

Quality improvement model

1. Helsebiblioteket.no
2. [Quality improvement](#)
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Systematic improvement work is a continuous process that can be illustrated in the form of a circle, as we have chosen to do with the model of quality improvement.

The model describes how to achieve improvements in services in five phases. It can be used in small and large improvement processes and can serve as a to-do list for factors that research and experience have shown are necessary to ensure successful implementation. Each phase consists of several steps as Figure 1 shows:



Figure 1: Quality Improvement Model

Although the circle has arrows pointing forward from phase to phase, it is often necessary to return to previous stages of the process, as the arrow in the center of the figure illustrates. The work on anchoring in phase 1 must be followed up throughout the process. The measurements may need to be adjusted along the way. If the evaluation shows that the improvement is not sufficient, new solutions can be tried.

The order of the steps also partially blends into each other; in practice, one often works with several steps in parallel.

The circular form also illustrates that the improvement work is a continuous process, where the focus must be maintained and new changes may be needed to maintain the results. The complexity of improvement work determines how long an improvement takes. Simple processes can be decided and implemented on the same day. More complex processes require testing, adjusting and repeating many times over a long period of time, as Figure 2 shows.

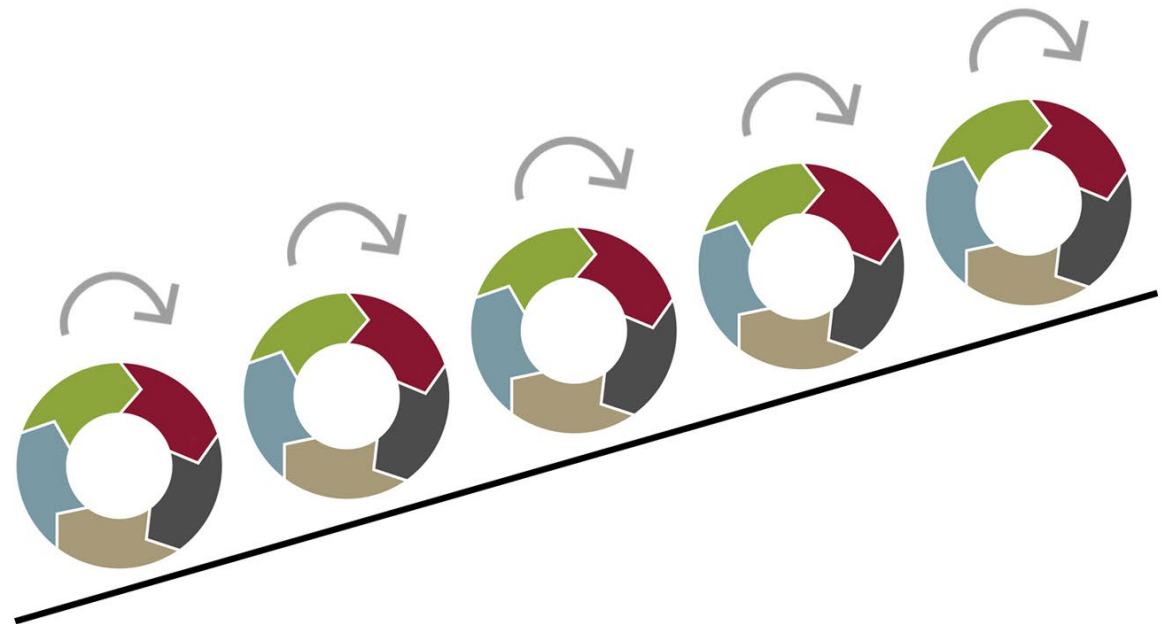


Figure 2: Continuous Improvement

1. Prepare



1. Prepare

Shared understanding of the need for improvement

Anchor and organise improvement efforts

Clarify the knowledge base
-research, experience and user knowledge

The first step in the model is Prepare. The steps in this phase are crucial for a good start to the improvement work

Figure 3: Phase 1 of the Quality Improvement Model

Common recognition of the need for improvement

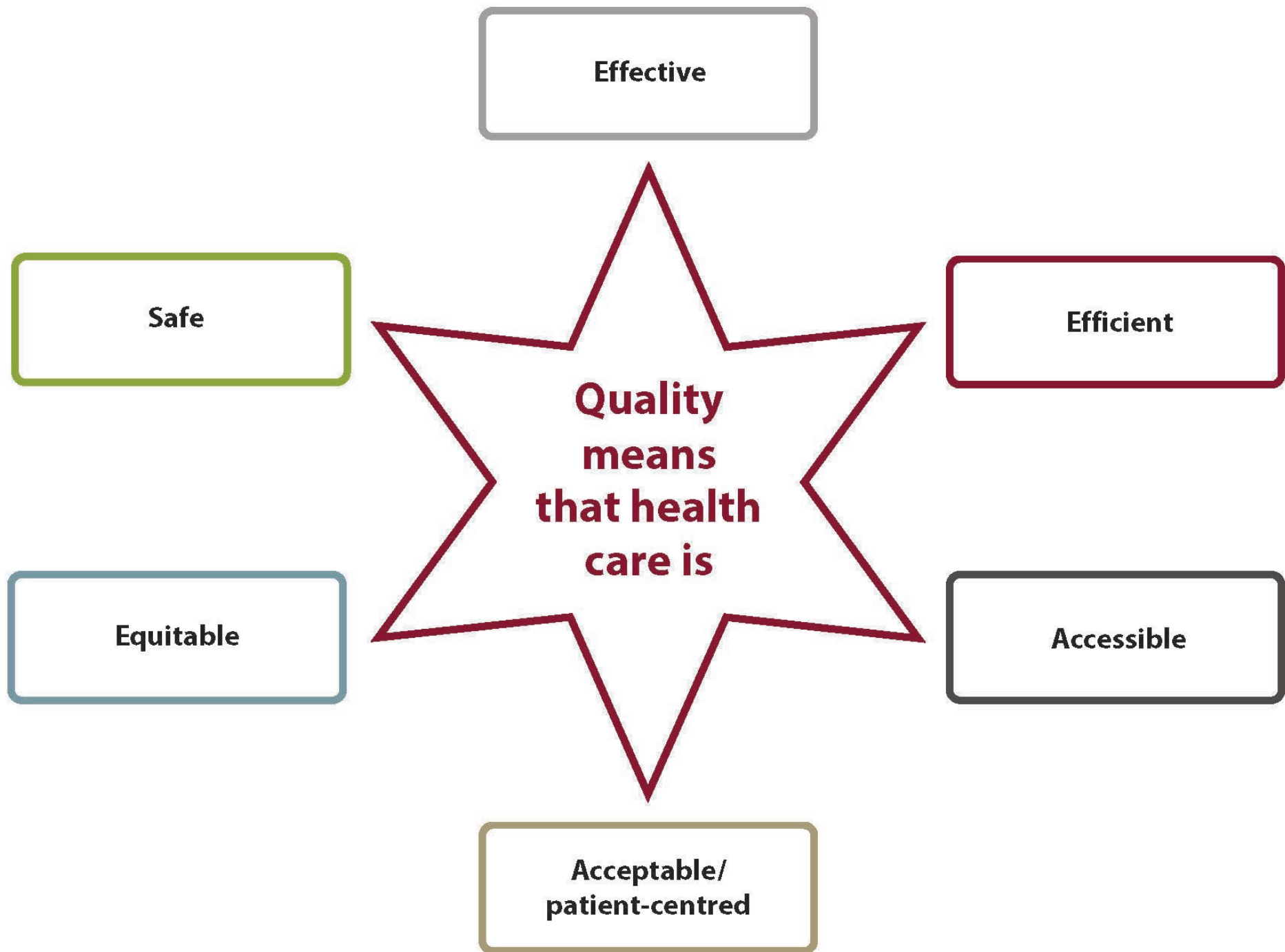


Figure 4: Quality Star Based on the Six Dimensions of the Quality Strategy

This is the starting point for all improvement work (1). In the national quality strategy, there are six dimensions of quality of service as illustrated in Figure 4(2). The dimensions affect each other. In the work to improve quality, it is therefore important to assess and safeguard all dimensions.

The recognition of the need to improve the Services may, for example, result from:

- Input from individual users, user councils and user organisations
- Input from managers/employees
- New knowledge and technological development
- External requirements or expectations; laws, political requirements, media
- Evaluation of the Services
- Nonconformities, unfortunate incidents and complaints
- Audit of the company's quality system
- New professional guidelines
- Changes to users' needs
- Changing economic frameworks

The individual service is responsible for ensuring good quality of the services of the users. Applicable legislations, including the Law relating to municipal health and care services (3), and the Regulations relating to management and quality improvement (4), set out the quality requirements to be met. Among other things, the Regulations require that users' experiences are systematically obtained and used to improve services. The legislation can thus be used as an aid in the improvement work. The Regulations emphasize that the quality of the services is a management responsibility.

Anchor and organize improvement work

Anchoring in the management, the academic community, the users, as well as other stakeholders, is crucial to the success of improvement work. It is important that the work is in line with the organisation's vision and objectives and is highlighted in the organisation's business plan (1, 5).

To ensure anchoring, it may also be helpful to discuss the following questions:

- Is the improvement work interrelated to strategies and plans?
- Have patients/relatives and employees been actively drawn into the discussions about which areas it is important to prioritize?
- Which partners are affected by the improvement work, and has a plan been drawn up to involve these in a systematic way?

Leaders play a crucial role in starting up and facilitating improvement work. Active support and commitment by leaders are of great importance, especially their role in creating a social process where everyone affected is involved and participates (1, 2, 5, 6). It is especially important to ensure that user representatives are included in an equal way.

It is also the management's responsibility to ensure that sufficient time and resources are allocated for the improvement work. Improvement work across organisations – for example with patient pathways – can present additional challenges. This will include the processes, structures and cultures of several organisations. This requires anchoring and involving managers and employees in all participating organisations (7, 8). It may be necessary to create a steering group with senior managers and user representatives to ensure good anchoring and necessary leadership attention.

Through research, the most important factors for success in carrying out improvement work, ensuring sustainability and spread of improvements. A model consisting of ten important factors illustrates the complexity of the improvement work and can serve as a to-do list of what to think about and take care of during the process (Figure 5). There is also an accompanying guide describing how to strengthen these factors (9-11).

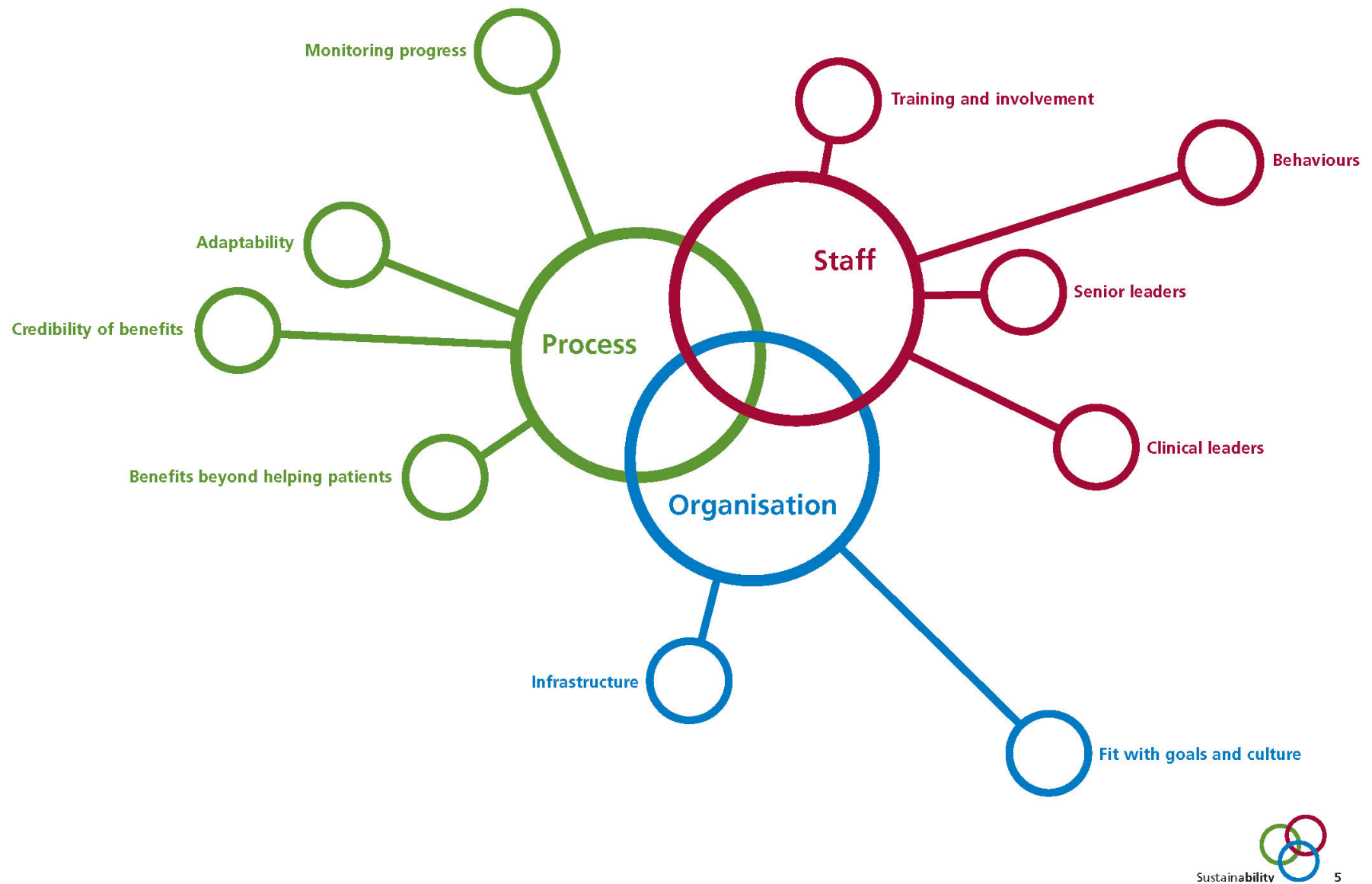


Figure 5: Factors for sustained improvement (6-8)

Organization of the improvement work

When organizing the improvement work, it is important to ensure that improvement becomes part of the day-to-day operations. It may be appropriate to establish a working group that is responsible for its implementation. Factors to consider when creating such a group are:

- All units involved in the actual process should be represented
- Users and/or relatives should be represented
- All key occupational groups should participate
- A formal manager should be appointed, often the unit leader is a natural choice
- Resources must be set aside to write meeting requests, meeting reports and to measure results. If there is a person with special responsibility for professional/quality improvement, it is recommended to use this
- A fixed meeting schedule should be set up
- External guidance may be appropriate to use if improvement competence is lacking in the organization

Time must also be spent informing and involving all affected actors, both before start-up and along the way. This can be done by using existing meeting spaces (such as staff-meetings and leader meetings).

When starting improvement work concerning personal data, assessments must be made of whether confidentiality or other data protection regulations hinder implementation. The Personal Data Law and the Health Personnel Law are among the laws that regulate this.

Representatives of users should be recruited through user organisations where possible, or possibly recruited among users/relatives of the relevant service. It is important to clarify expectations of what users will contribute, and that an inclusive culture is created with equal cooperation. Financial allowance and reimbursement of travel expenses must also be agreed.

To strengthen learning and development, multiple units in an organization, or several organizations/levels, can collaborate on the improvement work, for example in the form of a learning network (12, 15, 16).

Prepare the knowledge foundation – research, experience and user knowledge

To ensure that the services are of good quality, they must be based on research-based knowledge, experience-based knowledge (clinical experience), users' preferences and participation, as well as the context within which improvement work takes place. This is the starting point for evidence-based practice (Figure 6 below), which is described in more detail on the website www.kunnskapsbasertpraksis.no. The website provides training in evidence-based practice.

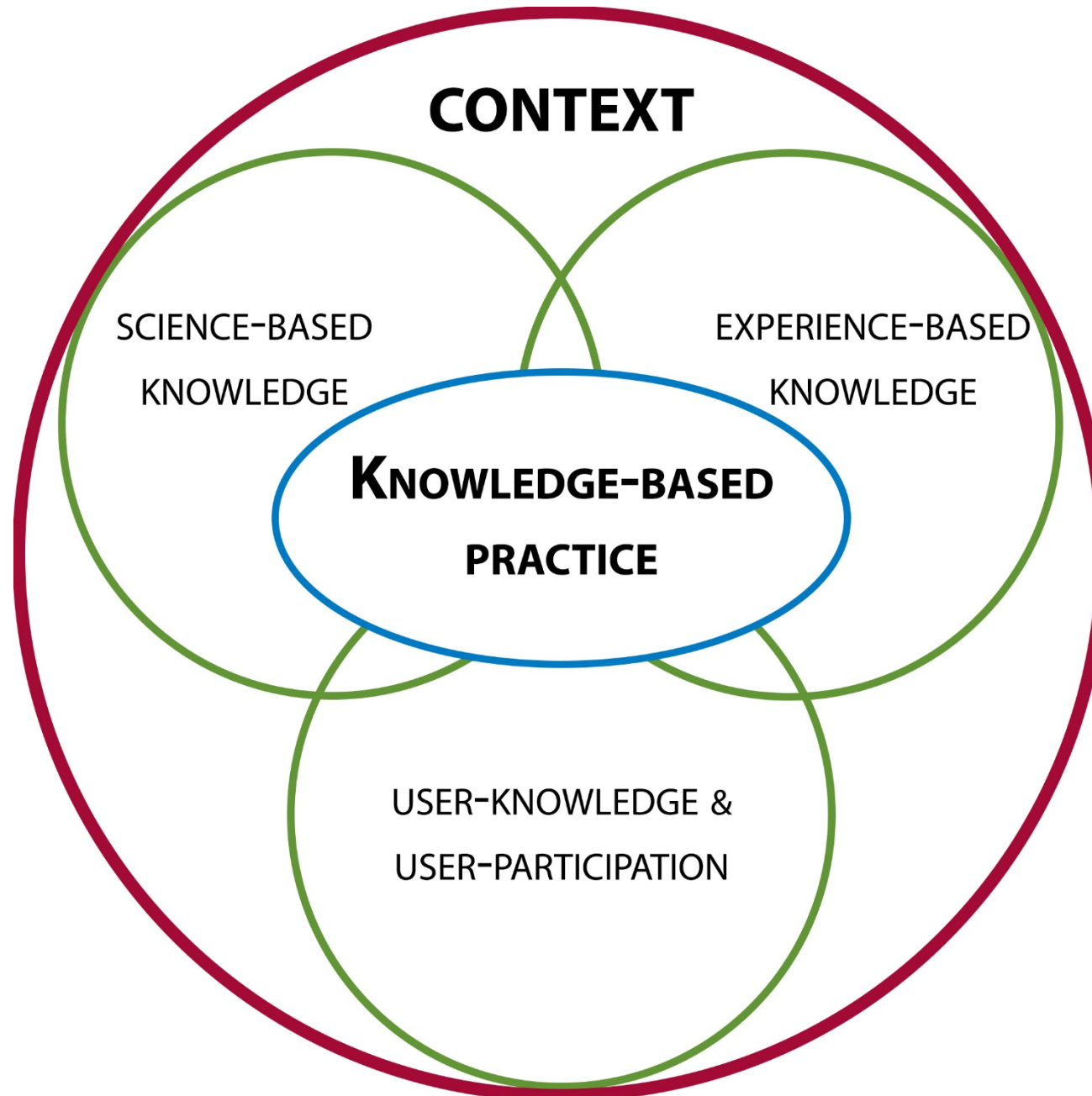


Figure 6: Knowledge-based practice

Helsebiblioteket.no provides free access to several key sources of knowledge:

- systematic reviews
- national professional guidelines
- articles in journals/databases
- knowledge-based encyclopedias, such as UpToDate and BMJ Best Practice

Active user participation provides useful information about users' needs, provides new perspectives on the services and motivation for the improvement work. When the patient is not able to express his or her own needs and wishes, relatives are often important sources of such knowledge.

Useful tools for phase 1:

- [Sustained improvement model](#)
 - [Focus group interview](#)
 - [Spørreskjema - See the questionnaire bank for validated forms](#) .
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2. Plan

The second phase of the model is about planning the improvement work

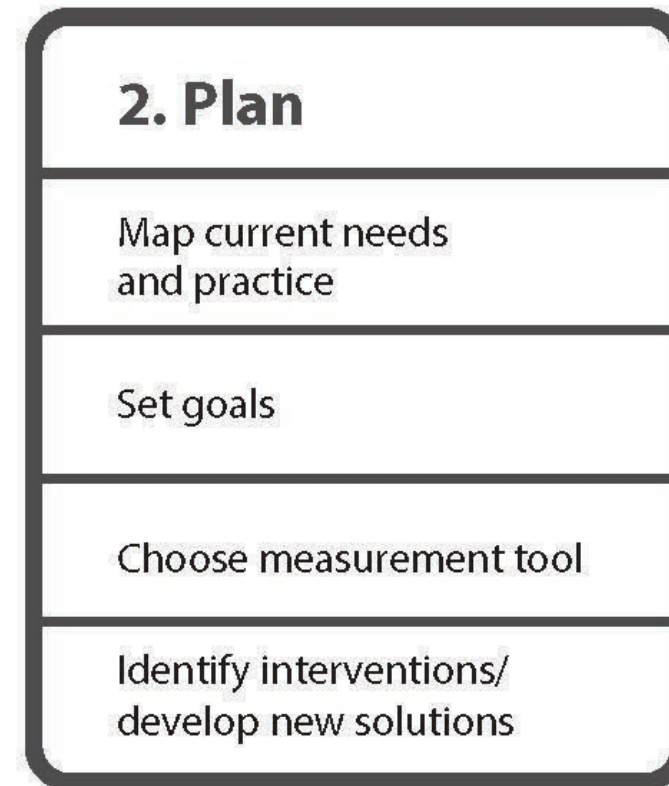


Figure 7: Planning Phase

Map different needs and current practice

It is an advantage to measure how the service works today to uncover what should be improved. The measurements will be a good starting point for creating concrete goals for the improvement work and make it possible to assess whether changes being implemented really lead to better services.

In addition, it may be useful to obtain qualitative data about the services through interviews, focus groups or stories. The mapping may lead to changes in which areas of improvement are selected. A good survey will be conscious of improving current practice and can provide new insight among managers and employees, which will be motivating for the further work.

Setting goals

The purpose of setting goals and measuring the effect of improvement work is to learn from your own practice, know and show whether the changes implemented have led to improvements and document this.

The quality of health care services can be monitored and evaluated in various ways, such as:

- If the goal is to strengthen the user, one can listen to the user's voice by bringing out the user's goals, function and perceived benefit from the follow-up. In addition, user satisfaction can be measured in different ways.
- If there are patient pathways to be improved, one can measure program fulfillment, i.e. whether information, user involvement, interaction and follow-up are safeguarded as agreed. The use of resources can also be measured before and after the introduction of new measures.
- If there is professional quality in an area to be improved, one can measure the extent to which one follows a knowledge-based treatment program, for example in relation to heart attacks or coordinated services using a checklist.
- If efforts are made to make services safer, it is important to measure deviations and unfortunate incidents, for example when it comes to drug handling.

Indicators can be divided into structural, process and performance indicators:

- Structural indicators say something about, for example, the number of doctors or nurses.
- Process indicators say something about whether you are on the right track with processes that lead up to the results. For example, whether a process has been carried out in line with a checklist.
- Performance indicators say something about the end result.

It can often be meaningful to follow indicators in several areas at the same time to check that the measures in one area do not compromise other parts of the service. What is measured gets attention and becomes important. Therefore, be concerned with measuring what really matters. When the process you measure is stable, you can often switch to just keeping track of the performance indicators, and if these changes, you should again measure the process to find out what has changed.

The objectives of the improvement work should be in line with the vision and purpose of the Health Care services. In the improvement work, there will be a need for both overall goals and more practically directed goals. The mapping of current practice is the starting point for setting the objectives. It may be useful to see the overall objectives in the context of one or more dimensions of quality of service, cf. Figure 4.

Creating good goals is a process. The overall objectives should be specified in sub-goals that meet the requirements to be SMART. They should be:

- Specific – clear, concrete, unambiguous indication of expected results, preferably quantified.
- Measurable – one should be able to know if the goal has been achieved.
- Agreement on the goal– anchoring in the working group, with the users, employees and management
- Realistic – achievable compared to other tasks and resources.
- Timed —specify when the result should be reached.
- Energizing – create an atmosphere of energy and motivation.

The more specific the goals, the easier it is to know if they have been reached.

Example from mental health care

Overall goal is that users participate in the treatment teams in the ward.

SMART GOALS: Within 3 months, 90 percent of users will participate in the treatment teams. The number 90 is set because there will always be patients who for various reasons will not or can't participate in the treatment teams, no matter how they are motivated.

In addition to quantitative measurements, it can be useful to get an insight into the users' experience of the services. Therefore, quantitative measurements can often be supplemented with qualitative surveys such as focus group interviews, patient stories about what they experience or film their journey through the system. Such user stories have proven to be useful in improving the services.

Measurements should be started before new actions or initiatives are implemented so that the effect on the changes are made visible. When the measures are implemented, it is a good idea to measure continuously. In this way, one can monitor and document the changes that take place and adjust the measures when necessary.

It is also important to continue to measure over time to ensure that improvements persist. When the improvements are stable, it may be sufficient to make control measurements periodically throughout the year, but all processes that are not followed will change, and continued measurement is therefore necessary.

Choosing a measuring tool

By measuring tools, we mean a practical tool that can help us measure and/or analyze the quality of the service.

An example of a measurement tool is a questionnaire. Here, questions with fixed answer options can be combined with open-ended questions and options on a scale that expresses, for example, the degree of satisfaction with the service offering.

Checklists are another example of a measurement tool. These can be further developed to become a scoring form if the areas are awarded points: completed = 2 points, partially completed = 1 point, not completed = 0 points. The scoring form can be filled in by the staff and/or users who can tick what measures/treatment they have received.

Example of using Statistical Process Control, SPC

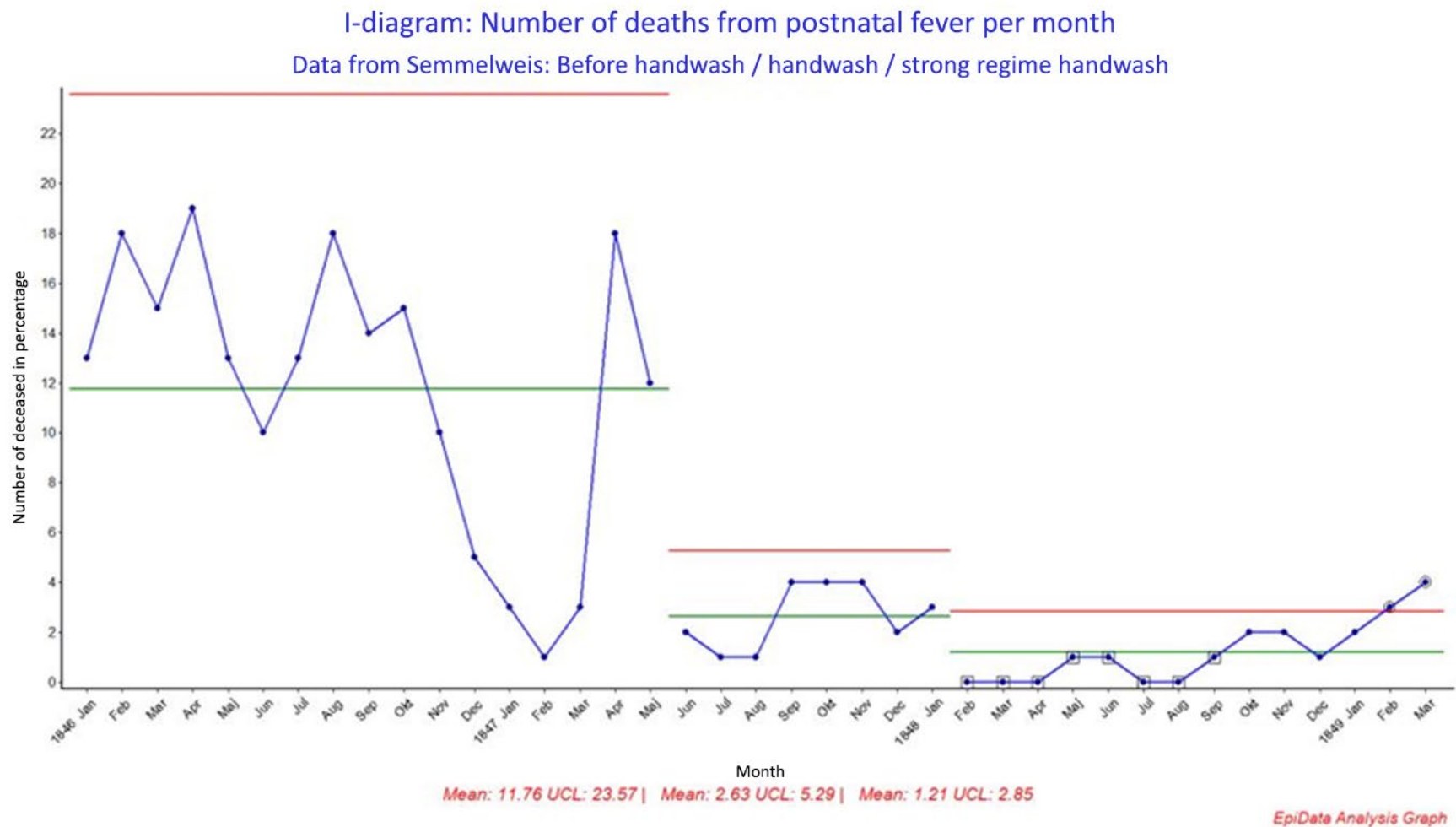


Figure 8: SPC chart showing Semmelweis' data on the proportion of deaths from postnatal fever per month

Semmelweis' work was a classic improvement work. This was before we knew about the existence of bacteria, but Semmelweis suspected that the doctors brought something "dirty" from the autopsy of the dead to the examinations of the birthing women.

Each blue dot in the chart is the proportion of dead women for the month in question, the green line is the average for the period and the red line shows the limits of where the results will normally end up "if we continue to do as we do now." The first period, on the far left, shows the time without hand washing. Here, mortality normally varied between 0 and 25% per month around an average of about 12% per month.

With the introduction of hand washing in June of this year 1847, we see a dramatic decrease in the number of deaths from postnatal fever per month. Here we see an average of about 2.6% and much less variety. By working in this way, normally between 0 and 6% of women died. A dramatic improvement.

The last period shows the time in which Semmelweis introduced a strict regime of hand washing, and the mortality rate almost fell to 0%. At the end of this period, the other doctors rebelled against the hand wash, and Semmelweis was eventually fired. We see how mortality goes up again towards the end of the period.

By visualizing the data with SPC, one can quickly get a chart that is suitable for collective reflection in meetings and to create a common understanding of the results "when we work in the way we do now".

The measurements can be presented both as before and after measurements or in time series. In improvement work, it is especially useful to use time series to present the results of the measurements. In time series, one can follow a process over time and highlight variation, as shown in Figure 8.

A suitable tool for analyzing time series measurements is statistical process control (SPC). It can provide information about the level of the process, whether it is stable or unpredictable with too much variation. SPC can be used on both small and large number materials (17-20).

It is important to measure the most central areas, and as far as possible use data that is readily available to avoid spending too much resources on data capture and data processing. Many indicators have already been developed for different disciplines (21, 22).

Finding/developing improvement measures

Ideas and suggestions for how processes can be improved should be collected broadly and systematically. Managers, employees and service users must be included in this work. Service users are especially important because they have different perspectives and experiences than employees. Organizations for users and relatives can also be drawn into the work.

It will often be useful to think outside the box to create significantly better services (9, 10, 23). For this, it may be good to draw ideas from areas other than the health service or from other disciplines such as service design.

If you are considering testing improvement measures that have been developed, it is important to search for documentation as to whether these works. This should be done in the same way as described during the preparation of the knowledge base. If solid evidence is found that measures will be effective, they can be introduced with greater confidence. Interventions that have been effective elsewhere must nevertheless be adapted to the new context in which they will be used.

Suggestions for improvements may be presented through:

- The mapping of current practice
- Theory and research
- Identification of the smart actions and activities one already makes and the opportunity to do more of this (Appreciative Inquiry) (24)
- Creative mind processes/brainstorming
- Get and customize ideas from other businesses
- Action packages as part of campaigns – for example, for patient safety

Often it is possible to simplify the work processes by removing unnecessary steps and involved people in a process, thereby perhaps saving resources and reducing the possibility of errors.

In planning better practice, it is also important to ensure that the competence of the various actors and professional groups is maximised. During the development of treatment programs one can discuss what actions should be carried out by which professional groups. By stakeholder mapping, one can ensure that the needs and competence of all affected parties are taken into account. An example of this is from everyday rehabilitation in the municipalities, where the home helpers receive training as home trainers and help to rehabilitate the patient instead of doing housework for the patient.

It is often useful to develop and use checklists as to-do lists to make sure that you take the measures that have been agreed on. The checklist will also serve as a useful starting point for training new employees. The use of checklists can help healthcare personnel more easily comply with guidelines and procedures and communicate better among themselves. It can also contribute to fewer undesirable incidents and to less morbidity and fewer deaths among patients (25, 26).

Nyttige verktøy for fase 2:

- [Flowchart](#)
 - [Acknowledging interview \(AI\)](#)
 - [Checklist and scoring form](#)
 - [Focus groups](#)
 - [Statistical Process Control \(SPC\)](#)
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3. Perform

Try out and facilitate new practice

After mapping and analyzing the process to be improved, it is time to try out the improvement measures.

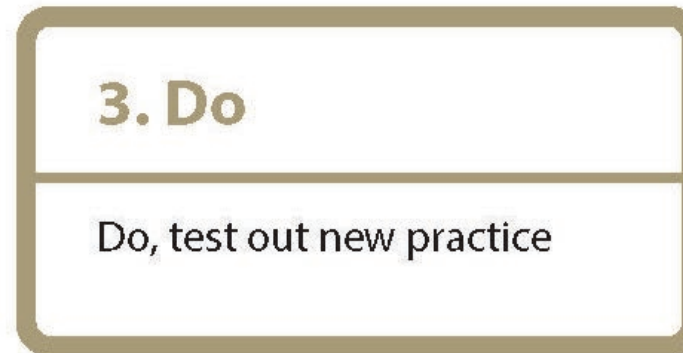


Figure 9: Execution Phase

It often makes sense to try out new practice on a small scale rapid iterative testing, evaluate and adjust many times until one is satisfied (see Figure 2). Only then can the measures be implemented in larger parts of the organisation (2).

Several actions and initiatives are often implemented in parallel if one is reasonably certain that they will improve the quality of service. The disadvantage of implementing several actions/initiatives in parallel is that one cannot know which of them have an effect.

The following points should be addressed when implementing the improvements (2, 5, 6-8.12, 14, 27, 28.32):

- Good information to all parties involved, both about the measure itself and what one wants to achieve
- Necessary training of personnel before start-up
- A project plan that gives clarity about who should do what and how
- Schedule and activity plan for introducing changes that take vacations into account
- Infrastructure to ensure equipment, materials and aids are in place
- Lessons-learned log, which shows when measures have been taken and how it went
- Management follows up to ensure that the measures are carried out as planned
- Checklist or other types of measurements to see if changes are being followed

Nyttige verktøy for fase 3:

- [Checklist and scoring form](#)
 - Statistical process control
-

4. Evaluate

An ongoing evaluation of improvement measures is crucial to know if they have worked as intended and **whether they** actually led to improvements that can be evaluated (Figure 10).



4. Evaluate

Measure and reflect on results

Are the improvements sufficient?

Figure 10: The Steps in the Evaluation Phase

Measuring and reflecting on results

It can be useful to use both qualitative and quantitative approaches to examine the quality of services and whether the changes led to improvements. The two approaches cover different factors and can complement each other.

Quantitative surveys

By analyzing and comparing new measurements with output data, one will be able to find out whether or not improvements have occurred. Regular measurements will show how the quality of the service provision develops over time, whether there are large and unacceptable variations and whether the level is good enough. In the daily work on improving the services, repeated measurements and analysis of these using, for example, statistical process control (SPC) will be sufficient to document whether the measures lead to real improvements (19, 20).

Qualitative surveys

Qualitative surveys – such as focus group interviews or patient stories – are suitable for obtaining the experiences of patients, relatives and employees.

Assess whether the improvement is sufficient and, if necessary, adjust

The results of the measurements and feedback must be made visible and discussed with management, users/patients and employees:

- Are the goals reached?
- Have we done what we agreed on and did it work?
- Are further improvements needed?

This discussion creates commitment and motivation, contributes to anchoring and, not least, to the fact that improvements persist over time (4, 6, 17, 29).

If the quality of service improvement is not satisfactory, you may want to return to the preparation and planning phase:

- Perhaps anchoring and organizing the Quality Improvement-work have not been good enough?
- Is there anything in the organizational culture that counteracts the improvements?
- Has the trial shown that the goals should be adjusted?

If these factors are in order and the actions have not worked as intended, the actions may have worked for too short of a time to produce the desired results. It can be useful to give the process a little longer before making adjustments. Alternatively, the measures must be adjusted based on the lack of effect. Otherwise, new improvement measures are developed, which are then tested in the same way. Either way, it's important to discuss the results with, leaders, the staff and service users to see if they have important input.

It should also be noted that the improvement work can have unexpected consequences. An example of this was that use of resources was decreased when patients in a psychiatric clinic were able to admit themselves (30).

Nyttige verktøy for fase 4:

- [Focus group interview](#)
 - [questionnaire](#)
 - [Checklist and scoring form](#)
 - Statistical process control
-

5. Follow up

Last but not least, it is necessary to follow up the improvement work in order for it to be successful both in the short and long term.



Figure 11: The Steps in the Follow-Up Phase

Implement new practice

If the changes that have been tried and tested works well, it is important to ensure that the improvements are then implemented and introduced into normal daily operation and that they are maintained. The improvements must be built into the organizations systems and infrastructure. It is recommended to create or update procedures, training programs, descriptions of different roles, reorganize resources and ensure routines for good communication (4, 5, 29, 31). If the improvement measures have been tested on a small scale with good results, they can be tested on a larger scale before implementation in normal operation.

Ensure continuation

Research has shown that up to 70 per cent of improvement work does not maintain the results, because one forgets to take care of the most important prerequisites for success in this, cf. Figure 5 (7). It is necessary to put in place a system to monitor that new practice is still working optimally. This can be done, among other things, by continuing to measure once or twice a year and highlighting and discussing the results with managers, users and employees. It is a managerial responsibility to ensure that this is done and that the results are used in further improvement work. Other measures to ensure that the quality of services persists include systematic nonconformity management and internal audit (4).

Spread the improvements

There are many good improvement projects in the health service, but most remain unknown in other organizations. Sharing the experience gained from the improvement work so that it can be spread to other organizations is therefore an important task in the improvement work. This can be done through local and national networks, or by facilitating joint learning by making projects known through articles, posters and lectures (11). When reporting from improvement work, guidelines for this can be of great help so that others can understand how it has been carried out, and thus be able to do similar work (32, 33).

The way forward

Once the improved practice has been incorporated, it is time to choose a new area of improvement. In this way, continuous improvement is introduced as the way the business is developed and managed.

Nyttige verktøy for fase 5:

- [Tools for sustained improvements](#)
 - [Squire – guidelines for publishing improvement work](#)
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About the development of the Model for Quality Improvement

The development of the Model for Quality Improvement has taken place over several years on the basis of experience with improvement work in the health service, research and theory.

1. In 2001, the Group for Quality Development in Social and Health Services (GRUK) published a method for process improvement. Elements from this method and experiences with it were the starting point for the model presented here.
2. In 2007, the first version of the model was launched in connection with the Norwegian Knowledge Centre for the Health Service (Knowledge Centre) developing an online toolbox for quality improvement for the National Strategy for Quality Improvement "...

and better it will be!". The model was based on experience with process improvement and on Deming's circle for quality improvement.

3. In 2008, a version of the model was created in which the content was angled towards user involvement.

4. In 2013, the model for quality development was revised and the development of the model described in a note from the Knowledge Centre.

5. In 2014, the model was revised. The user perspective was strengthened.

6. In 2015, we revised the memorandum describing the development of the model and also made some minor changes to the model

Read more:

- Konsmo T, de Vibe M, Bakke T, Udness E, Eggesvik S, Norheim G, Brudvik M, Vege A. [Model for quality improvement – development and use of the model in practical improvement work](#). Note – 2015. ISBN 978-82-8121-500-9

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Quality improvement and service design model - video

Siri Eggesvik, former senior adviser at the Knowledge Centre, reviews differences and similarities between the Model for Quality Improvement and Service Design (4.9.2015).

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