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Promoters and inhibitors for quality improvement work in general practice: a qualitative analysis of 2715 free-text replies

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ABSTRACT

Background Continuous quality improvement (QI) is necessary to develop and maintain high quality general practice services. General Practitioners (GPs') motivation is an important factor in the success of QI initiatives. We aimed to identify factors that impair or promote GPs' motivation for and participation in QI projects.

Material and methods We analysed 2715 free-text survey replies from 2208 GPs participating in the QI intervention 'Correct Antibiotic Use in the Municipalities'. GPs received reports detailing their individual antibiotic prescriptions for a defined period, including a comparison with a corresponding previous period. The content was discussed in peer group meetings. Each GP individually answered work-sheets on three separate time-points, including free-text questions regarding their experiences with the intervention. Data were analysed using inductive thematic analysis.

Results We identified three overarching themes in the GPs' thoughts on inhibitors and promoters of QI work: (1) the desire to be a better doctor, (2) structural and organisational factors as both promoters and inhibitors and (3) properties related to different QI measures. The provision of individual prescription data was generally very well received. The participants stressed the importance of a safe peer group, like the Continuous Medical Education group, for discussions, and also underlined the motivating effect of working together with their practice as a whole. Lack of time was essential in GPs' motivation for QI work. QI tools should be easily available and directly relevant in clinical work.

Conclusion The desire to be good doctor is a strong motivator for improvement, but the framework for general practice must allow for QI initiatives. QI tools must be easily obtainable and relevant for practice. Better tools for obtaining clinical data for individual GPs are needed.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Clinicians' and microsystems' motivation for change is an important factor for understanding success in quality improvement (QI) initiatives in healthcare services.

WHAT THIS STUDY ADDS

⇒ We found that GPs are strongly motivated by their wish to be better doctors, by having time and resources to work together with other personnel in their practice and by the provision of individual clinical data.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Future QI initiatives for general practice should focus on tools for easier access to individual clinical data as well as allowing for a framework where GPs have the time and possibility to discuss their clinical practice in safe peer groups.

BACKGROUND

Continuous quality improvement (QI) is necessary to maintain and develop secure and efficient healthcare on all service levels.[1 2] The Nordic Colleges of General Practice recently listed QI among the core values of general practice.[3 4] More knowledge is needed on how to facilitate QI work in general practice both in a Nordic setting and internationally.

Different theoretic models for QI and implementation of change exist.[5 6] The Model for Understanding Success in Quality (MUSIQ)[7] has been demonstrated as a useful tool particularly to understand influential factors on QI initiatives within healthcare microsystems.[8 9] MUSIQ identified 25 contextual factors that influence QI success, among them several factors relating to organisational microsystems. In general practice, the microsystem will usually consist of individual GP practices, which in Norway typically consist of 2–6 GPs and 2–6 nurses or nurse assistants. MUSIQ describes how the microsystems' culture, capability and motivation are among the important factors to achieve success in QI initiatives. Motivation is highlighted as the most important among these.[9] Available financial and human resources, organisational context and leadership are also identified as influential factors.

QI initiatives aim for sustainability of achieved results through continuous improvement, rather than temporary measures.[2] Antibiotic prescription is one example of topics that can benefit significantly from systematic QI measures. About 85% of all antibiotics for human use in Norway are prescribed in primary care.[10] It is crucial to minimise overall

antibiotic use to decrease the risk of antimicrobial resistance. A significant proportion of antibiotic use in primary healthcare is probably unnecessary,[11] hence correct antibiotic prescription is a highly relevant target area for primary care QI initiatives. In the *Action Plan Against Antimicrobial Resistance in Healthcare Services* from 2015,[12] the Norwegian Antibiotic Centre for Primary Care (ASP), in cooperation with the Centre for Quality Improvement in Medical Practices, were assigned the task to develop an initiative targeting Norwegian GPs to reduce antibiotic prescribing. This resulted in the QI programme *Correct Antibiotic Use in the Municipalities (RAK)*, further described below. Participants reduced antibiotic prescriptions by 10% during the first year of intervention, as opposed to a 4% reduction nationally during the same period.[13 14] This structured QI intervention was probably an important contributor to the 32% national reduction in antibiotic use in Norway from 2012 to 2020.[10] To further plan and implement other relevant, feasible and lasting QI tools, it is valuable to know more details regarding GPs reactions to participation in QI programmes.

As described in the MUSIQ model, the GPs' motivation is an important factor to understand the success of QI initiatives. The aim of this study is to identify factors that impair or promote GPs' motivation for and participation in QI initiatives by analysing experiences from a successful QI programme that was well received by participants.

MATERIAL AND METHODS

The RAK programme

The RAK programme consisted of three peer group meetings during 9–12 months (figure 1), with a combination of e-learning and peer group meetings for practical QI work. The model was inspired by previous successful interventions to improve antibiotic prescriptions[15] and prescriptions to older patients.[16] A similar model is described in detail in a study targeting potentially inappropriate prescriptions,.[17] During meetings, doctors discussed individual antibiotic prescription reports with colleagues in previously established Continuing Medical Education (CME) peer groups. RAK also provided clinical tools to assist with patient communication, decision making and correct prescribing and introduced the theory behind QI work exemplified by Deming's cycle for continuous QI.[18] The GPs received CME points for participation.

The e-learning modules were completed by each GP individually, and the content was discussed in subsequent meetings. Before the second and third meetings, participants received reports detailing their individual antibiotic prescriptions for the past 6–12 months, as well as a comparison with prescriptions for a corresponding period prior to RAK. GPs from all regions of the country participated. Participants answered a worksheet after each of the three group meetings, including anonymous scorings and free-text comments from each participant on all activities (e-learning sessions, group meetings, prescription reports). An electronic platform for primary care QI programmes provided by The Centre for Quality Improvement in Medical Practices was used during the implementation of RAK.

Material

At the time of data extraction for the study (December 2020), 2208 of totally 4951 Norwegian GPs[19] had attended parts of RAK, and 1062 had completed the entire programme (the difference is due both to dropouts and to participants not yet finished). We analysed free-text answers of a selection of relevant open-ended questions from all three worksheets. We chose not to include all items from the worksheets, but rather a selection that covered all topics relevant for the aim of our study. For a full list of questions and the reasoning behind the selection, see online supplemental appendix 1. Eight survey items were included in the study (table 1). Two survey items were included from the worksheet used in the first meeting (WS1), four from the second meeting (WS2) and two from the third meeting (WS3). The number of free-text answers per dataset shows large variation (from 147 to 894 individual answers) partly because not all questions were answered by all participants, and partly because

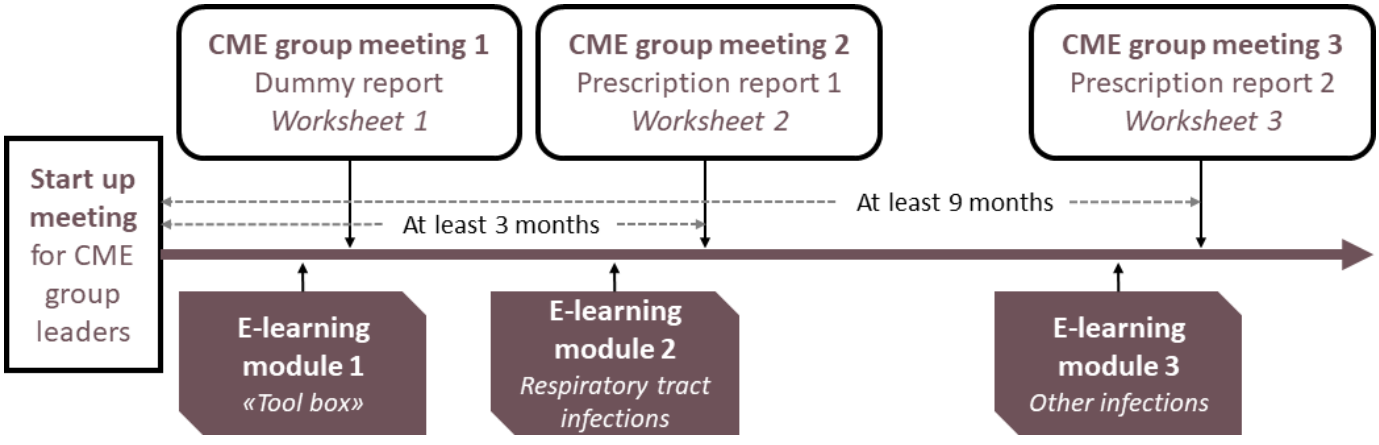

Figure 1 Outline of the RAK quality improvement programme. CME, Continuing Medical Education; RAK, Correct Antibiotic Use in the Municipalities.

Table 1 Datasets included in the analyses

Survey items included in the study (WS1–3=work sheet 1–3)	Number of free-text answers
WS1 Feedback on e-learning module 1	438
WS1 Any other feedback on module 1	147
WS2 Feedback on the individual prescription report	356
WS2 Feedback on the peer group discussion	257
WS2 Describe your improvement measures since last meeting	894
WS2 Any other feedback on module 2	106
WS3 Feedback on the individual prescription change report	339
WS3 Any other feedback on module 3	178
Total	2715

not all GPs have completed the whole programme. The answers to each of the eight items were treated as separate datasets and were initially analysed separately. A total of 2715 free-text answers were analysed.

Analysis

We analysed free-text survey responses using text-driven inductive thematic analysis.[20 21] Due to the large text-material, we took a pragmatic approach to the initial steps of coding. One author (TBE) familiarised herself with the data by reading all answers in the datasets containing less than 400 answers, and a random sample of 300 answers from the larger datasets. This first reading revealed many similarities and repetitions among the responses within each dataset and revealed that the answers were often short and used much of the vocabulary from the QI programme. Therefore, a random sample of 30 answers from each dataset was created as a starting point for the complete coding. These were read and coded inductively by two of the authors (TBE and SH) separately into first order text-driven codes, a similar process as described in template analysis.[22] All authors were involved in a thorough discussion on which codes to include in the final coding. Emerging codes not related to the aims of the study were discarded during this process. A set of first order codes was agreed on. TBE subsequently read and coded all the complete datasets, including new identified codes. Only one additional code (*Relevance for clinical practice*) was identified in the final coding, which mirrors our initial impression of many repetitions and similarities.

All authors read the complete files, discussed the content of the initial first order codes and agreed on a set of 12 overarching themes. TBE subsequently recoded the datasets into these thematic codes which were again evaluated by all authors. After the final recoding, overarching themes were identified (figure 2).

We used NVIVO 12 to analyse the datasets.

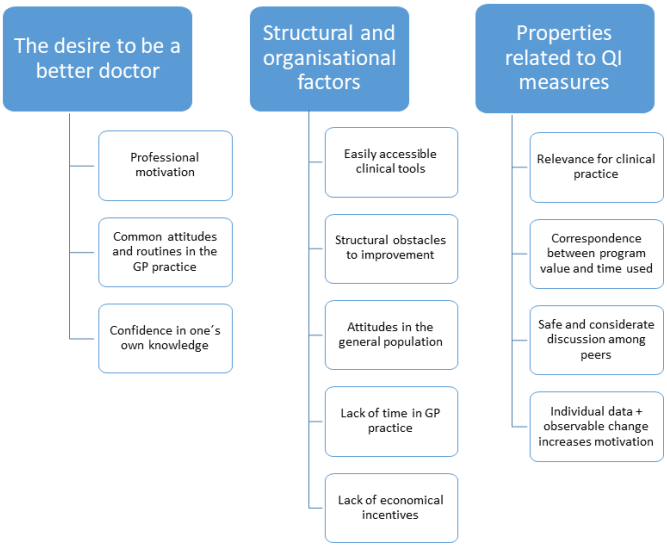

Figure 2 Map of thematic codes and overarching themes. QI, quality improvement.

Ethics and anonymity

Enrolment in RAK was voluntary. All GPs participants agreed that registered data may be used for statistical purposes. The researchers did not have access to any data that permitted identification of individual participants, including gender and age. No individual citations will be published, as the participants had not specifically agreed to this

According to the Norwegian Health Research Act,[23] approval by the Regional Committee for Medical and Health Research Ethics is not needed for research on QI when no patient data are involved.

Funding

The study is part of the RAK innovation project, a cooperation between the University of Oslo and the Norwegian Institute of Public Health, funded by the Norwegian Research Council (grant no 309805).

RESULTS

We identified three overarching themes in the GPs' thoughts on inhibitors and promoters of QI in primary care: (1) the desire to be a better doctor, (2) structural and organisational factors and (3) properties related to different QI measures. Figure 2 shows how the initial thematic codes were grouped into these overarching themes. Table 2 provides hypothetical statements that have been condensed from the extensive material in the different thematic groups.

The desire to be a better doctor

The innate desire to be a better doctor and to reduce one's own contribution to antimicrobial resistance were important motivating factors. Participation in the programme was by itself emphasised as a motivating factor. Many participants commented that they were happy about this opportunity to refresh their knowledge and that increased knowledge made it easier to explain to patients why no antibiotics were needed. Several commented on the importance of reducing antibiotic use. Similar programmes for other clinical areas were called for, as

Table 2 Typical statements condensed from each thematic group

Themes	Typical statements
The desire to be a better doctor	
Professional motivation	▶ The programme really increased the awareness on correct antibiotic prescriptions. ▶ We have become motivated to contribute to better antibiotic prescribing ▶ We would really like to do better
Common attitudes and professional routines at the GP practice	▶ It has been very useful to discuss this together in the GP practice ▶ I have informed the nurses and secretaries so they can give better information to patients ▶ We now have a more unison practice in the whole practice
Confidence in one's own knowledge	▶ I would like to learn even more about when it is safe to abstain from antibiotics ▶ It is very useful to learn specific information about the expected course of viral infections so I can better inform the patients
Structural and organisational factors	
Easily accessible clinical tools	▶ The leaflets from the course are now easily accessible on my desk ▶ The 'no-antibiotics prescription' should be available through the electronic patient journal
Structural obstacles	▶ It has not been possible to follow the recommendations due to a nationwide lack of nitrofurantoin
Attitudes in the general population	▶ After the programme, it is easier to explain to patients why it is important to limit the use of antibiotics, but it takes time. ▶ People are more knowledgeable than before, so it is not difficult to explain about antibiotic resistance
Lack of time	▶ It is a major problem that our days are so busy, and it takes time to explain to the patients regarding antibiotic use. ▶ It makes it more difficult to avoid antibiotics if there is no room in the timetable for a control appointment
Lack of economic incentives	▶ There is no money available to cover QI work ▶ This programme should be free of charge!
Properties related to QI measures	
Relevance for practice	▶ The theory about quality work was too vague and not suited for our way of working ▶ Some parts of the programme were too theoretical ▶ Some of the clinical tools have been very useful!
Correspondence between programme value and time used	▶ This programme gave far too few CME points compared with the time I used!
Safe and considerate discussions among colleagues	▶ It was really nice and useful to have time to sit down and discuss like this ▶ We know each other well, everybody were comfortable with sharing and discussing their data
Individual data and observable change increases motivation	▶ Very interesting and sometimes surprising to see my own data! ▶ Everybody in our group wished for a new report in 6–12 months ▶ It has been very motivating to see that my data actually got better

QI, quality improvement.

were follow-up antibiotic prescription reports at a later time.

A few participants worried about consequences of not prescribing antibiotics, and some mentioned a sense of failure if the patients had to come back for antibiotics when abstaining from prescription at the first consultation.

The usefulness of including the whole GP practice was often emphasised. Many participants used the opportunity to discuss with colleagues their professional habits regarding both the prescription of antibiotics and the handling of patients with infections. Nurse assistants and nurses were often included in these discussions. Participation seemed to trigger initiatives to change or improve routines for the whole practice. Some respondents were concerned that the GPs most in need of improvement are hard to reach and rarely volunteer for QI initiatives.

Structural and organisational factors

Practical and structural factors outside the GP's practice as well as organisational factors and framework within the practice were emphasised as important for QI.

Many participants emphasised lack of time as an inhibitor for QI work and improvement. It was seen as a major challenge both in individual patient consultations and when it came to planning and performing QI measures. Refraining from antibiotic prescriptions was anticipated to be easier if the schedule permitted a check-up consultation within a few days.

A few respondents mentioned a lack of economic incentives or compensation as an inhibitor for QI work. This was, however, not a frequently recurring theme among the respondents.

Many found it easier to change clinical practice if the population is informed and motivated. The comments regarding this could be categorised in two groups: (1) patients' expectations for antibiotics were easier to handle due to communicational skills from the programme or (2) patients are already reluctant to use antibiotics, hence the programme was not a major contributor in this regard. Respondents frequently indicated that the programme had led to an increased awareness on patients' expectations during consultations.

Easy access to clinical tools, such as patient information leaflets and short versions of guidelines, was stressed as important to achieve change and improvement. Such tools should preferably be incorporated into the electronic medical record (EMR) systems.

Recommended changes in prescribing practice could be difficult to follow due to external factors. A repeated example was the ongoing shortage of nitrofurantoin

tablets, which impeded compliance with the recommended rotation between three interchangeable antibiotics for urinary tract infection. Poor availability of small packages of antibiotics could increase the risk of self-treatment by patients for subsequent infections. GPs were also reluctant to change treatment started by hospital doctors, even when not in line with guidelines.

Properties related to QI measures

The comments on the relevance of the RAK programme could be categorised into three main groups: (1) it was very relevant and of high value for further practice work, (2) the content was mostly known beforehand and (3) the theoretical approach to QI work was irrelevant and a waste of time.

Many described the programme as too time consuming, therefore not corresponding with the amount of CME points given. They felt that that the content could have been presented in a more concise and still efficient way.

The opportunity to discuss with colleagues in a group was frequently addressed. The group discussions were seen as educational and interesting, and the possibility for comparison with others was repeatedly emphasised as useful. A safe group of peers was seen as important for the experienced usefulness of the programme, and the CME groups seemingly provided such an arena.

The feedback on the individual prescription report was almost exclusively positive. Many expressed enthusiasm regarding the possibility to evaluate their actual prescriptions, and quite a few were surprised either negatively or positively by their data. A large part of the respondents asked for similar reports after 12 months or as a regular occurrence, and many asked for the possibility to receive similar data for other medication groups. The possibility to observe change was highlighted as very motivational.

To summarise, both the organisation and the content of the QI programme was important for motivation. The longitudinal organisation, with three meetings over 9–12 months, was well received, but the GPs called for a more effective use of the electronic modules that better reflected the outcome of the programme both in terms of learning and CME points. Many commented that the theory behind QI work (for instance, the Plan-Do-Study-Act (PDSA) cycle[24]) was not considered useful or relevant. The group discussion with peers and the access to individual data were seen as especially useful, and the possibility to observe change after altering professional practice increased motivation.

Summary of the results

A summary of the main identified factors that promote or impair GPs' participation in QI programmes is found in table 3.

DISCUSSION

Main findings

Our main findings on GPs' attitudes towards QI work can be summarised in the following hypothetical statement, condensed from the study participants comments:

I want to be a good doctor who trust my own knowledge, and to work in a practice where both my colleagues and my employees have common and well-funded professional routines. QI tools must be relevant to my practice, and the time used must be proportional to the benefit of the measure. I find it useful to receive individual information on my GP work, preferably with information on change over time, and I enjoy discussing my professional habits in a safe group of peers. Organisational and societal factors can be either a potential obstacle (eg, lack of time) or a potential help (eg, easy access to relevant tools) in my QI work.

Access to my own data and a safe group for discussions

Access to individual clinical data and information regarding change over time was highly motivational for QI work. A safe group of peers was seen as a good setting for learning and discussing possible professional weaknesses. These findings are in line with a previous Norwegian study on QI in pharmacotherapy.[25] In Norway, all GP specialists must meet regularly in a CME group to maintain the increased fees that come with specialist status. Hence, the CME groups are a potentially important forum for QI discussions and measures. In an Australian study, GPs emphasised the importance of developing local peer networks to incentivise QI activities.[26] In Norway, the CME groups already constitute such networks, but more knowledge is needed on these groups' function and their

Table 3 Summary of the identified factors that promote or impair GPs' participation in QI programmes

Promoting factors	Impairing factors
Programme content is relevant for general practice	A universal lack of time in practice
Provision of relevant clinical tools	QI programme takes more time than what is judged reasonable related to outcome
The GP's wish to be a better doctor	Lack of necessary structural elements needed to follow recommendations
The opportunity to participate in professional discussions with close colleagues	QI programme does not give an adequate amount of CME points
The opportunity to establish common routines in the GP practice, involving both GPs and other personnel	QI programme contains too much theoretical information that is not seen as relevant for practice
Provision of individual clinical data and data over time to observe change	Lack of financial support

QI, quality improvement.

suitability as an arena for QI work. A 2019 study showed an increased focus on QI work when European GPs meet in groups for professional development.[27] QI Clusters and CME groups probably have different roles and importance in different healthcare systems. In a study from Switzerland and France, GPs did not wish to discuss individual reports on their professional work in peer groups, and the researchers hypothesised a fear of exposing practice that is not in line with guidelines.[28] This finding contrasts with our results. Our respondents were very positive to the group discussion, and many underlined these groups as a safe setting for exposing professional shortcomings. This further underlines the potentially important role established CME groups can play in QI work in Norway, as in other countries with similar structures.

MUSIQ addresses external initiatives as possibly influential on the success of QI initiatives, and resource availability has shown strong effect on QI success.[9] The acquisition of QI resources from external sources is further underlined in the later development of the MUSIQ framework.[8] The individual prescription reports in RAK and the guided use of the CME groups can be seen as such externally supplied resources. External initiatives may contribute to more systematic QI work and may increase GP motivation provided general practice relevance and feasibility.

A good doctor in a well-functioning GP practice

Professional pride and the desire to be a good doctor was a strong incentive and motivator for QI work. This is in accordance with results from UK, where GPs reported professional pride and improved patient care as important motivators for QI initiatives.[29] Many of our participants involved the practice as a team when changing their antibiotic prescription routines, including both fellow GPs and employees. This was seen as a very positive and motivating effect of the programme. Improved teamwork was also highlighted by British GPs in a study on motivation for participating in QI programmes.[29] It is relatively common that GPs' CME groups constitute of colleagues from one practice, which makes it possible to combine the benefits of using CME groups and involving the whole practice in QI programmes. It is, however, also possible that these two arenas could complement each other. The CME group is a safe group for discussion and exchange of experiences, while the practice is the arena where the QI takes place.

MUSIQ underlines the workforce's focus on QI and a culture supportive of QI as important success factors.[9] These are factors that seem to be present among our participants when it comes to antibiotic prescriptions, both in terms of using the CME groups as an arena for discussions and of involving the whole practice. In Norway, most GPs are self-employed and work in small group-practices of 2–6 GPs. The municipality chief medical officers (MCMOs) have the professional responsibility of the services, but rarely engage in the everyday GP work. The *Regulations for the regular general practitioner scheme* states that the municipality is responsible for ensuring QI work among Norwegian GPs.[30] None of our participants mentioned the municipality or the MCMO as either a facilitator or inhibitor for QI work. In a previous Norwegian study, the participants were positive towards MCMOs' engagement in QI work, but reported that it rarely, if ever, occurred.[31]

Our respondents addressed the importance of reaching the 'weakest links' in the GP chain (ie, the poorest performers), an important issue as it is known that QI measures have higher effect when baseline performance is low.[32] QI initiatives targeting the GP practice or the mandatory CME groups may contribute to reaching these individuals.

Time may be more important than money

The lack of time is a recurrent theme as a main inhibitor of QI work in practice. There is an increasing strain on GPs' time and responsibilities,[33] which is likely to negatively affect GPs' participation in QI work. The lack of economic incentives was, somewhat surprisingly, not strongly emphasised by our respondents. MUSIQ points to both financial resources and available time as important success factors.[7] Our results point towards the desire to do a good job as a main motivator, and the lack of protected time as a main inhibitor for QI work, whereas economical limitations play a much smaller role. Similarly, British GPs expressed a clear interest in improving their practices and took pride in providing good patient care, but a possibility to apply for funding for QI project was not seen as helpful because the process was unnecessarily complex and time consuming.[29 34] However, a stronger baseline economy may provide more time available for QI work. This is important information for policy makers when initiatives to encourage QI work in general practice are planned.

GPs are not trained in QI leadership

Our participants were not interested in learning the theory behind QI, such as the PDSA-model. Many found this uninteresting, and they wanted to go directly to the specific professional content and the suggested tools for correct antibiotic prescribing. In the MUSIQ model, the importance of the so-called QI team is described, where such a team's experience with QI work as well as a diverse professional background are success factors for QI initiatives. In a system like Norwegian general practice, where the GPs are the only leaders and employ their own staff, such a QI team is non-existent. The GPs are a part of the microsystem together with their staff, but they should also initiate and lead QI projects, a role handled by another organisational level in larger organisations like the specialist healthcare services. This may constitute both a possible impediment (lack of leadership and formal knowledge on QI work) and a resource (the leader is also part of the team and knows its strengths and weaknesses). Our results suggest that a well-organised QI programme works well with the GP as both participant and leader, which is probably a prerequisite for QI

initiatives in general practice. The positive feedback on the RAK QI model suggests that when provided with relevant QI programmes, GPs experience QI work in practice as feasible and useful.

In a previous interview study with Norwegian MCMOs, the MCMOs encouraged the construction of a QI tool or system for use in general practice.[35] Correspondingly, our participants expressed that easily accessible tools are important for the motivation to work with QI. It is, however, important that these tools come through as relevant for the GPs' clinical work.

Feasibility of recommended QI actions

The implementation of recommendations is a well-known obstacle to obtaining evidence-based care.[36] Easy access to clinical tools (eg, information leaflets) was highlighted as a positive effect of the RAK programme, and many wished for the tools to be incorporated into the EMR systems. Poor availability of recommended antibiotics in the pharmacies led to a certain frustration due to inability to follow recommendations. In the development of both QI measures and clinical guidelines, it is important that the suggested tools and measures are practically feasible.

Strengths and limitations

Although qualitative methodology does not aim for a representative material, we believe that our extensive material gives information that is relevant for the Norwegian GP population at large and also for GPs working in similar healthcare systems in other countries. It can be argued that GPs who voluntarily enrolled in the RAK programme are already more motivated for improvement work. However, we analysed data from almost half of Norwegian GPs, and it is unlikely that this has affected our results significantly. GPs who quit the programme contributed less data, and it is possible that these GPs were less motivated for QI work. The work sheets used in RAK were not designed for research, but nevertheless contained valuable information regarding GPs' attitudes towards QI. We chose to not use individual quotations, originally because the participants had not specifically agreed to this. However, the answers were mainly short and based on keywords, often employing the vocabulary of the QI programme, hence individual quotes would not in a good way convey the analytic findings. We have chosen to give condensed example statements to give an idea of the content of the data.

The authors are all GPs and have their own experiences with and attitudes towards QI, rooted in experiences from their GP practices. SH and NØ have extensive experience in developing QI initiatives. SH is the leader of the Norwegian Antibiotic Centre for Primary Care (ASP), and NØ is the leader of the Centre for Quality Improvement in Medical Practices (SKIL). TBE is a postdoctoral fellow focusing on QI in general practice. During analyses, we were conscious of our preliminary experiences and attitudes, although our hands-on knowledge with both QI and GP work was helpful both in identifying themes in the free-text answers as well as in interpreting results.

CONCLUSION

We found that GPs find strong motivation for QI work in their desire to be better doctors and to contribute to correct use of antibiotics, both for the sake of their individual patients and for the greater good of the society. Individual data reports on clinical practice were important motivators, hence tools to provide such data should be explored further both for antibiotic prescription and for other clinical areas. The CME peer groups seemed to be a safe-space for difficult discussions and may therefore provide an important arena for QI work. Established models for QI in healthcare can supply understanding of the effect of QI programmes, but the organisation of general practice must be taken into consideration when planning QI initiatives.

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Contributors TBE and SH planned the study and lead the coding and analysis. All authors were involved in the final coding and in the interpretation of the results. TBE wrote the main part of the article, but all authors took an active part in the writing process and approved the final version. TBE has the main responsibility for the overall content as guarantor for the finished work.

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Competing interests NØ is the leader of the Centre for Quality Improvement in Medical Practices (SKIL), and SH is the leader of the Norwegian Antibiotic Centre for Primary Care (ASP). They were both involved in the construction and implementation of RAK, but they have no economic interests in the program. TBE declares no competing interests.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Ethics approval The study has been approved by the Norwegian Centre for Research Data NSD (ref. no. 522215). It did not require approval by the Regional Committee for Medical and Health Research Ethics. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available on reasonable request.

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