NHS SCOTLAND

Quality Improvement and Measurement

What Non-Executive Directors need to know

Healthier Scotland
Scottish Government

Contents

This resource is one strand of a wider induction and development programme led by the NHS Chairs Group and the Corporate Business Management Team at the Scottish Government.

It was written for Non-Executive Directors of NHS Boards. However, the document and additional resources referred to within the document may also be of value to Executive Directors.

NHS Boards should consider how to use this resource in relation to their local Board development.

Introduction

Why do we need to improve quality?

Everyone has two jobs – to do the job they were appointed to do (either paid or as a volunteer) and to improve that job. This is the essence of quality improvement (QI).

Why not settle for the status quo? Why should we accept a need to improve?

In a society where shifting demographics means a higher proportion of older people, we know there will be an increased demand on services in the future. Equally, our culture is changing. This is reflected in new and changing demands from those receiving care. Costs are increasing. There are new medicines and technologies to be assessed and considered. In this complex environment and where there is increased pressure on finances, retaining the status quo is not an option. We may have to improve just in order to keep abreast of current pressures.

Continuing with sub optimal care can result in unnecessary costs. Improvements can bring about, for example, better use of resources through reduction of time spent in hospital due to infections, or stop unnecessary movements of people or materials. QI can make a contribution to the cost efficiency of a service; there is a business case for QI (Health Foundation, 2009). It can also support the 'skill and spirit' of the workforce through addressing and improving everyday problems.

It is the Board's responsibility to oversee the work of the NHS Board and also to oversee the improvement of that work.

This booklet is designed to help NHS Non-Executive Directors to understand their obligations in QI.

What is Quality Improvement?

'Quality Improvement is defined as the application of a systematic approach that uses specific techniques to improve quality. Though there is a range of different approaches that fit under this umbrella they all have the following in common:

- *The concept of a cycle of improvement which involves data collection, problem definition and diagnosis, generation, testing, iteration and selection of potential changes and the implementation and evaluation of those changes.*
- *A set of tools and techniques that support individuals to implement the cycle of improvement.*
- *A recognition of the central importance of engaging those who receive and deliver a service in the improvement of that service.*
- *A recognition of the importance of organisational context and the need for senior clinical and management leadership.'*

'The combination of a "change" (improvement) combined with a "method" (an approach or specific tools) to attain a superior outcome.'

Health Foundation

'The combined and unceasing efforts of everyone – healthcare professionals, patients and their families, researchers, payers, planners, administrators, educators – to make changes that will lead to better patient outcomes, better system performance, and better professional development.'

Batalden PB, Davidoff F; *Qual. Saf. Health Care*; 2007

There is no single definition of QI. Many approaches and definitions, however, share a number of underlying principles, including a focus on:

- understanding the problem, with a particular emphasis on what the data, both quantitative and qualitative, tells us;
- engaging with staff, those receiving care, and individual stakeholders to ensure that the will for change is built, and that this will translates to action;
- understanding the processes and systems within the organisation – particularly the journey and experience of those receiving care;
- examining the demand, capacity and how people move through a service;
- identifying from evidence and developing ideas for changes we believe will be improvements;
- selecting the most appropriate tools to generate a change;
- reliably delivering that change over time; and
- evaluating and measuring the impact of a change.

To improve services effectively we need to set clear aims, establish measures, test changes and reliably implement, sustain and spread these changes. There is a variety of well-tested tools and methods which can successfully support improvement in services to make sure that the NHS in Scotland provides maximum benefit to patients in an effective and safe way. The whole process from considering a potential improvement through to identifying what to do and testing the improvement is called the QI Journey.

Here are a couple of examples that illustrate what we mean by QI.

'Think, Check, Act', NHS Greater Glasgow and Clyde

In NHS Greater Glasgow and Clyde, hospital staff have been supported through a QI initiative, 'Think, Check, Act' to be more alert to the possibility of a patient in their care having diabetes. A diabetic patient risks an episode of hypoglycaemia, which has unpleasant symptoms, is potentially life threatening and is associated with an increase of hospital stay and one year mortality after discharge. Following the intervention, involving a short formal teaching intervention and the introduction of a 'hypobox' in one ward, the resolution of hypoglycaemia within 15 minutes rose from 28% to 88%, with a 20% reduction in the incidence of hypoglycaemia.
http://ihub.scot/diabetes-think-check-act/

The 'Highland Quality Approach' – NHS Highland

NHS Highland has an approach to QI referred to as the 'Highland Quality Approach'. The following links provide general information about the HQA and also an example of a paper where the impact of this methodology is presented to the board.
http://www.nhshighland.scot.nhs.uk/AboutUs/HQA/Pages/Welcome.aspx
Other Boards in Scotland are taking organisational approaches to quality improvement. The QI for Board Members pages on the ihub contain some information about these experiences.

The Role of Non-Executive Directors

What is the Role of Non-Executive Directors in Quality Improvement?

'Non-Executive Directors need to understand that quality improvement is a marathon, rather than a sprint. The work will take time, resources and skills, and will generally involve shifting the culture within the organisation.'

Professor Jason Leitch

A focus on quality and improvement of the services delivered is at the heart of the role of NHS Boards. Non-Executive Directors have a major role to play in ensuring that the organisation prioritises and focuses on QI approaches, applies them, and achieves the necessary outcomes.

To succeed, all QI requires an infrastructure. This encompasses the sustained focus and time, strong leadership, intent for QI, planning so that experts and practitioners are trained in QI, and engagement and learning at all levels that are required to ensure QI becomes 'the way we do things'. Leaders need to actively demonstrate the will to make change happen, have the ambition to set high-level goals, and have an unerring focus on implementation.

QI usually starts as a 'thing' – an activity or project. Credibility has to be established and demonstrating success in a project is a straightforward way of doing this. As projects and activities continue and expand then QI will become 'the way we do things round here' – the culture. We all need to move towards a culture where it is accepted that everyone has two jobs; the job to which one is appointed, and improving that job. Non-Executive Directors can lead by example by identifying areas where their own activity could be improved – and taking steps to improve it.

Without sound leadership from the Board, QI programmes are unlikely to bring about long-term change. It is vital that QI initiatives are integrated into the overall work of the NHS Board and its governance arrangements. Non-Executive Directors are also key in providing the overview of different activities that take place in an NHS Board and ensuring they are integrated and held together by an infrastructure for QI.

If Scotland is to develop a culture of continuous QI, then it requires to be led to do so. Non-Executive Directors therefore have a responsibility to ensure that their NHS Board is led 'on the QI route' from QI as activity to QI as culture. In addition the Board needs to be aware that other, wider changes may be necessary. Legislation, the influence of how new entrants to the care system, such as doctors, nurses and social workers, are trained, and policy shifts, for example, all have an impact and a Non-Executive Director will need to be attuned to this wider context of change.

As an NHS Non-Executive Director, it is important to:

- Lead by example;
- Be aware that QI is everyone's business and cannot be a top down directive; indeed it works best when initiated by those who do the work and supported by a strategic intent for QI;
- Be aware that data is used differently for improvement and for the management of performance and be clear on what type of problem the data presented to the Board addresses;
- Ask the right questions to ensure you support and provide oversight of quality improvement in your Board and understand the answers to these questions;
- Make the connections at strategic level that ensure QI activity is held together by an infrastructure and intent for QI across the Board area; and
- Be aware of the place other processes of change have in making improvements and consider the potential to contribute to these wider changes.

Improvement Framework

The 3-Step Improvement Framework for Scotland's Public Services has been developed to support people in creating the conditions for, and implementing, the improvements that will make a difference across our public services.

The framework sets out six questions (Figure 1) to be asked of every change programme to test whether the right conditions exist to support true improvement.

This guide uses these six questions to illustrate the role that NHS Non-Executive Directors can play in ensuring the right conditions exist to support QI.

Figure 1

1. Aim

'Purpose is the invisible leader.'

Toke Paludan MØller

Understanding an improvement aim

It is clear that for a team or group to work towards an aim, leadership that is inclusive, supports ideas on the ground, and inspires action is required.

Non-Executive Directors can ask how a particular improvement aim was formulated. If it was developed by a group having looked at a problem and who used data to identify and define it, and the problem is understood, then the chances of producing a successful approach to addressing the problem are high. The 'data' might be survey results from patients, or complaints from staff or patients; it does not have to be quantitative. An aim is most easily formulated where there is a clear evidence base to inform the actions that will achieve it; sometimes a judgement is necessary where the evidence base is not so clear. A Non-Executive Director can help question if in fact energy is being invested in making the right changes. We need to be clear we have the right aims that address what those who receive care most need.

It is important to remember that improvement aims are intended to generate unease with the status quo and to support a sense of urgency that a change is necessary. The change usually involves a redesign of a system or process. It does not involve exhorting people to work harder in the same way. An improvement aim is aspirational and not a target which tempts people to 'game' the system or which is used for judgement.

Organisations will have different starting points. Often, a 'best in class' organisation will find it harder to reduce a poor practice, for example, by 50%, than an organisation that is an outlier where the poor practice is more evident.

It is important to understand the importance of having an aim that is locally challenging and causes interest. Examples of the questions that a good aim provokes are:

- How did ward 10 achieve 366 'days between' a patient developing a preventable pressure ulcer?
- How did the GP surgery achieve a reduction of wasted appointments (do not attends) of 45%?

What Non-Executive Directors need to ask about the aim:

- What is the problem this aim seeks to address?
- Is there data that describes the problem?
- What is the vision behind this aim?
- Not all aims have to be quantitative. Is there a clear approach to how those concerned will know the aim is achieved?
- How has the aim been forged? Are unintended consequences likely?
- Do I believe in the aim?
- Does my experience suggest that this is an unrealistic aim? Is it appropriate to challenge this aim – or do I need to think and understand more about this?

2. Correct changes

'Would you tell me, please, which way I ought to go from here?'
'That depends a good deal on where you want to get to.'
'I don't much care where –'
'Then it doesn't matter which way you go.'

Lewis Carroll, Alice in Wonderland

Enthusing, involving and engaging staff

Evidence about successful QI indicates that it is not necessarily the method or approach used that predicts success, but rather it is the way in which the change is introduced (Health Foundation, 2011).

It is vital not to undervalue the importance of involving all relevant staff. Breaking down traditional hierarchies for a multidisciplinary approach is essential to ensure that all perspectives and ideas are considered, and all staff are engaged in all levels of improvement. Without involvement, we cannot expect commitment, ownership or further innovation through testing changes. As a Non-Executive Director, you can ask how staff are being engaged in the improvements reported on to the Board.

Involving patients and co-production

Patients, carers and the wider public are the only people who experience the whole healthcare journey from start to finish. They therefore have a significant role to play, both in designing improvements, and also monitoring whether these changes have delivered the anticipated impact.

Patients and their families frequently define quality differently from clinicians and managers (King's Fund, 2011). What they view as a problem or value within a service may be unexpected. They have a role to play not only in person-centred care improvements but in safety and effectiveness too. Therefore, leaders must ensure patients and their families are able to contribute meaningfully to their organisations' quality improvement programmes.

There is policy intent that this, in principle, becomes 'the way Scotland works'. An example is the second National Dementia Strategy (Scottish Government, 2013d), which is informed by the active participation of people with lived experience of dementia. The plan calls for mutual respect and equality in the relationship between the person living with dementia and their carer by ensuring that care is planned "from their perspective, not the perspective of service managers or clinicians" (Scottish Government, 2013d: 3). http://www.coproductionscotland.org.uk/resources/co-production-in-scotland-a-policy-overview/

What Non-Executive Directors need to ask about making the correct changes:

- Are we improving the right things for maximum impact?
- Is there evidence that there is a problem and something really needs to be improved?
- Does our data about patient and staff experience suggest this would be a good change?
- Do I believe this change is a good use of attention and resource?
- Will fulfilling the aim make a difference to care in this NHS Board area?
- When I walk in the area where this work is taking place and talk to staff, do they know about it?
- How have staff been involved in identifying the changes?
- How have patients, service users or citizens been involved in identifying the changes?

3. Clear change method

'The measure of intelligence is the ability to change.'

Albert Einstein

When working to improve a situation, it is important to be clear on the change method being used and to consider whether it is appropriate to the issue being addressed. When working to address system level challenges, improvement often requires a combination of approaches. An example is the reduction in levels of smoking by individuals in Scotland. These changes to behaviour were brought about by a series of well-considered and planned methods. Education and training of key people charged with leading the change, the introduction of legislation and by-laws to prevent smoking in public places, the use of marketing and social media approaches to shift or nudge different habits in the population, and the promotion of smoking cessation support were among the many different tactics used to bring about a reduction in smoking.

Within this wider framework of change, specific QI activities can take place. An example is the work led by the SPSP Maternity and Children's programme. This used QI to develop an approach that focused on monitoring carbon monoxide (CO) levels in pregnant women, to improve a mother's awareness of the dangers of smoking to her unborn baby, with appropriate referral to smoking cessation services which support pregnant women.

The approach must be appropriate for the 'problem'. There are many QI techniques or methodologies, and Appendix 1 looks at some of the more common ones used in Scotland.

As healthcare is an extremely complex system, involving many human factors, it is important to consider which methodology will suit the intended improvement and the local context. It is also important to remember that improvement has a 'result' and is not only an activity. An understanding of why a particular improvement was identified and why a particular method was selected suggests fluency with the methodologies. If a Board is to lead by example this is a requirement. Changes may also have unintended consequences and your role as a Non-Executive Director is to be alert for the impact on the whole system.

Some NHS Boards have adopted a particular approach to improvement and focus on building capacity in this one approach. There is debate in Scotland as to whether fidelity to one methodology or drawing on a variety of methodologies for a variety of problems is more appropriate. There is an argument that it is more straightforward to build an infrastructure around one approach, and train and build capacity in one methodology. There is a counter argument, however, that, with the complexity of health and social care, we need the flexibility to fit one method to the particular context to get the best possible outcomes.

In a large organisation, the narrative draw of one approach may engage staff powerfully and support culture change. Whether one approach or a variety of approaches is adopted, strategic support, integration, intent and planning for QI are important.

What Non-Executive Directors need to ask about a clear change method:

- How was the change method decided? Were other methodologies considered?
- Is the degree of attention to the problem proportionate and risk based?
- If the change happens, will the result matter? (So what?)
- Do I need to know more before I can properly understand this?
- Am I leading by example in introducing and/or supporting improvements at Board level?
- Do I have a preferred change methodology that blinkers me to others?

4. Measurement

Understanding data and measurement

'No stories without data, no data without stories'

Sir Austin Bradford Hill

Non-Executive Board members need to be aware that measurement:

Can be used for different purposes

Measurement for improvement differs from measurement for judgement and measurement for research. In one Board meeting, Non-Executive Board members will often be required to understand data for these three different purposes. It is important to know the different expectations on Board members for each type of measurement.

Data is commonly gathered from services so that managers and quality assurance and scrutiny organisations can judge the performance of those services against agreed quality thresholds and targets. An example would be an inspection report or a measure against a HEAT target which gauges performance. Data is also commonly collected by research projects that seek to develop knowledge of better ways of delivering services. An example would be data on different medicines to manage blood pressure in patients in the community.

Data for improvement cannot usually be used for comparisons between sites and against thresholds, and more commonly involves tracking processes and outcomes for the same site(s) over time. A typical example is a run chart for a ward showing the number of admissions where a care plan is in place within a particular timescale.

Measurement for improvement informs staff learning as the improvement process develops; data is therefore 'good enough.'

Rather than waiting for the results of an audit, an improvement approach might use a small sample of case notes used in one morning to see if an action has been taken, and quickly establish if not, then why not. This intelligence is fed into the picture of trying to make the improvement work later that day. For example, if case notes suggest an action did not take place and it is then identified that a new member of staff who did not know about the action was on the rota, then in future the induction for new staff can include reference to this. Further information on how measurement for improvement is different to traditional measurements used in healthcare is given in Appendix 2a.

At Board level, data for improvement at the local level is usually reported once it has been collected at scale or over a period of time, where there is a cohesive story. A typical point in reporting to the Board is when an improvement has been demonstrated and it then becomes a strategic responsibility to consider how to spread that improvement elsewhere.

Establishes if there is an opportunity for improvement

When we set out on an improvement project we need to understand if we are meeting the needs of those receiving care. Data can be used to understand how well the system is working in meeting these needs and help us focus energy on the right things. For example, staff might be concerned at the delays in movement of patients through an outpatient clinic; quantitative measures of time and qualitative measures through patient satisfaction surveys would confirm this needs improvement.

Helps prioritise improvements

Data can be used to prioritise improvements so that those that will bring the biggest change are made first. For example, the areas where measurement indicated a pattern of patient mortality informed the first priority areas for the Scottish Patient Safety Programme.

Illustrates improvement through a series of measures; outcome, process and balancing measures

Measurement for improvement should include a small set of measures to test the hypothesis that a particular intervention will bring about an improvement from a variety of angles. These are shown in Appendix 2b.

Needs considered interpretation

Board members will be required to understand data that are reported to them, rather than know about how data might be collected, analysed and presented. Further information on how data can be presented is provided in Appendix 2c.

Whilst a series of quarterly reports might be enough to establish a trend for some measures, data for improvement needs to show points plotted over units of time that allow us to interpret if a change introduced at one point has had an impact. This is typically shown in a run chart which can be annotated. An example is shown in Appendix 2c. Often staff in a hospital ward show run charts on their notice boards as a means not only of tracking but also communicating progress with an improvement process.

Non-Executive Board members also need to be aware that variation in a process may cause a 'point in time' data return to fluctuate between 'green' one month and 'red' the next if the variation is around the set target level. It is important to understand the variation over time rather than responding to the one data point, and support the Board to minimise these variations. More information on variation is shown in Appendix 2d.

Should be viewed in the wider context

It is not enough for a Board to simply approve QI data. It is a Board responsibility to see if there are links to other improvements elsewhere in the Board area, ensure the QI work is integrated into a Board-wide intent for QI and an infrastructure to ensure improvements can be sustained. It is important to understand the possible barriers to successful QI, shown in Appendix 3, since a Board member may be in a position to help remove these.

Board members are also in a position to encourage and support improvement by example, by making links through knowledge of what is going on elsewhere, and by supporting wider changes that could bring about parallel improvements. A Board needs to clear on the purpose of and be alert to the impact on staff if asking for measures. If Non-Executive Board members are invited to attend a local QI event, Appendix 4 shows questions to ask.

What Non-Executives Directors need to ask about measurement:

- What is the data for?
- Is it up to date?
- What does it say?
- Do I know how to look at this presentation of data?
- Do I understand it?
- Do I need to have a short session with someone who can interpret this?
- Do I know how this presentation differs from other data presented in Board papers?

5. Capacity and capability

'What we can or cannot do, what we consider possible or impossible, is rarely a function of our true capability. It is more likely a function of our beliefs about who we are.'

Albert Camus

'If I have the belief that I can do it, I shall surely acquire the capacity to do it even if I may not have it at the beginning.'

Mahatma Gandhi

Capability across a group of staff can be improved

Building capacity and capability for improvement within the NHS will bring huge benefits for patients, carers and staff, as well as increased quality and value. QI is most successful if frontline staff are engaged and indeed have been involved in developing the proposed improvement, and if they are then supported by those who have capability in QI methods, approaches, tools and techniques. In NHSScotland we have a series of courses which support NHS staff to develop their capability in improvement skills: qizonenes.nhs.scot.

We also have the means of identifying how many of these experts we need in a particular area; For more information contact the QI team within NHS Education for Scotland.

Attending a course, however, does not ensure that someone is capable in QI; learning needs to be experiential, and rooted in real work. That is why most courses in QI require attendees to undertake an improvement project.

Scotland has international reputation for the quality of our QI learning programmes. Within each Board there are staff members with high levels of expertise. These people offer a huge potential for each Board to draw upon.

Capacity is related to time and ability to spot opportunities

There also needs to be the mental 'headspace' to formulate improvements and follow them through. Work on the *Building a QI infrastructure programme* found a consistent theme in NHS Boards was that middle managers are so busy doing the work that even if they know about QI and are committed to it (are capable of leading QI work), they often don't have the capacity to support QI in their areas. Often they are responsible for much of the measurement for performance on which the Board is judged and it takes skill and application in order for them to flex and encourage improvement. Further information upon this work can be obtained from the ihub: contact QI for Board Members team.

As a Non-Executive Director you can ask what plans there are:

- for developing staff in improvement skills across the NHS Board area;
- for supporting staff to actually use those skills they have learned, including creating the 'headspace' for proactive improvement work; and
- to retain those staff once they have learned the skills.

A lot of disconnected projects, each with their different measures and reporting mechanisms can be very demanding on staff and the system. QI is most likely to be effective if improvement projects are linked and supported at a system-wide level and all are focused on a few key aims for the whole Board area. This ensures good governance and avoids a 'scattergun' approach. There is a tension, of course, between wanting to encourage staff to think of and develop improvements, and ensuring that this enthusiasm and energy is focused on priority areas for the Board and where it will make most difference.

It is a Non-Executive Director's privilege to have an overview of the system and to support the integration of changes so that there is intent for, and a consistent approach to QI and activity is held together and sustained with an infrastructure. This helps ensure QI becomes part of the culture and is not only activity that is person or situation dependent.

What Non-Executive Directors need to ask about capacity and capability:

- Do the staff in the relevant area have the capacity to take on this improvement?
- Are they capable (ie do they have the skills)?
- What is the Board plan for improvement?
- How can I support the development of capacity and capability in my Board area?
- Does my Board have a philosophy or consistent approach to QI?
- Does my Board have a commitment to building up capability and capacity in QI?

6. Spread plan

'You're not gonna change any of them by talkin' right, they've got to want to learn themselves, and when they don't want to learn there's nothing you can do but keep your mouth shut or talk their language.'

Harper Lee, To Kill a Mockingbird

'All changes, even the most longed for, have their melancholy; for what we leave behind us is a part of ourselves; we must die to one life before we can enter another.'

Anatole France

Quality and sustainable change

Approximately two-thirds of healthcare improvements go on to result in sustainable change that achieves the planned objective (Health Foundation, 2011).

Local improvements, however, need to be acknowledged, celebrated and spread. Spread is 'when best practice is disseminated consistently and reliably across a whole system' and involves the implementation of proven interventions in each applicable care setting.

Understanding barriers to Quality Improvement

Non-Executive Directors need to understand that QI involves change and change is often resisted. An understanding of what may hold back change will help in developing QI in the first place and then supporting the spread of that change. A summary of barriers to change is shown in Appendix 4. Some of these relate directly to the potential of the Board to support or inhibit improvements, most notably the role of leadership and organisational context and culture. Non-Executive Directors have a powerful role to lead by example.

Understanding barriers to the spread of quality improvement successes

There are barriers to spreading improvements. In healthcare a third of improvements are never spread beyond the unit where the improvement originated, a further third are embedded in their unit and spread to the organisation and the final third are spread beyond the organisation (UK NHS Institute for Innovation and Improvement, 2010). A common mistake in attempting to spread a success is to task those who have first introduced the change with the responsibility for spreading it. It is not their responsibility; it is a strategic responsibility.

Spread is not as simple as identifying an improvement in an area and telling others to go and do the same. A plan for spreading the change that is supported by Board leadership will be required. The plan needs to make sure that the conditions are created so that those in the next area in the spread plan wish to adopt the change. The relevant people need to be identified starting with those who are most likely to adopt the change and the ground prepared. Supporting others to make the change may require a combination of persuasion, marketing and communication skills and change management. On an encouraging note, the history of the NHS is the history of adopting innovations and positive changes. Antibiotics, anaesthetics and the concept of an outpatient department were once innovations. The current challenge is to ensure that innovations and changes that bring an improvement to the way healthcare is delivered are adopted.

How can leaders ensure that change is sustainable?

Sustainability is 'when new ways of working and improved outcomes become the norm'. There is evidence that sustainable change is more likely in certain contexts (Health Foundation, 2014). A model that involves patients and staff in co-developing, co-designing and implementing changes is more likely to secure a change than one driven by a 'command and control' or hierarchy model where a change is enforced.

A successful and sustainable spread of change requires understanding of the organisational culture, and knowledge of different units, areas and staff groups. The plan for spread must align with the vision and values of the organisation to ensure the work to spread the improvement is undertaken with conviction in each area. The role of senior leadership is to support alignment of improvements and provide the overview of the system to ensure that improvements are reliably implemented, spread and sustained.

The QI Zone has developed a resource to increase understanding of the 10 key factors underpinning successful spread and sustainability of quality improvement in NHSScotland. The Spread and Sustainability of Quality Improvement in Healthcare is available on the QI Zone website.

What Non-Executive Directors need to ask about the Spread Plan:

- How can we celebrate this success?
- Do we know where else this improvement is needed?
- What do we need to do as a Board to encourage the spread of this improvement to these areas?
- Is there anything the Board needs to do to unblock a barrier to spread? Or, what can we learn from this failure?
- Am I generous in acknowledging success?
- How do I support the Chief Executive and other leaders?
- How do I approach the failure of an improvement?
- How do I go about challenging or criticising? Am I supportive or do I only discourage?

Appendices

Appendix 1 – Quality Improvement methodologies

At the outset, it is important to acknowledge that QI methodologies are not the only types of change that bring about improvement. In some cases, wider changes will be necessary. These could include a change of legislation, or professional regulations. Similarly, the introduction of training to existing staff or introducing a new component to pre-registration courses so that new staff entering a system will bring a new skill will bring about change. QI methodologies work within the current legislative, professional and regulatory frameworks and challenging these is beyond the scope of these techniques. Parallel activity may of course work to make these changes.

Skill is required to discern which method is most applicable to the issue being addressed. For example, repeated actions that follow a particular sequence, such as the insertion of catheters, or the issuing of repeat prescriptions, are well suited to being improved through the Model for Improvement that requires rapid hypothesis building, testing and retesting. Redesigning pathways of care that are inefficient and unreliable may lend themselves to lean techniques. An example would be making the distribution of medicines throughout a series of hospitals more efficient.

It is important to recognise that QI usually takes time; the more people who are involved and more complex the environment the longer it will take to make and then embed improvements.

Board members are in a strong position to support wider cultural changes that will be necessary if these QI methodologies and the 'habit' of QI are to become part of the local culture.

The methodologies used most frequently in Scotland are described below.

Understanding the process – Process mapping

'Every system is perfectly designed to deliver the results it produces.'

Langley et al, 2009

Although technically not an improvement methodology, since a map is simply a description, process mapping has been included here, since developing a process map is often the first step in any improvement initiative. The sequence of steps in a process are identified and drawn. Quite often this act of investigating and describing a process will immediately show areas where there are inefficiencies or blockages. This can then lead to improvement action to 'unblock' and streamline the process.

To find out more about process mapping, visit:
https://improvement.nhs.uk/resources/process-mapping-conventional-model/

Model for Improvement

To learn more about the Model for Improvement, and to read about examples of how the Model for Improvement has been used in NHSScotland, visit:
http://ihub.scot/media/3256/a46965-20171124-handy-guide-to-the-model-for-improvement-v1-0-2.pdf
http://ihub.scot/about/empowering-improvement/

Lean

To read about how lean thinking is being applied in NHS England, visit the Lean Healthcare Academy:
https://www.england.nhs.uk/leadingchange/lcav-in-action/videos/

To learn how NHS Highland is using lean thinking to implement its Quality in Action work, visit:
http://www.nhshighland.scot.nhs.uk/AboutUs/HQA/QualityInAction/Pages/welcome.aspx

To learn how to reduce things that do not add value to patients, visit:
https://improvement.nhs.uk/resources/quality-service-improvement-and-redesign-qsir-tools-type-approach/

Six Sigma

To learn how Six Sigma can be combined with lean thinking to dramatically reduce waiting times, visit:
https://improvement.nhs.uk/resources/quality-service-improvement-and-redesign-qsir-tools/

For useful tips on how to use the 'five whys' to get to the root cause of problems, visit:
https://improvement.nhs.uk/resources/root-cause-analysis-using-five-whys/

To learn how to reduce things that do not add value to patients, visit:
https://improvement.nhs.uk/resources/quality-service-improvement-and-redesign-qsir-tools-type-approach/

Demand Capacity Activity and Queue (DCAQ)

To learn more about Demand Capacity Activity and Queue, visit:
https://improvement.nhs.uk/resources/demand-and-capacity-overview/

The Vanguard approach

To learn more about the Vanguard approach, visit:
http://vanguard-method.net/the-vanguard-method-and-systems-thinking/

The following link shows how it has been used:
https://improvement.nhs.uk/resources/tcsl-programme/

Experience-based co-design

To find out more about experience-based co-design, visit:
https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/

Appendix 2a – The three reasons for measurement

Data and its measurement for improvement are used differently from data employed for judgement or for research. It is vital that Board members know the difference between these and the expectations on Board members for each type of measurement. In this video Mike Davidge explains how measurement for improvement is different to traditional measurements used in healthcare.

Characteristic	Judgement	Research	Improvement
Aim	Achievement of target	New knowledge	Improvement of service
Testing strategy	No tests	One large test	Sequential tests
Sample size	Obtain 100% of available, relevant data e.g. percent of patients who have been seen within a predetermined waiting time	'Just in case' data e.g. systematic analysis of an outpatients' invitation to attend notes to test the effectiveness of a new IT system	'Just enough data', small sequential samples e.g. five case notes from yesterday – followed by five today to see if staff are actually undertaking and recording all three elements of a care bundle
Type of hypothesis	No hypothesis	Fixed hypothesis	Hypothesis flexible, changes as learning takes place
Variation (bias)	Adjust measures to reduce variation	Designed to eliminate unwanted variation	Accept consistent (random) variation
Determining if a change is an improvement	No change focus	Statistical tests, p-values	Run charts or Shewhart control charts

Adapted from: The Three Faces of Performance Measurement: Improvement, Accountability and Research. Solberg, Leif I., Mosser, Gordon and McDonald, Susan Journal on Quality Improvement. March 1997, Vol.23, No. 3.

Appendix 2b – Outcome, process and balancing measures

Not every activity in a change will result in a measurable outcome, so measures are developed to show the activity has taken place. These are called process measures.

For example, if a ward agrees that three patients are to be checked every two hours against the 'SSKIN care bundle' this is recorded as a process measure (which reflects how the system is working). A bundle is simply a set of actions that, when undertaken together, have been proved to address risks. In this case, the nurse checks the Surface, observes the patient's Skin, encourages her to Keep moving, ensures she avoids Incontinence and encourages Nutrition. The outcome measure would be the absence of a pressure ulcer developing (this reflects the impact the system is having on the patient). This outcome measure could be shown at a ward or care home level as the number of 'days between' a preventable pressure ulcer developing in their patients. Other examples of outcome measures are rates of falls, or hospital acquired infection.

Balancing measures enable a system to monitor any unintended consequences (good or bad) of the improvement effort and are particularly useful when there is a concern that a change might have an unintended negative consequence. In this example there could be a concern that patients may find the interventions disruptive and so the number of complaints received regarding pressure area care could be a useful balancing measure; there could also be concerns that staff may find the bundle burdensome and add to their workload, so staff satisfaction or time spent completing documentation may also be useful balancing measures.

Balancing measures are particularly useful when there is a concern that a change might have an unintended negative consequence. An example of this was in work to improve access to psychological therapies where clinicians were concerned that the focus on access might result in poorer quality treatment. A balancing measure focused on clinical outcome data was therefore developed.

Appendix 2c – Data presentation

This guide focuses on the interpretation of data so that action can be taken. Further information on the collection, analysis and presentation of data is available from the NHSScotland QI Zone website: Collecting data, Analysing data and Presenting data.

Appendix 2d – Showing data and variation over time

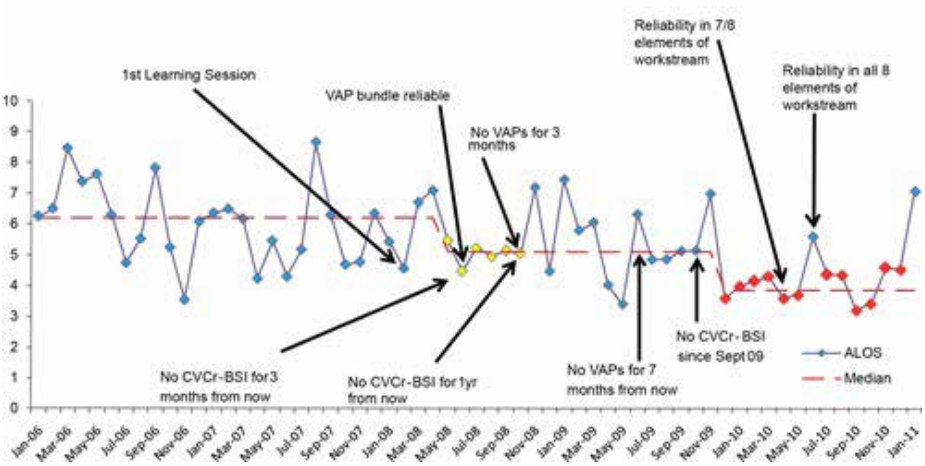
Data is often aggregated and presented over long time periods, yet shown as discrete points in time. If there are not enough points in time this can lead to poor interpretation. Presenting data continuously over time can provide a more accurate basis for decision making.

Run charts

Run charts are line graphs where a measure is plotted over time with the median also shown. Changes made to a process are also often marked on the graph so that they can be connected with the impact on the process.

Example of an annotated run chart

Average length of stay (ALOS) in Intensive Care Unit (days)



Courtesy of Professor Kevin Rooney, University of the West of Scotland and NHS Greater Glasgow and Clyde.

More information on run charts can be found at: http://www.healthcareimprovementscotland.org/previous_resources/implementation_support/guide_to_using_run_charts.aspx

Appendix 2e – Variation

It is important to understand that a certain amount of variation is normal. Some variation is intended, for example, care is designed for specific groups of patients with different needs. Unintended variation in healthcare is due to differences in healthcare processes that are not connected with patients' different needs. This can result in waste and harm, and commonly forms the focus for an improvement.

Statistical Process Control (SPC) is a way of using statistical methods and visual display of data to allow us to understand the variation in a process. More information on this can be found at: https://improvement.nhs.uk/resources/statistical-process-control-spc/

Appendix 2f – Additional resources on measurement

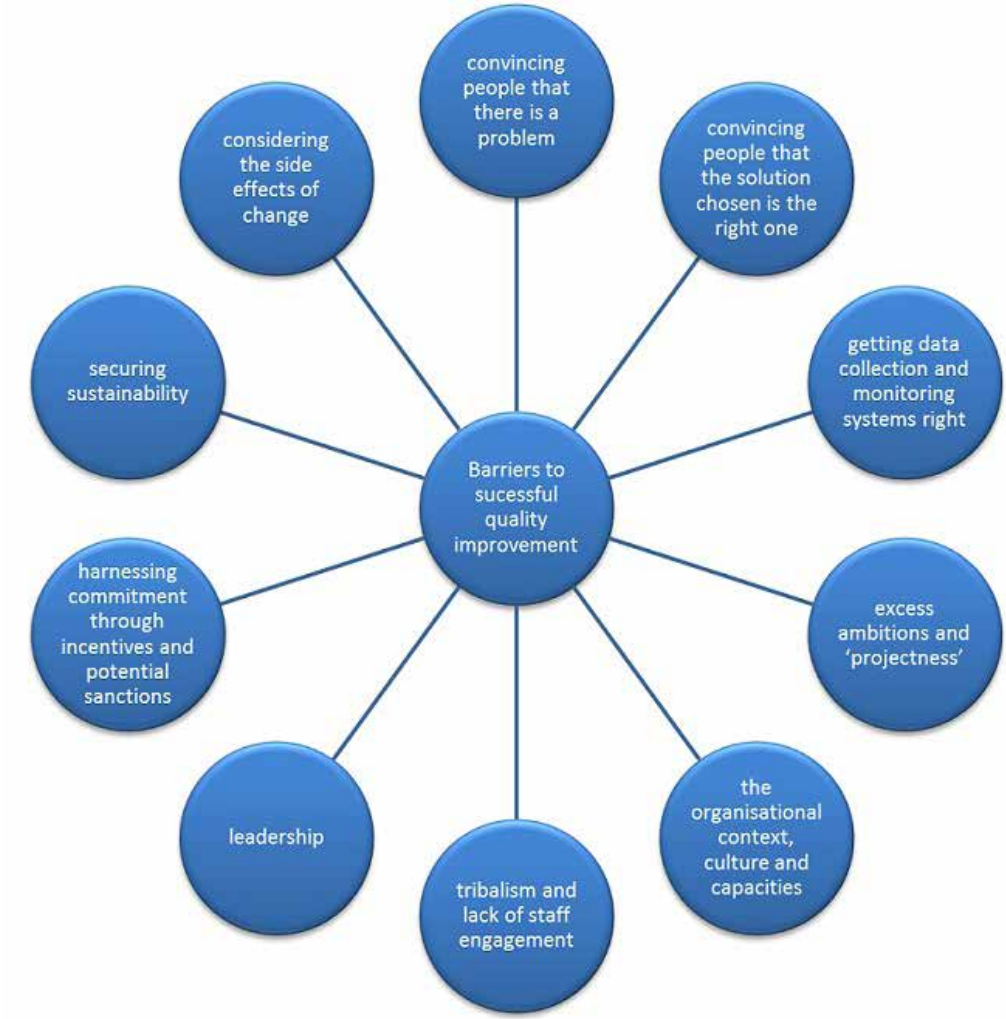
- https://improvement.nhs.uk/resources/measurement-improvement-overview/
- The Seven Step Measurement Process
- The NHS Education for Scotland QI Zone: Setting measures to assess impact of improvement efforts

The NHSScotland QI Zone has a set of e-learning modules which can be found at: https://learn.nes.nhs.scot/817/quality-improvement-zone/resources-elearning

The QI Zone has developed a Measurement Tool Decision Assistant which helps assess what the measurement needs are and suggests which measurement tools might be appropriate.

Appendix 3 – Barriers to successful quality improvement

In a study of 14 quality improvement programme evaluations (Dixon Woods et al, 2012), 10 key challenges were consistently identified from the programmes:



Appendix 4 – Example improvement agenda for leaders

Agenda	
1.	Review aim statement and measures.
2.	What are the important/unique/challenging aspects of the project that senior leadership should keep in mind?
3.	Review significant accomplishments over the past month – focus on results and understanding the data.
4.	What was the last test carried out? What will be the next test?
5.	Review monthly data reports, and run charts where available.
6.	Discuss team experience, identifying specific improvement issues.
7.	Identify what problems/sticking points have been encountered in the last month that the team needs help with.
8.	Determine the level of confidence that the team will meet its aims within the project timeframe. 1 2 3 4 5 6 7 8 9 10 No confidence High confidence
9.	Identify next steps.

References

How do hospital boards govern for quality improvement? A mixed methods study of 15 organisations in England Jones et al BMJ Quality and Safety 2017; 0; 1-9

What is "quality improvement" and how can it transform healthcare? Batalden PB, Davidoff F; Qual. Saf. Health Care; 2007;16:2–3

Bringing user experience to health care improvement: the concepts, methods and practices of experience-based design. Bate P, Robert G; Oxford: Radcliffe Publishing; 2007

High reliability health care presentation. Berwick D, Nolan T; 2003 [cited 2015 Sept 04] http://www.qihub.scot.nhs.uk/media/257341/quality_improvement_hub_01.pdf

Quality improvement: theory and practice in healthcare. Boaden R, Harvey G, Moxham C, Proudlove N; Coventry: NHS Institute for Innovation and Improvement/University of Manchester Business School; 2008

Total Quality Management (TQM) [online]. The Chartered Quality Institute; 2015 [cited 2015 Sept 04] www.thecqi.org/knowledge-hub/resources/factsheets/total-quality-management

Measurement for Improvement. Davidge M [cited 2015 Sept 04] https://eoeleadership.hee.nhs.uk/sites/default/files/Patient%20Safety%20First%20How%20To%20Guide%20measurement%20for%20improvement.pdf

Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. Dixon-Woods M, McNicol S, Martin G; BMJ Qual Saf. 2012; 21 (10):876-84

Better together. Experience based design cancer pilots. Interim reflection report. Edinburgh: Better Together, Scotland's Patient Experience Programme. Hodgkiss F, Barrie K, Sinclair C; 2011

Quality Improvement Made Simple. The Health Foundation; 2011 [cited 2015 Sept 04] http://www.health.org.uk/publication/quality-improvement-made-simple

Getting the measure of quality opportunities and challenges. Raleigh VS, Foot C; The King's Fund; 2010 [cited 2015 Sept 04] http://www.kingsfund.org.uk/sites/files/kf/Getting-the-measure-of-quality-Veena-Raleigh-Catherine-Foot-The-Kings-Fund-January-2010.pdf

Perspectives on context. Bate P, Glenn R, Fulop N, Øvretveit J, Dixon-Woods, M; The Health Foundation; March 2014 http://www.health.org.uk/publication/perspectives-context

The patient-centred care project: evaluation report. The King's Fund; 2011 [cited 2015 Sept 04] https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/

Experience-based co-design toolkit. The Kings Fund; 2013 [cited 2015 Sept 04] http://www.kingsfund.org.uk/projects/ebcd

The improvement guide: a practical approach to enhancing organizational performance. 2nd Ed. Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP; San Francisco, California: Jossey-Bass Publishers; 2009

Scotland's national dementia strategy 2013-2016. Scottish Government; 2013 [cited 2015 Sept 04] http://www.gov.scot/Topics/Health/Services/Mental-Health/Dementia

The 3-step improvement framework for Scotland's Public Services. The Scottish Government; 2013 [cited 2015 Sept 04] http://www.gov.scot/Resource/0042/00426552.pdf

Sustainability Model and Guide. NHS Institute for Innovation and Improvement; Maler L. Gustafson D, Evans L; 2010 [cited 2015 Sept 04] https://improvement.nhs.uk/resources/Sustainability-model-and-guide/

Does improving quality save money? A review of the evidence of which improvement to quality reduce costs to health service providers. Ovretveit J; 2009 [cited 2015 Sept 04] http://www.health.org.uk/publication/does-improving-quality-save-money

Scottish Government
Riaghaltas na h-Alba
gov.scot

This publication is available at **www.gov.scot**

Any enquiries regarding this publication should be sent to us at
The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-78781-001-3

Published by The Scottish Government August 2018

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS431326 (08/18)