NIHR CLAHRC Northwest London
Systematic Approach to Quality Improvement
“How to” Guide

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1 Introduction

1.1 What is NIHR CLAHRC North West London?

The translation of research into sustainable high quality care remains one of the greatest challenges to the NHS. The conduct of high quality research results in the production of academic publications or short term local improvements, but rarely are these findings translated to sustained improvements at a population level. This is known as the ‘second translational gap’.

The National Institute for Health Research (NIHR) established the Collaborations in Leadership for Applied Health Research and Care (CLAHRC) to foster relationships between academia and the NHS with a focus on closing the second translational gap. Thirteen CLAHRCs were established in January 2014 in the second wave of funding. The CLAHRCs are monitored by the NIHR so that generalisable lessons and best practice can be shared across the CLAHRCs and throughout the NHS.

The NIHR CLAHRC for Northwest London was established in October 2008 and awarded a second term of funding in January 2014. The collaboration encompasses all healthcare organisations in northwest London and was awarded £10 million from the NIHR and a further £11.7 million was committed from partner organisations.

1.2 CLAHRC NWL Mission

CLAHRC NWL’s mission is to improve health outcomes and patient experience through research and quality improvement, working in partnership with healthcare organisations across the sector. We aim to achieve this by:

- Informing and embedding a culture of continuous and scientific improvement through research
- Engaging and involving patients and carers
- Creating a culture of collaborative leadership and shared responsibility
1.3 How to use this guide

Our systematic approach includes the use of a range of tools, methods and principles. This guide summarises these which project teams will find useful over the course of an improvement project.

This guide covers the first steps teams need to take in the early stages of their improvement project to maximise its success. It draws on research literature from disciplines of change management, leadership, stakeholder engagement, research and iterative design. The guide is based on the expertise and experience of the CLAHRC NWL team, external advisors and feedback from project teams who have worked with CLAHRC NWL over the last five years.

The steps are broadly laid out in the suggested order for completion (e.g. there is no point defining measures before an aim and interventions have been agreed)

However, we anticipate that many of the steps will need to be revisited during set-up phase... (e.g. process mapping is likely to result in revisiting with stakeholders)

...and revisited throughout the project life time (e.g. you may want to revisit process mapping once a significant change has been implemented to see what impact it has had, or if there were any unintended consequences)

To perform each step will require dedicated time from all relevant stakeholders (e.g. for process mapping we recommend a minimum of half a day with all project and relevant frontline staff present).

1.4 Overview of support:

CLAHRC NWL is funded to provide support, training and guidance to implement improvement projects. Each section in this guide indicates where you can get further support from members of the CLAHRC NWL team.
The Process of Quality Improvement

This section aims to provide an introduction to quality improvement methodology with some guidance and tools that will allow individuals and organisations to consider how they may improve the quality of the Medicines Reconciliation process within their own organisation.

The process of quality improvement has several stages, which can be visualised in fig 1.1 “The cycle for improvement”.

![Fig 1.1: The Cycle for Improvement (reproduced with permission from the authors)](image)

When this cycle is successfully completed, improvements to patient care and health or population outcomes should be observed. Each step of the cycle is described more clearly below:

1. What Actually Happens: It is important to focus on the reality of current care delivery in a particular care setting; considers patient experience, outcomes as well as service delivery. This should be considered at the beginning of the process to understand what is happening before improvement work is planned, and revisited as changes are being implemented to ensure that they are making the desired difference.

2. Identify Needs: By understanding the current situation, it is possible to identify areas for improvement, for instance unmet needs, problems, variations and quality issues.
3. Identify Priorities: It is necessary to prioritise resource investment drawing on knowledge including patient and population needs, economic and clinical considerations to focus energy and support successfully delivery of improvements.

4. Identify Potential Solutions: Identifying potential solutions that need to be implemented and tested to see if they are capable of improving ‘what actually happens’. This stage considers existing knowledge and interventions or creates new interventions and evidence about what might work.

5. Implement: Process by which potential solutions are implemented into practice. This is an iterative process changing in response to emerging evidence to ensure solutions are fit for purpose and deliver the desired change in ‘what actually happens’.

In reality there is often a gap between the identification of potential solutions and their implementation and delivery of improvements in care settings. This gap is often described as the translational gap and results in poor quality patient care. Box 1.1 describes a quality improvement project which had a significant focus on Medicines Reconciliation that took place at Chelsea and Westminster Hospital and the challenges the team had to overcome to achieve their desired improvements.

**Box 1.1: A project to implement medicines optimisation to support patients with changes made to medication during an emergency admission into hospital.**

A project team was established to address concerns re medicines optimisation including reconciliation. To start, the project team mapped the actual process of a patient’s journey through the hospital to discharge home and how this related to their medication needs. They discovered that four separate professionals were taking medication history from patients (doctors, nurses, pharmacists and physiotherapists) and that this information was being held in silos and not shared with the rest of the team. The process map showed inefficiencies, poor patient experience and safety hazards: For example one patient had arthritis and the physiotherapist was aware she was unable to open bottles with a child-proof top, but she was given tablets in a bottle with a child-proof top from pharmacy.

The project team facilitated a number of activities to support staff and patients to redesign the process, renegotiating the roles of each of the four staff groups so work was coordinated more effectively. As a result of this work a single Medicines Reconciliation form was introduced for use by all four professional groups.

The team started collecting data on how well the new Medicines Reconciliation process was working, including the rate of errors in the reconciliation process. They found that there was a high rate of errors (24%), although the error rate varied a lot, between 0% and 74%. The team realised that whilst they had improved the process for Medicines Reconciliation they still needed to improve the rate of error free Medicines Reconciliation and further reduce variation in how the process was completed. The team investigated the causes of high or low error rate and how error rates related to patient flow and staffing levels.

As a consequence of this investigation they decided to redistribute Pharmacy staff to support a 7
day per week to improve consistency of their service. The team had to negotiate this with several people including the executive team to secure the appropriate budget and permissions for this change to take place.

The team realised that information availability on patient level drug history was a systemic problem, and whilst this hadn't been the original focus of the project, it was fundamentally linked to their ability to complete high quality Medicines Reconciliation. Patients involved with the project challenged assumptions about relying on clinicians and healthcare organisations for this information. To support patients to have greater ownership of their medication histories the team worked with patients to develop a patient-held ‘My Medications Passport’ that could act as information source to support Medicines Reconciliation. This led to patients using the My Medications Passport as a platform for conversations with health care professionals about their drug histories.

The team also worked to increase their profile, identifying how their work related to key hospital concerns including the importance of Medicines Reconciliation to admissions avoidance, how it linked to the safe and effective flow of patients through emergency care, and how it contributed cost-savings by avoiding inappropriate prescribing. Aligning the project to that of the key hospital concerns took considerable work, but helped to secure vital resources including executive support to champion the work and permission for team members to be released from daily business.

This example highlights the complexities the project team had to navigate and the wider range of issues they encountered right from what actually was happening on the wards, identifying the need for change, identifying priorities and solutions and implementing improvement initiatives. (cycle for improvement model). The example also illustrates why effective implementation of new evidence requires a deep understanding of complex care processes and how they interrelate to form a care delivery system.

3 A Systematic Approach to Quality Improvement:

CLAHRC NWL has developed a systematic approach to quality improvement based on a wide range of existing research evidence and their experience of delivering, evaluating and researching improvement projects over the last six years and draws on a diverse set of principles from academic literature. The methods draw on research literature including basic scientific research, clinical research, statistics, change management, leadership, and improvement science.

These tools and methods have been carefully selected to work together as a comprehensive suite that is designed to achieve the principles outlined in the conceptual framework (embrace complexity, act scientifically and pragmatically and engage and empower). The tools and methods are built around the model for improvement and are intended to support the planning, conduct and evaluation of improvement efforts.

3.1 The Model for Improvement:
The Model for Improvement was developed by Associates in Process Improvement. It is a powerful tool for accelerating improvement.

The model has two parts:

- Three fundamental questions:
  - What are we trying to accomplish: Any improvement effort requires setting aims. The aim should be time-specific, measurable and should also define the specific population of patients that will be affected by the improvement effort.
  - How will we know that a change is an improvement: The team agrees on and establishes measures. These could be quantitative or qualitative and is used to determine if a particular change actually leads to an improvement.
  - What changes can we make that will result in an improvement: Creative ideas combined with subject specific knowledge can help generate ideas for the change. The improvement team then works with appropriate stakeholders to identify and select changes.

- The Plan-Do-Study-Act cycle to test changes and determine if the change is an improvement. The model is a simple, yet powerful tool to accelerate improvement. This model has been used successfully by hundreds of healthcare organisations around the world and you will learn how the methods and tools described below helps answer the three questions and use the Plan-Do-Study-Act cycles to make rapid cycle tests for change.
The next section provides an introduction to the methods and tools, which are part of the CLAHRC NWL systematic approach to quality improvement. The methods draw on research literature including basic scientific research, clinical research, change management, leadership, and improvement science. Each of the methods helps teams to addresses a different challenge and using these together will help navigate and make sense of complexity, incorporate evidence into local practices, overcome barriers and obstacles to change and maximise the success of your project.

1. Representative Team
2. Patient and Public Involvement
3. Stakeholder Management
4. Process Mapping
5. Action Effect Method
6. Plan-Do-Study-Act cycles
7. Measurement for Improvement (including Statistical Process Control)
8. Outcome Measurement
9. Sustainability Model
10. Reviews
11. Finances
4 Mental and Physical Wellbeing

CLAHRC NWL recognises that people will usually have a range of health needs spanning both mental and physical wellbeing and that these needs are interconnected. Mental and Physical health can be thought of as being on a “health and care continuum” where a patient’s mental wellbeing can be looked at across a spectrum from less serious (e.g. minor anxiety) to more serious (e.g. schizophrenia) and similarly for physical wellbeing (see Figure 1 below). Unfortunately health services are often provided in a way that does not recognise this continuum and the inter-relationship between physical and mental health. This can put patients at risk and important things can be missed, jeopardising an individual’s health, quality of life and wellbeing.

For example, low level depression may have a significantly more negative impact on someone with chronic obstructive pulmonary disease (COPD) than someone without COPD, affecting their ability to manage their condition, keep active and take their medication correctly causing a vicious cycle that leads to a more rapid deterioration of their COPD, social isolation and a worsening of their depression (Person 1 in Figure 1).

The impact can be equally serious if an individuals’ physical health is neglected as can often happen to people with severe and enduring mental health problems such as schizophrenia (Person 2 in Figure 1). The effect of separating mental and physical health care can be substantial, with a shortened life expectancy for people with severe and enduring mental health problems of between 13 and 30 years with 60% of this mortality due to physical illness compared to people without mental health problems (Hert et al, 2011).

![Figure 1: Whole Person Thinking](image)
Focussing on the whole person and paying attention to people’s mental and physical wellbeing will improve your projects’ chances of success. Seeing the patient as a whole person, with both mental and physical health needs, will deliver better patient care and improved outcomes.

Therefore, as part of the early stages of your CLAHRC NWL project, we suggest the following to help you think in a more integrated way:

- Actively seek the views of patients and carers, ask them what is important to them and what their priorities are (see section 3.3 of this guide)
- Undertake an emotional process map involving patients and carers
- Undertake a literature search to see if there are any published papers, reports or guidance that take or include a more holistic approach in your project area
- Have a look at what local and national data is telling you. Is there any correlation between mental and physical wellbeing in your area?
- Talk to and seek the views of a wide range of people; if your project is looking at physical health talk to people involved in mental health, if your focus is mental health seek input from people with physical health experience or knowledge: use your stakeholder mapping exercise to check you have included everyone and if not use it to help you widen your scope.

5 Representative Team:

What is a representative team?
In order for the research to be embedded into practice, it is essential to include front line staff members involved in the day to day ‘operational systems’ that deliver patient care. To achieve patient centred care, it is also important to actively involve patients, families and carers who are likely affected by the research throughout the life of the project.

Why have a representative team within a quality improvement project?
Successful projects are led by strong individuals who are committed to making a difference in bringing high quality and safer care to patients. It helps to have representation from all staff groups affected by the project as they can bring insights from their professional perspectives and influence their peers. The core team will provide oversight and the driving force for the work to proceed. It should be remembered that they will also need to engage with a wide range of stakeholders (see Patient and Public Involvement and Stakeholder engagement sections below).

How to choose a representative team?
Involve people who are in key roles that have led successful projects and programmes within your organisation. Highlight the opportunities for professional development when engaging frontline staff.
Define clear roles, responsibilities and time commitments with colleagues and their line managers and develop a rota for meetings and events to help maintain project momentum.

**Example:**

- **Sponsor** - Ensures the project is in line with the organisational strategies and can support key decisions necessary to move the project forward. The more complex the project is the more involved your executive sponsor should be. (e.g. Chief Pharmacist, Medical Director, Nursing Director)

- **Clinical Leads** - The clinical champion for the project who coordinates the delivery of the improvement whilst maintaining high governance standards. (e.g. Senior Clinical Pharmacist, Care of the Elderly Consultant)

- **Project Managers** - Support the clinical lead and project team members in managing timelines and coordinating actions, applying improvement methods and the overall delivery of the project. (e.g. mid-career pharmacist, managers, external project support).

- **Information Support** - Key to collecting routine data and reporting on it. Early collaboration with Information Technology and Information Services and other relevant departments will support system changes. (e.g. information analysts, business managers, researchers)

- **Ward Nursing Staff** – Nurses as part of the multi-disciplinary team support the implementation of the improvement activity, collect and analyse data and support the delivery of the project to improve patient care (Nurses may be collecting MR data for Med Safety Thermometer already)

- **Ward Pharmacy Staff** - Pharmacists as part of the multi-disciplinary team will support the project in implementation, providing information on the process and flow and support iterative changes that need to be implemented as well supporting in data collection and analysis.

- **Medical Staff, AHPs, receptionists, ward clerks and other healthcare staff** may be key people in bringing your improvement project into practice. Engaging these members from the beginning will make them feel involved and empowered to make change, and bring useful insights to guide project direction.

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**6 Patient and Public Engagement and Involvement:**

**What is Patient and Public Involvement?**

The term "Patient and Public Involvement" is to mean activities carried out ‘with’ or ‘by’ members of the public rather than ‘to’, ‘about’ or ‘for’ them. Individuals can be considered as Patients or Public if they are: patients; potential patients; informal or family carers; people who use health and social care services; community and voluntary sector groups or individuals.

**Why involve patients and the public?**

People have a right as citizens and taxpayers, to be involved in shaping services. However, more importantly involving patients can be transformative and a useful challenge to existing ways of working. Working with patients/public can lead to tangible benefits in healthcare improvement as
well as unexpected benefits\textsuperscript{8-11}. Involvement can be at the individual or collective levels – that is, an individual may be involved as a result of their own care or involvement can be with groups of people to inform decisions for example at service level. Whether the project team should engage individually or collectively, should be decided by what the aims are of the quality improvement project.

**How to involve patients and the public?**

How people are involved in any project needs to be specific to the context. Thinking carefully about the rationale for patient involvement, identifying the most appropriate methods to use, having clarity on the role(s) patients will play and ensuring that effective involvement strategies are in place, are important steps towards facilitating the involvement of patients in ways that harness its full potential, and the distinctive roles that patients can play in improvement work. It would also be beneficial to reflect on the experience and expertise across the project team when involving patients and the availability of resources to support specific methods for example workshops and focus groups. For example, patients and the public can be involved in emotional mapping of patient journey to understand their perspective of care or can be involved as part of the project team.

**Example:**

Patients were part of an improvement team aiming to improve prescribing in the elderly. Interactions that the patients had in other healthcare settings as well as in their capacities as carers or people with long-term conditions, led them to suggest a “passport” which would contain all of their current medication information and would support communication with healthcare professionals. Healthcare professionals worked with patients as team members and together developed this idea in to a “My Medication Passport”\textsuperscript{12}.

**7 Stakeholder Engagement:**

**What is Stakeholder Engagement?**

Stakeholders are individuals, groups, departments and organisations that can influence success and/or will be impacted by it and they may be instrumental in highlighting new developments that may have a positive or negative affect on the quality improvement project. Stakeholders could include patients, clinicians, executives, managers, non-clinical staff, commissioners, local authorities, community and voluntary organisations and regulators, for example the Care Quality Commission.
Some stakeholders will have more influence and interest than others. Identifying who they are will help understand how to evoke their interest, gain their support and meet their needs. It is necessary to map, communicate and engage with stakeholders continuously through the life of the project.

Why do stakeholder mapping?
To enhance the success, sustainability and spread of the quality improvement project it is important for to identify and involve key stakeholders outside of the immediate setting at an early stage of project development. Consider:

- How can they be involved?
- What stage might you involve them?
- What do you aim to achieve through their involvement?

How to engage with stakeholders?
Initially it is important to scope widely to seek out potential useful influence, interest and commitment. Stakeholders can be identified by thinking carefully about the purpose of the project, what the aims are of the project and who can influence its success. This can be supported by completing a two-by-two matrix (Fig 6.1) identifying key stakeholders along a continuum of interest on one axis and influence on the other. The four quadrants within the stakeholder map informs how each stakeholder should be managed.

**Fig 6.1: Stakeholder Mapping Quadrant**

<table>
<thead>
<tr>
<th>Influence</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>HIGH</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Satisfy Opinion formers.</th>
<th>Manage Key stakeholders who should be fully engaged through full communication and consultation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep them satisfied with what is happening and review your analysis of their position regularly.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inform/Monitor Not crucial to the process but useful to keep informed.</th>
<th>Involve Voices that need to be heard, e.g., patients. Take proactive steps by organising them into groups or active consultation work.</th>
</tr>
</thead>
</table>

**Example:**
In a quality improvement project focussed on Medicines Optimisation at Chelsea Westminster Hospital the team undertook a stakeholder mapping exercise and started with the example below. They soon realised that they had not included Physiotherapists and Allied health prescribers within the project and also realised they needed support from the Chief Pharmacist. They then updated the stakeholder map to include others who needed to be involved and informed in the project.
8 Process Mapping:

What is Process mapping?
A process map is a visual representation (a picture or model) that shows all of the current steps in a process. In a healthcare context, this is often a map of a patient journey - highlighting the relevant procedures and administrative processes a patient might come across from point A to point B in their treatment. Importantly the process map should show how things are and what currently happens, rather than what should happen or what people would like to happen in the future.

Why use process mapping?
Process mapping helps users to see what is happening by giving a structured, visual method of representing tasks and decisions made within a clearly defined context. Setting out a process visually like this helps anyone involved in the quality improvement project to see other people’s tasks and roles. Process mapping identifies opportunities for improvement towards a more safe, efficient and coordinated process for patients and staff. It can also help to diagnose problems and identify areas for improvement. This is necessary to influence how the project will align or ‘fit’ into these systems and roles to sustain and embed good practice, and should be revisit as the project progresses and changes are made.

How to do a process map?
The most effective approach to building a process map is to work collaboratively as a project group. The more people that work on the map, the more likely you are to capture the entire process accurately and from all perspectives. To understand the process, team members must walk through
the patient journey from beginning to end to find out what is actually happening, not what is perceived to be happening? Outlined below are some tips when conducting a process mapping exercise:

- Allow as much time as possible to gather the team and stakeholders together
- Planning and preparation for this event is key
- Decide who can facilitate and ask the challenging questions that will not disrupt the dynamics. Pre-meet with senior leaders and managers to discuss your project and invite them to come along to the process mapping session.
- It is important to agree the starting point and end point of your pathway and what is in scope and out of scope
- Start at a high level and drill down

Identify and discuss at each step who is involved in that process or decision point? What are the parallel processes? E.g what are the administrative activities or activities carried out by a pharmacist that a patient wouldn’t see but will influence their care? Where are the potential ‘trigger’ points that could support your project? Park issues you cannot solve, to be returned to at a later date.

- Be open to ideas and generated by the session.
- Document ideas for future use
- There may be a need to return to complete more information later that is not available at the initial time of doing the map.
- It is helpful to observe the processes in practice once the initial map has been developed to see if it accurately reflects what is actually happening in the care setting.
- It can be helpful to revisit the process map throughout the improvement project to see if changes are having the desired impact and to assess any further learning or problems that emerge as changes are made.
- It may be helpful to compare current processes to ideal process or flow chart

The session will help identify which areas along the pathway require improvement or how they will be affected by introducing a change. The session will also help the development of key measures, and identify who is involved in the care processes which may indicate additional people to join the project team or new stakeholders to engage. The session may identify areas where it is unclear what the process is and where further investigation needs to take place; for example in collecting data (observation, speaking to colleagues, quantitative data).

**Example:**

Below is an example of a simple process map that a team used as part of a project looking at the medication review process for elderly patients on arrival on an acute medical ward. The process mapping demonstrated that key elements of medication review on the ward required input from the Multi-disciplinary team and they then involved other members of the multi-disciplinary team as part of the improvement plan.
A more detailed process map was then created that highlighted areas for improvement that the quality improvement team could focus on:

9 **Action Effect Method (AEM):**

What is Action Effect Method?

The Action Effect Method\(^{13}\) is a structured way to develop a shared understanding and visual representation of the three questions in the model for improvement:

1. Shared aim: What are we trying to accomplish?
2. Measurement: How do we know that a change is an improvement?
(3) Intervention Ideas: What changes can we make that will result in an improvement?

The Action Effect Method specifies a method of developing the shared aim, then breaking this down into well-defined contributing factors and connecting these to interventions through cause/effect chains. The Action Effect Method produces a visual representation known as an Action Effect Diagram, which depicts the overall aim in a box on the left, and interventions and implementation activities on the right. The Action Effect Diagram helps you visualise a cause/effect pathway, connected by arrows, from these interventions to the overall aim. Measurement concepts and links to the evidence are depicted visually on the diagram as well. This helps the entire project team to keep the whole picture of the project in mind, and focus on the overall aim, whilst planning specific tasks and implementation efforts.

Why use the Action Effect Method?

The Action Effect Method gives you a clear and structured way to uncover the detail of your project processes. The finished Action Effect Diagram demonstrates ‘how’ an overall aim might be achieved by reading left to right, and ‘why’ an intervention is being tested by reading right to left. It can help team members and other stakeholders to see exactly what is going on in your improvement project. It also makes sure everyone is focussed on a common aim and help team members to communicate clearly to others about your project. Interventions are also identified that can be trialled using Plan-Do Study-Act cycles and predictions made about the potential impact of interventions and how this can be directly and indirectly measured to assess change efforts success.

How to construct an Action Effect Diagram?

It is helpful to have an initial facilitated session that brings together diverse stakeholders. While taking time to consider the project in detail is preferable, if needed to, the project team could create an Action Effect Diagram within a two-hour facilitated session. The initial Action Effect Diagram can then be built on and developed further over time as the project progresses. The steps below provide some tips on how to facilitate a session:

- Set the scene: Explore the patient and carer experience by using emotional mapping to help remind stakeholders why this work is important and focus their thinking on what changes need to take place.
- Agree the project aim: Establish a common purpose and shared aim by discussion. Always start with exploring the overall aim of different people in the group – ‘what do you want to achieve?’ This is essential to ensure that the whole team are in agreement, and to ensure that the discussion focuses on the main issue. Try and steer conversations away from ideas for interventions during this stage as this can lead to the thought process being constrained by pre-existing ideas for interventions or can create divisions in opinion. Use this time as an opportunity to think about your project from other perspectives including those of patients to clarify why it is important and what you want to achieve together.
- Identify component factors: Discuss the aim in more detail, identify top-level major contributing factors (the areas that will have the biggest impact on achieving your aim) and then break down major contributing factors into contributing factors. Once an aim has been agreed, teams could use a brainstorming session to help collect and discuss ideas for major contributing factors and the cause and effect relationships that exist between them, before structuring the results into the format of an action effect diagram. Process mapping will help the team identify ideas for major contributing factors and key elements by considering the patient journey from different perspectives. Only start thinking about potential interventions once the aim and contributing factors columns of the action effect diagram are agreed by the team.

- Using the Action Effect Diagram: Once developed the Action Effect Diagram can be shared with stakeholders to communicate why any changes need to take place or to gain support and engagement. In order to understand the impact your interventions are having measures can be assigned to the cause and effect chains in the Action Effect Diagram. Regular collection and review of this data can be used to answer the question “How will we know that a change is an improvement?” and can be used in the Study part of Plan-Do-Study-Act cycles.

**Example:**

![Improving Prescribing for the Elderly (ImPE) ACTION EFFECT DIAGRAM](image)

- **To reduce the use of inappropriate medicines amongst older people who are inpatients in Hospital X**
  - Assessing which patients need a Medicines Review
  - Completion of high quality Medication Reviews for appropriate patients
  - Medication Review results communicated and implemented effectively

- **Agreement on prompts that indicate a need to conduct a Medicines Review**
  - Agreement on location and responsibility for conduct of a Medicines Review
  - Agreement on Medications Review form and procedure
  - Training of staff in their role in Medications Review
  - Agreement on documentation of Medication Review in clinical notes
  - Agreement on communication of Medication Review results and recommendations
  - Agreement on acting on Medication Review results and recommendations

- **Staff communication scripts to encourage shared decision-making with patients and carers around actions and recommendations**
  - Staff awareness of varying patient and carer perspectives on medications and the need for communication

**Evidence:**
- Gallagher & O’Mahony (2008)
- Garfield et al (2009)
- RPS Good Practice Guidance (2013)
**10 Plan-Do-Study-Act cycles:**

What is Plan-Do-Study-Act cycles?
The Plan –Do-Study –Act cycle is a framework for an efficient trial and learning methodology (see fig 9.1 of PDSA cycle below). The cycle begins with a plan and ends with an action and the use of the word study emphasises that the purpose of this phase is to build new knowledge. Multiple Plan-Do-Study-Act cycles are usually needed to make successful changes.

Fig 9.1: PDSA Cycle

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Why use Plan-Do-Study-Act cycles?
The complexities of healthcare systems make it impossible to do all the design and planning of a change before it is put into practice. The PDSA cycle is a way of developing an intervention over time, testing changes by starting on a small scale, overcoming barriers that are encountered, and then gradually ramping up to a full scale intervention. By the time a full scale implementation is reached all the little unforeseen glitches will have been sorted out and there is a better chance of achieving the aims of the intervention and sustaining this in the long term.

How to use Plan-Do-Study-Act cycles:
Testing begins with a well laid out plan (to test a change) developed with the project team. Part of starting any improvement project is to break it down into manageable small steps. These steps will be the basis for changes to test using Plan-Do-Study-Act cycles. It is important to prioritise changes and conduct them one at a time: which will provide the biggest impact? From the previous example of the Action Effect Diagram, the testing would be linked to each the identified interventions on the far right hand side of the action effect diagram. For eg: The design of a new form for medication review.

**Plan:** The plan should include predictions made by the project team. Identify potential changes to test and discuss as a team what predictions will happen because of this change and any difficulties that are anticipated. Document these to compare back to after your test.
Do: The project team then carries out the agreed plan based on who does what, when and where as identified in the plan and collect data for analysis.

Study: Quantitative and/or qualitative data can be collected to analyse if there has been an improvement and compare it to the predictions made and also summarise what was learnt.

Act: The learning from one cycle can be used to adapt the change to inform the next cycle. Glitches can be sorted out as the learning from one cycle is used to inform the next cycle.

Example:
The below is an example of just one of the Plan-Do-Study-Act of a sequence of cycles leading to further testing before implementation.

<table>
<thead>
<tr>
<th>Aim: Introduce a medication reconciliation form for use on ward A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every goal will require multiple smaller tests of change</td>
</tr>
<tr>
<td>Describe your first (or next) test of change:</td>
</tr>
<tr>
<td>Person responsible</td>
</tr>
<tr>
<td>Test the medication form version 0.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan: List the tasks needed to set up this test of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person responsible</td>
</tr>
<tr>
<td>We plan to test the adaptation made to the medication reconciliation form developed in cycle 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do: Carry out the plan. Document problems and unexpected observations; collect data and begin analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr X led the trial of the new form. Four nurses were on duty to use the form, however Dr X only managed to run through the form with two of them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study: Complete analysis of data. Describe the measured results and how they compared to the predictions. Summarise what was learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The plan was initiated for 1920 applicable patients.</td>
</tr>
<tr>
<td>2. Only 12 of the forms were complete, the other 6 only had the first page filled out.</td>
</tr>
<tr>
<td>3. The 2 nurses that were briefed on the form completed both sides. 1 other nurse used the form but did not have the time to complete both sides. A 4th nurse was not aware of the form.</td>
</tr>
<tr>
<td>4. The nurse stated that the form was useful when reviewing patients’ medications. They felt however that it took too long to complete on a busy day.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Act: Describe what modifications to the plan will be made for the next cycle from what you learned.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project lead to shorten form and have it ready for test next week. Dr X to brief all staff at the start of the day.</td>
</tr>
</tbody>
</table>

11 Measurement for Improvement and Outcome Measures:

What is measurement for improvement?
Measurement for improvement allows the project team to measure processes and systems in healthcare and is about understanding whether a change is delivering an improvement. This requires the use of time series data with near to real-time feedback to understand the impact of change, coupled with qualitative insights which can provide and understanding of why change ideas are working or not. Outcome measures tell you whether the actions that have been taken have a beneficial effect on the care that patients receive. These may assess any dimension of quality
relevant to the project for example, patients’ experience of care, clinical outcomes, or service utilisation measures such as hospital re-admission rates, length of stay or primary care contacts. Process measures can indicate how the outcome has been achieved. The project team can usually influence more directly the process measures than the outcome measures. Linked closely to the project’s aims and objectives, these measures should be specific, simple, easy to collect and available for weekly use.

Why use measurement for improvement?
Healthcare is complex and however well a new idea works in a trial or in the lab, often it is not known how effective it will be in real life. To get the most out of the intervention it is important to measure as the project progresses to understand the variation in the data, using appropriate methods (such as statistical process control). This enables the project team to know what works and what doesn’t, improving quality of care in the process. Measurement is a source of learning during implementation and monitoring of data can help sustain improvement after implementation.

How to measure for improvement?
- Define what precisely is being measured including operational definitions
- Agree processes or mechanisms by which measurement will take place
- Agree who is responsible for data collection, analysis and feedback
- Where possible, use existing data and focus on a small number of measures

Ensure that baseline data are collected before interventions are implemented. They could be quantitative or qualitative. The purpose of baseline data is to provide information on the current system of care (which could be done at the process mapping stage), and could include some of the improvement measures identified. Collecting and analysing baseline data will help inform the starting point for the project. This will help plan the first actions on the PDSA cycle.

Measurement can also be used over the course of the project to assess how progress is going. Statistical Process Control is a helpful method to understand what variation is normal and to be expected, and what is unusual. This analysis method can also signify when a change has been made. In the example below a quality improvement team identified a weekly average of 24% of medicines were unreconciled, with wide variation. Interventions to the system of care were made such that this variation was reduced by half, and the percentage unreconciled medicines fell to 11% on average. At one point in the new process 40% unreconciled was noted, this would have been “normal” in the previous care provision, but was unusual now.
Example:

12 Sustainability:

What is sustainability?
Sustainability is when new ways of working and improved outcomes become the norm. Not only have the process and outcome changed but the thinking and attitudes behind them are fundamentally altered and the systems surrounding them are transformed in support. There are different models that look at sustainability including the NHS Institute for Innovation and Improvement Sustainability Model and the CLAHRC NWL ‘Long Term Success Approach’. These models aim to aid teams in reflecting upon long term success of their initiatives and consider actions they and their teams can take to increase chances of achieving sustainability over-time. The approach provides a comprehensive analysis of factors influencing improvement sustainability as well as a tool to examine sustainability within improvement projects.

Why consider sustainability with a quality improvement project?
Significant resources have been dedicated to quality improvement within healthcare services in order to improve patient outcomes and experience. Unfortunately, many improvements within healthcare fail to sustain beyond the end of funding and their true benefits are not realised. It is important for teams to consider sustainability throughout the duration of their projects in order to adequately plan for benefits to continue after the life time of the project.

How to use the sustainability model?
Sustainability models can be used by individuals but a richer picture can be gained if key members of the improvement team complete the model and discuss differences in opinions. Individuals within the team would bring different perspectives and it is important to understand these different perspectives. In addition to providing further information on sustainability, the act of completing the model can lead to useful discussions about your improvement initiative. The figure below (fig 11.1) shows the ten factors of sustainability within the three themes of process, staff and organisation from the NHS Institute for Innovation and Improvement's sustainability model.

Fig 6.2.3: NHS Institute for Innovation and Improvement's Sustainability Model

13 Reviews:

What are project reviews?
Project reviews provide an overview of the project and can be used to track progress in the project at different points in time. There is a great deal of literature on the relative merits of both summative and formative evaluation and review.

Why carry out project reviews?
The review process has both an ‘operational’ purpose and a ‘research’ purpose. From an operational standpoint reviews allow the project team to: Take a step back to consider progress to date and direction of the project, identify main challenges at this stage and how they can be resolved and identify support needs of the project team at this stage. From a research standpoint: Use the outputs of review as one source (among others) to assess - common barriers/facilitators to applying evidence into practice, an understanding of how projects evolve and to capture your narrative to share with others for example as a poster in conferences or a peer reviewed journal paper.

How to do a project review?
Structure the review to happen at periodic intervals for the duration of the quality improvement project. For example, improvement projects that last 18 months, project reviews can happen in windows/periods of: Window 1 – 6 to 9 months and Window 2 – 12 to 15 months, Window 3 21-24 months after project has finished to assess sustainability and on-going support requirements. Each review includes a presentation from the team and a discussion. Part of the purpose of the discussion is to reveal the extent to which each team has utilised and engaged with the quality improvement methodology. When preparing a project review consider:

- When should a review take place and why?
- Scheduling dates & agreeing Chair
- Preparing agenda and identifying attendees
- Material to bring to review
- Actions after the meeting
- Capturing progress to share with others

### 14 Resources and Funding:

**What is resources and funding?**

Financial support provides resource through the appointment of specified staff roles or released time and through non-pay elements such as computers, expenses for focus groups.

**Why financial support is needed?**

The provision of financial support is a well-established mechanism for generating commitment to research and development in healthcare. Financial support provides a mandate to act, thereby providing the freedom to do so. If funding is specifically attached to a learning mandate - this can also support willingness to learn. Space and time away from busy daily practices is needed for staff to engage with and explore improvements that can be made. A well written business case can secure resources for a quality improvement project. This can be used to obtain management commitment and approval for investment in quality improvement through rationale for the investment and also provides a framework for planning and management of the business change and the ongoing viability of a project or programme will be monitored against it.


