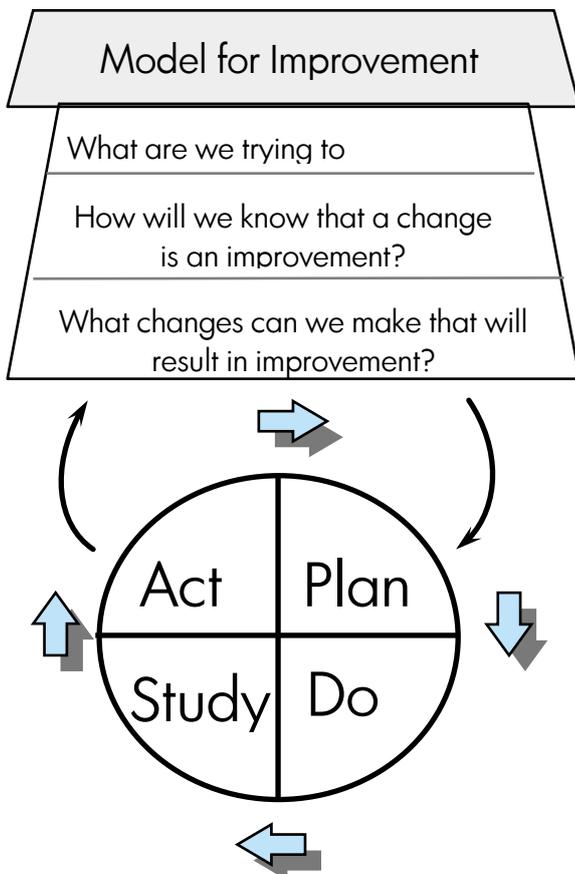# A Guide to Quality Improvement

What is quality improvement?

- Quality improvement (QI) is about improving patient (and population) outcomes, system performance and professional development. [1]
- The Institute of Healthcare Improvement (IHI) have developed the "Model for Improvement" (MFI) which is one type of QI methodology.[2] The MFI is being successfully adopted in many healthcare settings to improve patient care.
- More than the methodology, QI is about a change in behaviours, working together, change coming from the bottom up, creative thinking, and fundamentally, using measurement to guide improvement.
- QI is distinctly different to audit and has been shown to bring about more sustained improvement.

What is the Model for Improvement?

- The Model for Improvement consists of the 3 questions below.
- These questions should act as guide when planning your project and you should refer back to them during the running of your project to ensure you are on track.

Model for Improvement

What are we trying to

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

Act | Plan
Study | Do

How to interpret each question?

- Set your aim & then plan your project with a process map and driver diagram
- Regular real time measurement will inform you if changes you test bring about improvement
- Develop ideas & test them using PDSA cycles

1. Batalden D, Davidoff F. What is "quality improvement" and how can it transform healthcare. *Qual Saf Health Care* 2007;16:2-3 doi:10.1136/qshc.2006.022046

2. Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edition). San Francisco: Jossey-Bass Publishers 2009

How do I form the right team?

- To ensure success & sustainability of your work, it is vital you get the right team together. The team should include everyone who has a stakeholder interest in your project.

- It should be multi-disciplinary, include someone with enough seniority to make key decisions, have permanent members of staff to ensure sustainability, include people with specialist knowledge as well as frontline staff who will champion your work.

Aim Setting

- Having the right aim is a fundamental part of starting your project. The right aim will provide clarity, engage stakeholders, generate enthusiasm and enable measurement.

- The aim should be a "stretch aim" ie. an aspiration, not a target you reached within a week.

- The aim should be SMART:
    - **S**pecific   who, what, where, when
    - **M**easureable   numeric goals, by how much?
    - **A**chievable   within your influence
    - **R**ealistic/relevant   to stakeholders and organisation
    - **T**imely   by when, give a precise date

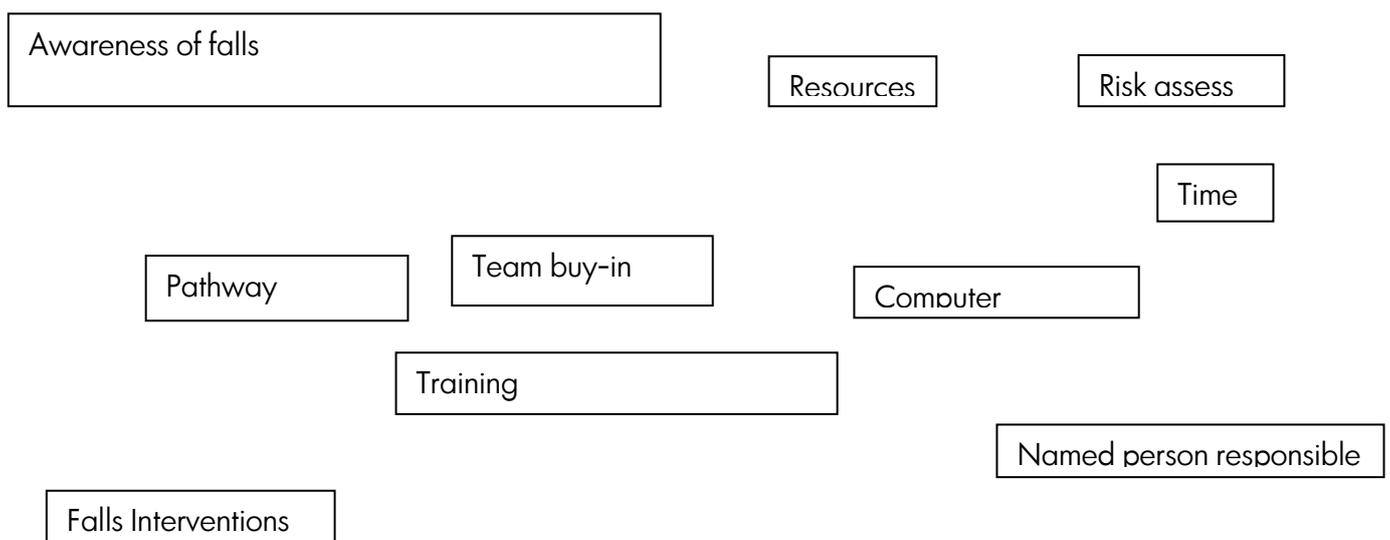| WEAK AIM	Why is it a weak aim?	STRONG AIM
Reduce the number of resident falls in a care home	S: which care home, type of fall (all or injurious?) M: reduce by how much? T: by when?	Reduce the no. of injurious falls 4 by 50% in XXX care home by 31st Dec 2015
Residents must have a nutrition plan within 48 hours	S: Is it all residents or just the new ones or a six monthly review? Within 48 hours of what? Newly welcomed or those back from hospital? R: Relevant? Do all residents need a nutrition plan? T: by when	All new residents at XXX care home will have a full nutrition assessment, plan and communicated to all staff within 48 hours of arriving by October 2014
95% of residents will have their medications in a timely manner	S: Which medications prescribed or PRN? M: What do we mean by timely? At the exact time or within 30 minutes/60 minutes T: give an actual date!	All residents will receive their prescribed medications within 30 minutes of the time prescribed by 1st October 2014 at XXX care home.

Process Mapping

- A process map sets out exactly what occurs in the system at the moment. It maps out the current pathway and can be used to identify problem areas, stakeholders and ideas for change.
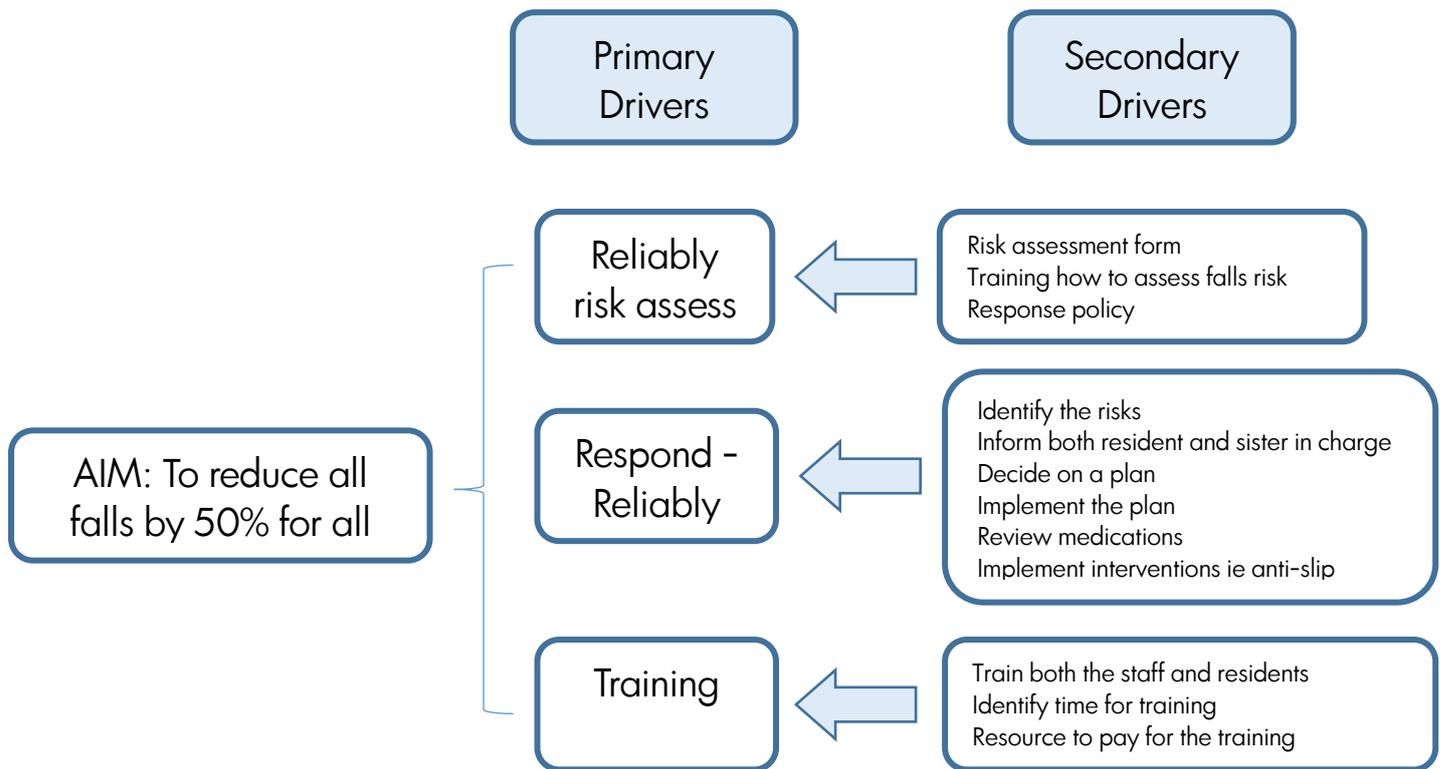
Driver Diagrams

- A driver diagram sets out the plan for your project in a visual and effective diagram

- The diagram includes your smart aim and the primary and secondary drivers needed to reach that aim.

    - Primary drivers: essential factors that need to be addressed in order to achieve the aim

    - Secondary drivers: what factors lead to your primary drivers

    - Nb. A secondary driver should directly lead to a primary driver, which should be essential to achieving your aim.

    - Each primary driver must be essential to your project, ie, without it, your project won't succeed

    - Driver diagrams help identify the measures for your project as well as your "to do" list

    - To start your driver diagram, have a session with your team where...

        - ...you brainstorm on post-its, all the factors needed to meet your aim

        - ...then group the factors into primary and secondary drivers

Eg.AIM: AIM: To reduce all falls by 50% in all residents at XXXX care home by December 2015

Step 1: Brainstorm-what factors need to be in place to achieve this aim?

Awareness of falls

| Resources | | Risk assess |

| Time |

| Pathway | | Team buy-in | | Computer |

| Training |

| Named person responsible |

| Falls Interventions |

Step 2: Use your driver diagram to group into primary and secondary drivers

Primary Drivers	Secondary Drivers

Reliably risk assess
← Risk assessment form
Training how to assess falls risk
Response policy

AIM: To reduce all falls by 50% for all

Respond – Reliably
← Identify the risks
Inform both resident and sister in charge
Decide on a plan
Implement the plan
Review medications
Implement interventions ie anti-slip

Training
← Train both the staff and residents
Identify time for training
Resource to pay for the training

Step 3: From this you can now develop measures and your "to-do" list.

Measures:

AIM: Number of falls

Examples of other measures:

The number of staff and residents who have been trained

The number of fully completed risk assessments performed
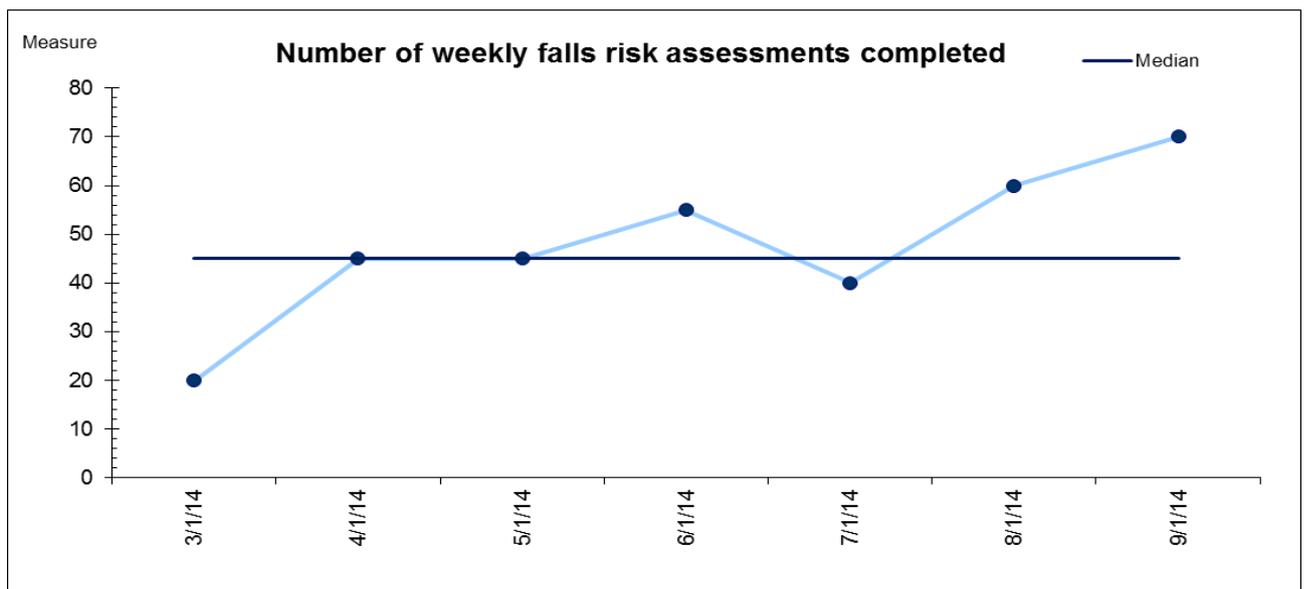
Measurement for Improvement

- Rigorous, real time measurement is a key part of QI and should drive your project.
- There are 4 types of measures needed:
  1. Outcome measure: this is your aim and should relate directly to the patient/population
  2. Process measures: measuring the integral aspects of your system eg. percentage pathways completed
  3. Balancing measures: the knock on effects of your project
  4. Financial measures: these *should not* drive your project, but need to be understood

Eg. Aim: Reduction of inpatient pressure ulcers by 50%

1. *Outcome measure: No. of residents falls*

2. *Process measure: The number of completed falls risk assessments*

   Balancing measure: Are more residents developing pressure ulcers as a result of decreased mobility to prevent the falls

3. *Financial measures: costing attributed to reduction of falls*

- Key rules of measurement for improvement:
  - o Measure at weekly or monthly intervals (little but often – a sample will do)
  - o Ensure measurement is in real time
  - o Make it easy to understand
  - o Make it part of your working routine and so easy to collect
  - o Annotate your charts with the tests of change you have tried, so you can learn from what you have tried and understand what has made a difference
  - o Sample size: needs to be good enough, not perfect. This is not research! You only need a sample size large enough to identify if you have a problem in your system.
  - o Displaying your measurement: use run charts ie. time series charts

Examples of QI run charts: AIM: To reduce all falls by 50% in all residents at XXXX care home by December 2015
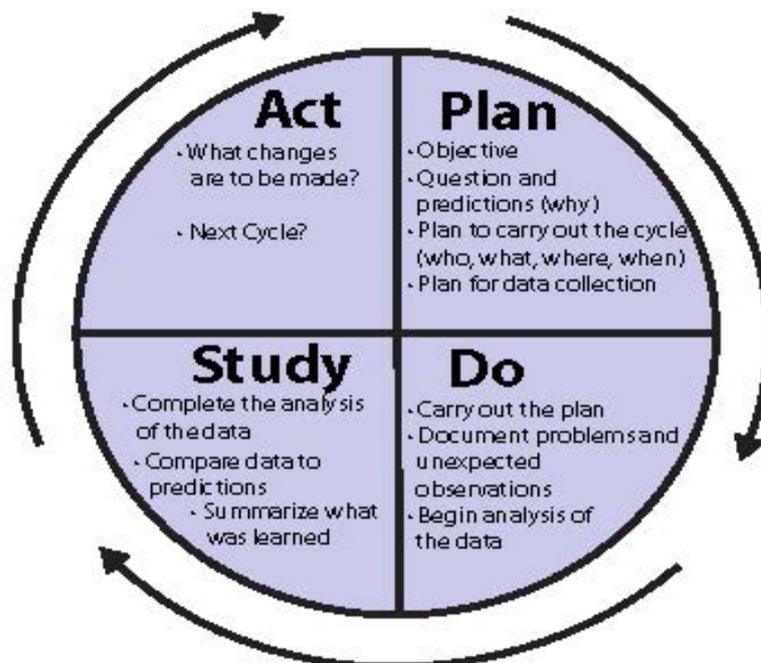
Tests of change

- To improve a system, changes need to be tested to see if they make an improvement. Testing involves rigorous real time measurement, to see if there is an improvement.

    "All improvement will require change, but not all change will result in improvement." P Batalden

- Testing change is done using PDSA cycles (see diagram below). PDSA cycles should be carried out for each test undertaken.

The PDSA Cycle for Learning and Improving

Act
- What changes are to be made?
- Next Cycle?

Plan
- Objective
- Question and predictions (why)
- Plan to carry out the cycle (who, what, where, when)
- Plan for data collection

Study
- Complete the analysis of the data
- Compare data to predictions
- Summarize what was learned

Do
- Carry out the plan
- Document problems and unexpected observations
- Begin analysis of the data

For each test of change, run the PDSA cycle as follows:

1. Plan: What test of change do you want to try? Where are you going to try it and on who? What do you expect to happen? How will you measure it?
2. Do: Carry out the test and measure
3. Study: Analyse your results. What happened when you ran the test? Did it meet your expectations?
4. Act: Adopt, adapt or reject the change. Perhaps test it on more patients? Try a new test of change.

Features of PDSAs

- Keep tests small so failures cause minimal damage
- Measure, so you understand the impact of any change
- Annotate your run charts with your tests of change
- Don't change the system till you understand the impact of changes

- Retest the change in each new environment eg, don't assume a pathway which has been tested in one clinic will work in the next clinic
- Give team members ownership of different tests
- Celebrate failures, this is useful information too

Eg. Aim: 95% discharge summaries are sent on day of discharge in Basildon Hospital.

Start small, take one team on one ward. Get it to 95% with that team first, before moving to the whole team or care home.

CYCLE	PLAN	DO	STUDY	ACT
1	-Hold a teaching session with the team and residents	-Hold the teaching session -Measure weekly the no of falls	What did the measurements show?	-Adopt, reject or redesign the teaching session -Trial it again -Try another
2	Re-design the falls assessment form	-Trial on one day with one resident	Ask for feedback and respond	-Adopt, reject, adapt the system
3	Introduce an alert system which enables residents to say if they feel at risk of falling Introduce a safety huddle for each handover	-Trial it on one week with a group of residents Try it one day	Analyse the results Ask for feedback from the team	-Adopt, adapt, reject

You can then develop your run chart by annotating the changes you have tested

Number of weekly falls risk assessments completed
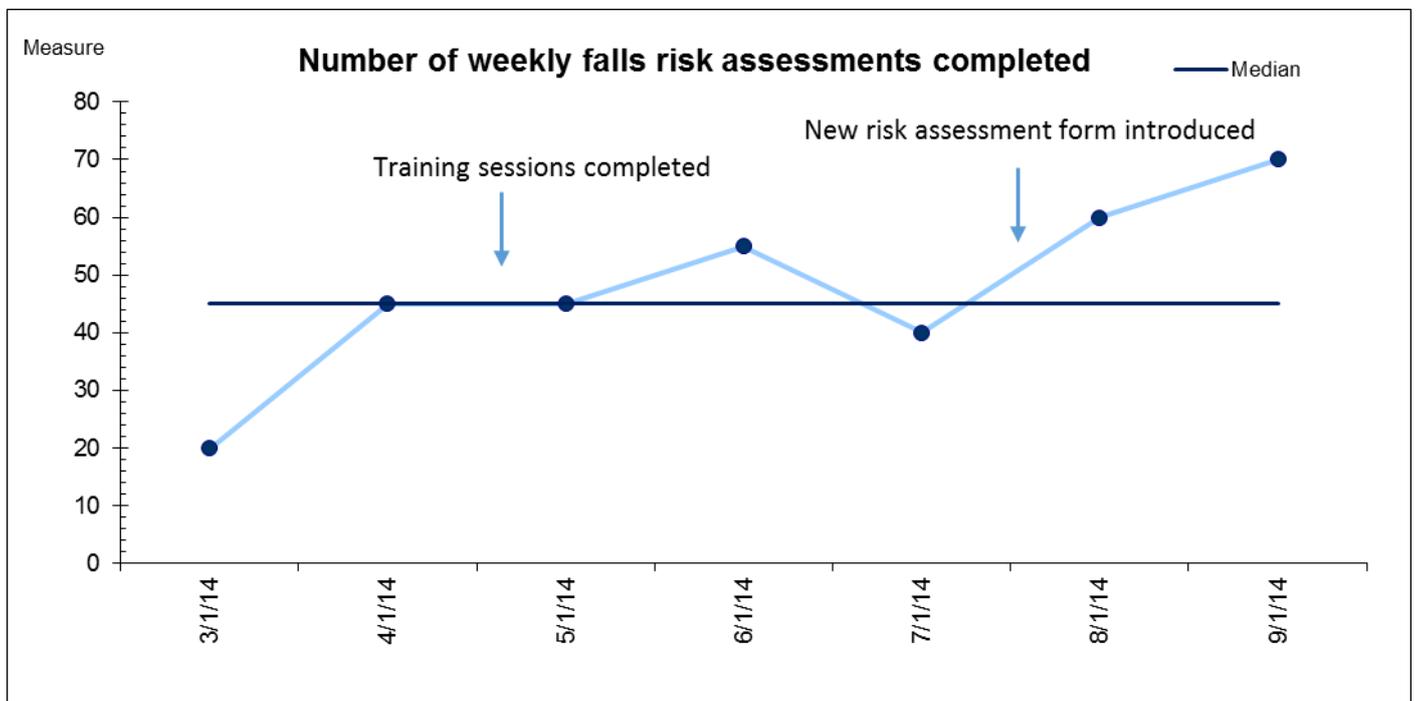
Other Useful Resources

Useful article: Batalden D, Davidoff F. What is "quality improvement" and how can it transform healthcare. *Qual Saf Health Care* 2007;16:2-3 doi:10.1136/qshc.2006.022046

A you tube summary of the model for improvement: http://www.youtube.com/watch?v=SCYghxtiolY

Scottish Improvement Hub provides a useful collection of resources: http://www.qihub.scot.nhs.uk/home.aspx

Resources for core medical trainees doing a QI project: https://www.rcplondon.ac.uk/projects/learning-make-difference-ltmd

The Institute of Healthcare Improvement has useful resources as well as some online courses:

http://www.ihi.org

http://www.ihi.org/education/ihiopenschool/courses/Pages/default.aspx