# Demystifying QI – A beginner's guide to Quality Improvement

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# Objectives for today

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- To introduce the main principles that underpin quality improvement in healthcare
- Provide improvement skills and tools that can be used in everyday practice
- Signpost to other resources

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# Improvement principle

*All improvement involves change, BUT not all change leads to improvement.*

# How quality improvement interacts with other approaches to improving healthcare

## Clinical audit

"A way to find out if healthcare is being provided in line with standards and let care providers and patients know where their service is doing well, and where there could be improvements" (NHS England 2018)

Provides assurance that we are adhering to best practice, identifies shortfalls in practice, and suggests corrective actions

Use audit to provide assurance or improve the extent to which best practice is being followed

Audit is a useful measurement tool within a QI project, to set a baseline or to study the impact of a change

QI work may raise questions about best practice which help to identify research opportunities

## Research

"The attempt to derive generalisable new knowledge by addressing clearly defined questions with systematic and rigorous methods" (Department of Health 2005)

It starts from a hypothesis which is tested and measured using a rigorous scientific approach

Research requires careful planning and often funding and ethical approval to proceed

Use research to derive generalisable new knowledge to drive clinical care forward

Clinical audit may identify areas of non-compliance with best practice that would benefit from a QI approach

## Quality improvement (QI)

A principle-based approach to continuously improving aspects of healthcare with a focus on iterative change, learning, and adaptation

QI seeks to engage staff and patients to change culture as well as processes and systems

Change using QI can be adapted and spread across teams and organisations

Use Quality Improvement to make small changes that will have a big impact

Using QI can help to test whether an intervention proven elsewhere can also work here and support adaptation to local context

Service evaluation can be used to identify shortfalls in services that would benefit from a QI approach. It can also assess a service's readiness for change or identify risks associated with change

QI allows the small scale testing or piloting of ideas before they are implemented in full as part of a transformation project

## Service evaluation

"A process of investigating the effectiveness or efficiency of a service with the purpose of generating information for local decision making about the service" (Healthcare Quality Improvement Partnership 2011)

Service evaluation is broad and may consider financial sustainability and workforce planning in addition to quality of service provided

Use service evaluation to take a snapshot of how a service is performing

Upskilling staff in QI as part of a transformation project provides them with the skills to problem solve or tweak things after a large change has been completed

## Clinical transformation

"A deliberate, planned process that sets out a high aspiration to make dramatic and irreversible changes to how care is delivered" (Health Foundation 2015)

It may be driven by clinical need, the need to modernise, or by external demands. May involve consultation with staff and partners

Use a transformation approach when large scale change is required

**BMJ: first published as 10.1136/bmj.m865 on 31 March 2020.**

# Early Pioneers in QI

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Florence Nightingale (1820-1910)

- Collected data to inform changes, using pies charts regarding mortality in military field hospitals and statistical study in sanitation leading to a sanitation reform.

- Walter Shewhart – Developed the first known control chart and the Shewhart Cycle (Plan Do Study Act)

Walter Shewhart (1891-1967)

W. Edwards Deming (1900-1993)

- Deming – Brought QI to forefront of the business world. Went to Japan to teach them about QI after WWII. Developed the System of Profound Knowledge

# Improvement methodology

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- Developed in 1996
- Now known as the IHI Model for Improvement
- Most used QI approach in healthcare

# What's the problem?

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Struggling to answer all the MI queries that come in leaving a significant proportion unanswered.

Audit shows only 20-25% of queries need a MI pharmacist or even pharmacy to answer them.

Staff are feeling overwhelmed and job satisfaction is low.

# Understanding the problem


| Understanding the problem | QI Tools |
|---|---|
| Who is involved? | Stakeholder mapping |
| What is the data telling you about the problem? | Measurement plan template |
| Understanding the contributory factors | 'Fishbone' diagram<br>Process Mapping<br>Pareto Principle |
| Planning your project | Project Charter template |
| Setting a SMART aim | SMART aim template |

# Understanding the problem – What is the data telling us?

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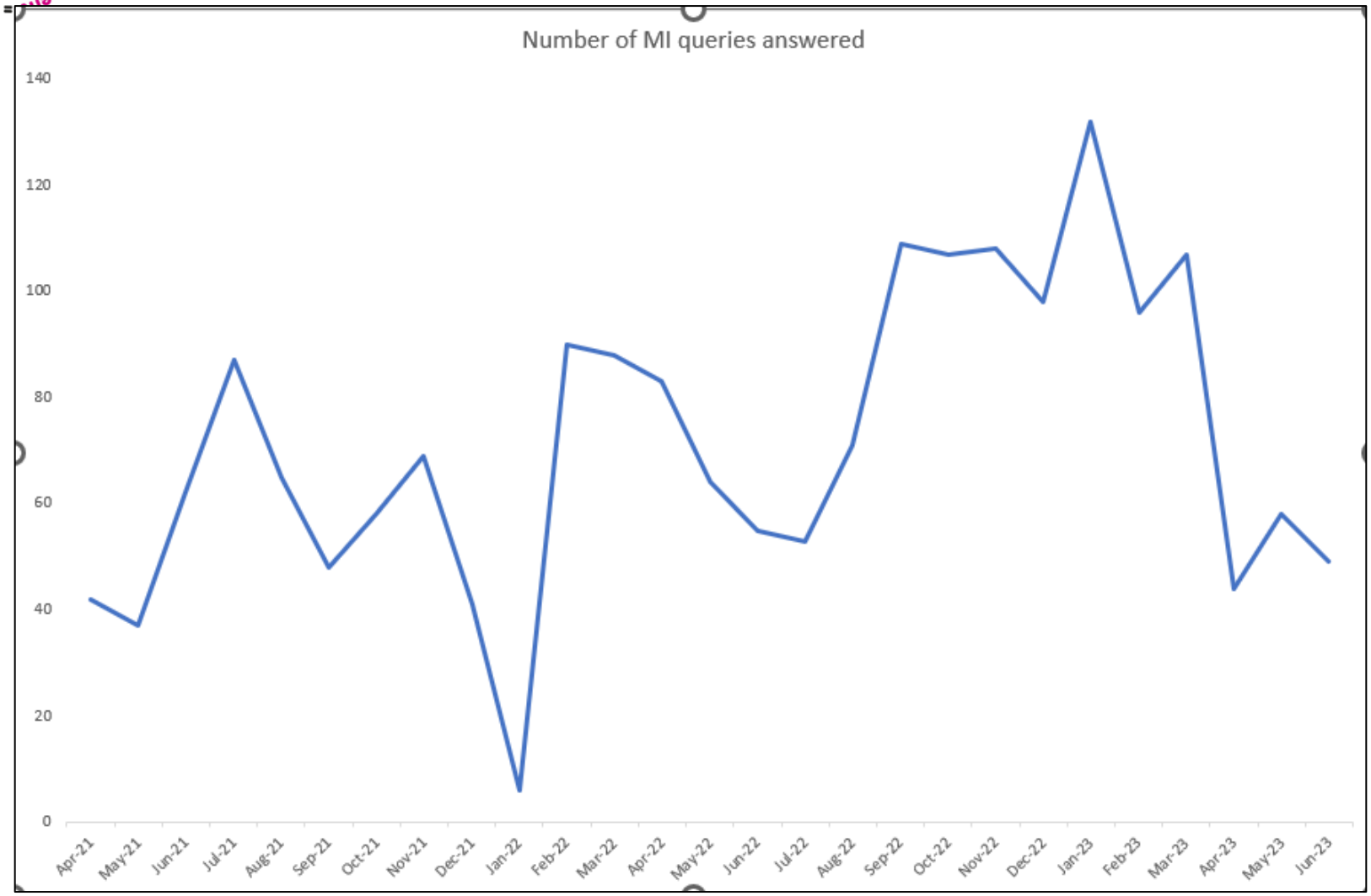
**Bradford MI Service number of MI queries answered per month**

| Date | Number of MI queries answered |
|---|---|
| Apr-21 | 42 |
| May-21 | 37 |
| Jun-21 | 62 |
| Jul-21 | 87 |
| Aug-21 | 65 |
| Sep-21 | 48 |
| Oct-21 | 58 |
| Nov-21 | 69 |
| Dec-21 | 41 |
| Jan-22 | 38 |
| Feb-22 | 90 |
| Mar-22 | 88 |
| Apr-22 | 83 |
| May-22 | 64 |
| Jun-22 | 55 |
| Jul-22 | 53 |
| Aug-22 | 71 |
| Sep-22 | 109 |
| Oct-22 | 107 |
| Nov-22 | 108 |
| Dec-22 | 98 |
| Jan-23 | 132 |
| Feb-23 | 96 |
| Mar-23 | 107 |
| Apr-23 | 44 |
| May-23 | 58 |
| Jun-23 | 49 |


Number of MI queries answered
140
120
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80
60
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20
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May-21
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Nov-21
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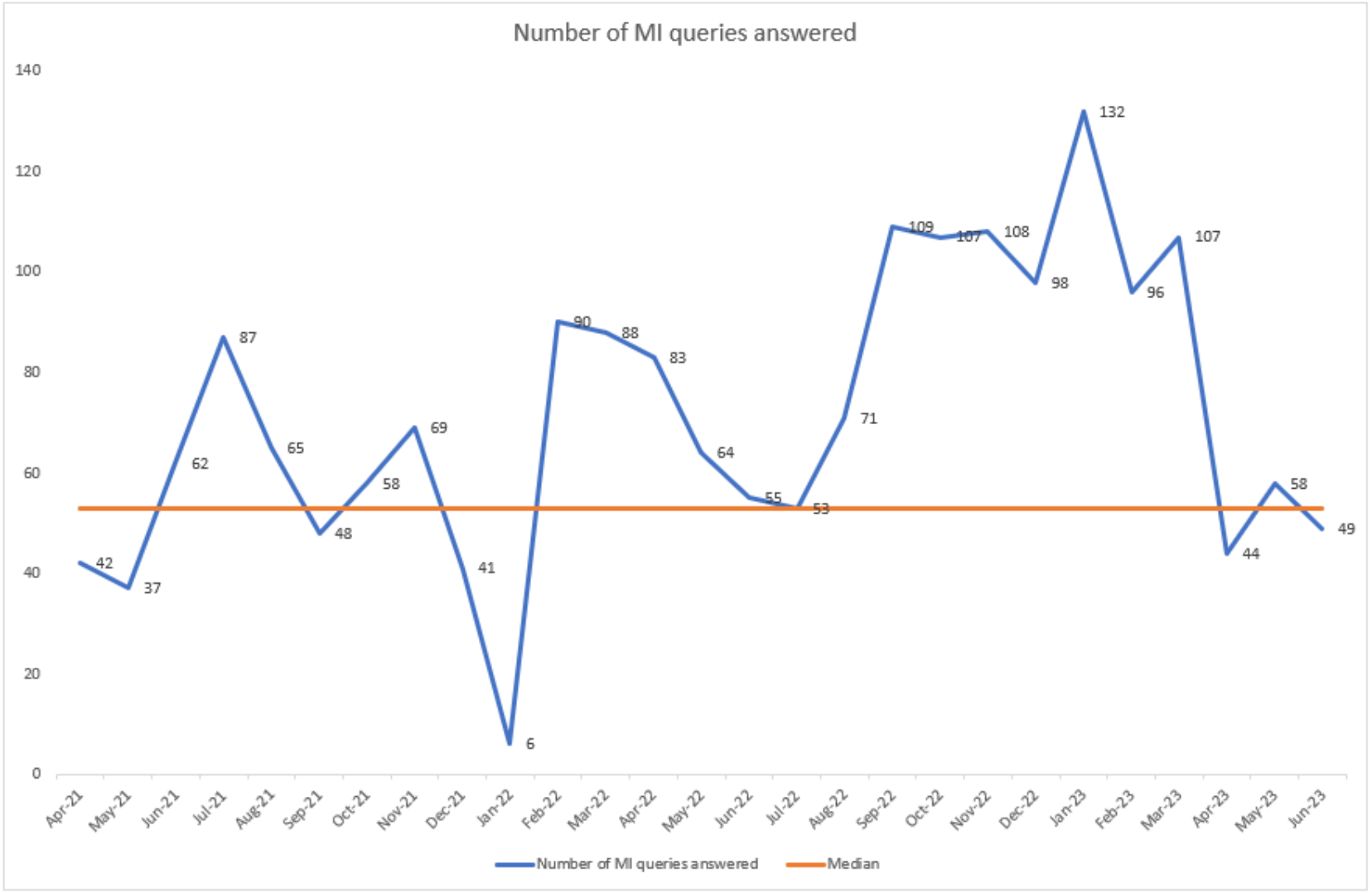
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Jun-23
Number of MI queries answered
Median

# The Run Chart

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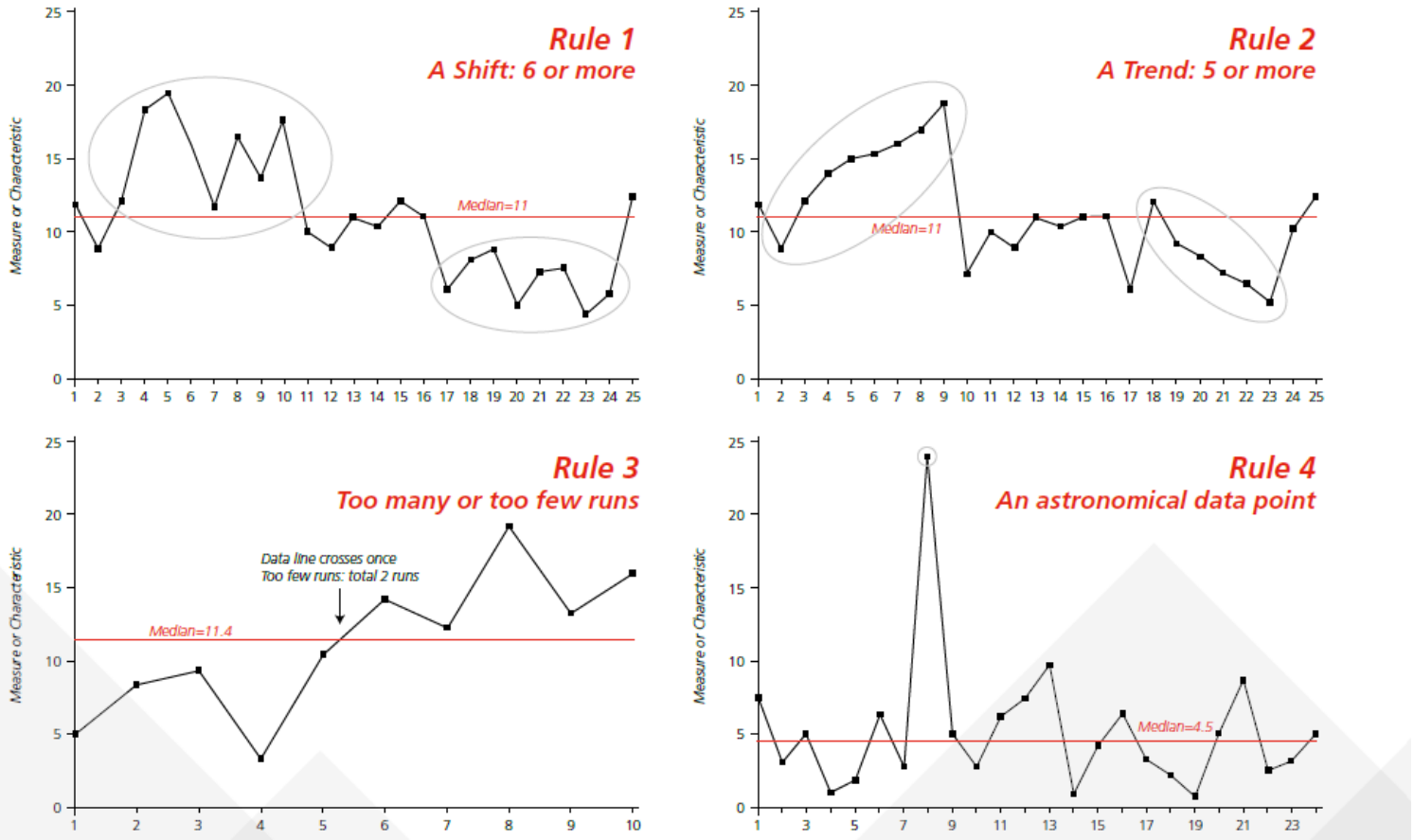
## Non-random rules for run charts




Source: The Data Guide by L. Provost and S. Murray, Austin, Texas. February 2007: p3-10

# Improvement principle

*Reduce (unacceptable) variation.*

# The Run Chart

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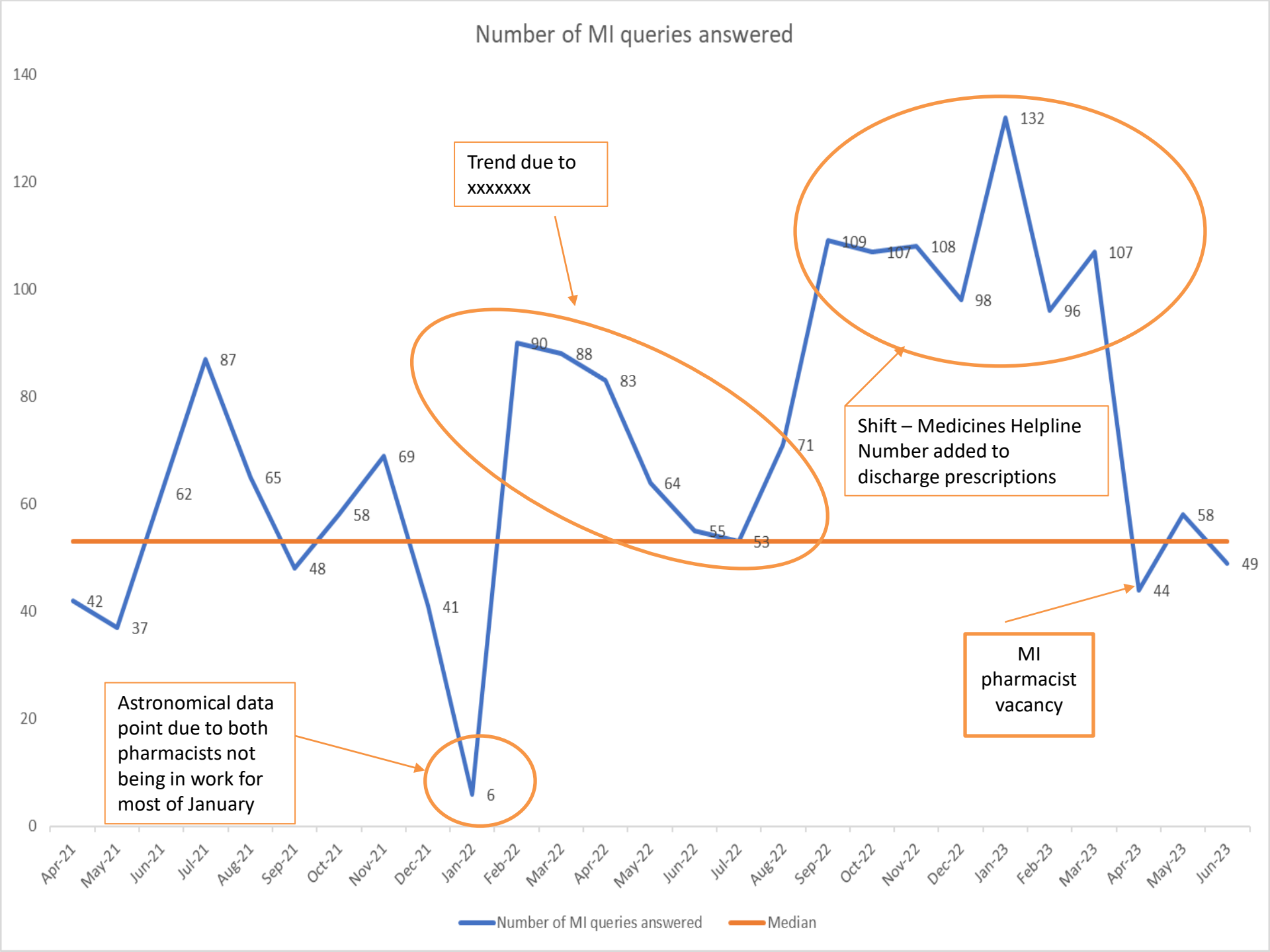
ORIGINAL RESEARCH

## The run chart: a simple analytical tool for learning from variation in healthcare processes

Rocco J Perla,[1] Lloyd P Provost,[2] Sandy K Murray[3]

BMJ Qual Saf 2011;20:46e51. doi:10.1136/bmjqs.2009.037895


Number of MI queries answered
140
120
100
80
60
40
20
0
Trend due to xxxxxxx
Shift – Medicines Helpline Number added to discharge prescriptions
MI pharmacist vacancy
Astronomical data point due to both pharmacists not being in work for most of January
42
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# Understanding the problem – Setting a SMART aim

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| Understanding the problem | QI Tools |
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# Understanding the problem – Setting a SMART aim

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Specific


Measurable


Achievable


Relevant


Time

## Problem statement:

There are too many queries coming into the MI service that are not true MI queries and there are genuine MI queries not being answered.

## Aim:

To increase the number of genuine MI queries that get answered by 30% by 31st March 2023.

# How will we know change is an improvement?

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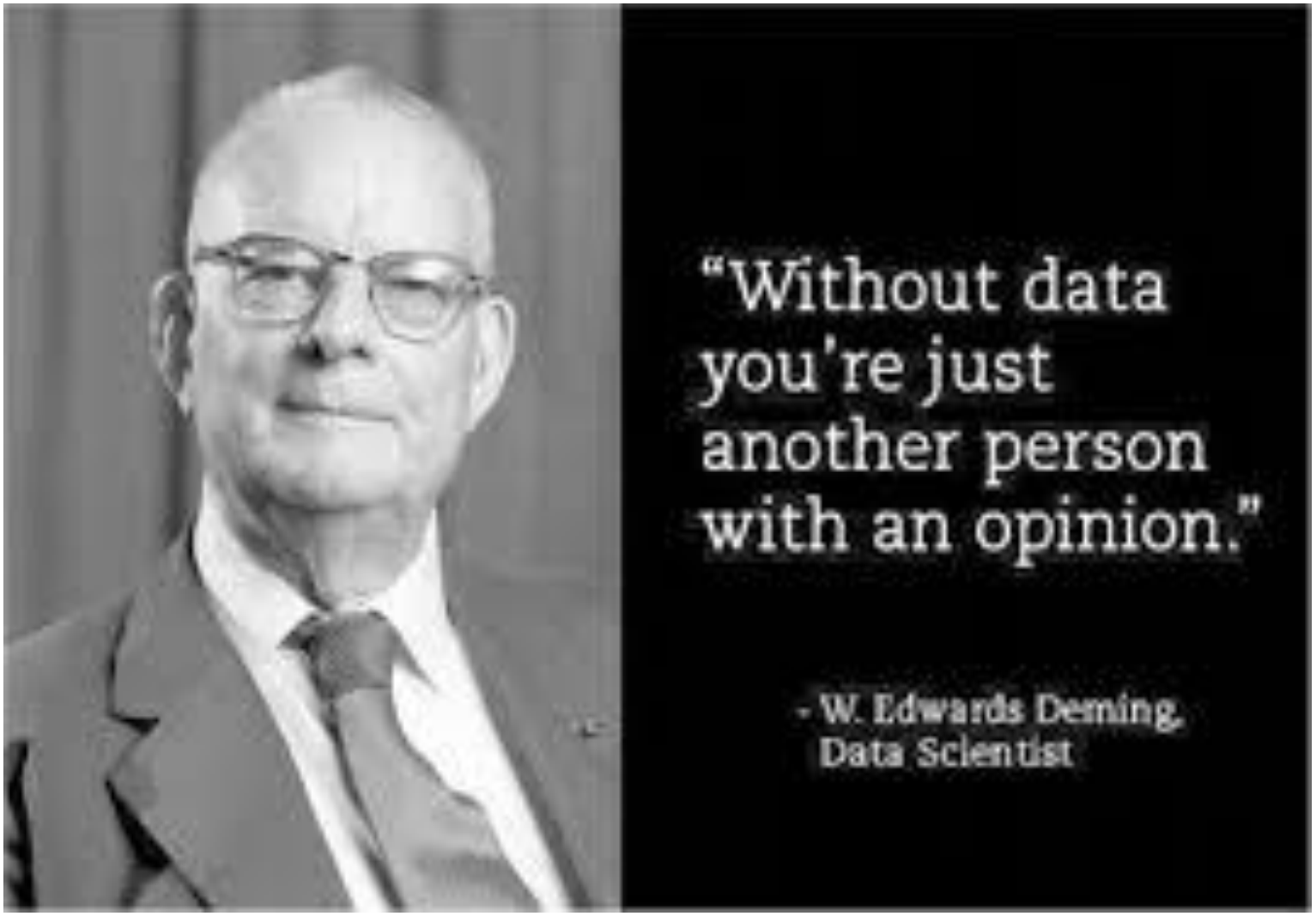
# Improvement principle

*Without measurement it is impossible to know whether you have improved.*


"Without data you're just another person with an opinion."
- W. Edwards Deming, Data Scientist

# Why measure?

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To know where you are …

… where you're going…


And when you've arrived … !!!

# Does this show improvement?

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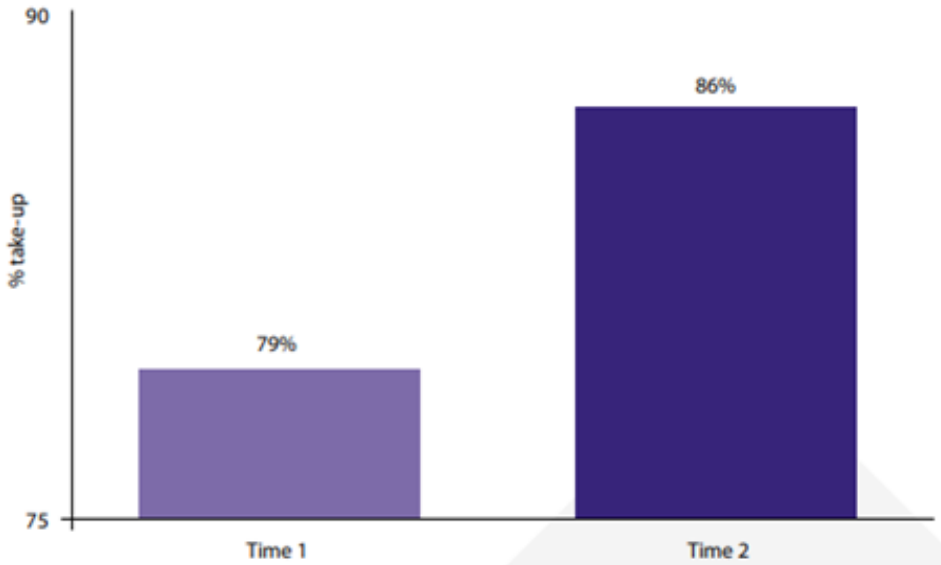
The importance of time-based measurements

## Improving immunisation rates

Before and after the implementation of a new recall system

This example shows yearly figures for immunisation rates before and after a new system was introduced. The aggregated data seems to indicate the change was a success.



# What really happened

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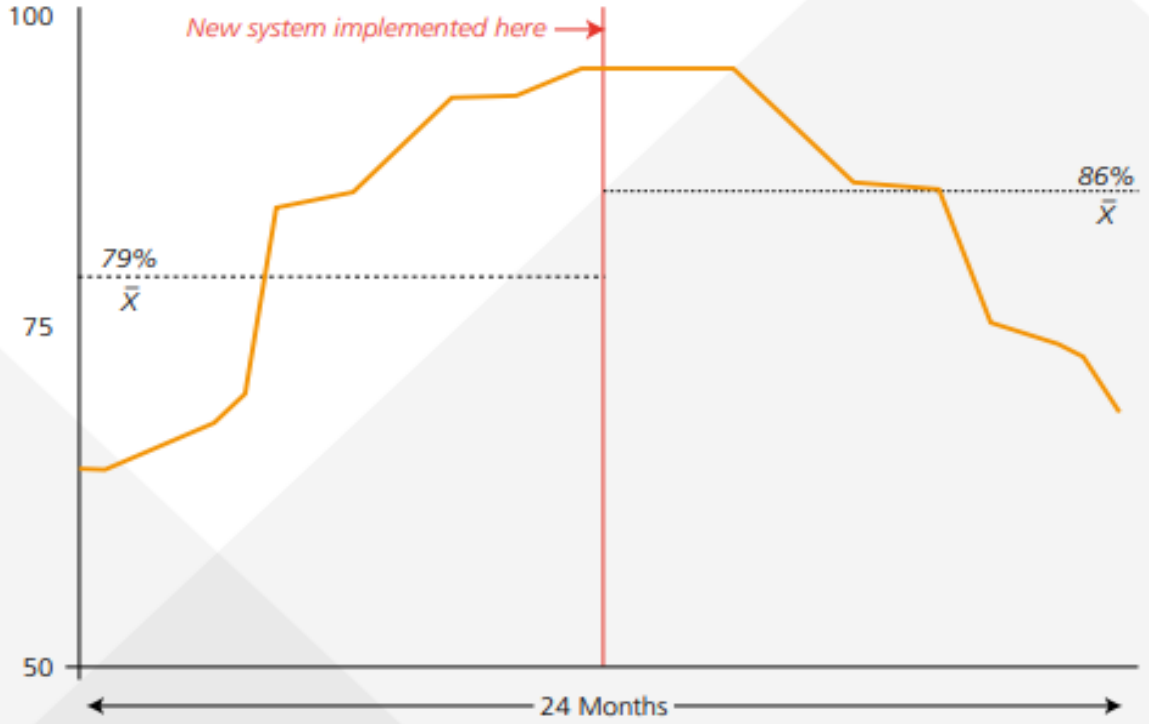
## Improving immunisation rates

Before and after the implementation of a new recall system

However, viewing how the rates have changed within the two periods tells a very different story. Here we see that immunisation rates were actually improving until the new system was introduced. They then became worse.

Seeing this more detailed time based picture prompts a different response.

***Now what do you conclude about the impact of the new system?***



# What will you measure?

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| Type | Definition |
|---|---|
| Outcome Measures (1-2) | Reflects the impact on the service user and demonstrate the end result of your improvement work. Linked directly to the aim.<br>e.g. reduced emergency admissions, reduced length of stay, improved service user experience |
| Process Measures (4-6) | Reflects the way your systems and processes work to deliver the desired outcome.<br>e.g. if service users are kept informed about delays when waiting for an appointment |
| Balancing Measures (1-2) | Reflects unintended positive or negative consequences of change.<br>e.g. monitoring emergency re-admission rates following initiatives to reduce length of stay |

# What change can we make that will result in an improvement?

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## Change Ideas

- *Collaborative approach*
- *Psychological safety*
- *No idea is a bad idea*

# Improvement principle

*Make it easy to do 'the right thing'*
*(Or) make it hard to do 'the wrong thing"*

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# Testing change ideas

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**Plan:** To have a meeting to discuss adding answer phone message to MI line

**Do:** Had meeting

**Study:** Decided it won't work

**Act:** Arrange another meeting

**Plan:** To test if an answer phone message stops queries not relevant to MI

**Do:** Add answer message for a week

**Study:** Measure number of calls, number of messages left, % of genuine MI queries

**Act:** Did it work? Adapt, adopt or abandon.

**Then do another PDSA**

# Improvement principle

*Transferring solutions is rarely effective, instead, transfer the change principle. Adapt rather than adopt.*

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# PDSA Cycles

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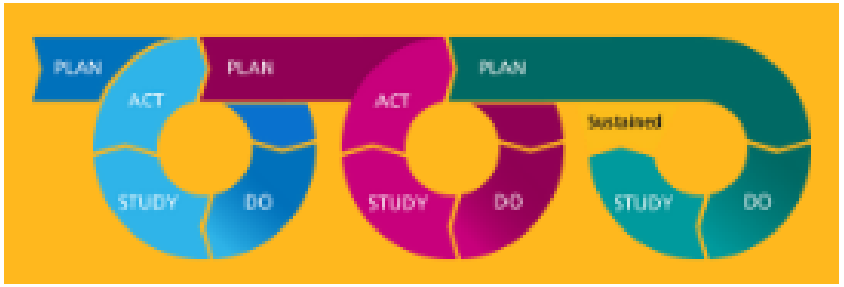
## PDSA Cycle

- **Plan** – Objective & predictions - Who, what, where, when, how are you going to measure it's impact?
- **Do** – just do it! Document problems and unexpected observations.
- **Study** – Collect information and analyse. Compare data to predictions. What worked/ didn't work?
- **Act** – what changes are to be made? Next cycle?




GAME
TIME!

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# Potato Head Challenge: practicing PDSA cycles

## Learning Objectives:

- Understand rapid cycle PDSA testing
- Understand how theory and prediction help you learn
- See how to collect real time measurement
- Appreciate the opportunity for collaborative learning

# PDSA - Plan

## 1) Assign Team Roles

- Master clinician-Fix it
- Time keeper-time how long it takes
- Quality Assurance-assess assembly
- Scribe-plot the data on the chart

## 2) Instructions

- Assemble Mr PH as quick as possible
- Don’t start until time keeper says go!

# PDSA - Do

## Record your data

### Accuracy

**1**= One or more pieces are not on Mr PH

**2**= All the pieces are on Mr PH but one or more is out of place

**3**=All the pieces on Mr PH are on and positioned correctly

## PDSA - Study

How did you do?

Can you improve the accuracy or speed?

## PDSA - Act

- Make your predictions
- Explain your theory
- Repeat the process

# Take home messages

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- We have bad systems not bad people
- Measurement supports action (and visualisation of improvement)
- QI is everyone's business
- Anyone can have a great change idea. Test them, don't dismiss them!
- Improvements can be rapid and profound
- QI is about making it easy to do the right thing

# Resources

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Institute *for* Healthcare Improvement

Also check out Home - Improvement Academy and New Home - Quality Improvement - East London NHS Foundation Trust : Quality Improvement – East London NHS Foundation Trust (elft.nhs.uk)


Thank you!!