Community Planning Aberdeen

# Quality Improvement Toolkit

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# Introduction

## How to use this handbook

This handbook provides a step-by-step guide for planning, testing, implementing and spreading an improvement project using Quality Improvement (QI) tools and techniques. This guide is intended to help you understand what QI is and how to use this knowledge to get started on an improvement project to help deliver the Local Outcome Improvement Plan.

Each stage outlines the approach you should take and the output that you should aim for. Once the stage is completed, you can move to the next until the improvement project has reached its overall aim.

We also signpost you to further information, tools, techniques and resources. These include templates for your improvement project, YouTube links, help sheets and online resources.

In the spirit of improvement, we are keen to seek your feedback and are curious about how you have used this handbook. If you have any suggestions or changes, please send them to communityplanning@aberdeencity.gov.uk. Please also let us know which aspects of the handbook you found helpful.

## Why would you use a quality improvement approach and what is it?

Quality improvement (QI) can be defined as the application of a systematic approach that uses specific techniques to improve quality. Although there are a range of approaches that fit under this umbrella, they all have the following in common:

- The concept of a cycle of improvement which involves problem definition and diagnosis, testing of change ideas, data collection and analysis, implementation and evaluation;
- A set of tools and techniques that support individuals to implement improvement;
- A recognition of the importance of engaging stakeholders, including our customers and community members; and
- A recognition of the importance of culture.

QI helps bring a systematic approach to tackling complex problems by:

- Focussing on outcomes;
- Flattening hierarchies;
- Giving everyone a voice; and
- Bringing people together to improve and redesign the way services are delivered.

When done successfully, QI can change the culture of a system, whether the system is a single team, a department, an organisation or a multi-agency partnership.

## Starting to think and act like an improver

One of the founding fathers of improvement science, William Edwards Deming, believes it takes four key areas of knowledge to lead successful improvement:

- **Systems thinking** – understanding that sustainable improvement occurs when safe and reliable systems are put in place to reduce human errors;
- **Variation** – achieving excellent outcomes by understanding and reducing variation within a system;
- **Psychology** – how we can motivate and encourage people to make and sustain change; and
- **Theory of Knowledge** – being curious and open to learning and understanding how to achieve best results. Using QI methods, tools and techniques which reliably implement best practice or new ways of working which lead to improvement.

## What is the Model for Improvement?

The Model for Improvement is a quality improvement framework which was developed to help people to apply the theory of quality improvement. It has been adopted by Community Planning Aberdeen as the chosen methodology to drive improvement across the Community Planning Partnership. In a nutshell, it provides a framework to develop, test and implement changes that lead to improvement.

The Scottish Government has also endorsed the use of Quality Improvement methodology and has developed the 3-Step Improvement Framework for Scotland's public services.

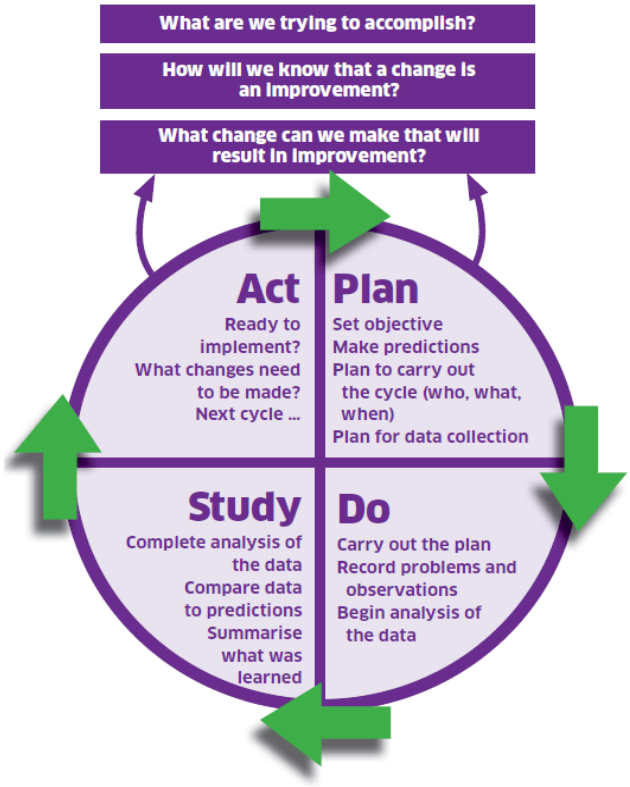



FIGURE 1: MODEL FOR IMPROVEMENT DIAGRAM

The Model for Improvement is structured around two parts. Firstly, there are three fundamental questions, the 'thinking part'. These questions need to be answered before you start any improvement project. They can be answered in any order.[1]

[1] G. J. Langley, R.D. Moen, K. M. Nolan, T. W. Nolan, C.L. Norman, L.P. Provost, *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*, 24.

The second section, Plan-Do-Study-Act (PDSA) Cycles, the 'doing part', focuses on testing changes through the improvement journey - from a small-scale change to implementation and spread of the change ideas that lead to improved outcomes.

This handbook will guide you through both parts and provide you with tools to use whilst running your improvement project and to support you through the improvement journey.

## Improvement Journey

We have identified four key stages in this Improvement Journey they show the stages of an improvement initiative or project. In reality, your journey is unlikely to be straightforward, there will be twists and turns, moving backwards as well as forwards. You will likely need to work on different aspects at the same time and throughout your project. This table summarises these stages and indicates some useful approaches and tools for each stage.

| Stage | Methods / Tools | Output |
|---|---|---|
| **1. Getting Started**<br>Project area has been identified. The improvement team has begun to form, and the current system is being analysed. | • Root Cause Analysis: 5 whys, fishbone diagram, force field analysis<br>• Process mapping<br>• Understanding data<br>• Customer feedback<br>• Audits<br>• Driver Diagrams<br>• Project management<br>• Communication and stakeholder engagement<br>• Project charter<br>• Driver diagrams | • Establish a team around a shared aim for improvement that aligns with objectives and outcomes in the LOIP<br>• Understand the systems and processes which contribute to the outcome.<br>• Understand what needs to be improved and what improvement would look like.<br>• Develop the Improvement Aim and Draft Project Charter |
| **2. Designing and testing changes**<br>Project charter is approved, specific change ideas have been developed and testing is underway. Data is being gathered and there are initial indications of improvement | • Driver diagrams<br>• Generating ideas and creative thinking<br>• Understanding variation<br>• Project charter PDSA cycles<br>• Data – qualitative and quantitative<br>• Run charts | • Update your project charter to include specific changes to be tested.<br>• Use PDSA cycles to test your changes and learn. PDSA cycles and associated data identify the changes which lead to improvement. |
| **3. Implement and sustain changes that demonstrate improvement**<br>Evidence of improvements shown in project measures. Spread plans are being developed and deployed. | • Use PDSA cycles to implement changes which lead to improvement<br>• Implementation Plans<br>• Run charts | • Formalised procedure in place to ensure the improvement is embedded into routine practice and sustained with governance arrangements. |
| **4. Spreading changes**<br>Changes have been implemented as business as usual.<br>Learning is being shared and spread to other areas. | • Implementation plan<br>• Spread plan<br>• Run charts<br>• Sustainability<br>• Large-scale change | The aim has been met or exceeded with changes being implemented as business as usual. Learning is being spread for others to adopt. |

# Stage 1: Getting Started

| Stage | Methods / Tools | Output |
|---|---|---|
| **1. Getting Started**<br>Project area has been identified. The improvement team has begun to form, and the current system is being analysed. | • Root Cause Analysis: 5 whys, fishbone diagram, force field analysis<br>• Process mapping<br>• Understanding data<br>• Customer feedback<br>• Audits<br>• Driver Diagrams<br>• Project management<br>• Communication and stakeholder engagement<br>• Project charter<br>• Driver diagrams | • Establish a team around a shared aim for improvement that aligns with objectives and outcomes in the LOIP<br>• Understand the systems and processes which contribute to the outcome.<br>• Understand what needs to be improved and what improvement would look like.<br>• Develop the Improvement Aim and Draft Project Charter |

## Setting up your team

Once you have identified an area that you want to improve, one of the first steps to beginning your improvement project is to set up a team. They will be integral in helping you understand your system, developing your aim and when you start testing change ideas. Your team may be small or require members with certain expertise. Whatever the specific membership if your team is, it is important that the roles below are considered when thinking about who you want to be involved in your project.

FIGURE 2: TEAM ROLES

| | |
|---|---|
| **Executive Sponsor** | This should be a senior member of staff who is able to help you overcome barriers and raise issues where appropriate, e.g. the Chair of an Outcome Improvement Group, Chief Officer or Service Manager |
| **Project Manager** | The person who is responsible for leading the project |
| **Subject Matter Expert** | Someone who is an expert or has experience in the area you want to improve |
| **Improvement Advisor/Coach** | This could be yourself or another member of staff who understands the Model for Improvement or another quality improvement methodology |
| **Data Manager** | The person who is responsible for collecting the data you need to know if your changes are working |
| **Practitioner** | Someone who will be delivering the improvements that your project is delivering, e.g. a Housing Advisor, Social Worker, Development Officer |
| **Customer/ client** | The person / group / community who will be affected by the improvements that your project will be delivering |

It is important to note that these roles do not all have to be taken by different people, for instance, you could be both the Project Manager and the Practitioner.

## Understanding your system

Before making changes, it is important that you understand the system that you want to make changes in. This will help you to make changes that result in improvement and reduce the chance of unintended, negative consequences. Your improvement projects may come from a variety of sources, the LOIP, performance indicators, customer feedback, a hunch and other sources. It is important to define the problem from the start as it forms the basis of your rationale for improvement.

The NHS Education Scotland module on understanding your system is a good place to start if you want more knowledge about how to define a system. Part of understanding your system is understanding the type of system you are trying to improve. This video introduces a framework to help you understand what type of system you are improving.

The tools listed below allow you to understand your system.

Using one of these tools with your improvement project team would be the next step in starting your improvement project.

### Root Cause Analysis

What we see as a problem that needs fixing is often not the cause of the issue at hand. Sometimes we need to explore the problem in depth to find out the true (or root) cause. Root cause analysis investigation is a well-recognised way of doing this. It is designed to identify areas for change which deliver improved outcomes. There are various tools you can use to undertake a root cause analysis – for example, the Five Whys Technique.

### The Five Whys Technique

By repeatedly asking the question 'Why?' (use five as a rule of thumb), you can peel away the layers of an issue, just like the layers of an onion, which can lead you to the different root causes of a problem. The reason for a problem often leads into another question and you may need to ask the question fewer or more than five questions before you get to the origin of a problem.

The real key is to avoid assumptions and logic traps and encourage the team to keep drilling down to the real issues that underlie why different factors have aligned to contribute to an outcome that is in need of improvement! It is most helpful to use this tool in a group and to then share it with others to start to identify possible changes to test.

- Write down the specific problem. Writing it down helps you formalise the problem and describe it accurately. It also helps a team focus on the same problem;
- Use brainstorming to ask 'why?' the problem occurs then, write the answer down;

- If this answer doesn't identify the source of the problem, ask ‘why?' again and write that answer down;
- Some of the ‘whys’ may be part of the same issue so think about how you might group these together; and
- There will often be more than one cause, so repeat the process as many times as you need to. It can also be helpful to use this in conjunction with cause and effect analysis (detailed below) to help explore the different types of causes.

You can then think about possible change ideas that will help with the identified causes. See the topic on developing change ideas. You can find more information on the five whys on this NHS worksheet.

### Cause and Effect or Fishbone Diagram

Undertaking a cause and effect analysis helps you to think through the causes of a problem, including possible root causes, before you start to think of a solution – not just symptoms. By identifying all possible causes and not just the most obvious, you can work towards removing the problem. Working through cause and effect analysis enables the project team to gain a shared insight into the problem, develop possible solutions and create a snapshot of the team’s collective knowledge. For more guidance on how to create a cause and effect diagram, go to this NHS help sheet on fishbone diagrams for guidance.

### Process maps

Another useful tool when undertaking an improvement project is a process map. A process is a series of steps or actions performed to achieve a specific purpose. A process map is a pictorial representation of the series of actions of which a process is comprised. Process mapping is undertaken to describe and understand the work being done. When used as an improvement tool it can help you identify any gaps and critical steps, areas of duplication and complexity, and inefficiencies or waste. Using a process map can help you reach consensus as a team on what an improved process could look like.

For more guidance on how to use a process map, go to this NHS help sheet on process maps for guidance

## Stakeholder Engagement

A key step in any improvement project that will help to ensure success and improve service delivery processes is to actively engage with a variety of stakeholders who might have an interest in your improvement project. This may include operational staff, service users, practitioners and communities.

Here are some key steps to effective stakeholder management:

- **Identify your stakeholders**
  Bring a group of subject matter experts to list all the people and groups likely to be affected by the proposed change;
- **Prioritise your stakeholders**
  Analyse the stakeholders in terms of the extent your project will impact upon them and their ability to influence your project or change initiative;
- **Understand your key stakeholders**
  It is important to know more about your key stakeholders and their level of interest and influence in your project. How are they likely to feel about and react to your intended project outputs; how will your project impact upon them? The table below provides some information on conducting a stakeholder mapping and analysis exercise. This will help you to think about who you might need to engage with during your project. The highest priority stakeholders are those with the greatest ability to influence your project and/or those who are likely to be impacted most by your project. The lowest priority are those who are least impacted and have least influence.

FIGURE 3: STAKEHOLDER MAPPING

| | | |
|---|---|---|
| **High power** | **Satisfy**<br>Opinion formers. Keep them satisfied with what is happening and review your analysis of their position regularly. | **Engage**<br>Key stakeholders who should be fully engaged through full communication and consultation. This includes customers and communities who should help to co-create your change ideas. It may be helpful to take steps to increase their influence by organising them into groups or taking active consultative work. |
| **Low power** | **Monitor**<br>This group of people are lower priority if time and resources are stretched. | **Inform**<br>These are colleagues and customers who are less influential but need to know about your work and could contribute to the change process at some stage. You would need to consider how to engage with them when appropriate. |
| | **Low impact** | **High impact** |

- **Managing your stakeholders**
  Once a stakeholder mapping and analysis exercise has been undertaken, the project team can devise a communications plan that encourages stakeholder engagement and commitment. A simple plan will include the following information for each stakeholder or group of stakeholders:
  - Method of communication: presentations, emails, newsletter, meetings, social media, etc;
  - Frequency of communication: monthly, weekly, daily, etc; and
  - Key messages you want to give regarding progress.

## Developing your aim

The next step after setting up your team, understanding your system and engaging with your stakeholders is to develop your **aim statement**. In order to deliver a successful improvement project, you need to start by defining your aim. This should be a collaborative process involving all key stakeholders, including 'customers' – a shared aim helps to ensure all members of the team are included and are working to achieve the same outcome. It should answer the first question of 'what are we trying to accomplish?'. You will do this through writing an aim statement.

**Characteristics of a good aim**

- ✓ **What?** – what is it you want to achieve? Be specific! e.g. Increase customer satisfaction rates
- ✓ **Measurable** – by how much do you want to achieve this? e.g. 75% increase in customer satisfaction rates
- ✓ **Time specific** – by when do you want to achieve this? e.g. December 2019
- ✓ **Who?** – define the participants and customers. A geographic area would also be suitable. e.g. Tillydrone
- ✓ **Ambitious** – your aim needs to be bold! Remember an improvement project is something that cannot be achieved by hard work alone. Be innovative and aspirational

A good rule of thumb is that someone unrelated to your project should be able to read your aim statement and understand exactly what you want to achieve. Aims do not need to be long, they need to be focused and specific.

The below are examples of aim statements that you may have used or seen. The aims in green are specific, measurable – they state what needs to be achieved, by how much and by when!

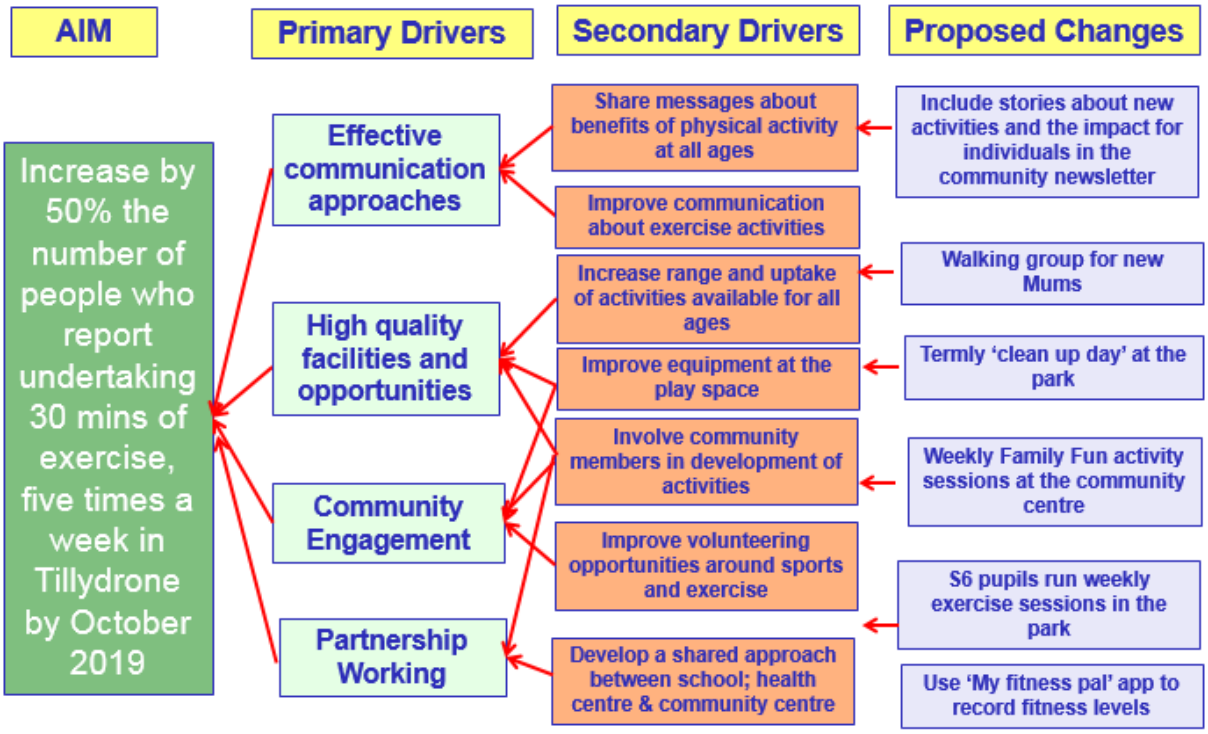
| | |
|---|---|
| ✗ To enable colleagues and our customers in Tillydrone to share skills and experience to increase customers satisfaction by setting up focus groups. | ✓ Increase customer satisfaction rates in our Tillydrone service by 75% by December 2019. |
| ✗ Undertake a series of workshops that develops understanding across all staff of the gaps and areas to improve waiting times. | ✓ By March 2019 the referral waiting time will decrease by 8 days. |
| ✗ Support and inspire communities to volunteer and participate in community activity by providing the right opportunities | ✓ Increase the number of volunteering hours undertaken in Tillydrone by 500 by October 2018. |

For further guidance on how to develop your aim this online module developed by NES offers a number of useful tips.

## Driver Diagrams

This is an optional step, but very useful one. A Driver Diagram helps translate a high-level improvement goal into a logical set of related goals and sub-projects. The tool helps organise change concepts and ideas as an improvement team answers the question ***'what changes can we make that will result in an improvement?'*** Driver Diagrams are used to test theories about cause and effect and are meant to be updated throughout the project.

FIGURE 4: EXAMPLE DRIVER DIAGRAM




You can create a simple driver diagram template using SmartArt in word. Follow the link to a video demonstration explaining how to do this. Alternatively, just use pen and paper! For more information on driver diagrams, take a look at the driver diagram helpsheet or this video.

Once you have begun to understand your system and started to develop your aim with your team you can move on to the next stage which is **designing and testing changes**. This is when a driver diagram can come in useful as it will show your theory of change on one page and enable you to prioritise what changes you wish to test first.

# Stage 2: Designing and testing changes

| Stage | Methods / Tools | Output |
|---|---|---|
| **2. Designing and testing changes**<br>Project charter is approved, specific change ideas have been developed and testing is underway. Data is being gathered and there are initial indications of improvement | • Project charter<br>• Driver diagrams<br>• Generating ideas and creative thinking<br>• Understanding variation<br>• PDSA cycles<br>• Data – qualitative and quantitative<br>• Run charts | • Update your project charter to include specific changes to be tested.<br>• Use PDSA cycles to test your changes and learn. PDSA cycles and associated data identify the changes which lead to improvement. |

After you have completed stage one, formed your team, begun to understand your system and written an aim statement you should develop your **Improvement Project Charter** and move onto stage two**.**

## Improvement Project Charter

The development of an Improvement Project Charter is an important step in the execution of your improvement project. It establishes and communicates the purpose, scope, measures and targets necessary to achieve success. It identifies key members of the improvement team as well as the Executive Sponsor of the project. Support from the organisation leadership will help team members maintain their focus and momentum and protect them from being overloaded with other work. It is also a mandatory document if you are presenting your improvement project to the Community Planning Aberdeen Management Group.

FIGURE 5: EXAMPLE PROJECT CHARTER (THE FOLLOWING IS A FICTIOUS PROJECT USED FOR ILLUSTRATION PURPOSES ONLY!)

| |
|---|
| **Improvement Project Title:** Getting Active in Tillydrone |
| **Executive Sponsor:** Chair of Resilient, Included and Supported OIG |
| **Project Lead:** Community Development Worker |
| **Aim statement:** *(What are we trying to accomplish? Over what time? Numerical target for improvement?)*<br><br>Increase by 50% the number of people who report undertaking 30 mins of exercise, five times a week in Tillydrone by October 2019. |
| **Link to Local Outcome Improvement Plan:**<br>This links to Stretch Outcome 11 "Healthy life expectancy (time lived in good health) is five years longer by 2026."<br><br>To support 50 low income families in priority neighbourhood to improve eating behaviours and adopt positive lifestyle choices to help towards a healthy weight by 2023. |
| **Link to Locality Plans: (**Please state which Locality Plans have Community Ideas for Improvement aligned to your project e.g. North, South, Central or None).<br><br>North, South and Central. |

**Why is this important and issues with the current system:** *(The rationale/business case for the improvement project: Does this support prevention and early intervention? Benefit to clients/ stakeholders/ residents? Are costs reduced now or in the future by addressing this issue? What published research can you draw on as evidence?)*

Increasing physical activity in the locality has been identified as a community priority. There has also been a number of research papers that have been published that support the theory that through improving physical activity rates in socio-economically deprived communities that health equality is more likely to be achieved. This project also supports the Scottish Government's Physical Activity Delivery Plan. The below are research papers into the links between health inequalities and physical activity.

- Economic and Social Research Council - Physical Activity Briefing
- The Socioeconomic Gradient in Physical Inactivity in England

Analysis of our local data shows that in October 2018 **% of residents in Tillydrone reported that they were engaging in 30 minutes of exercise, 5 times a week.

**Measures:** *(How will we know if a change is an improvement?)*

- Outcome measure - % of people reporting 30 mins of exercise, 5 times per week
- Process measure - # of people attending exercise activities each week in Tillydrone Hub
  # of people participating in the weekly walking groups
  % of children reporting that they use active travel methods to get to school
- Balancing measure – Decrease in mental health referrals

**Change ideas:** *(What can we do that will result in improvement?)*

- Include stories about new activities and the impact for individuals in the community newsletter
- Walking group for new parents
- Termly 'clean up day' at the park
- Weekly Family Fun activity sessions at Tillydrone Hub
- Use of exercise cards with families in Torry
- Develop an app providing free exercise classes

**Location/Test Group:** *(Which location (e.g. Northfield) and test group (e.g. 16-18 year olds) are you going to test your change ideas with?*

- Tillydrone and New Parents - Walking group for new parents
- Seaton Park – people from Tillydrone and Seaton aged 50 plus - Weekly exercise sessions in the park run by S6 pupils
- Torry – families – use of exercise cards

**Resources: (***This section should detail how the change ideas in the charter are going to be resourced. When completing this section, the Project Team should contact the External Funding Team, stbews@aberdeencity.gov.uk to discuss any external funding opportunities available that could support delivery of the project.)*

- External 'Keep Active' Fund applies to for exercise equipment for the outdoor exercise sessions.

**Potential risks and/or barriers to success & actions to address these**

- Lack of buy in from community members

| |
|---|
| • Dog fouling in the park restricts use<br>• Winter weather is seen as a barrier for outdoor activities<br>• Getting enough fitness instructors to run activities |
| **Project Team:**<br>Community Development Worker<br>Community Member<br>Sport Aberdeen Representative<br>Headteacher at local school<br>Parent from local school<br>Community connector |
| **Community/User Representation/Engagement** *(This section should detail any engagement you have done, or plan to do with communities and/or user groups such children and young people, people with lived experience to ensure your changes planned are informed by these key groups and that there is clear opportunities for people to get involved in your project.)*<br><br>Feedback from our children and young people as part of the development of the Children's Services Plan showed that 50% of young people who responded wanted to do 30mins of exercise, 5 times a week, however felt that they needed more groups covering a variety of different exercises. Parents have also feedback that they want to have access to more classes that they can do as a family. C&YP and parents will be given the opportunity to get involved in testing the change ideas identified and providing feedback, specifically S6 pupils will be leading the session. |

You can find more information on how to complete a project charter using this helpsheet (or see appendix).

A driver diagram can also be helpful at this stage of the project as it can help you to identify the measures you need to collect to see if your project is achieving its aim.

## Measuring for Improvement

One of the most important parts of any improvement project is working out what data you will need to measure during your improvement project. For you to determine if improvement is really happening, you need to collect data over time and observe the patterns of change over time. Measuring for improvement is different from measuring to manage performance or for research purposes. The purpose of measuring for improvement is to answer the question: '***How will we know if a change is an improvement?'***

It is very easy, when undertaking any project, to get caught up in the detail and try to measure everything! We recommend that each improvement project should have between two and eight improvement measures, known as the 'vital few' measures. Remember that you should not collect data just because it is easy to collect, you should collect the data that will help you to understand if your project and changes are resulting in improvement. It should show your improvement story.

One way to help develop and keep track of your measures is to use a measurement plan (example below). This tool helps you to plan how to collect your data and answer four key questions for data collection:

- **Who should collect the data?** – Are they best placed? Is everyone collecting the same information?
- **What?** – Is this information relevant to your measures? Is there any data that might already be useful?
- **When?** – How frequently should we collect the data? How long do we need to collect it?
- **How?** – What is the best way to get the data?

FIGURE 6: MEASUREMENT PLAN

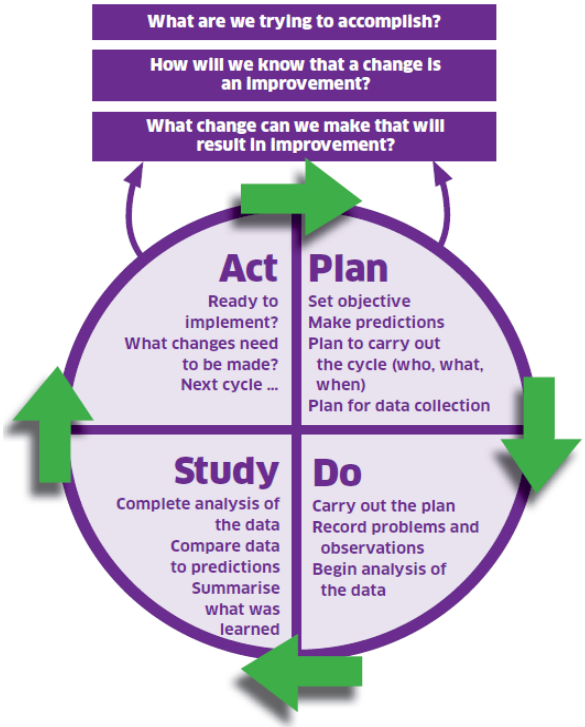
| **Name of measure** Indicate whether it's an Outcome (O), Process (P) or Balancing (B) measure and specify type of measure (e.g. percentage / count / rate / variable / days or cases between). | **Concept being measured and why it's important to look at this** What is the purpose of this measure? | **Operational definition** Clear, precise definition of the measure and how it is calculated. Include numerator and denominator if it's a % or rate. What / who is included or excluded? | **Data collection** Who is collecting it? How often and when? Where is the data coming from? What's the sampling method and sample size (if used)? | **Where are we and where do we want to be?** Baseline info and goal for this measure |
|---|---|---|---|---|
| e.g. Outcome<br>% of people reporting 30 mins of exercise, 5 times per week | This measure will enable us to see if local residents are becoming more active | % = Number of people reporting 30 mins of exercise, 5 times a week divided by total number of people completing the question in the monthly household survey. | Monthly survey of 50 households in the Tillydrone area (as part of wider community data collection process). | 1 October 2018 = 10% of respondents reported exercise 30 mins, five times a week.<br>Aim = Increase by 50% the number of people who report undertaking 30 mins of exercise, five times a week in Tillydrone by October 2019. |
| e.g. Process<br># of people attending fitness activities each week in Tillydrone Hub | This measure will help us to understand the level of attendance at fitness activities in the Hub each week | # = Number of individual people attending the fitness activities held at Tillydrone Hub every week. | Individual attendance records are collated weekly on a Monday to provide the number of individuals who have attended fitness activities for the previous week. | 1 October 2018 = 40 individual people attended classes over the previous week.<br>Aim = By 31 December 2018 a minimum of 70 individual people |

| | | | | |
|---|---|---|---|---|
| | | | | will attend classes every week at the Tillydrone Hub. |

Further details on creating a measurement plan can be found on this help sheet. If you want more information on creating measures, please complete the module from NES on measurement for improvement.

To use this data meaningfully you will need to be able to interpret it. One method of doing this is to use a run chart. It is important to remember that effective use of run charts requires data to be collected on a regular basis. Run charts are explained in a later section of this handbook.

## Plan-Do-Study-Act Cycles




PDSA cycles are the 'doing' part of the Model for Improvement and are a fundamental tool in improvement work. You would begin to use them when you start to test your change ideas.

PDSA cycles allow the team to create new knowledge by conducting small tests of change with a minimum of risk, and build confidence in the impact of the changes proposed. Ideas with positive impact can be continued on a larger scale (PDSA ramps) to implementation while ideas that do not have a positive impact are discontinued. PDSA can be used effectively to engage staff who may be reluctant to change.

A PDSA cycle is broken up into four steps to build knowledge and create sustainable change. This is how you test your theory:

**Plan** – the planning stage is about preparing to test a change - asking yourself what will happen if we do something different. What is your objective? What theory are you testing? What do you predict will happen – what will be the impact of this change? You plan how you are going to carry out the cycle – who will do what? When will it happen? What will you do and how? How will you collect any data?

**Do** – the plan is carried out and you test your idea. Observe anything that does not go according to plan, for instance, did you not have enough resources, should you allocate more or less time? Collect enough data to help you to understand if your prediction is correct.

**Study** – now that you have run your test, use the data you have gathered to analyse your results. Did things go according to your plan, did you achieve your predicted results.  Why did this test succeed, why did it fail, what did you learn?

Note down what have you learnt from it and using the notes you have gathered from the **do** stage, ask yourself questions like: Were you right in your predictions?

**Act** – What are you going to do next after your analysis? Will you adapt, adopt or abandon this change? Do you need adapt your idea and carry out another PDSA cycle?  Do you need to test again with different people; in a different place; at a different time?  Is it time to adopt this way of working? If so, you need to think about what would be needed to implement this change.

Every change idea will have at least one PDSA cycle, and it is likely to have multiple iterations of the change idea as you test it until you are confident that it works. In order to use a PDSA cycle effectively, you should be disciplined about completing every stage of it and record this in a PDSA plan. Below is an example of how you can use a PDSA document to help you effectively test your change ideas.

**FIGURE 7: EXAMPLE PDSA  CYCLE**

**INCREASE PHYSICAL ACTIVITY IN TILLYDRONE**

| | |
|---|---|
| **AIM OF PROJECT** | Increase by 50% the number of people by who report undertaking 30 mins of exercise, five times a week in Tillydrone by October 2019 |
| **AIM OF PDSA** | Increase attendance at walking group for new parents |
| **PDSA No.** | 2 – we tested with four parents initially. |

**PLAN**

Describe test

The test will be to see if by changing the time of the walk to after school drop off time will increase the number of parents attending.

What questions do we want answered?

- Has the change of time increased uptake?
- Will the starting point at the primary school at that time encourage more parents to attend?
- Did participants feel better for having walked?
- Capture general observations, comments, and anecdotes.
- Will we reach our goal of 6 people attending the walking group?

| List the tasks needed to set up this test of change? | Person responsible | When to be done | Where to be done |
|---|---|---|---|
| • Put posters up in primary school and other locations (e.g. local shop, sport centre and community centre) | Mum 1, Walk Leader, Community Development Officer | 8/3/2019 | Primary School |
| • Gain commitment from other parents to publicise by word of mouth at other groups to be involved in bedtime reading project | Community Development Worker | 8/3/2019 | |
| • Set up event on Facebook and publicise on locality group page | Community Development worker | 28/2/2019 | |

Predict what will happen when the test is carried out

- Predict that two more parents will join the group as will see other parents from school.
- Other parents will be interested but cannot join due to other commitments.

**DO**

The change of time had an impact and four new mums participated. There was more interest from others at the school who said they would like to join next time. The route wasn't the easiest for those with a pram or buggy. However the weather meant that two of the previous participants didn't join due to risk of rain.

**STUDY**

The test succeeded. We exceeded our prediction and other parents wanted to join but publicity of the walk hadn't reached them. The parents all reported better and more active in a group situation with low impact exercise. The route needs to be changed slightly as the pavements were not very flat in areas so it was hard to get prams and buggy's over tree roots. A suggestion was made to include another primary school on the way from a parent whose child attends.

**ACT**

The next cycle will build on the lessons learned from the first two, that after an event that people are already out for means that more people are likely to join. The route will be adapted by the walk leader and will be slightly longer to incorporate the other school.

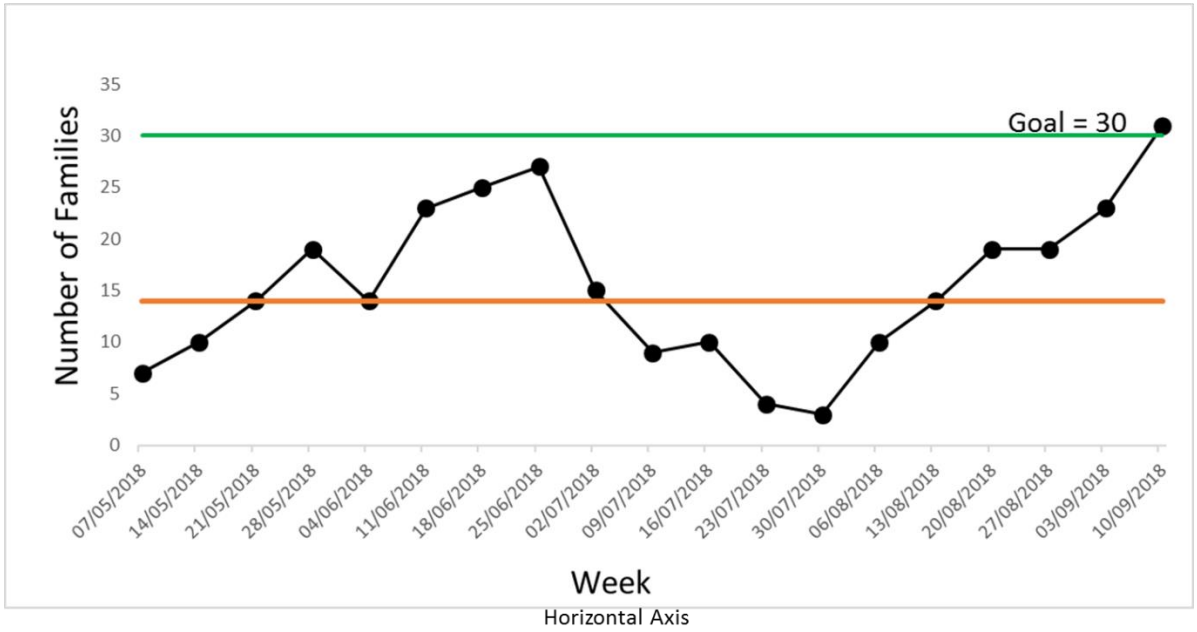
For more information please refer to this help sheet on PDSA cycles or refer to this online module and watch this video

## Run Charts

As you are gathering data, your next step is to consider how to analyse the data. Run charts are a powerful tool which can help you to present your data and understand if your changes are making an impact. Run charts present data in a visual way so that you see if your changes are having an impact and show changes in measures across the life cycle of a project. They focus on variation and are different from collecting data at one point in time. They are simple to produce and interpret, and they are guided by simple rules.

An annotated run chart has comments with arrows pointing to times when different ideas for improvement were tested. This helps explain any sudden changes in quality that may have occurred.

FIGURE 8: EXAMPLE RUN CHART




To have a go at making your own run chart go to the help sheet, which includes an excel template you can use and an expanation of the run chart rules which will help you to understand whether your changes have led to improvement.

# Stage 3: Implementing and sustainaing changes that demonstrate improvement

| Stage | Methods / Tools | Output |
|---|---|---|
| **3. Implement and sustain changes that demonstrate improvement** Evidence of improvements shown in project measures. Spread plans are being developed and deployed. | • Use PDSA cycles to implement changes which lead to improvement<br>• Run charts<br>• Spread plans | • Formalised procedure in place to ensure the improvement is embedded into routine practice and sustained with governance arrangements. |

## Implementation

When you have gathered evidence (through testing changes by using PDSA cycles) that your change idea achieves the results you are aiming for, it is time to consider how to implement this change.

Implementation is a permanent change to the way work is done and, as such, involves building the change into the organisation. It may affect documentation, written policies, training etc. There are a variety of approaches to implementation depending on the complexity and the risks involved. A PDSA cycle is required for all approaches, these cycles would take more time than the cycles that took place during the testing stages. An implentation plan would be a useful tool for you plan these implentation stages.

FIGURE 9: IMPLEMENTATION PLAN

| Component of Implementation | Consider | Lead | PDSA Cycle # | Objective of PDSA cycle |
|---|---|---|---|---|
| **Standardisation** | • *Map the new process*<br>• *Standardise key steps in the process*<br>• *Clarify individual responsibility/authority*<br>• *Define some simple rules to guide practice* | | | |
| **Documentation** | • *Changes required to reflect the new way of working*<br>• *Assign responsibility for keeping it up to date*<br>• *Use for ongoing education and training* | | | |
| **Training** | • *Formal or informal*<br>• *Broader and more long-term than for testing*<br>• *Link training to the service need* | | | |

| Component of Implementation | Consider | Lead | PDSA Cycle # | Objective of PDSA cycle |
|---|---|---|---|---|
| **Measurement** | • *Plan visible measurement of key outcome measures*<br>• *Plan measurement of key process steps*<br>• *All measurement over time* | | | |
| **Resourcing** | • *May require more resources than testing*<br>• *Plan resource request and allocation*<br>• *Plan ongoing ownership* | | | |

For more information on implementing changes which lead to improvement go to NHS Education for Scotland's (NES).

# Stage 4: Spreading Changes

| Stage | Methods / Tools | Output |
|---|---|---|
| **4. Spreading changes**<br>Changes have been implemented as business as usual.<br>Learning is being shared and spread to other areas. | • Implementation plan<br>• Spread plan<br>• Run charts<br>• Sustainability<br>• Large-scale change | The aim has been met or exceeded with changes being implemented as business as usual. Learning is being spread for others to adopt. |

## Requirements for spread

Achieving breakthrough performance in any area of an organisation is a significant accomplishment. But a more important and often more complicated challenge remains: how to spread the success. This can be complex as it usually over multiple areas or teams, but spreading a successful improvement project and making it sustainable will depend on communication.

Communicating with with others to sustain and embed the change as business as usual can be a challenge and in order to do this successfully without people going back to the old ways of doing things a few key questions should be answered to ensure that your improvement project is successful.

| | |
|---|---|
| **What?** | What are essential ingredients/key components?<br>What adaptations are permitted/ necessary? |
| **How?** | What are your spread processes and reporting structures? |
| **Who?** | What scale? Which teams? What places? Which people? |
| **When?** | Time frame and time line for spread |

# Improvement Glossary

**Aim or Aim Statement**: A written, measurable, and time-sensitive statement of the expected results of an improvement project.

**Annotated Run Chart:** A line chart showing results of improvement efforts plotted over time.
The changes made are noted on the line chart at the time they occur. This allows the viewer to connect changes made with specific results.

**Change Idea:** A general idea for changing a process that will be tested in your improvement project.

**Early Adopter:** In the improvement process, an opinion leader within the organisation who brings in new ideas from the outside, tries them, and uses positive results to persuade others in the organisation to adopt the successful changes.

**Implementation:** Taking a change and making it a permanent part of the system. A change may be tested first and then implemented throughout the organisation.

**Improvement Team:** The group of individuals, usually from multiple disciplines, that drives and participates in the improvement process.

**Measure:** A focused, reportable unit that will help a team monitor its progress towards achieving its improvement aim. Key measures should be focused, clarify your team's aim, and be reportable. A measure is used to track the delivery of proven interventions and to monitor progress over time. Improvement measures can be divided into three classifications: outcome, process, and balancing.

**Measurement Plan:** A specific description of the data to be collected, the interval of data collection and the subjects from whom the data will be collected. It emphasizes the importance of gathering samples of data and how to obtain "just enough" information

**Model for Improvement:** An approach to process improvement which helps teams accelerate the adoption of proven and effective changes. A framework for improvement that involves asking three key questions - What are we trying to accomplish? How will we know that a change is an improvement? What changes can we make that will result in an improvement?

**PDSA Cycle:** A structured trial of a process change:

- **Plan** - a specific planning phase
- **Do** - a time to try the change and observe what happens
- **Study** - an analysis of the results of the trial
- **Act** - devising next steps based on the analysis

This PDSA cycle will naturally lead to the Plan step of a subsequent cycle.

**PDSA Ramp:** one change idea that is composed of multiple PDSA cycles.

**Process Change:** A specific change in a process in the organisation. More focused and detailed than a change concept, a process change describes what specific changes should occur.

**Process Mapping**: Activities involved in defining exactly what an organisation or part of an organisation does, who is responsible, to what standard a process should be completed and how success can be determined.

**Quality Improvement (QI):** QI is a formal approach to the analysis of performance and systematic efforts to improve it. There are various methods or models of QI such as total quality management (TQM), continuous quality improvement (CQI), Six Sigma, LEAN, and more. All QI models are aimed at improving performance.

**Run Chart:** A graphic representation of data over time, also known as a 'time series graph' or 'line graph'. This type of data display is particularly effective for process improvement activities.

**Spread:** The intentional and methodical expansion of the number and type of people, units, or organisations using the improvements.

**Test or Test of Change:** A small-scale trial of a new approach or a new process. A test is designed to learn if the change results in improvement and to fine-tune the change to fit the organisation and patients. Tests are carried out using one or more PDSA cycles.

# Appendix

## Project Charter Template

### Improvement Project Charter

| |
|---|
| **Improvement Project Title** |
| **Executive Sponsor** |
| **Project Lead**<br><br>**Name**:<br><br>**Job Role & Organisation**:<br><br>**Email Address**: |
| **Aim statement** |
| **Link to Local Outcome Improvement Plan** |
| **Link to Locality Plans** |
| **Why this is important** |
| **Measures**<br>• **Outcome measures**<br><br>• **Process measures**<br><br>• **Balancing measures** |
| **Change ideas** |
| **Location/Test Group** |
| **Resources** |
| **Potential risks and/or barriers to success & actions to address these** |
| **Project Team** |

**Community/User Representation/Engagement**

This section should detail any engagement you have done, or plan to do with communities and/or user groups such children and young people, people with lived experience to ensure your changes planned are informed by these key groups and that there is clear opportunities for people to get involved in your project.

| Outline Project Plan | | |
|---|---|---|
| **Project Stage** | **Actions** | **Timescale** |
| **Getting Started** (Project Score 1-3) | | |
| **Designing and Testing Changes** (Project Score 4-7) | | |
| **Implementing and sustaining changes that demonstrate improvement** (Project Score 7-10) | | |
| **Spreading Changes** (Project Score 9-10) | | |

## PDSA template

**IMPROVEMENT PROJECT TITLE**

**OUTCOME IMPROVEMENT GROUP**
**PDSA No.X, DATE**

**AIM OF PROJECT** Overall aim of the improvement project

**AIM OF PDSA** Specific aim of this PDSA

## PLAN

| Describe test |
|---|
| Person responsible? When to be done? Where? |
| What questions do we want answered? |
| What measures do you have that will tell you if the test is a success? |
| List the tasks needed to set up this test of change? |
| Tasks? Personal responsible? Timescale? |
| Predict what will happen when the test is carried out |
| Predictions may be positive or negative |

## DO

Was the test carried out? Describe what happened? Any problems or unexpected events?

## STUDY

Lessons learned from the results? How do the results compare to the predictions?

## ACT

Describe the modifications to the plan for the next cycle

## Measurement Plan Template

| **Name of measure**<br>Indicate whether it's an Outcome (O), Process (P) or Balancing (B) measure and specify type of measure (e.g. percentage / count / rate / variable / days or cases between). | **Concept being measured and why it's important to look at this**<br>What is the purpose of this measure? | **Operational definition**<br>Clear, precise definition of the measure and how it is calculated. Include numerator and denominator if it's a % or rate. What / who is included or excluded? | **Data collection**<br>Who is collecting it? How often and when? Where is the data coming from? What's the sampling method and sample size (if used)? | **Where are we and where do we want to be?**<br>Baseline info and goal for this measure |
|---|---|---|---|---|
| | | | | |
| | | | | |
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| | | | | |

If you want to know more about Quality Improvement or have any questions, please email communityplanning@aberdeencity.gov.uk.

## Your notes