Author's response to reviews

Title: Local politico-administrative perspectives on quality improvement based on national registry data in Sweden: a qualitative study using the Consolidated Framework for Implementation Research

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Author's response to reviews: see over
To the Implementation Science Editorial Team,

Thank you for the opportunity to revise and resubmit our manuscript previously titled “Organizational conditions for quality improvement based on national registry data in Sweden: a qualitative study using the consolidated framework for implementation research”. The new title is: "Local politico-administrative perspectives on quality improvement based on national registry data in Sweden: a qualitative study using the Consolidated Framework for Implementation Research".

We have now carefully considered all comments from the reviewers, and we have dressed them and revised the manuscript. The comments were very helpful and insightful and helped us improve the manuscript considerably. We have made substantial revisions and hope that you now consider the manuscript ready for publication in Implementation Science. We feel that the study contributes with important new knowledge about political and administrative use of medical registries, and experiences of applying the Consolidated Framework for Implementation Research (CFIR) in a non-clinical setting.

Please let us know if you have any further questions, or requests for additional clarifications.

As the reviewers asked for much additional information, we have tried to reduce the amount of text by deleting a few entire paragraphs and single sentences throughout the manuscript.

Below you find our responses to the review comments. We have followed the numbering used by the reviewers.

Sincerely,

On behalf of the authors,

Mio Fredriksson, PhD, Uppsala University
<table>
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<tr>
<th>REVIEWER 1</th>
<th>AUTHOR RESPONSE</th>
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<td>1. The question posed is original and important, but not as well-defined as it could be since it does not fully correspond with the contents. The title does not fully reflect the aim or the framework applied in the study since the study is not restricted to merely organizational conditions for QI based on NQR data. The CFIR framework specifies five types of determinants/conditions (called domains) for implementation outcomes, of which inner setting, i.e. the organization, is only one. The authors identify three domains, which means they clearly do not limit themselves to looking for just organizational conditions. I think the paper deals with &quot;Conditions for using NQR data for QI&quot; (or &quot;...in QI efforts&quot;). This should be changed so the title reflects the aim and approach taken in the study. The aim also needs to be adjusted.</td>
<td>In this study and manuscript we applied &quot;organizational&quot; in a broad sense, referring to the whole county council organization and the politicians' and administrators' views concerning the whole organization. However, as &quot;organization&quot; may more often in everyday language indicate a single service provider organization, e.g. a hospital, we have changed the term used in the article. Instead, we now use the term politico-administrative context, or conditions. As mentioned by Damschroder et al. (2009) “Barriers to implementation may arise at multiple levels of healthcare delivery: the patient level, the provider team or group level, the organizational level, or the market/policy level.” In the manuscript we use the CFIR to investigate the politico-administrative level, previously referred to as the organizational level. To our understanding, this doesn't limit our use of the CFIR to the domains of outer and inner setting only. Rather, as Damschroder et al. points out, there are also other contextual factors, e.g. perceptions of the intervention characteristics and the characteristics of individuals, that are important to consider in order to understanding implementation barriers at the politico-administrative level. With regards to the title and aim, both have been changed as suggested. Amended title: Local politico-administrative perspectives on quality improvement based on national registry data in Sweden: a qualitative study using the Consolidated Framework for Implementation Research Amended aim: The aim of the study was to investigate the perspectives of Swedish county council politicians and administrators on quality improvement based on national registry data.</td>
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<td>Another concern I have regarding the aim is whether the focus of the study is on how NQRs are used in QI efforts, rather than the operation of (reporting data) and/or a more general use (such as obtaining an overall picture of various health issues) of NQRs. The connection between NQRs and their use specifically in QI efforts is emphasized in the introduction, but somehow gets “lost” in the results, which seem more geared towards work with NQRs in more general terms and what might affect that (or even attitudes to NQRs in general), with relatively limited regard to their actual use. The authors specify three potential uses for NQRs (reference lacking so it is not clear who has stipulated this use), of which QI is one. The questions in the interview guide do not seem to explicitly</td>
<td>The reviewer draws attention to an ambiguity, or lack of clarity, that is present in the empirical data. We believe that this is not the result of ambiguous questions but rather the result of the current state in the county councils where QI work based on NQR is still in its infancy. At the meso-level, the representatives largely see data reporting, and the struggle to register reliable data, as a quality improvement effort in itself. To secure reliable data is the first step in quality improvement. Without reliable data, the registries cannot be used at all, according to the politico-administrative leaderships. This interpretation is supported by the literature on medical registries and the use of registries in improving care. Trust in the data quality is essential for registries to be used efficiently in feed-back that improves care. We have made this connection clearer in the beginning of the manuscript. On page 6, we now say that: “Quality improvement refers to any type of planned or continuous &quot;actions for improving the processes and outcomes of health care&quot; [19] involving the</td>
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talk about the use of NQRs in QI efforts, as the speak about “how the county council works with NQRs and QI” and “how the different levels work with NQRs and QI”, etc. In other words: the questions do not specifically ask about how NQRs are used in QI efforts. I also think the results do not link the NQRs to QI. The authors need to be consistent here: is the paper about factors impacting on the work with or use of NQRs more generally or is the focus on what affects the or intended use of NQRs in QI efforts? As it reads, the paper deals with both issues but this is not reflected in the aim or the title.

NQRs; also including the continuous effort to secure high data quality – being pointed out as essential in previous research [14]."

In the introduction we also develop the discussion on the intended use of registries, as it is presented in the national policy agreement. Hopefully, that perspective on what is meant with QI strengthens the link between QI efforts and the NQRs in the results section. On page 4, we phrase:

“In addition to facilitating registry-based research, the policy agreement aims to increase the use of NQR data in efforts to improve health care [7], which we focus on in this study. The vision is that NQR-data is used to follow-up the processes and outcomes of clinics, hospitals and county councils (local authorities responsible for financing, planning and providing healthcare) [6]. Thus, NQRs may enable continuous quality improvement at the clinical level (where NQR data is used for identifying improvement areas, planning improvement efforts and studying the result), and at the political and administrative level (where NQR data is used to monitor performance against standards and locally set targets and goals). At the politico-administrative level the use of NQRs has characteristics of both quality improvement (QI) and audit [8]."

Furthermore, we have examined the results section and made an effort to strengthen the link between NQRs and QI-efforts in the text. However, at the politico-administrative level, this link is rather weak, but reflects the reality. Politicians and administrators do not talk explicitly, even when asked directly, about NQRs as a base for QI. That is a result that we now give more attention in the Discussion section.

As suggested, the title and the aim have been amended, to better illustrate the key aspects dealt with in the paper.

Still another important issue is whether the key informants really talk about the actual use of NQRs (in QI efforts or otherwise) or if they are also talking about “the idea of using the NQRs as a basis for QI”, as is stated in the discussion, i.e. a more hypothetical, potential or intended use. I assume they are talking about both, but this should be clarified. I have more “trust” in the relevance of determinants that have actually been experienced and encountered rather than determinants that the informants speculate, imagine or assume to exist.

See answer to Reviewer 3, comment 7.

We have also addressed this concern in the strengths and limitations section. On page 22 a new passage reads: “One of the potential weaknesses is that the politico-administrative representatives did not always have the detailed knowledge we were asking for, for instance regarding specific quality improvement efforts based on the NQRs and the use of the Riksstroke registry. In general, their views centered on the NQRs more broadly and sometimes approached the desired effects of using NQRs rather than actual experiences. As pointed out in another interview study using the CFIR, a qualitative approach might not reveal actual behavior [30]. However, the fact that the key informants did not always have the detailed knowledge is also important information. It indicates that the politico-administrative leaderships are not very involved in the implementation, which reduces the possibility of success and sustainability."

Linked to my above comment: some of the key informants talk about what needs to/should be accomplished for the use of NQRs in QI. To some extent, one could say We agree that the data in the first draft of the article includes both perceived barriers and potential barriers, along with practical and potential facilitators to overcome the issues. In the revised version we have presented facilitators recognised
that they speculate based on perceived barriers. I would hesitate to place the same emphasis on these determinants as facilitators/barriers that have been encountered and experienced when actually using NQRs in QI efforts. Here are some examples of what I see as more "hypothetical" determinants that the key informants speculate might affect the use:

• "IT solutions must be enhanced and shared across registries as well as across county councils"
• "...it is crucial that output data can be attained"
• "Politicians should investigate the results..."
• "...goals which can be followed up..."

I think the authors need to acknowledge and somehow address this. The potential determinants/conditions might be just as relevant, but they could also be "in the eye of the beholder" and not really of great importance in "real life" when undertaking work with NQRs for QI purposes.

3. There were some inconsistencies in the use of CFIR. We have applied it in a few research studies in a similar way to the authors, in a "deductive mapping process to structure/categorize data collected in inductive, explorative studies. It is an excellent tool. The key informants talk about "positive attitude toward the use of NQRs" and the "clinics are perceived to be competent", yet the authors disregard the domain of the individual users’ characteristics. Although the attitudes and competence are attributed to the clinics (as a whole) here, these attributes surely are those of the individuals working in these clinics. I would like to see a better, more elaborated rationale for discarding the two of the five domains of CFIR.

Damschroder et al. (2009) points out that there are sometimes indistinct boundaries between CFIR constructs. One example is the elusive difference between the domain 'Intervention characteristics' (often based on the key stakeholders’ perceptions of the intervention) and the construct 'Knowledge and beliefs about the intervention' (Domain: 'Characteristics of individuals'). Characteristics of individuals refers e.g. to "individuals' attitudes toward and value placed on the intervention, as well as /.../principles related to the intervention", whereas 'Intervention characteristic' constructs refers to e.g. "stakeholders' perception of the advantage of implementing the intervention" and "stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes." Thus, there are overlaps. One complicating factor is that evaluation of the constructs often relies on individual perceptions (Damschroder et al. 2009), which is also the case in our manuscript. According to Damschroder et al (2009), the study context determines the level at which to perform analysis. In a similar way as Damschroder and Lowry (2013) we chose not to use the domain 'Characteristics of individuals' as the study did not focus on individual level behavior. This is now clarified in the methods section, on page 10, where we write: "As we did not focus on individual behavior change, the informants’ perceptions about the intervention were coded into 'Characteristics of the intervention' rather than into 'Characteristics of individuals' [see 24]."

I’m not sure how the authors have interpreted the classic Rogers attribute of "relative advantage". What do they compare the use of NQR for QI with? Just stating that the key informants believe by multiple respondents since we believe that these could serve as potentially valuable knowledge for quality improvement efforts.

Meanwhile, we acknowledge the reviewers comment, and have therefore excluded potential hypothetical statements at several places in the text, or in some cases rephrased them.

• (p.11) ".../ the politico-administrative leaderships stated, in a similar way, that the current data input and data output solutions constitute barriers to the broad assimilation of the intervention into the local health care organization."
• (p.11) "Most respondents mentioned that, to initiate politico-administrative QI efforts, they need to attain output data in real time."
• (p.14) "Several politicians mentioned that they need to assume a more active role than they do today and also develop the politico-administrative use of NQR data, for instance when they follow-up whether the contracted providers deliver quality care."
• (p.15) ".../goals which were partly possible to follow-up via the Riksstroke variables."
NQRs are an "outstanding data source of QI" does not say anything about this being a relative advantage over something else. What about the comparison of not using NQRs for QI? The authors need to examine what is meant by relative advantage and reconsider if they really believe there is such an advantage concerning NQR for QI.

The data seem sound, but the paper could benefit from a few improvements with regard to some methodological issues. It is very important to problematize the means of gathering data to answer research questions, as all methods have their weaknesses. However, the authors do not address any methodological shortcomings, which gives the impression of the study (and its findings) taking itself for granted. The authors have used what I would refer to as a key informant approach, by letting a number of individuals "speak on behalf" of their organizations. We have used this approach in a few studies and I find it very useful. However, the approach definitely has a number of pros and cons, yet the authors do not acknowledge this at all. They neglect an important discussion of what the shortcomings (and strengths) of this approach might be, both more generally and more specifically, in their study. This has to be addressed in the Discussion. I also think the rationale for using this approach should be made explicit in the Methods section.

An obvious shortcoming of using key informants is that they do not always have full or sufficient knowledge about the matters they are being interviewed about. This is evident in some instances in the paper, for example:

- "...the directorates assume that hospital clinics already use..."
- "...are thought to be responsible for NQR work."
- "How operations managers progress after meeting central management is not always clear to the directorates."

I think it is important that the authors address uncertainties like these; what is their impact on the findings, if any?

Why did people decline being...
interviewed? How many did decline? In what ways might this have affected or biased the findings? People who participate and those who do not often differ in some respects. It might be worthwhile to at least address the reasons for non-participation.

What can be said about the use of telephone interviews vs. face-to-face interviews?

4. Overall, the manuscript is fine. However, there are some easily resolved form issues that I would consider minor essential revisions.

I would like to see the section "National Quality Registries and the national stroke registry" placed in the Methods section. It can be said to be the study object of the study and would therefore fit much better as part of the Methods. It is somewhat confusing to finish the introduction with this more specific description.

The aim is typically placed towards the end of an introduction and I think this would be beneficial in this paper, as the aim is sort of hidden in the text, being placed midway through a paragraph, halfway through the introduction.

The authors need to specify/define QI, for improved understanding of the concept as used in this paper. It is, after all, a key concept if the focus of the paper is the use of NQRs in QI efforts.

The results are written in present tense, which is highly unusual and at odds with more textbooks on scientific writing. Why was this used? It is customary to write in past tense.

I think Table 2 needs a column where the domain is briefly explained. What is the meaning or understanding of "Process," "Outer setting," etc.? As it reads, the constructs appear somewhat cryptic to the general reader. I think just a few words/a sentence would be sufficient to clarify the "essence" of each domain.

5. The Conclusion is not really a conclusion. "In conclusion, the use of the CFIR framework helped us to discover..." The aim was not to "test" the use of CFIR. The framework was simply a tool, a means, towards an end. The fact that the

| Interviewed? How many did decline? In what ways might this have affected or biased the findings? People who participate and those who do not often differ in some respects. It might be worthwhile to at least address the reasons for non-participation. | of the study (page 21-22). |
| What can be said about the use of telephone interviews vs. face-to-face interviews? | In the methods section (page 8) we also mention the use of telephone interviews. "To ensure flexibility and thus increase the possibility for participation, the informants were interviewed via telephone (for between 30 and 50 minutes)." Our experience is that telephone interviews worked fine in this case and that this interview form did not hinder the informants from elaborating on relevant issues. |
| 4. Overall, the manuscript is fine. However, there are some easily resolved form issues that I would consider minor essential revisions. | We have, in accordance with the reviewer's comments reduced the amount of information considerably on the "National Quality Registries and the national stroke registry". Some information is placed in the Methods section, and the rest is included in the new Figure 1, that describes the Swedish health care system and study setting. |
| I would like to see the section "National Quality Registries and the national stroke registry" placed in the Methods section. It can be said to be the study object of the study and would therefore fit much better as part of the Methods. It is somewhat confusing to finish the introduction with this more specific description. | The aim is now moved to the last section in the introduction. |
| The aim is typically placed towards the end of an introduction and I think this would be beneficial in this paper, as the aim is sort of hidden in the text, being placed midway through a paragraph, halfway through the introduction. | We have rewritten the introduction and now specify what we mean by QI. "In this study, we defined both context and quality improvement broadly. Quality improvement refers to any type of planned or continuous "actions for improving the processes and outcomes of health care" [19] involving the NQRs; also including the continuous effort to secure high data quality – being pointed out as essential in previous research [14]." |
| The authors need to specify/define QI, for improved understanding of the concept as used in this paper. It is, after all, a key concept if the focus of the paper is the use of NQRs in QI efforts. | Acknowledged; we have changed the tense in the results section. The interviews are now referred to in past tense. |
| The results are written in present tense, which is highly unusual and at odds with more textbooks on scientific writing. Why was this used? It is customary to write in past tense. | About Table 2: see answer to Reviewer 2, comment 4. |
| I think Table 2 needs a column where the domain is briefly explained. What is the meaning or understanding of "Process," "Outer setting," etc.? As it reads, the constructs appear somewhat cryptic to the general reader. I think just a few words/a sentence would be sufficient to clarify the "essence" of each domain. | We have rewritten the conclusion and the experiences from using the CFIR is now placed in the Discussion section. |

6
use of CFIR was beneficial, etc., can be addressed as part of the discussion, but it is not a conclusion of the conducted study. The abstract has a much more appropriate conclusion.

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<th>REVIEWER 2</th>
<th>AUTHOR RESPONSE</th>
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<td><strong>MAJOR EDITS</strong></td>
<td>In response to this important comment, we have made several compulsory changes. We have reconsidered the use of directorate and organizational level (which was previously based on how these terms are used in Sweden and obviously not leading the thought in the right direction). The organizational level is now referred to as the local &quot;politico-administrative level&quot;. Instead of using the term directorate, we now use the term &quot;politico-administrative leadership&quot;. By this we mean the following positions: County commissioner, Health care executive director, Chief manager of central development unit, Co-worker at central development unit and Hospital Director.</td>
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<td>1. Meso, macro, directorate, and organizational levels are presented and described somewhat but then used inconsistently through results and discussion making it difficult to follow. Only individuals affiliated with county councils were interviewed for this study and so would be more informative about the directorate or meso (as defined on page 7). The stated purpose mentions &quot;organizations&quot; (which leads me to think of local hospital settings); the idea of &quot;organization&quot; is reinforced on page 5 which states that using the CFIR &quot;...contributes to an enhanced understanding of the context influencing the work of <em>hospital clinics</em>...&quot; The authors need to clearly define terms and segments of &quot;context&quot; they propose to explore/study and then use that language consistently throughout the paper. A visual schematic may help to explain the various entities mentioned later in the paper and their relationships with indication of their level (e.g., meso, macro). The following bullets point out a few more examples that contribute to this general confusion. There are many more...</td>
<td>We also explain the use of micro, meso, and macro in the main text and in a new Figure (1), as suggested by the reviewer. Generally, we use the expression &quot;politico-administrative level&quot; instead of &quot;the meso-level&quot;. However, as this study has a wider policy implementation perspective, we wanted to illustrate that within the Swedish healthcare system, the local politico-administrative context constitutes the meso level. Furthermore, we now define what we mean by “context” in the introduction. Generally, we wish to enhance the understanding of the politico-administrative context influencing the work of hospital clinics – where the core implementation occurs. Thus, we have added a short description, in the introduction, of the role of the politico-administrative leadership in the county councils, see page 6. “The politico-administrative context refers to the non-clinical conditions and activities that surround the implementation of NQRs and QI, which also ultimately creates the institutional/organizational conditions for the clinical use of NQRs for QI.”</td>
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<td>a. Page 7 states that implementation conditions are studied at the meso level which is defined</td>
<td>a. This terminology is no longer used, see answer to Reviewer 1, comment 1.</td>
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<td>b. Page 7 also defines directorates and directorate level; the directorate level seems to be synonymous with the meso level</td>
<td>b. Now defined in Figure 1.</td>
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<td>c. A brief mention is made to “macro” on page 5 without definition or mention elsewhere</td>
<td>d. “Staff” refers to individuals at the local hospital settings. This is clarified on page 10.</td>
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<td>d. Clarify that “staff” (used throughout Results) are referring to individuals at</td>
<td>e. The county councils are autonomous in designing their own management and delivery structure. This means that there is</td>
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<td>The paper purports to focus on the Stroke registry and yet it is rarely and inconsistently mentioned in results. Much mention is made of registries in general. Perhaps it is more accurate to say that the <em>interviews</em> (and perhaps the larger study) focused on the Stroke Registry but directorates did not limit their responses and findings thus centered on registries (NQRs) more broadly with perhaps a bit more depth on Stroke registry in a few areas.</td>
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<td>3. A section is needed that describes the role and function of the directorates. Membership is well defined but functions are not. Clarifying this will help the reader work through findings much more easily. For example, do the directorates engage in QI? I assumed that QI would occur in the hospital settings but e.g., page 10 says that &quot;most respondents mention that, for QI purposes, it is crucial that output data can be attained in real-time at the directorate level...&quot; thus, it appears the directorates engage in QI as well but how does this relate to QI done in hospitals?</td>
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<td>This is a correct observation. Few of the politico-administrative representatives had more detailed perceptions of the use of the Stroke-registry in the improvement of care quality. Predominantly they talked about NQRs in general. Thus, we have rephrased to not indicate the Stroke-Registry as a focal point. In the Methods section (page 8-9)– discussing the interview guide – we now write that: &quot;More particular, the informants were asked about quality improvement related to the Swedish Stroke Registry (Riksstroke) – the registry that targets the single somatic disease group that causes the highest number of hospital days in Swedish health care [21]. The purpose was to capture the politico-administrative views on a NQR that is well-managed, long-running and affects a broad group of citizens and patients.&quot;</td>
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<td>Thus, if any the Riksstroke registry should be the registry people in general and the politico-administrative stakeholders at county council level in particular should know about.</td>
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<td>3. We have added a text paragraph in the introduction (page 5) that describes the function of the directorates (now referred to as the politico-administrative leaderships). &quot;Most importantly, the local politico-administrative level (constituting the meso-level in the Swedish healthcare system, see Figure 1) decides on the county council budget and fees, establishes goals and guidelines for providers and staff, and commissions services from private and public providers. Monitoring and follow-ups are increasingly important tasks, in particular to secure the quality of care, for which the county councils are accountable to the public [17].&quot;</td>
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<td>In addition, Figure 1 describes how the local politico-administrative leadership relates to other parts of the Swedish health service. Furthermore, we have clarified that we look at quality improvement in the meaning that is expressed in the national policy agreement, i.e. at the clinical level (where NQR data is used for identifying improvement areas, planning improvement efforts and studying the result), and at the politico-administrative level (where NQR data is used to monitor performance against standards and locally set targets and goals). The latter activity, however, has characteristics of both quality improvement (QI) and audit and is the focus of our study.</td>
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<th>4. Results are a confusing tangle of findings at the meso and micro (and</th>
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<td>As we study the politico-administrative level (which, apart from the clinics are potential users of NQRs for QI) this level...</td>
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other?) levels. Inner Setting, according to the authors, includes both. Table 2 could be greatly expanded to include operationalized descriptions for each construct as applied in this study – a strength of the paper is use of these constructs at multiple levels. More explication of how this was done would be valuable.

needs to be part of the inner setting. If we had analyzed the politico-administrative level as the “outer setting” almost all statements had ended up in the categories of “Cosmopolitanism” and “External policies and incentives”. In that case we had not been able to use all the constructs in the inner setting that was relevant to this study. In a way, there are two inner settings, the politico-administrative and the clinical. Here, perhaps, it becomes noticeable that the CFIR is primarily constructed for studying implementation at the clinical level. One strength in our study is that we expand this construct to also include the politico-administrative level. This is further highlighted in the Discussion section.

In the results section, we have tried to make it clearer when the politicians and administrators refer to the politico-administrative level and when they refer to the clinical level.

Table 2. We have added a column with our operationalizations of the constructs presented in the study. In our opinion, instead of being included in the manuscript, Table 2 could be presented in an Additional file to save space.

5. Related to #4, each section/construct within Results needs to be better organized to reflect findings at the meso level and then how that links into or affects micro-level settings. Be clear when describing entities within one level and then another.

In the results section, we have made compulsory revisions to make it clearer when the politicians and administrators refer to the politico-administrative level and when they refer to the clinical level.

6. Tension for change: does not seem to be applicable because the NQRs already exist. Perhaps there is Tension for *needed* change or improvements to NQRs which are underutilized.

We have rewritten this section, see answer to Reviewer 3, comment 6.

7. The construct for Incentives and Rewards was combined with Goals and Feedback (G&F). Goals and Feedback describes a “process” where “goals are clearly communicated, acted upon, and fed back to staff and alignment of that feedback with goals.” These two constructs should be separated. The findings about compensation being tied to performance is in the sphere of Incentives and Rewards – or depending on how this construct is conceptualized between meso versus micro levels, this may relate to External Policies and Incentives that is within the Outer Setting Domain. Perhaps the economic incentives motivate organizations (micro? Meso?) to clearly define those as goals for their organization with clear communications to staff who then use feedback to monitor their progress/contributions toward achieving those goals but this is not covered.

As a response to this comment, we have separated “Incentives and Rewards” and “Goals and Feedback”.

See also response to Reviewer 2, comment 4. The whole county council organization is treated as “Inner Setting”.

8. In the Discussion, include a section that reflects back on the usefulness of the

We have included a section (page 21) that reflects on the usefulness of the CFIR. The section reads:
CFIR with recommendations for improvement; especially related to operationalizing across multiple levels.

“One of the proposed advantages of the CFIR is that the framework can be used to build a knowledge base of findings across multiple contexts [15]. Usually, the CFIR is used to study more well-defined interventions such as a weight management program [24], not broad policy agreements implemented in the health service. As such policies are generally less specific (one of the challenges in policy implementation research is to define what is actually being implemented [1]) it may be difficult to use all the constructs and sub-constructs in the CFIR. The multiplicity in the policy agreement we studied may thus be one of the reasons why few statements were coded into the process domain [compare 30], which deals with how implementation is planned, executed and evaluated. To fully understand what the lack of process data means, more information is required. It may be that the CFIR does not capture the broader policy implementation process, but it may also be a reflection of the lack of an implementation strategy in the national policy agreement. Furthermore, studies using the CFIR usually focus on the clinical levels: the provider team or group level, hospital or clinical management level. In contrast, we focused on the non-clinical level which determines the clinics’ conditions. Often, the non-clinical tier is approached as the outer setting (i.e. the economic, political, and social context within which an organization resides [15]). However, we dealt with this level as part of the county councils’ inner setting as the politico-administrative level includes features of structural and political context through which the implementation process proceeds [15]. This approach creates many tiers within the inner setting, which may confuse the findings and conceal what actually works where and why – but reflects complexity in health service provision. Thus, the CFIR should acknowledge that there may be multiple tiers in the inner setting, some of which are non-clinical.”

9. Discussion is too long and needs to be considerably tightened. Focus on findings and recommendations and then tie to published literature as appropriate.

We have rewritten the Discussion. The most relevant findings are now discussed in relation to the literature.

MINOR EDITS
1. There is reference (#9) to a paper that is “forthcoming.” This will need to be taken out of the citations assuming it is not published.

The reference is now amended with publication details.

2. Relative Advantage: (p 11) starts off saying NQR has high relative advantage but ends by saying really, people preferred the Regional Comparisons. This is a theme (the preference of Regional Comparisons) that manifests throughout and a major finding. This paragraph is inconsistent, however. It seems that perhaps people’s *idea* of the *potential* of the NQR has high relative advantage but in reality, the Regional Comparisons have higher Relative Advantage.

We have rewritten this paragraph and it now ends with the statement: “Thus, in practice the Regional comparisons have a higher relative advantage than the NQRs.” (page 12)

3. Page 9: States that there is an option to work only with selected constructs from the CFIR which cites the original

We have added this reference.

**REVIEWER 3**

**MINOR ESSENTIAL REVISIONS**

1. The methods for collecting and analysing the qualitative data appear to be sound and controlled. However, because there are a relatively small sample of respondents (17), and these respondents represented four separate regions within Sweden, I recommend eliminating documentation of the specific region/site of a respondent when reporting results in an effort to retain as much anonymity as possible for all individual respondents; the specific site, or region, does not add any great value to the results, and I fear there may be some readers who might possibly be able to identify (or attempt to) particular respondents.

   Although the site numbering (1-4) was fictive, we appreciate the reviewer’s consideration of the respondents’ anonymity and have thus deleted all references to site or location. When presenting quotations, we only refer to the respondent’s position in the county council – information we consider necessary for the understanding.

2. The first sentence of the RESULTS section begins with, “The respondents chose to talk about…” (p. 9). This could imply that respondents were given a ‘choice’ about what they wished to talk about, rather than responding to a semi-structured interview guide; if that is the case, the methods section needs to be much clearer about this. Otherwise, it may be helpful to simplify this sentence (e.g., “Responses reflected issues within the themes of evidence strength…” – emphasizing the data collected from respondents rather than potentially biased choices among respondents about what they wished to talk about.

   Thank you for pointing out the ambiguity in the choice of wording. All respondents responded to semi-structured questions. In the end we deleted that sentence to save space.

3. Page 11, 1st full paragraph: “The directorates perceptions of the relative advantages of using NQRS for QI are consistent.” I am concerned about the words ‘perceptions’; is the ‘perception’ based on direct experience or knowledge? If not, then it does not truly represent adequate qualitative data and should be excluded.

   In response to this comment, in this specific text passage, we have chosen to rewrite the sentence not using the word ‘perceptions’. The new sentence reads: “The politico-administrative leaderships described the relative advantage of using NQRs for QI in a consistent way.”

   Site of change: P 11.

   Regarding the use of ‘perceptions’ in the manuscript: see
It would be helpful to supply the basis for these perceptions and an example of the data on which a directorate bases this perception.

answer to Reviewer 3, comment 7.

Politicians mentioned this preference themselves, along with other respondents. We have simplified in accordance with the suggestion.

Site of change: P 12.

The sentence has been moved to the Discussion section and a reference has been added. Several implementation researchers mention communication and Greenhalgh et al. (2004) concludes that effective communication across structural (e.g., departmental) boundaries within the organization enhances the success of implementation and the chances of routinization.

New sentence (page 19): “The analysis of the inner setting shows that formal and informal units and networks dealing with NQR matters are not clearly linked together by efficient and distinct communication channels, which make successful implementation less likely [28].”

We have rewritten this paragraph, see page 15.

“A mixed picture of the implementation climate was conveyed by the politico-administrative leaderships. Importantly, there was a positive attitude toward the use of NQRs such as the Riksstroke and QI based on NQR data. Still, the tension for change was weak at the politico-administrative level as its representatives mainly relied on other types of performance data, e.g., the Regional comparisons. Furthermore, several informants stated that cross county council-efforts to develop the use of performance data to work out improvement strategies were based on the Regional comparisons. Thus, at the politico-administrative level the NQRs were given lower relative priority as a source of quality monitoring.”

We acknowledge the reviewer’s concern for the respondents’ basis for their statements. In the manuscript, ‘perception’
structures and activities built up around performance data and QI, this kind of leadership engagement is not necessarily perceived as support at the clinical level.” Please see my comments above regarding the potential for limited validity of ‘perceptions’; if there is specific evidence or experiences of respondents that can support reported perceptions, this would be extremely helpful.

refers to “the way, in which something is regarded, understood, or interpreted” which may be based on both direct and indirect experience and knowledge. As the NQRs are inherently medical, some aspects of the registries and their use cannot be experienced first-hand by politicians and administrators. The perceptions of politicians and administrators are often formed after consulting health care professionals about their experiences of certain processes, work methods etc. Ultimately, politicians and administrators make decisions based on a mix of both direct and indirect experience and knowledge. Thus, we believe that the ‘perceptions’ of politicians and administrators are generally valid empirical data in this study. Similarly, Damschroder et al (2009) acknowledges perceptions (of e.g. the evidence supporting interventions) as contextual factors. They also acknowledge that “the evaluation of most of the constructs relies on individual perceptions”.

Regarding the specific paragraph commented on by the reviewer: an example of that leadership engagement is not necessarily perceived as support follows on the statement. To make this connection between the statement and the example clearer, we have added a reference to the example in the initial statement. The text passage on page 16 reads (new text in italic):

8. Page 16, 2nd paragraph: “The respondents’ perceptions about available resource for undertakings associated with NQRs are consistent. QI work is one of the clinics’ essential obligations and NQR work and QI are to be carried out within the clinic’s regular budget.” (1) Same regarding ‘perceptions’; (2) When I read this sentence I inferred that there as adequate funding – within the allotted budget – and did not require separate funding efforts; however that inference conflicted with the authors’ writing on page 17 (and reinforced by the authors in the conclusions) that "most respondents agree that the clinics' resources...are." Clarifying the sentence on page 16 may be helpful.

The funding of the day-to-day activities related to NQRs at the clinical level (most notably data input activities) is a central concern. All clinics have a budget, and essential obligations such as quality improvement are to be carried out within that budget. NQRs are seen as one element of that quality improvement work (although the NQRs' most successful use has been in research carried out by the national registry organizations). Although the costs in terms of time spent to enter and validate data are immense, the clinics are not given extra resources. Many health professionals tell that they spend unpaid nights and weekends trying to carry out the task of data input. The system is thus under-financed.

We have tried to clarify this, by rewriting the sentence, which now reads: “Thus, the clinics are offered no additional resources for undertakings associated with the NQRs, which are considered a part of the clinics’ essential obligation to work with QI. The resources available are those of the clinics’ regular budget – within which QI efforts are to be carried out, be they NQR-related or not.

Site of change: P 17.
9. Bottom p. 18 to p. 19: “The fact that the respondents gave few statements relating to the process domain is rather telling in itself, and an observation to which we will return.” (the authors return to this on p. 21) Similar to comments offered above, I have concerns about declaring the lack of data on a particular topic/issue as an indication that the topic/issue is of limited concern to the respondents. As the authors appropriately identify, one reason for incomplete data could be that "(2) the CFIR is constructed for studying implementation of more well-defined interventions and does not capture a broader policy process" (top p. 22). I suggest the authors instead consider reporting that, for these particular topics/issues where they did not obtain specific data, more information is required.

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**DISCRETIONARY REVISIONS**

1. It may be helpful to offer the semi-structured interview guide to readers if possible.

   In principle, we agree with the reviewer's comment. However, the interview guides are currently available only in Swedish. To make perfectly accurate translations (with translation and retranslation) we would have to hire a professional translator and thus apply for extra funding in the project. If the Editor considers the interview guides essential for publishing the manuscript, we will start that process.

2. Is there anything that should be reported regarding potential respondents who refuse to participate? For example, how many individuals refused, and was there any assessment of those who refused compared to participating respondents to assure there was no unintentional selection bias?

   As mentioned a few respondents did not wish to participate. We have added a sentence with additional information:
   
   “Five representatives declined, stating that they lacked the time to participate or that they had had their current position too short time to contribute with any relevant information.”

   Site of change: P 8.

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In the methods section the authors report that the survey was initially structured to reflect all five domains of the CFIR. However, under the 'Analysis Procedure' section it is then reported that, “The final analysis, however, was constructed of three of the domains”. It would be helpful to provide the reason(s) why two domains were excluded from the final analysis.

We have rewritten the text regarding the lack of statements in the process domain, which is now included in the discussion about the experiences of using the CFIR (page 21): “Usually, the CFIR is used to study more well-defined interventions such as a weight management program [24], not broad policy agreements implemented in the health service. As such policies are generally less specific (one of the challenges in policy implementation research is to define what is actually being implemented [1]) it may be difficult to use all the constructs and sub-constructs in the CFIR. The multiplicity in the policy agreement we studied may thus be one of the reasons why few statements were coded into the process domain [compare 30], which deals with how implementation is planned, executed and evaluated. To fully understand what the lack of process data means, more information is required. It may be that the CFIR does not capture the broader policy implementation process, but it may also be a reflection of the lack of an implementation strategy in the national policy agreement.”

In the section 'Analysis procedure' we explain that we used the full range of domains and constructs in the coding phase, but that the final analysis was constructed of three of the domains into which the absolute majority of interview material was coded. In the manuscript we have clarified that we relied on a 'menu of constructs' approach. The new passage reads (page 10):

“Thus, similarly to Damshroder and Lowry [24] we relied on a 'menu of constructs' approach including only those that applied most directly to the present study.”