# Developing a model for primary care quality improvement success: a comparative case study in rural, urban and Kaupapa Māori organisations

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## ABSTRACT

**Introduction.** Primary care is under pressure to achieve accessible, equitable, quality health care, while being increasingly under resourced. There is a need to understand factors that influence quality improvement (QI) to support a high-performing primary care system. Literature highlights the impact of context on QI but there is little primary care research on this topic. **Aim.** This qualitative case study research seeks to discover the contextual factors influencing QI in primary care, and how the relationships between contextual factors, the QI initiative, and the implementation process influence outcomes. **Methods.** The Consolidated Framework for Implementation Research was used to frame this qualitative study exploring primary care experiences in depth. Six sites were selected to provide a sample of rural, urban and Kaupapa Māori settings. Qualitative data was collected via semi-structured interviews and compared and contrasted with the organisational documents and data provided by participants. **Results.** Cases reported success in achieving improved outcomes for patients, practices, and staff. Strong internal cultures of 'Clan' and 'Adhocracy' typologies supported teamwork, distributed leadership, and a learning climate to facilitate iterative sensemaking activities. To varying degrees, external network relationships provided resources, knowledge, and support. **Discussion.** Organisations were motivated by a combination of patient/community need and organisational culture. Network relationships assisted to varying degrees depending on need. Engaged and distributed leadership based on teamwork was observed, where leadership was shared and emerged at different levels and times as the need arose. A learning climate was supported to enable iterative sensemaking activities to achieve success.

**Keywords:** case study, context, distributed leadership, general practice, implementation, learning climate, network relationships, quality improvement.

## Introduction

Despite decades of healthcare quality improvement (QI) efforts and notable successes,[1,2] results have not always been successfully replicated[3,4] and quality problems persist.[5] The primary care system is under pressure to achieve accessible, equitable, quality health care, and reduce demand on hospital and specialist services while increasingly under resourced.[6,7] Building an understanding of what is needed to support quality improvement and achievement of a high-performing primary healthcare system is critical in the current environment.[6,8]

Literature highlights the impact of context on QI outcomes,[9–11] but the relationships between the context, QI intervention (QII) and implementation process have not been established.[10,12] Research into factors influencing QI success has predominantly occurred in secondary care settings.[13,14] General practice and other primary care services are unique settings with high degrees of heterogeneity and uncertainty.[4,15] Primary care research into determinants of effective improvement is sparse, lacks consensus and often focuses on what was done rather than describing underpinning theory, contextual factors and their relationship to each other and success.[15,16]

**WHAT GAP THIS FILLS**

**What is known about the topic:** The context surrounding improvement efforts contributes to observed variation in initiative outcomes. Studies into factors influencing QI success generally focus on secondary care organisations and little is understood about the relationship between the initiative, implementation process and context in primary care.
**What this study adds:** This is an extension of a previous cross-case comparison. Additional cases enabled deeper understanding and refinement of key factors and proposed directionality of interrelationships influencing QI. A refined model is shared depicting factors and relationships for effective QI.

Therefore, we seek to identify: (1) the contextual factors influencing primary care improvement initiatives, and (2) how contextual factors (inner and outer socio-technical setting), the improvement intervention, and implementation process influence each other and the outcomes in primary care.

Research from a 15-year program of primary care transformation in the United States suggests that a complexity-informed approach is required.[4] This research found an adaptive reserve centred on relationships was required for primary care QI and developed a relationship-centred model tested by path analysis.[17,18] The results found strong associations between relationships, sensemaking and learning when there were higher degrees of trust and reflection, without establishing any causal link to improved quality or outcomes.[18] Pfadenhauer defines context as 'comprising not only the setting but also roles, interactions and relationships',[19] supporting thinking that the people-related factors of QI, such as teamwork, leadership, and culture, are critical contextual factors.[9,16]

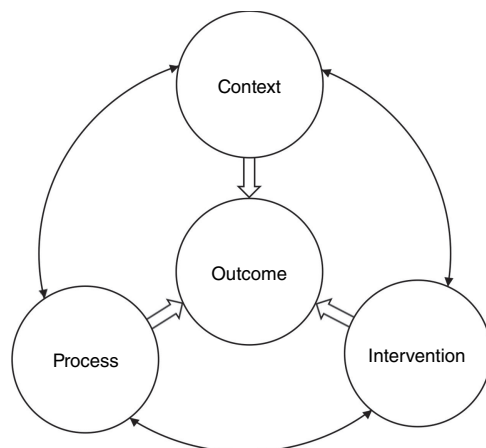Fig. 1 provides a high-level view of current research into understanding factors and their relationships influencing primary care QI. The intervention encompasses the topic and planned changes, including factors such as complexity and adaptability.[10,20] The process is how the intervention is implemented, including methodology and facilitation.[10,16,21] Contextual factors are the inner and outer socio-technical setting, including structures, people-related characteristics, and relationships.[10,20,21] The model shows the overlap and interrelationships between the three components.

## Methods

This qualitative multi-case study employs the Consolidated Framework for Implementation Research (CFIR)[20] to guide data collection and analysis. CFIR was chosen because of its broad coverage, demonstrated applicability to primary care,[22,23] and generic conceptual applicability.[22,24] The CFIR domains and constructs illustrated in Fig. 2, are a good fit with the primary care QI model (Fig. 1), to enable identification of primary care specific constructs and relationships.

A sampling strategy based on known characteristics of the New Zealand (NZ) primary care setting was used to select relevant general practice, primary health organisation (PHO) sites and improvement topics, resulting in a mixture of rural, urban, very-low-cost access (VLCA), Kaupapa Māori (guided by Māori worldview and principles) practices and one PHO. Case study sites were asked to choose a successful QII to discuss. After several case interviews, effort was made to find cases that used 'scientific QI' methods,[25] leading to inclusion of Case 4 (C4) and C6. Fig. 3 outlines site characteristics and improvement topics.

In-person, semi-structured interviews were conducted between October 2018 and January 2020. The qualitative interview data was compared and contrasted with the organisational documents and data provided by participants. Further method details, including consent, were provided in the 3-case comparison[26] and remain the same for this study. However, it is worth repeating the care taken to honour the gift of Kaupapa Māori providers' data and ensure principles were represented correctly from the participants perspective. The authors are all of European descent and do not have the lived understanding of Kaupapa Māori principles, therefore representatives from C2 and C5 were provided opportunity to provide feedback on their case report to ensure correct representation.

### Ethics approval

This study was deemed low-risk and not requiring a full ethical review (Massey University Ethics Notification No. 4000018920).

## Results

Descriptive characteristics showing the key differences and similarities between the cases and the chosen QII are shown
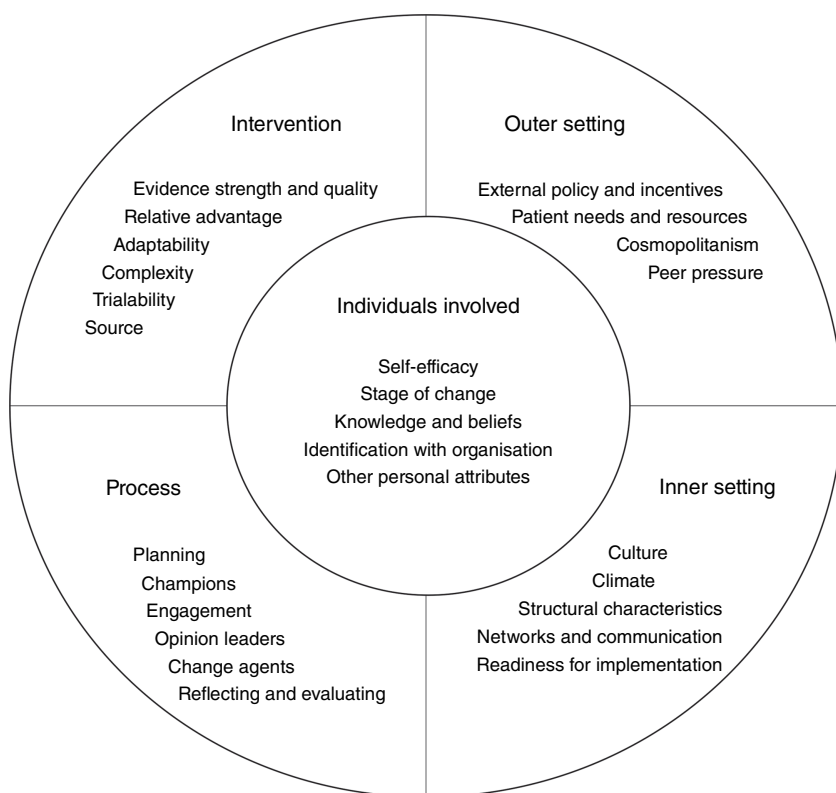


**Fig. 1.** Determinants of Primary Care quality improvement success.

**Fig. 2.** CIFR domains and constructs.

below in Table 1. Interview participant titles show the spread of staff interviewed and involved in the QII. C1 was in a remote rural setting and all the other cases were in urban settings of varying sizes and locations across NZ. Two were VLCA practices, as well as all the practices within Case 5, a PHO.

The main themes identified were a mix of CFIR constructs and emergent themes identified from the qualitative data during the transcription, analysis, and writing-up process in an iterative and ongoing process. A small sample of quotes that illustrate these themes from each case is provided in the Supplementary File S1. Cross-case results analysis is reported using the main CFIR domains as headings. The main constructs identified in this study and the relative strength of these in comparison to each other are presented in Appendix 1. The addition of a further three cases led to the revision of strengths for planning in C1–3. Relative strength of identified constructs is based on a combination of the frequency, passion and stated importance assigned to that construct by the participants.

QII outcomes were not evaluated as part of this study although cases provided evidence supporting the QII success. Every case used feedback from patients and staff to assess progress towards achievement of goals. Four of the cases used quantitative time series data, one case used before and after data, and the other case used high level data that the QII is thought to have contributed to. All the QIIs were seeking improved access in varying ways but they also sought or had additional benefits as they balanced patient needs, practice sustainability and staff wellbeing. All cases considered their projects to be successful, not only in achieving the desired patient outcomes but also benefitting the practice and/or staff wellbeing. C3 and C5 saw unintended consequences, with increased workload in other parts of the system as they improved patient access and experience. Improved value for practice resources was achieved in C2, C4 and C6 as well as improved patient and provider experience.

## Intervention characteristics

All QIIs except for C1 were internally generated. Although the C1 QII was initiated by the PHO, it had been of concern for some time within the practice team. All QII topics showed influences from the wider health environment, national primary care initiatives, and changes such as the Health Care Home Collaborative and funding changes.

Both C2 and C4 needed the QII to be cost neutral, but other cases provided funding to varying degrees for their QII. All teams did background investigations into their topics, seeking to learn from the examples of others. In most cases they drew on similar QIIs implemented elsewhere to develop evidence supporting the QII and how it would be an advantage to both patients and the organisation. This was supported by contextual knowledge, their 'gut' instinct, and qualitative and quantitative data to establish baseline understanding and review progress. The QII had to show adaptability to fit their context as they learnt
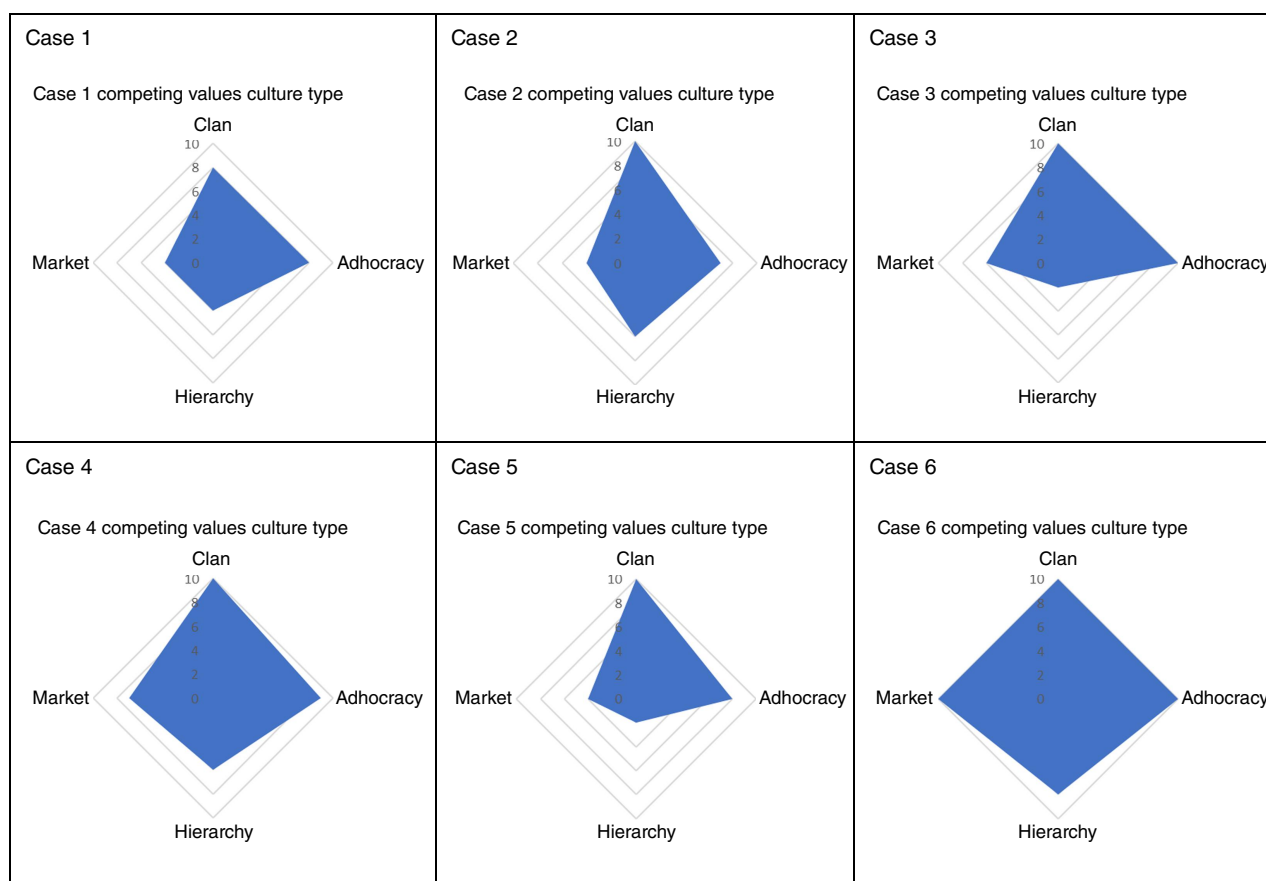
**Fig. 3.**   Case culture types – competing values.[27]

more through local implementation. C4 found that 'it was the data that kept telling the story that enabled us to tweak and adjust.'

## Context

### Outer setting

Identified patient need was a source of motivation for all cases and linked to the inner setting through a sense of community responsibility that was particularly strong in the Kaupapa Māori organisations. While several cases had other drivers, patient need was a core motivating factor without which the QIIs could not have been implemented.

All the teams had strong network relationships nationally and with their local communities, PHOs and/or District Health Boards (DHBs). PHO and/or DHB staff were members of the team in C1, C3 and C4 (C5 was a PHO) and C2, C3, C4 and C6 had staff in PHO or DHB governance positions. Several practices' PHOs used these QIIs to demonstrate successful QI to others. They were all strongly connected to their population, communities, local services and providers and utilised these networks for most cases in these QIIs, but in all cases as part of maintaining contextual awareness.

### Inner setting

Teams spoke of the need to do the QII for their patients and community, and this related to maintaining practice viability. The identified patient need connected with a strong sense of community responsibility for the enrolled population. This was particularly strong in Kaupapa Māori and rural teams, where for example (C5) 'a lot of the people work [here] because they are passionate about the community' and many of the cases spoke of going 'the extra mile' or 'above and beyond'. C4 and C6, were strongly motivated by financial concerns and the need to stay in business, but C2 and C5 also sought to manage finances in their QIIs.

Culture played a significant role in why and how these QIIs were accomplished. Fig. 3 contains radar charts displaying the mix of culture types, based on the Competing Values Framework,[27] self-identified by participants, and a synthesis of the interview data. Teams identified strongly with the 'Clan' and 'Adhocracy' culture types. The two largest urban practices within a large metropolitan city (C4 and C6) had spread across the culture types and had strong 'Hierarchy' culture elements. The Hierarchy culture is more formalised, structured, and focused on smooth functioning and efficiency.[27] There is no 'correct' culture type, but the culture should ideally respond to the environmental demands on the organisation.[27]

**Table 1.** QII topic and site characteristics.

| | Case 1 (C1) | Case 2 (C2) | Case 3 (C3) | Case 4 (C4) | Case 5 (C5) | Case 6 (C6) |
|---|---|---|---|---|---|---|
| Organisation | A PHO and VLCA[A] practice co-located with Community Mental Health and other health services | A Kaupapa Māori[B] VLCA practice | An integrated family health service | General practice | A Kaupapa Māori PHO with varied primary health care services including 5 VLCA general practices | A general practice co-located with a range of other health services |
| Setting | Remote rural practice | Urban practice within a satellite town of a large city | Urban practice in a large city | Urban practice in a large city | Sited in urban suburbs surrounding a large city | Urban practice in a large city |
| Practice size (100th percentile is the largest at approx. 29 000 patients) | Approx. 6000 enrolled patients<br><br>76th percentile | Approx. 3000 enrolled patients<br><br>40th percentile | Approx. 6000 enrolled patients<br><br>76th percentile | Approx. 13 000 enrolled patients<br><br>95th percentile | PHO approx. 18 000 enrolled patients; practices: 2500–5500<br><br>From 38 to 67th percentile | Approx. 20 000 enrolled patients<br><br>99th percentile |
| FTE, unless otherwise stated | General practitioners (GPs): 7, employed over varying hours | GPs: 2.5<br><br>Nurse practitioner: 1<br><br>Practice nurses (PNs): 2<br><br>Community health team 3.6 | GPs: 5<br><br>PNs: 2.35 | Head count of 13 GPs with various FTE | Practice headcount:<br><br>GPs: 25<br><br>PNs: 30<br><br>PHO: approx. 120 staff in a range of roles | Chief executive<br><br>GP director<br><br>Finance/admin: 2<br><br>GPs: 11.9<br><br>PNs: 9.5<br><br>Reception: 10 |
| Interview participants[C] | PHO clinical director<br><br>CMH district manager<br><br>General practice (mental health) liaison nurse<br><br>Practice nurse<br><br>General practitioner (GP) | GP director<br><br>Practice manager<br><br>Nurse lead<br><br>Administration team lead<br><br>Community health worker/receptionist<br><br>*Community health worker*<br><br>*Practices nurses (2)* | GP director<br><br>DHB service integration facilitator<br><br>PHO project manager<br><br>Practice nurse<br><br>Receptionist | Clinical nurse Lead<br><br>GP director<br><br>Clinic RN<br><br>General manager<br><br>Administration manager<br><br>PHO data nnalyst<br><br>PHO nurse director | Quality leader<br><br>Clinical lead nurse<br><br>Hub senior lead<br><br>Hub administrator | General manager<br><br>Medical director<br><br>GP associate |
| Intervention | Physical health for patients with a mental health diagnosis | Telephone triage project | Patient prioritisation at reception | Nurse-led acute paediatric (initially 13 years and under) clinic. | A central telephone call answering and appointment booking service | Model of care change from acute care and general practice to general practice only |
| Date of QII | 2017 | 2014 | 2017 | 2018 | 2018 | 2018 |
| Date of interviews | October 2018 | October 2018 | January 2019 | August 2019 | January 2020 | December 2019 |

[A]**VLCA**: Very low-cost access (VLCA) practices have an enrolled population that is at least 50% economically deprived or Māori and Pacific Island peoples and the practice receives funding to maintain low fees.
[B]**Kaupapa Māori**: 'an approach that is guided by Māori worldviews and principles'[35]
[C]All of those interviewed were actively involved in the improvement apart from those in italics.

In a 'Clan' culture, success is achieved by caring for people and meeting the needs of clients. It is friendly, like a large family held together by loyalty and teamwork, with promotion of participation and consensus.[27] Every case spoke of teamwork, and several spoke of closer family-like relationships, particularly in the Kaupapa Māori organisations, where the unique cultural relationships of whānau (extended family group) and whanaungatanga (relationships and kinships) were key.

The 'Adhocracy' domain describes a creative working environment where employees take risks, leaders are seen as innovators and the long-term goal is to grow and create new resources.[27] The quotes in Table 2, a sample of participants' views, not only reflect that participants were constantly looking for ways to improve, but also reflect that they were looking to improve their way of improving.

Together Clan and Adhocracy cultures combined to create a learning climate where staff felt valued, safe, and supported to 'voice ideas' and learn by 'trial and error' with a 'can-do' attitude. The teams included senior staff as well as a variety of front-line staff, including receptionists, nurses, administration staff and general practitioners, demonstrating both self-efficacy and agency. Engaged staff and leadership were key, and the mixed staff and shared leadership can be seen in Table 1. Teams spoke of flattened hierarchy and distributed leadership behaviours as they shared leadership roles and tasks to varying degrees relevant to their context and QII.

### Process

Processes varied according to skills and experience of participants. Participants spoke of known change methods: C2, Kotter change model;[28] C3, Model of Emergent Learning;[29] and C4, Plan-Do-Study-Act cycles. Only C4 used improvement science, and C6, although very experienced in QI, said 'we were meticulous in following the process, but we didn't use particular tools.' Patient co-design was not part of the QIIs: C3 commented, 'not having the knowledge or model of how to incorporate it.' Only C1 and C6 employed a structured approach to consumer feedback. C6 hired a research company to undertake focus groups and surveys to inform service design and C1 undertook a post-trial survey. Preparation and planning were key and were mentioned as a strength in C3, C5 and C6. Every team used existing regular meetings to iteratively plan actions and review progress, 'tweaking' processes until things worked as planned.

## Discussion

This research sought to identify the key contextual factors in primary care QI, and how they were interrelated with each other, the intervention, and the process of implementation. A revised model depicting primary care QI is presented in Fig. 4 showing the key factors identified in this study and their relationships. The quadruple aim[30] is used to indicate success as case QIIs sought and achieved multiple aims. The model shows the inner and outer context overlapping due to interrelatedness and soft boundaries. The specific construct interrelationships and directionality are demonstrated by the arrows (Fig. 4).

Context, consisting of the inner and outer socio-technical settings, was a key determinant for selection of the QII in all cases. The inner and outer settings overlapped with shared relationships and strong connections. The QII was chosen to address the identified patient need but that also had benefits for the practice and staff. Network relationships assist participants in developing suitable QIIs through access to knowledge and examples from other settings. The QIIs in C2, C3 and C4 were delivered without direct financial outlay, but

**Table 2.** Adhocracy quotes.

| Case 1 | We are quite innovative and over the years we have been a team that will try new things. |
|--------|------------------------------------------------------------------------------------------|
|        | There is very much a 'can-do' attitude and always has been. And the nice thing about [the IFHS], […], is that its non-hierarchical. |
| Case 2 | We are always trying to create new ways of doing things to be able to improve the practice. |
|        | I find that we can give our own feedback as staff. […] I give my own opinion all the time. |
| Case 3 | We just constantly want to improve things. But our way of improving is also hopefully improving. |
|        | Not too much of a hierarchy, everybody is involved in the planning, decision and evaluation, everybody. |
| Case 4 | We're constantly trying to improve. |
|        | I feel that we do a lot of thinking and trying to figure out what we can do better, is there something we can do to fix this particular problem. |
| Case 5 | So, everything from the way we set up our services, how can we run it better, how can we have a safer process. |
|        | It's quite common for staff to voice ideas, […] be able to run with those […] and trial new things. |
| Case 6 | We've always been a group of people that have tended to be if not spearheading, certainly very quickly early adopters. We've been more cutting edge. |
|        | We make decisions and do it. And if we've made a decision and it's not working, we stop it. |
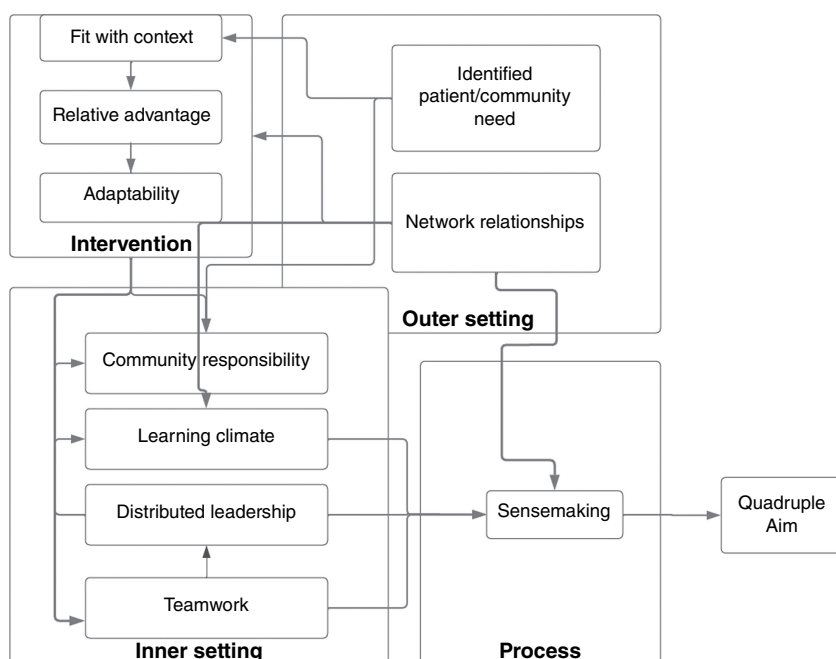
Fig. 4. Revised model of quality improvement determinants in primary care.

for all cases, they cost money in terms of staff time. Even when external support is provided, practices must supply 'unpaid labour' for QIIs.[31] The advantage of the QII over previous ways of working for the practice, its patients and staff had to be clear and show alignment with organisational values before commencing the QII. This is reflected in the multiple aims of the QIIs aligning to the quadruple aim.[30]

The participants were motivated to improve by a sense of community responsibility. This was an emergent theme, not included in CFIR, and seems to be particular to primary care.[32,33] NZ studies have highlighted how important a culture-centred, participatory approach is for successful change.[34,35] For C2 and C4, staff were motivated to improve services by the kaupapa Māori values of manaakitanga (value, respect and care for) and whanaungatanga, which are only partially represented by the theme 'community responsibility'. Across all cases, a commitment to provide quality care for their communities and strong connections to each other was apparent.

Engaged leadership and distributed leadership were observed, where leadership was shared and emerged at different levels and times as the need arose. In primary care, less senior, operational staff were often vital to action change,[36] and participants described distributed leadership with 'flat hierarchy' and a 'team approach'. The engaged and participative leadership style was a key contributor to the learning climate, and both are known for being key to continual improvement.[18,32,37,38]

The CFIR defines learning climate as one: 'in which: (a) leaders express their own fallibility and need for team members' assistance and input; (b) team members feel that they are essential, valued, and knowledgeable partners in

the change process; (c) individuals feel psychologically safe to try new methods; and (d) there is sufficient time and space for reflective thinking and evaluation'.[20] This combines elements of the Clan and Adhocracy cultures in a frame with a focus on learning. Learning is essential in QI as it is by learning that behaviours change.[18,38,39] Here we saw teams draw on their natural skills and resources within the practice and through network relationships in a supported environment in order to learn and improve.

Network relationships with other organisations such as PHOs, DHBs, and national organisations were present in all cases, even if not required for these QII. These network relationships provided support, where needed, in the form of personnel time and expertise, as well as sharing or enabling access to knowledge and at times funding. Team members also drew on personal, professional, and community networks for support. Miller et al.[32] found that the most resilient practices were consistently engaged with their local health systems, forming part of the practice's adaptive reserve.[32] In NZ, the collaborative network supporting the implementation of the Health Care Home initiative has been identified as an innovation enabler, although complex relationships between DHBs and PHOs have created barriers in the past.[40] All these cases draw on, and contribute to, national and local resources at an individual and organisational level, forming strong connections across the health system.

The interventions were well planned, and formal improvement methodology was only applied by C4, with several staff trained in improvement methodology and initially supported by an improvement advisor. Quantitative data collection and analysis was strong in C4 and C6, but

overall was limited across the cases. Healthcare studies have found sensemaking to be a key problem-solving process in complex settings where there is scant and ambiguous data.[18,32,41] Participants described an iterative social process of 'sensemaking' where participants combined available information, tacit knowledge, and experiences to reflect and make sense of events, to learn from and plan actions. Sensemaking activities were critical in these complex contexts for successful improvement and were enabled by psychologically safe[42] learning climates and distributed leadership. Distributed leadership and learning climate can be natural, emergent properties or deliberately enacted over time based on practice and literature to guide development.[43–45]

## Limitations

There are several limitations in this study. Case study research provides an in-depth view of individual cases and only six cases were considered. Primary care services are heterogeneous, and the conclusions may not be generalisable to other settings even within primary care. The interviews were conducted varying amounts of time after the initiatives, and while the teams felt confident in their recollection of events, it is possible that their recollection may have changed over time. Finally, the data collection for this study was completed prior to the arrival of COVID-19 in NZ, and primary care has been affected considerably by the pandemic. There are now likely to be other factors present in primary care that will affect QI efforts, including increasing resource and capacity constraints. Research to ascertain the generalisability of these findings in the current environment is recommended.

## Conclusion

Community/patient need was a core motivator that connected with the sense of community responsibility in the participants. This (and more) was expressed as manaakitanga and whanaungatanga in Kaupapa Māori organisations. The teams drew on available knowledge, their networks, and resources to identify quality improvement interventions that addressed identified needs, and were adaptable and a good contextual fit. Formal improvement methods were generally not applied; however, teams combined structured planning with sensemaking activities to evaluate and adjust to achieve the desired outcome. This provided just enough structure and adaptability to respond to the current and changing conditions as they sought improvement without overly increasing the burden of effort within a resource-constrained environment.

Distributed leadership underpinned by teamwork was key to success, enabling inclusion of different perspectives and shared responsibility. This supported a psychologically safe learning climate for sensemaking and testing ideas.

Distributed leadership, teamwork, and a learning climate enabled effective sensemaking to occur through iterative cycles of problem-solving, testing, and reviewing ideas to achieve successful outcomes.

## Supplementary material

Supplementary material is available online.

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## Appendix 1.  Comparison of factor strength between the six cases

| Model domains | Factors | Case 1 | Case 2 | Case 3 | Case 4 | Case 5 | Case 6 |
|---|---|---|---|---|---|---|---|
| Outer context | Network relationships | +++ | +++ | +++ | +++ | +++ | ++ |
| | Identified need | +++ | +++ | ++ | ++ | +++ | +++ |
| Inner context | Community responsibility | ++ | +++ | + | ++ | +++ | ++ |
| | Distributed leadership | +++ | ++ | +++ | +++ | +++ | ++ |
| | Learning climate | + | + | +++ | +++ | +++ | +++ |
| | Teamwork | ++ | +++ | +++ | +++ | +++ | +++ |
| Intervention | Fit with context | +++ | +++ | ++ | +++ | +++ | +++ |
| | Relative advantage | +++ | +++ | +++ | +++ | +++ | +++ |
| | Adaptability | +++ | +++ | +++ | +++ | +++ | ++ |
| Process | Planning | +++ | + | +++ | +++ | +++ | +++ |
| | Sensemaking | ++ | +++ | +++ | +++ | +++ | +++ |

Table factor strength key: Present = +, stronger = ++, Strongest = +++.