element of the QIC approach. As evident from Paper B, the deliberately broad formulation of QIC objectives and measurements provided a leeway for the QI teams to define and implement QIC projects tailored to their specific contexts and circumstances. This finding is in line with the findings of other studies, pointing to the adaptability of the QIC intervention as a crucial element in successful implementation because it affords opportunities for meeting diverse site needs (24, 28, 42). This dissertation adds to these studies by showing how the leeway for local adjustment is experienced to contribute to the organisational institutionalisation of the QIC project and to professional engagement in the

implementation process. As regard to the latter, several other studies have also pointed to the positive association between the bottom-up approach to implementation and professional engagement (8, 18, 45, 46). The reasons for this association are, however, sparsely addressed. Thus, Paper C add additional insights into this matter by showing how the professionals perceive the bottom-up approach as engaging. This approach serves as a catalyst for their professionalisation projects by providing opportunities for contributing their professional expertise and fostering their development. Furthermore, the bottom-up approach plays an important role in integrating the professionals' professionalisation and institutionalisation projects. This integration, as highlighted in Paper C and other studies exploring healthcare professionals' engagement in quality improvement (see for example (17, 108, 109)), is decisive for the professionals' engagement. Finally, the dissertation shows how the bottom-up approach constitutes a valued element because of its positive implications for the inter-professional collaboration in the QICs. As evident from Paper C, the broad formulation of QIC objectives made room for various participating professions to concurrently pursue their individual professional development interests. Hereby, the bottom-up approach may contribute to resolve potential inter-professional tensions that could otherwise hinder successful QIC implementation and outcomes.

The contribution of the bottom-up approach to QIC implementation is further evident from the professionals' active agency in the implementation of the QICs. For example, as shown in Paper D, the QI teams actively engaged in aligned, bottom-up and emergent distributed leadership of the local QIC implementation. Furthermore, Paper B shows how the professionals actively engaged in translating the QICs to make them fit their local context and specific circumstances. The insights into the professionals' leadership practices offered by Paper D represents a novel contribution to the QIC implementation literature. Studies looking into QIC leadership are few and they mainly point to the positive relationship between leadership support and positive QIC outcomes, while devoting sparse attention to the question of which types of leadership practices are related to these outcomes (18, 22, 24-26, 41). Paper D provides an important contribution to these studies by demonstrating the relevance of an aligned distributed leadership perspective for understanding leadership practices in local QIC implementation and by pointing to the experienced positive contribution of such leadership practices to the progression and achievements of the local quality improvement work. The professionals' active engagement in translation of the QICs resonates with the results of other scholars (20, 29, 45), showing that during local implementation, QICs were adjusted to facilitate the integration and long-term sustainability of improvements within the organisational settings. Paper B, however, adds important nuance to these findings by providing detailed knowledge of the

various strategies and practices for translation applied by the QI teams and the regional and local coordinators. Paper B also unveil the underlying rationales and the contextual conditions influencing these strategies and practices.

Summing up, both examples of professional agency in QIC implementation highlight the strong commitment of professionals in driving the implementation bottom-up. These findings challenge existing studies within the QIC literature, which often indicate the difficulties in maintaining professional engagement in QIC implementation (8, 18, 24, 28, 40, 41, 45).

The roles and importance of formal managers and local coordinators

Implementing QICs bottom-up is, however, not without challenges. Thus, the present dissertation also highlights the vulnerable nature of this implementation approach. For example, Paper B demonstrates how the QI teams and local coordinators engaged in sometimes radical translations of particularly the QIC methodology, deliberately omitting parts of the QIC methodology. Such radical translations raise the question of the extent to which translation is both feasible and acceptable (88, 94) as they may risk diluting the core elements of the intervention and thereby possibly undermine the potential for achieving the expected QIC outcomes. Furthermore, Paper D highlights how the pronounced bottom-up distribution of leadership within the local QI teams sometimes resulted in misaligned distributed leadership practices. This occurred due to unclear expectations and framing of the QIC implementation, for example concerning prioritisation. Such misalignments were experienced by the QI teams to negatively affect their local progression in and achievements of the quality improvement work. Finally, Paper C demonstrates a clash between the methodological and administrative work required for QIC implementation and the types of work that professionals consider within their mono-professional expertise. Having to handle such administrative tasks resulted in reduced engagement and in some cases caused inter-professional tensions, hindering the advancement of the QIC implementation.

To address this vulnerability inherent in the bottom-up approach, the dissertation emphasises the important roles of formal leaders and local coordinators in facilitating the professionals' active agency in the QIC implementation. Hereby, the dissertation echoes the results of existing QIC implementation studies, highlighting the significance of formal leadership and external facilitation in fostering professional engagement in the QIC implementation process and influencing the outcomes of the QICs (4, 18, 22, 24, 26, 28, 40-42, 47, 48). Previous studies have, offered limited insight into *how* formal managers and external facilitation support QIC implementation, and which responsibilities and tasks are associated with these outcomes. This dissertation

addresses this gap in knowledge by illuminating the important ways in which formal managers and local coordinators support the QI teams' implementation processes.

With respect to the formal managers, Paper D highlights the significance of the participation of departmental formal managers in the QI team (or near the team) in ensuring the alignment of distributed leadership and the advancement of quality improvement efforts. These formal managers play a pivotal role in establishing aligned practices and priorities during the QIC implementation and in consolidating the emergent distributed leadership practices within the QI teams. Furthermore, the findings show the important role of the formal managers in increasing the legitimacy of QIC implementation in the involved departments and in ensuring horizontal alignment with other departments affected by the QIC implementation. Paper B adds to these formal leadership responsibilities by emphasising the importance of formal leaders' considerations regarding the extent to which translations should be allowed or avoided to facilitate the organisational institutionalisation of the QICs and the achievement of expected outcomes. Finally, Paper C highlights the critical role of formal leadership in framing the QICs as a quality improvement process that advances the integration of the professionalisation and institutionalisation projects of the professions. This framing is essential for successfully engaging professionals in the QIC implementation process and thereby enhance the prospects for achieving the desired outcomes. These results correspond with the findings of existing QIC literature, pointing to the positive association between supportive formal leadership and improved QIC outcomes (e.g., (18, 24, 25, 41)). The dissertation, however, adds nuance by illuminating the specificities of the required formal leadership support.

Turning to the local coordinators, Papers B-D collectively show the important role of the coordinators as facilitators of the local QIC implementation. They provide process facilitation and methodology support, and the professionals highly appreciate their participation and support. Paper C further highlights the local coordinators' role in reducing tensions between the professions' projects of professionalisation and institutionalisation. The appreciation and significance of external facilitators in supporting local QIC implementation have been highlighted by other QIC scholars, too (4, 18, 22, 24, 47, 48). For example, Bidassie et al. (2015) found that the external facilitators played a crucial role in the implementation process by empowering the local QI teams to take ownership of and advance their local QIC work (47). The finding of local coordinators serving as integrators of the professions' projects of professionalisation and institutionalisation adds a novel layer of nuance to these existing studies.

Papers B-D demonstrate a variation in the enactment of the local coordinators' role and active involvement in the QI teams' QIC work. Thus, where some

coordinators mainly provided support from the sideline, others took on an active role as a driving force or even as a team leader. This variation adds nuance to the existing studies, illuminating the role of external facilitators in QIC implementation (46, 47). Furthermore, the examples of coordinators assuming the role as team leaders raise important dilemmas in relation to the outcomes of the QIC implementation. Thus, on one hand, this active involvement of local coordinators may positively affect the professional engagement in and short-term outcomes of the QICs (similar findings are identified by Bidassie et al. 2015 (47)). However, on the other hand, it may have drawbacks in terms of negative consequences for the organisational institutionalisation and the sustainability of the QIC outcomes and methodology. This can occur when formal QIC implementation, and consequently, the facilitation from local coordinators comes to an end.

In summary, the importance of formal managers and local coordinators in supporting the professionals' active agency in driving the QIC implementation illustrate the interrelatedness of the different levels of the QIC implementation process. Thus, the bottom-up implementation work performed by the participating QI teams cannot stand alone or be understood in isolation. Rather, it is enabled and formed by – and therefore needs to be understood within the context of – the local organisational level along with the regional and national levels of the QIC intervention and implementation.

The significance of organisational complexity in QIC implementation

A third overall finding of the dissertation concerns the significance of the organisational complexity of the QICs for their implementation and outcomes. Across Papers B-D, the findings point to the distinct implementation challenges and circumstances experienced in the implementation of organisationally complex QICs, characterised by a cross-professional and cross-organisational/cross-sectoral composition of the QI teams. For example, Papers C and D showed large challenges faced by the complex QIC Fracture teams in establishing aligned distributed leadership and in maintaining engagement among all professions involved. Even though not consistently observed, these complex QI teams frequently encountered challenges in making progress and achieving results in their quality improvement endeavours. Lowther et al. (2021) and others (see for example Burton et al. 2018 (48)) similarly found that "(...) *complex QI processes, or those requiring system re-design and multiprofessional coordination, were more challenging, difficult to implement and unlikely to support change in the short term* (Lowther et al. 2021, p. 11)(24). This dissertation adds to these findings by identifying some reasons why organisational

complexity may challenge QIC implementation and outcomes, and how to support complex QICs in becoming successfully implemented. However, importantly, the dissertation also points to how the complex QI teams experienced more informal benefits of their QIC participation, e.g., in terms of better communication, shared understanding of the patients and improved knowledge of each other's competencies. These informal benefits were all experienced to improve the interprofessional and interorganisational/intersectoral collaboration and care for patients. A similar duality in the QIC participation of complex QI teams was highlighted by Williams et al. (2022)(41). Taken together, the dissertation shows how complex organisational settings require more implementation effort. However, when successful, these QICs may also potentially bring about larger achievements.

Theoretical contributions

While contributing to the theoretical literature was not a primary aim of the dissertation, the ongoing and iterative dialogue between the empirical data and the theoretical framework throughout the research process led to various refinements of the applied theoretical perspectives. These refinements are worth highlighting as they enrich our understanding of the research findings (58, 63).

First, the identified dynamics and experienced implications of the translation processes embedded in the QIC implementation add further nuance to Røvik's theoretical framework for analysing the translation of organisational ideas (82, 88, 94). The analyses in Paper B unveiled a broad range of copying, modifying and radical translation strategies and practices. Some of these aligned with the translation rules identified by Røvik (copying, adding, omitting and altering) (82, 88). However, particularly in relation to the modifying mode of translation, the findings revealed additional translation rules revolving around practices of prioritisation, integration and focus. Furthermore, the findings articulate some of the rationales behind the various translation practices, such as 'starting with low-hanging fruits', 'continuing along a track already initiated' and 'demonstrating clear results'. These findings provide nuances to our understanding of the processes and motivations behind specific modifications. The findings regarding the contextual conditions add additional nuance to Røvik's conceptual framework. Particularly the identification of the five influential features of the regional and local contexts contribute to a refined conceptualisation of the 'recipient context' as a condition influencing translation (82, 88). Finally, the findings regarding the observed experienced positive impact of translation on professional engagement and organisational institutionalisation, alongside the potential negative implications of translation for the QIC outcomes, introduces a new

layer of nuance to Røvik's translation perspective. They suggest divergent implications of translation for the outcomes of the implementation process (Røvik 2023, p.188-206)(94). Additional empirical evidence is necessary to determine whether these additional and nuanced translation rules, contextual features and potential implications apply outside the setting of QIC implementation.

Second, the findings regarding professionals' engagement in QIC implementation, presented in Paper C, add perspectives to the institutional, organisational studies of professions' perspectives on professional engagement, highlighting professional engagement as a constructive interplay between the projects of professionalisation and institutionalisation within the professions (86, 95). In particular, the identification of the three 'integrating factors' (bottom-up approach to implementation, the participation of local coordinators and the desire to deliver high-quality patient care) adds to our understanding of how to facilitate the integration of the professions' projects of professionalisation and institutionalisation, which is decisive for their engagement in institutional change processes. The idea of integrating factors between professions' professionalisation and institutionalisation projects has been brought up by other scholars in the context of, e.g., welfare governance in integrated care and elderly care, but is novel within the area of quality improvement in healthcare (110, 111). Similarly, to the theoretical refinements of the translation perspective, additional empirical evidence is needed to ascertain the relevance of the identified integrating factors outside the QIC implementation setting.

Finally, the findings of the QI teams' distributed leadership practices, presented in Paper D, contribute to the distributed leadership literature by offering a deeper understanding of the concept of alignment. Within the distributed leadership literature, there is a lack of studies examining distributed leadership practices in cross-organisational/cross-sectoral and cross-professional settings (102, 107, 112). The findings of Paper D add to this literature by demonstrating how these complex organisational settings require aligned distributed leadership practices, not only in the involved departments but also horizontally, to other affected departments, to enhance the possibilities for reaching the desired outcomes. In addition, to increase the likelihood of long-terms success of the aligned distributed leadership practices in complex organisational settings, hierarchical anchoring and support from formal managers are pivotal. In addition to the distributed leadership literature, these findings represent a valuable contribution to comprehending leadership within transversal settings (113). Further empirical exploration is necessary to determine the applicability of the identified specific requirements for aligned distributed leadership in complex organisational settings beyond the scope of QIC implementation.

Methodological considerations

In this section, I discuss the dissertation's methodological strengths and limitations. Furthermore, I discuss the findings' validity and analytical generalisability. Discussions of the paper-specific methodological considerations appear from the individual papers (Appendices 1-4).

Strengths and limitations

When reflecting on the research process of the dissertation, I would like to emphasise three key strengths. First, the application of the qualitative case study design offered an opportunity for in-depth investigation of the multiple, inter-related facets, levels and practices within the QIC implementation process. Furthermore, investigating the QIC implementation within its real-life context enabled an understanding of the importance of the context for the QIC implementation process. Finally, the inclusion of QIC Fractures and QIC Diabetes as embedded sub-cases allowed for analysis of the QIC implementation process at various stages and in various organisational settings. Thus, the case study design contributed to a rich and nuanced understanding of the QIC implementation process (50, 51, 53).

Second, the multi-sited structure of the research process constitutes another methodological strength. Addressing the QIC implementation process from various perspectives and collecting data at national, regional and local levels provided a comprehensive understanding of the full implementation process. Furthermore, the multi-sited structure contributed to a deep understanding of the processes and practices taking places at the various levels and in relation to the various implementation perspectives along with their interdependence.

Finally, it is a strength of the dissertation that triangulated qualitative data provided the empirical foundation for the analysis. The interviews offered insights into the perceived, experienced and articulated aspects of the QIC implementation process, while the documents provided information about the more formal, planned aspects of the implementation and the QIC intervention. Finally, the observations offered insights into how the QIC implementation process actually unfolded, capturing aspects that may have been taken for granted or of which the actors may have been unaware. Thus, the triangulated empirical data offered a nuanced understanding, thereby providing comprehensive support to the findings (64-66).

Turning to the limitations of the dissertation, I want to highlight three issues. First, the dissertation investigated the QIC implementation process using qualitative data only. Qualitative data are superior in providing a thorough understanding of a social phenomenon. However, the qualitative data do not allow for

conclusions on the measurable outcomes of the (differences in the) QIC implementation process. Combining both the dissertation's qualitative implementation data and quantitative data on the achieved effects, derived from the measures of the specific QICs, could have been advantageous. Such an approach could have provided a more detailed understanding of how the implementation process and the outcomes hereof are related.

A second limitation concerns my decision to focus participant observations on the spatially well-bounded sites of the various meetings central to the national, regional and local implementation of the two QICs (70, 114). The observations provided insights into central QIC implementation activities and contributed to getting to know the actors and the 'native language' of the field. However, a longer-term fieldwork in the local hospital and municipal settings could have further enhanced my insights. This type of fieldwork would have allowed for the observation of daily QIC implementation work, thereby offering a deeper understanding of how the QIC implementation process unfolded in practice. Such insights would have added to the knowledge obtained through interviews and observations. Unfortunately, such longer-term fieldwork was not within the scope of the present PhD study.

Finally, the consequences of the Covid-19 pandemic have significantly impacted the data collection, constituting a paramount constraint in this dissertation. Because of the pandemic, most planned national, regional and local QIC implementation meetings were cancelled, both within QIC Fractures and QIC Diabetes, where I had intended to participate. Some meetings were converted into video meetings, which made it possible to participate via video. These observations were valuable, but observation could not be made of non-verbal aspects such as dynamics between participants. Moreover, the opportunities for informal interviews during breaks could not be obtained. These circumstances unavoidably affected the empirical data obtained from the observations. However, the potential impact and bias of my participation may in turn have been reduced due to the video format, where I was just a small picture and a name tag. The pandemic also implied that most interviews were conducted by video. This circumstance posed challenges in establishing rapport before, under and after the interviews. Despite this, drawing on my experience as an interviewer, I find that the video format did not substantially influence the knowledge obtained from the interviews. Rather, the video interviews offered greater flexibility in scheduling, which may have led more actors to agree to participate in an interview.

The validity of the findings

In qualitative research, validity is about to which extent the findings convincingly represent the phenomenon being studied and thus the trustworthiness of the empirical data, interpretations and findings (65, 66). In this dissertation, I have sought to enhance the validity in various ways. Throughout my research, I have made an effort to document and reflect on the research setting, research design, case selection, data collection process, theoretical perspectives and data analysis in sufficient detail to enhance the transparency of the research process and thereby enable readers to assess the validity of the data material, interpretations and findings (66, 115).

Triangulation has served as another tool for improving the validity of my findings. Triangulation contributes to validity by providing an opportunity for comparing and testing the convergence of data and interpretations made from the various methods, participants, and expertise engaged in the research process (56, 64-66). As described in Chapter 2, I used triangulation of methods (interviews, observations and documents), which contributed to strengthening the trustworthiness of the interpretations (56, 64, 66). Furthermore, I used participant triangulation by including and comparing the perspectives and experiences of various participants across the levels of the QIC implementation process (national project managers, expert faculties, regional and local coordinators, and local QI teams). This nuanced my understanding and enhanced the trustworthiness of the findings (56, 64). Furthermore, regular discussions with my supervisors enabled researcher triangulation. Bringing in their diverse expertise facilitated valuable discussions and reflexivity around the research process, which challenged my individual understandings of the empirical data and interpretations, and led to more robust findings (51, 56, 65).

Finally, during the research process, I presented and discussed preliminary findings with various groups of participants from my study. These presentations served yet another way of enhancing the interpretation and validity of my findings, as they provided constructive feedback based on their experiences and perspectives. These discussions contributed to substantiate my interpretations and analysis (56, 65).

The analytical generalisability of the findings

Case study research, and qualitative research in general, has often been criticised for providing limited opportunities for generalisation (55, 66, 115). This critique is, however, often based on quantitative quality standards and a misconception that qualitative research should adhere to the principles of statistical generalisability for the

findings to be considered valid (53, 55, 65, 66, 115). The concept of analytical generalisability provides a more fruitful way of thinking about generalisability in qualitative research and case studies (53, 66). Analytical generalisability "(...) *involves a reasoned judgement about the extent to which the findings of one study can be used as a guide to what might occur in another situation*" (Brinkmann & Kvale 2015, p.297) (66). It is based on comparison of situations, which presupposes rich and nuanced descriptions of the case and its context. Furthermore, analytical generalisability involves the use of theory and existing research as a frame for comparison of the findings of the case study (53, 66).

The embedded case study design applied in the present dissertation makes it relevant to discuss the analytical generalisability of the findings at two levels; first, the generalisability of the two embedded sub-cases to the overall case; second, the generalisability of the findings of the overall case to the use of QICs as an approach to implementation of quality improvement in healthcare in other similar contexts. Starting with the first, throughout the analysis, I have made an effort to compare and contrast the findings from the sub-cases. My aim was to clearly elucidate any disparities in QIC implementation across the QICs and how these disparities relate to their contextual differences (for example the larger organisational complexity of QIC Fractures) (65). With these rich descriptions, I have aimed to make it possible for readers to assess the generalisability of the sub-cases to the overall case. My assessment is that analytic generalisability from the sub-cases to the overall case is, indeed, possible. The specific details and contexts of the embedded sub-cases vary to some extent, for example in relation to the QIC objectives, measures and their organisational complexity, but common themes and patterns have been identified across the QICs and their contexts.

Turning to the analytical generalisability of the overall case to other similar contexts, I have aimed to provide thorough and contextual descriptions of both the QICs and the research process in order to enable readers to assess the relevance and applicability of the findings to their own contexts (53, 56, 65, 66, 116). Furthermore, I have applied selected theoretical perspectives to levitate the findings, facilitating broader insights that may hold relevance beyond the immediate context. These insights are intended to be applicable to other QIC implementation settings (53, 116), thereby expanding the scope of their applicability. For example, in Paper B, I have applied the concept of 'translation' as a theoretical lens for understanding the adaptation processes involved in QIC implementation in various regional and local settings. Likewise, in Paper D, I have applied 'aligned distributed leadership' as a concept for exploring the organisation and leadership practices of the local QIC work.

Considering the contexts where the findings of the dissertation may be relevant, it is important to note that the QICs examined in the case study are implemented within a national healthcare quality programme for the Danish healthcare system. Accordingly, some features of the QICs and their implementation may be specific to this particular context, e.g., the obligation to participate in the QICs, the regional responsibility for implementation and the specific implementation support structures. These specific features may affect the potential generalisability of the findings. However, at the same time, the key elements of the QIC intervention and its implementation are similar to the more general characteristics of QICs internationally. Furthermore, the findings of the case study align closely with existing QIC implementation literature. Thus, the findings of the dissertation may have broader relevance and applicability to various other QIC settings.

Chapter 6:
Conclusion and Perspectives

In this chapter, I outline the dissertation's main conclusions. Furthermore, I discuss the perspectives for future research and the potential policy and practice implications.

Main conclusions of the dissertation

To be able to support the successful use of QICs as a collaboration-based, bottom-up approach to implementation of quality improvement in healthcare, in-depth empirical investigation of the implementation of QICs in specific settings is needed. In light hereof and drawing on a qualitative case study examining the use of QICs within a national Danish healthcare quality programme, this dissertation's aim was to investigate the implementation of QICs as a healthcare professional-driven approach to quality improvement. To provide a comprehensive understanding of the QIC implementation approach, the implementation process was investigated from four perspectives: the policy perspective, the perspective of the contents of the QIC, the professional perspective and the organisational perspective.

In line with the policy intentions driving the introduction of the QICs, this dissertation underscores a strong commitment among the participating healthcare professionals towards driving the QIC implementation process. This commitment is facilitated by the bottom-up implementation approach embedded in the QICs and is evident from the professionals' wide engagement and active agency in the QIC implementation process. The dissertation shows how the professionals' engagement is facilitated by a fruitful integration of the professionalisation and institutionalisation projects of the professions. Besides the bottom-up implementation approach, this integration is enabled by the participation of local coordinators and the QICs' clear focus on the development and commitment to delivery of high-quality patient care.

Turning to the professionals' active agency in the QIC implementation, the dissertation shows how they and the local and regional coordinators actively engage in rich translations of the QICs. Drawing on a variety of copying, modifying and radical translation strategies and practices, the professionals translate the QIC implementation roles, contents and methodology, tailoring them to their specific organisational contexts. The dissertation highlights how these translations are experienced to have positive implications for the professional engagement in and

organisational institutionalisation of the QICs but potentially negative implications for the QIC effects. The dissertation furthermore demonstrates how the professionals, actively engage in aligned distributed leadership practices. These practices rely on highly emergent and bottom-up-driven negotiations and relate to the scope and structure of the teamwork, the task distribution and leadership roles within the team, and the aims and methodology of the QIC implementation. Such alignment is experienced as important for the progression of the QIC implementation and for achievement of the QIC outcomes.

Implementing QICs bottom-up is, however, not without challenges. By pointing to examples of radical translation practices, misaligned distributed leadership, lacking professional engagement and inter-professional tensions, the dissertation highlights the sometimes-vulnerable nature of the bottom-up approach to implementation. To accommodate this vulnerability, the dissertation identifies the important roles of formal managers and local coordinators in supporting professionals in driving the QIC implementation. With respect to formal managers, the dissertation points to their particular importance in relation to the local prioritisation and legitimisation of the QIC implementation, the framing of the QIC implementation to promote professional engagement and decision-making regarding the appropriate level and types of translation of the QIC intervention. Regarding the local coordinators, the dissertation highlights their important role as facilitators of the local QIC implementation process. In this role, they offer process facilitation and methodology support, and they promote professional engagement by reducing tensions between the professions' projects of professionalisation and institutionalisation. The importance of formal managers and local coordinators underscores that the different levels of the QIC implementation process are interrelated.

Finally, the dissertation highlights the significance of the organisational complexity within QICs, emphasising its profound impact on both implementation processes and outcomes. The findings demonstrate distinct implementation challenges related to the cross-professional and cross-organisational/cross-sectoral composition of the QI teams, for example in relation to alignment of the distributed leadership practices and the engagement of the professionals. Thus, implementation of QICs in complex organisational settings requires a profound implementation effort and support by formal managers and local coordinators. However, when successful, these QICs may also potentially bring about distinct benefits.

In conclusion, the dissertation extends current QIC implementation research. Furthermore, it offers new insights and identifies important attention points for the continuous development of the QICs as a professional-driven approach to

quality improvement in healthcare and for creating the best circumstances for their successful implementation across diverse healthcare settings.

Suggestions for future research

In the following, I present three suggestions of future research. These suggestions represent important contributions aimed at refining the QIC approach and its implementation process in healthcare quality improvement.

First, the dissertation has provided a comprehensive and in-depth understanding of QIC implementation in specific settings. However, the field of QIC implementation is still nascent and further implementation studies are needed to broaden our understanding of the QICs as a bottom-up and professional-driven approach to implementation of quality improvement in healthcare. As previously highlighted, such implementation studies would benefit from an ethnographic research approach and longer-term fieldwork in local hospital and municipal settings. Following the daily QIC implementation in practice could produce a deeper and more contextual understanding of the QIC implementation process. Likewise, it would be valuable for future QIC implementation studies to apply social science founded theoretical perspectives that enable exploration and understanding of the complexity and dynamic nature of the QIC implementation process (44, 117).

Second, the dissertation has clearly demonstrated how QICs undergo rich translations to align with the unique organisational context and circumstances. Furthermore, the dissertation has identified both positive and potentially negative experienced implications resulting from these translations, shedding light on their impact on professional engagement, organisational institutionalisation and the effects of the QICs. However, to increase the understanding particularly of the potentially negative implications of these translations for the effects of the QICs, I suggest that future research should explore ways of combining qualitative data on various translations with quantitative data on the achieved QIC effects, based on the formal measures of specific QICs. Such studies would make a significant contribution to understanding the appropriate level and types of translation in QIC implementation. They would help strike a balance between the imperative of organisational institutionalisation and the achievement of the desired QIC effects (94).

Finally, this dissertation has sought to contribute to enhancing our understanding of the QIC implementation process. However, another important contribution lies in ensuring the sustainability of the QIC implementation and outcomes beyond the formal implementation period. Within the QIC literature, sustainability remains a limited field of research, mainly focused on the sustainability

of the QIC outcomes. The few existing studies that exist have collectively identified the challenges of sustaining the QIC outcomes after termination of the formal QIC implementation period (see e.g., (118-121)). Drawing from the findings of the dissertation, I propose the need for increased emphasis on the sustainability of the QIC *approach*. This entails ensuring continued use of the QIC approach and improvement methodology beyond the end of the formal implementation period. One important dimension of this sustainability perspective concerns investigating the relationship between the participation of local coordinators and the potential for sustaining QIC activities, along with their outcomes once the formal implementation concludes. Obtaining such knowledge would constitute an important contribution to the continuous development the QIC approach and to the creation of the best circumstances for their successful long-term implementation and outcomes.

Implications for policy and practice

Throughout the research process, a main motivation has been to provide findings that are relevant for managers, policy makers and practitioners working with QICs as a quality improvement approach in healthcare. In the following, I therefore highlight four suggestions for future QIC planning and implementation rooted in the findings of the present dissertation.

First, the dissertation points to an importance of framing the QICs as an approach to quality improvement that promotes an interplay between professions' professionalisation and institutionalisation projects to successfully engage healthcare professionals in taking responsibility for driving the QIC implementation. To facilitate this interplay, the dissertation suggests emphasising the bottom-up approach embedded in the QICs, the importance of giving local coordinators sufficient opportunity to support the professions in integrating their projects and ensuring a clear focus on the improvement of patient care pathways and patient outcomes in the planning and implementation of QICs.

Second, the dissertation points to the importance of acknowledging translation as an unavoidable, embedded part of the QIC implementation process that is necessary for the organisational institutionalisation of the QICs in local contexts. As far as the planning and implementation of the QICs are concerned, the dissertation therefore highlights the importance of thorough consideration among managers and administrators of which translations are appropriate and which are not for the purpose of balancing the dual concerns for organisational institutionalisation of the QICs and the achievement of the desired outcomes.

Third, for the local QI teams to experience progress and realisation of desired improvements, it is important to ensure aligned distributed leadership of the local QIC implementation. These leadership practices should be ensured particularly in relation to the structure of the teamwork, the distribution of leadership tasks and roles, along with decision making in relation to QIC aims and methodology. Furthermore, to provide the best circumstances for long-term success of the QIC implementation, the dissertation underscores the importance of ensuring timely consolidation of emergent, bottom-up-distributed leadership practices.

Fourth, to enhance the possibilities for successful QIC implementation and outcomes, the dissertation highlights the important roles of formal managers and local coordinators in supporting the professionals in driving the QIC implementation. The dissertation points to the particular importance of formal leadership support in relation to the prioritisation and legitimisation of the QIC implementation and of local coordinators in relation to provision of methodological and administrative support. The dissertation therefore suggests that ensuring such support should be a distinct priority for hospital/municipal managers of the participating sites. As QIC implementation in organisational settings spanning multiple professions, departments and sectors appears particularly challenging, the dissertation highlights that special attention should be devoted to ensuring sufficient support from formal managers and local coordinators when planning and implementing QICs in such complex settings.

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Appendices

Appendix 1	Paper A: The Danish Health Care Quality Programme: Creating change through the use of quality improvement collaboratives
Appendix 2	Paper B: Implementation through translation: A qualitative case study of translation processes in the implementation of quality improvement collaboratives
Appendix 3	Paper C: Engaging health care professionals in quality improvement: a qualitative study exploring the synergies between projects of professionalisation and institutionalisation in quality improvement collaborative implementation in Denmark
Appendix 4	Paper D: Distributed leadership in health quality improvement collaboratives
Appendix 5	Overview of conducted interviews and participants
Appendix 6	Written information and consent to participate form
Appendix 7	Interview guides for focus group and individual interviews