Improvement Leaders' Programme

Participants' Guide

EAST LONDON NHS FOUNDATION TRUST

QUALITY IMPROVEMENT DEPARTMENT
9 Alie St, London, E1 8DE

Day 4

Participant Guide

Each module of the Participant Guide contains the following information:

	LEARNING OBJECTIVES The expected knowledge and skills participants will gain by the end of each module.
	KEY CONTENT Key content covered during each module.
	RESOURCES A list of resources used during each module.
	TRAINING ACTIVITIES A list of exercises done by participant's during each module.
	ASSESSMENT AND TAKE AWAY WORK An assessment of key information covered during each module.

Day 4

Welcome and Introductions

Video/Background

Camera

Integrated Camera

My preview

Change virtual background

None | Blur

Step 2. Select your background of choice.

If you want to remove the background then repeat the process and select 'None'

Camera

Integrated Camera

Settings...

Change virtual background

Stop video | Share

Step 1. If you would like to change your background, you can do so by clicking the 'Carat' symbol and selecting settings or change virtual background.

Change virtual background

Advanced Settings

☐ Hardware acceleration for video
☐ Hardware acceleration for sharing
☑ Automatically adjust camera brightness
☑ HD video

Troubleshooting

If you are losing connection or your system is slowing down, then please 'de-select' all available options.

NHS East London NHS Foundation Trust

Participants/Chat

Participants (1)

Search

ELFT QI
Host, me

In the 'Participants' tab you can see a few options available. You can 'raise your hand' & you can see your 'mute status'

Chat

To: Everyone

Enter chat message here

Participants | Chat | ...

Please ensure that when you are sending messages in the 'Chat', you select the option 'Everyone'. Unless you intend to send a message 'Privately' then ensure that you have selected the person correctly.

NHS East London NHS Foundation Trust

Breakout Room

When we open up the breakout rooms, you will notice that the 'Participants' section now contains the 'Breakout Sessions' feature.

Participants (1)

Main meeting | Breakout sessions

Q Search

> Breakout session 1 (0/0) — Join
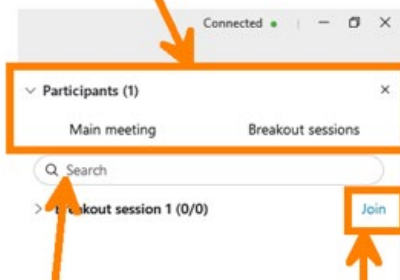
You can quickly search which breakout rooms you are looking for here.

Click here to 'join' the room

Participants (1)

You're currently connected to the **Breakout Session 1** session

(!) Session Time: 01:37 | (?) Ask for help

Q Search
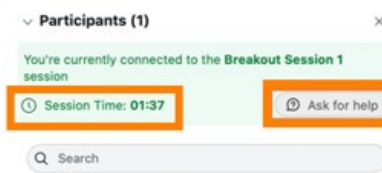
Once you are in the room, you can see the session time and you can 'ask for help' if you need any assistance.

Leave Breakout session 1 session

Do you want to leave the **Breakout session 1** session and return to the main session?

Leave session | Cancel
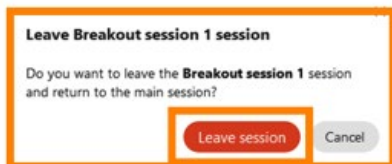
If you want to leave the breakout session, then select then click 'Leave session' – You will then go back to the main room.

My Notes 🖊

Module 4.1

Using Qualitative Data for Improvement

	LEARNING OBJECTIVES • Understand what qualitative data is Learn about some data collection methods and principles for qualitative data use in Improvement • Develop an understanding around analysis for qualitative data for Improvement
	KEY CONTENT • Qualitative Data
	RESOURCES • PowerPoint Presentation
	TRAINING ACTIVITIES • N/A
	ASSESSMENT • N/A

What is qualitative data?

Qualitative data helps us to understand the meaning people have constructed, that is, how people make sense of their world and the experiences they have in the world.

WHAT MATTERS THE MOST?

Qualitative data is critical at the start of an improvement journey, when you are trying to find "what matters the most" and improvement opportunities

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Quantitative

- Focus on numbers/numeric values
- Who, what, where, when
- Match with outcomes about knowledge and comprehension (define, classify, recall, recognize)
- Allows for measurement of variables
- Uses statistical data analysis
- May be generalize to greater population with larger samples
- Easily replicated

Qualitative

- Focus on text/narrative from respondents
- Why, how
- Match with outcomes about application, analysis, synthesis, evaluate
- Seeks to explain and understand
- Ability to capture "elusive" evidence of student learning and development

In your QI project you might be wanting to learn about…

- **Meaning**
  Example: What the current system means from different perspectives (clinicians, patients, families, communities etc.)
- **Experience**
  Example: The experience of improving a system or implementing an intervention
- **Context**
  Example: The context in which new change ideas are tested
- **Culture**
  Example: The safety culture/climate of an organisation

Qualitative Methods in Improvement: Why?

Appreciation of a System → Partnering with People Most Affected to Transform the System

Uncover, Understand Theory: Overall Program Theory & Theory of Knowledge

The Psychology of Change is about People/ Human Behaviour – And counting will only get you so far

Have a More Robust Way to Understand Variation, See the Fuller Context, Drive Learning

Ways of collecting Qualitative data – consider the advantages and disadvantages

Words

Interviews, Focus Groups, Autobiographies, Oral History

Documents

Letter, Feedback, Surveys, Policies, Pictures

Actions

Observation, Ethnography, Video

Interviews – advantages and disadvantages

INTERVIEWS:

Help understand issues to work on with multiple perspectives.
Provide deeper meaning behind people's views + theories

ADVANTAGES: Can explore deeper meaning.
Interviews can be individual or in a group
Can be structured, semi-structured or un-structured

DISADVANTAGES: Can be time intensive
Need to facilitate the interview and take notes/record. Analysing narrative data requires skill to understand issues from multiple perspectives

Thinking through the sequence of improvement where would you consider using qualitative data and how?

Identification of quality issue	Understanding the problem	Developing a strategy & change ideas	Testing	Implementation & Sustaining the gains
• Interviews (individual or group) to understand customer view of the service • Review of documented complaints	• Focus group to explore what lies beneath the issue • Surveys to understand the baseline • Case note review to understand cause & effect • Observation of workplace	• Surveys to generate new ideas	• Individual interviews to understand effect of PDSA • Survey to see if changes making a difference	• Observation to see impact on behaviour

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Tips and Tricks of the Trade

- **Purpose**: Always know what we are aiming to achieve with the data
  - Qualitative data help us understand THIS situation, THESE stories (not "the whole world").
- Pay attention to **power dynamics** and **overall context** of the data collection & analysis
- Avoid **quantifying** the qualitative

- **Plan**, practice and get coaching to continue to improve the use of qualitative data

- **Avoid closed questioning and use opening** the question techniques. Be a curious cat

Analysing Qualitative Data - thematic analysis

- **Stage 1 - Organise the data**: organise the data into a useable format and structure, such as writing up interview notes or transcribing audio recordings.

- **Stage 2 - Explore the data**: Read , read and read ...through the data and begin to identify potential themes. Get a second or third pair of analytical eyes

- **Stage 3 - Code and classify**: Code the data into any themes and subthemes that are either key areas of interest or that have been identified through organising the data.

- **Stage 4 - Explore relationships**: Look for similarities, differences, patterns and associations between the different themes and sub-themes. stage 5 - interpret the data: Develop possible explanations for the patterns observed in the data.

NHS England, 2017, Building greater insight through qualitative research.

My Notes ✏️

Module 4.2

Using Control Charts for Improvement

	LEARNING OBJECTIVES • Understand what a control chart is and how it can be used • Understand how to interpret a control chart • Understand the 5 basic types of Control chart used (C, U, P, I XbarS) and when to use
	KEY CONTENT • Control Charts
	RESOURCES • PowerPoint Presentation
	TRAINING ACTIVITIES • Appendix 1 - Page 40 to 42
	ASSESSMENT • N/A

The Lens of Profound Knowledge

"The system of profound knowledge provides a lens. It provides a new map of theory by which to understand and optimise our organisations."

(Deming, *Out of the Crisis*)

It provides an opportunity for dialogue and learning!
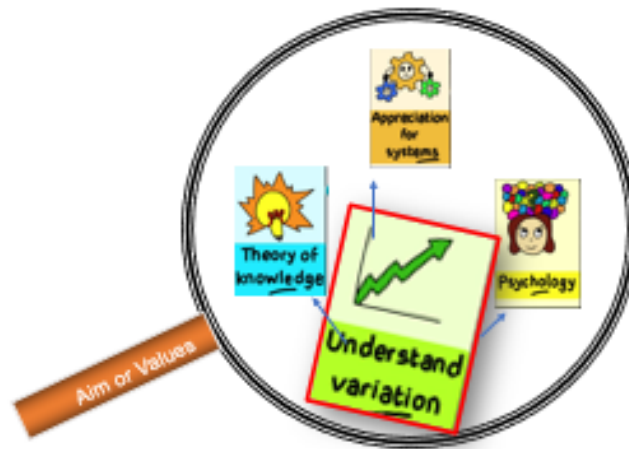
Run Charts – Variation

Use the chat box

Name two types of variation are in run charts?	Random Non-random
Which variation would be considered normal?	Random
How many data points do you need to start using a run chart?	10

The Statistical Process Control (SPC) Pioneers

W. Edwards Deming
(1900 - 1993)

Walter Shewhart
(1891 – 1967)

Joseph Juran
(1904 - 2008)

Three Names

Control Charts

Shewhart Charts

SPC Charts

Not looking for static dynamic – data at a fixed point in time is a snapshot

"You could not step twice into the same rivers; for other waters are ever flowing on to you".
- Heraclitus

We can learn a lot more about this river by following it to its destination than by stepping into it at one point in time

Data over time helps us to understand how a system is performing

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A tool we can analyse

- Common or controlled
- Special cause

What's happening in this process?

Variation

Stability

Predictability

How do we calculate the mean?

1 2 3 4 5 6 7 8

Sum Total of the figures listed here = 5 14 21 19 40 7 58 32 = 106

DIVIDED BY

No of figures = 8
= 106 ÷ 8 = 24.5

Control Charts – Two types of variation

Controlled or common cause variation

Special cause

What's different about Control Charts? 🤔

Control Charts rather than Run charts – but aren't they the same?
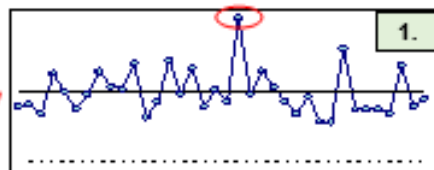
- **Mean** rather than median

- **Boundaries or limits** of routine/common cause variation

- **More accurate rules** that better identify exceptional patterns of variation (Special Cause)

Zones underpin key rules for detecting special cause

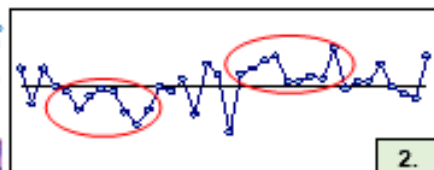*Control Chart Rules for Detecting Special Causes (IHI rule)*

Six consecutive points increasing (trend up) or decreasing (trend down)

3.

Similar to run chart patterns, but more rigorous

A single point outside the control limits

1.

Uses control limits!

Two our of three consecutive points near a control limit (outer one-third)

4.

Uses control limit zones !

Eight or more consecutive points above or below the centerline

Similar to run chart patterns, but more rigorous

2.

Fifteen consecutive points close to the centerline (inner one-third)

Uses control limit zones !

5.

Rule 1

A **single point** outside the control limit

Uses control limits!

1.

Rule 2

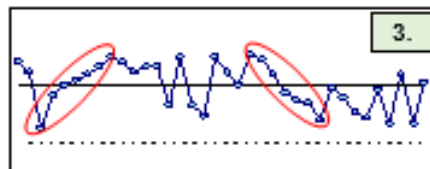### Eight or more consecutive points above or below the center line

Similar to run chart patterns, but more rigorous

2.
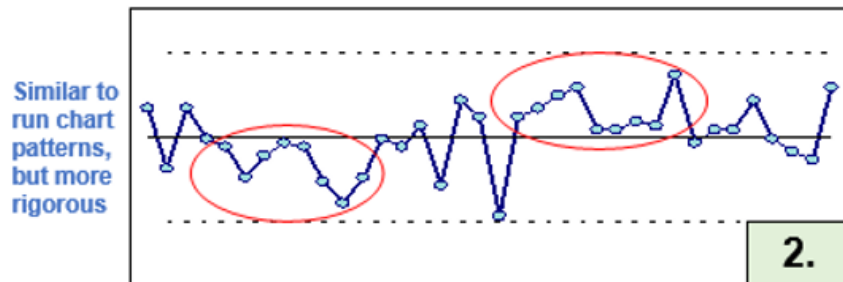
Rule 3

Six consecutive points increasing (trend up) or decreasing (trend down)
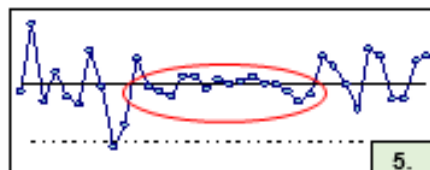

3.
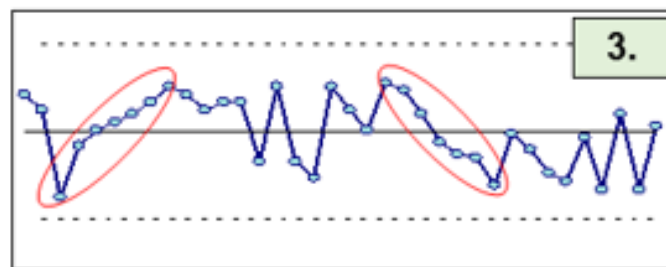
Similar to run chart patterns, but more rigorous

Rule 4

Two out of three consecutive points near a control limit (outer one third = A)

4.

Uses control limit zones !

Rule 5

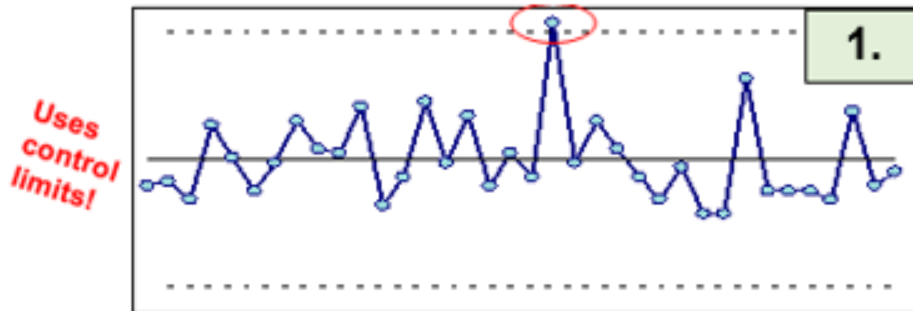## Fifteen consecutive points close to the center line (inner one third = C)

5.

Uses control limit zones !

```
                           Type of data

        Attributes data                          Continuous (variable data)

        Numbers of items that passed or failed   Measurement, on some time of scale
        Data must be whole number when           Time, money, height/weight, throughput (workload,
        originally collected                     productivity)


    Count                  Classification     Each dot on the        Each dot on the
                                              chart consists of a    chart consists of
    1,2, 3, 4 etc. (errors, Either/or, pass/fail, single observation  multiple data values
    falls, incidents)      yes/no             (i.e. cost per
    Numerator can be                          episode of care,       X-bar plots the average
    greater than           Percentage or      waiting time for       of all the data values
    denominator            proportion         each patient)          S plots the standard
                                                                     deviation of the data
                                                                     values

  Equal area  Unequal      Equal or           Subgroup               Equal or unequal
  of          area of      unequal            size of 1              subgroup size (n>1)
  opportunity opportunity  subgroup size      (n=1)


  C chart     U chart      P chart            I chart                X̄ and S chart
```
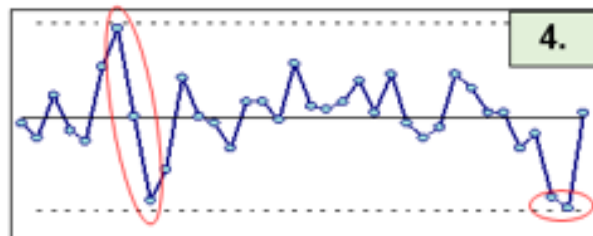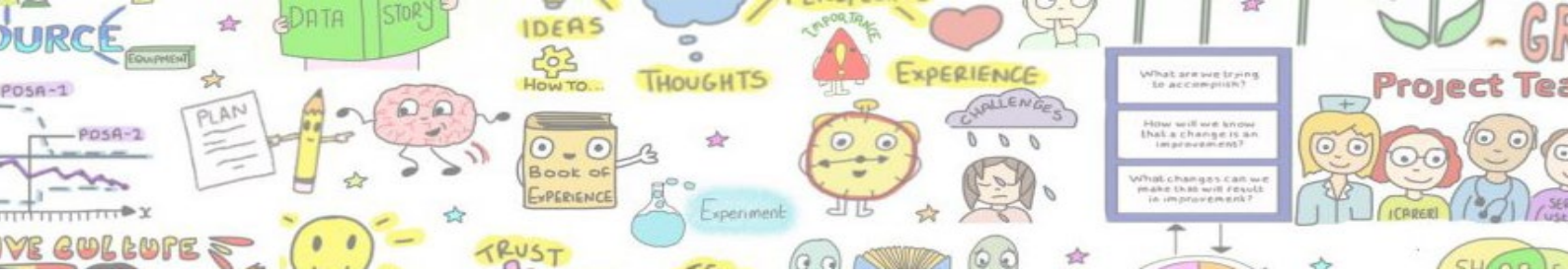
Types of quantitative data

Variables Data

Attributes Data

**Count – data is counted, not measured.
Must be whole numbers**
e.g. number of errors / falls / incidents

Classification – percentage that meet a particular criteria
e.g. % of staff who receive supervision each month
e.g. % of new assessments where a Water low score was completed

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There are 5 basic control charts

Attributes Charts

- **C chart**
  (number of defects)

- **U chart**
  (defect rate)

- **P chart**
  (proportion or percent of defectives)

Variables Charts

- **I chart**
  (individual measurements)

- **$\bar{X}$ & S chart**
  (average & standard deviation chart)

Source: R. Lloyd. Quality Health Care: A Guide to Developing and Using Indicators. Jones and Bartlett, 2004, Chap.6

Attributes data

- Data that we collect that often involves some sort of judgement (e.g., what is an error, what is late, what is satisfaction)

- Must be a whole number when collected and data are collected as a category or a count

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Attributes data

Classification – there are only two outcomes here.

An item or event is either "ok" or "not ok" (a binomial condition).

- Conforming/not conforming

- Completed/not completed

- Harm/no harm

- Pass/fail

- Good/bad

Count – you count the number of 'things' you are making a judgement on.

- No. drug administration errors

- No. pressure ulcers

- No. patients saying they are extremely satisfied

- No. serious incidents

Usually, things we don't want to happen (adverse events)

Count vs. Classification data

	Record 1	Record 2	Record 3	Record 4	Record 5
Medical records	X x		X x X x x X x x	x	
Classification (Pass/fail)	Fail	Pass	Fail	Fail	Pass
Count (errors)	2	0	8	1	0

Summary:

Classification 3/5 fail = 60% Failed

Count 11 errors / 5 records = 2.2 errors per record

I've got count data which chart do I use?

Area of opportunity – Frame or area within which the count of data occurs

e.g., number of units (procedures, patient charts), Time (one week, one shift)

Equal Area of Opportunity – C Chart

Unequal Area of Opportunity – U Chart

Variables Data

Quantitative data that uses some sort of measurement scale doesn't have to be a whole number when collected:

Can include decimal places;

Time

Money

Experience/perception data on Likert scale

Workload

Productivity

I've got variables data-which chart?

I CHART	X and S Chart
Each data point on the chart consists of only one observation	Each data point on the chart consists of multiple observations or data values
e.g. Length of stay of each individual patient on an inpatient mental health ward	e.g. Average waiting time for an community health team

My Notes ✏️

Module 4.3

Action Learning Set - 3

ALS Design

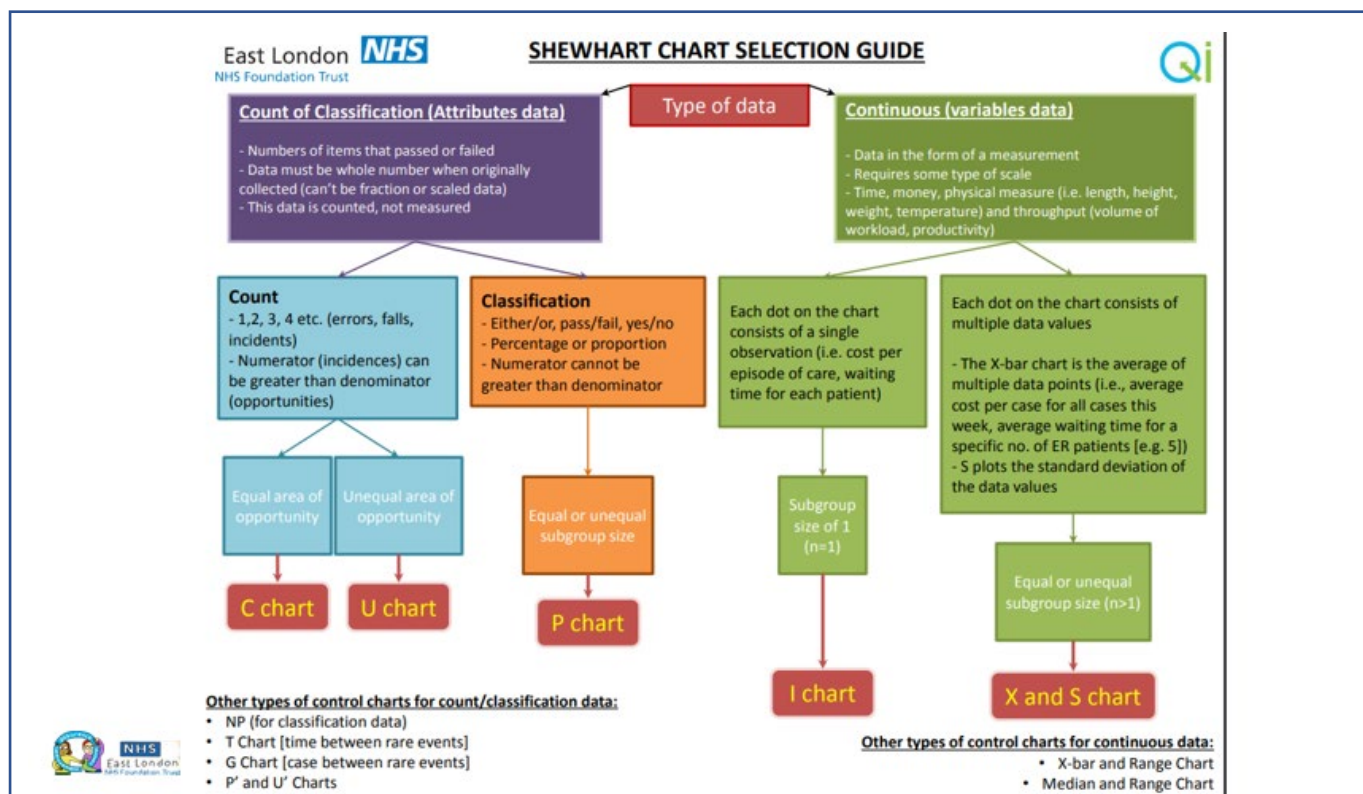| Activity	Description	Time
	Arrival Buffer	5 mins
1. Control Chart Selection	Individual time to practice selecting a Control Charts. (10 min) Share back the chosen chart and rationale with the group. (15min) Followed by discussion and Q&A with facilitator. (15 min)	40 mins
BREAK		10 mins
2. Control Chart Rules	Individual time to practice interpreting Control Charts. (15 min) Followed by group discussion and agreement on correct answers. (10 min) Followed by report back, discussion and Q&A with facilitator. (15min)	40 mins

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Activity 1: Control Chart Selection (40 min)

Test your knowledge and build understanding around Control Chart selection

1) Assign one scenario to each person in your room. There are 6 scenarios, so if you have more than 6 people, more can be assigned the same scenario.

2) Find the Control Chart selection guide on the QI website https://qi.elft.nhs.uk/resource/shewhart-chart-selection-guide/

3) On your own, select the correct control chart for your scenario. Write down the answer and rationale. If you have time, tackle another scenario. **(10 mins)**

4) Share back the chosen chart and rationale with the group. **(15min)**

5) Report your final answers to your facilitator. Discussion and Q&A **(15 mins)**

SHEWHART CHART SELECTION GUIDE

East London NHS Foundation Trust

Type of data

Count of Classification (Attributes data)
- Numbers of items that passed or failed
- Data must be whole number when originally collected (can't be fraction or scaled data)
- This data is counted, not measured

Continuous (variables data)
- Data in the form of a measurement
- Requires some type of scale
- Time, money, physical measure (i.e. length, height, weight, temperature) and throughput (volume of workload, productivity)

Count
- 1,2, 3, 4 etc. (errors, falls, incidents)
- Numerator (incidences) can be greater than denominator (opportunities)

Classification
- Either/or, pass/fail, yes/no
- Percentage or proportion
- Numerator cannot be greater than denominator

Each dot on the chart consists of a single observation (i.e. cost per episode of care, waiting time for each patient)

Each dot on the chart consists of multiple data values
- The X-bar chart is the average of multiple data points (i.e., average cost per case for all cases this week, average waiting time for a specific no. of ER patients [e.g. 5])
- S plots the standard deviation of the data values

Equal area of opportunity → **C chart**

Unequal area of opportunity → **U chart**

Equal or unequal subgroup size → **P chart**

Subgroup size of 1 (n=1) → **I chart**

Equal or unequal subgroup size (n>1) → **X and S chart**

Other types of control charts for count/classification data:
- NP (for classification data)
- T Chart [time between rare events]
- G Chart [case between rare events]
- P' and U' Charts

Other types of control charts for continuous data:
- X-bar and Range Chart
- Median and Range Chart

Activity 1, Scenario 1: Control Chart Selection

Question
- Which control chart should the team choose to monitor the number of pressure injuries each month? Why?

At Heart Hospital in Doha, Qatar, 127 pressure injuries were identified in 2014, corresponding to an incidence
of 6.1/1000 patient-days in first 4 months of 2014.

Hospital-acquired pressure injury (HAPI) is one of the most common preventable complications of hospitalisation.
They also have a significant impact on patients in terms of pain, worsened quality of life, psychological trauma and increased length of stay.

Aim
To reduce HAPIs from 10 per month to 4 HAPIs per month by 31 December 2018.

Activity 1, Scenario 2

In the East London National Health Service (NHS) Foundation Trust (ELFT) Community Musculoskeletal (MSK) Physiotherapy Service, a large proportion of appointments were recorded to have not been attended by patients.

The service offers approximately 21 000 appointments per year, thus averaging 400 patients per week. Baseline data identified that 23.76% of newly referred patients did not attend their first appointment and 23.74% of current patients failed to attend their follow-up appointment.

Aim

The overall aim of this project was to reduce the percentage of missed appointments within the ELFT
community MSK physiotherapy service.

Question

- Which control chart should the team choose for recording the percentage of missed appointments? Why?

Activity 1, Scenario 3

Ward-based violence is the most significant cause of reported safety incidents at East London NHS Foundation Trust (ELFT). It impacts on patient and staff safety, well-being, clinical care and the broader hospital community in various direct and indirect ways.

A QI methodology was applied in medium and low secure inpatient settings. A change bundle was tested for effectiveness, which included: safety huddles, safety crosses and weekly community safety discussions.

Aim:

The aim was to reduce incidents of inpatient violence and aggression across two secure hospital sites by at least 30% between July 2016 and March 2018.

Question

- Which control chart should the team choose to record the average incidents of violence per thousand bed days? Why?

Activity 1, Scenario 4

City and Hackney Adult Mental Health Referral and Assessment Service (CHAMHRAS) is the single point of entry for all mental health referrals to secondary services, with the exception of perinatal referrals, in the City and Hackney region of London, UK.

Throughout 2014, the average waiting time by month for a first face-to-face assessment varied between 42 and 67 days. In December 2014, the average waiting time was 58 days.

Aim:
To reduce the average waiting time from referral to first face-to face appointment, including both internal and external referrals and including patients who 'Did Not Attend' their appointments (DNAs) and cancellations from an average of 60 days to 40 days by November 2016.

Question
- Which control chart should the team choose to record average waiting time each month from referral to first appointment? Why?

Activity 1, Scenario 5 (20 mins)

Length of stay and bed occupancy are important indicators of quality of care. Admissions are longer on older adult psychiatric wards as a result of physical comorbidity and complex care needs.

The recommended bed occupancy is 85%; levels of 95% or higher are associated with violent incidents on inpatient wards.
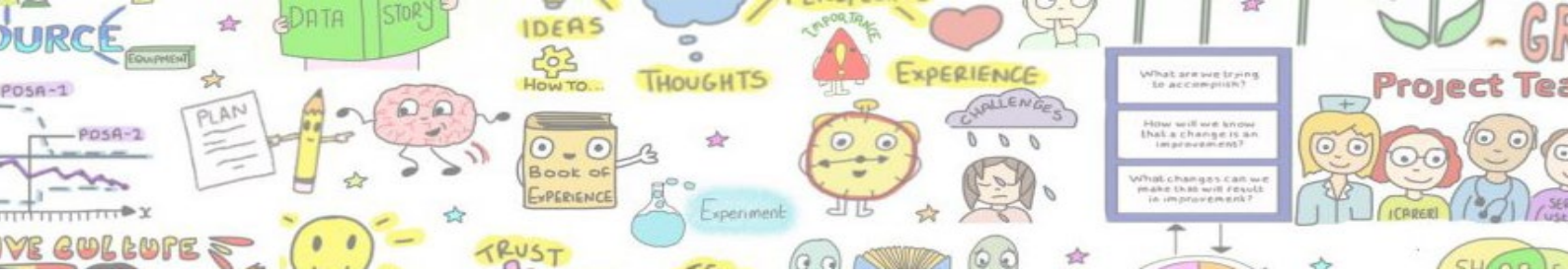
Aim:
We aimed to reduce length of stay and bed occupancy on Leadenhall ward, a functional older adult psychiatric ward serving a population of just under 40 000 older adults in two of the most deprived areas of the UK.

Question
- Which control chart should the team choose to monitor average length of stay each week? Why?

Activity 1, Scenario 6

Ward A is passionate about improving patient safety and maintaining high standards of Infection, Prevention & Control. The ward team decides to monitor the number of days between infection outbreaks on their ward.

Question

- Which control chart should the team choose to monitor the number of days between infection outbreaks? Why?

Activity 2: Interpreting Control Charts (40 min)

**Test your knowledge and build understanding around interpreting Control Charts**

1) Find the Control Chart rules on the QI website
   https://qi.elft.nhs.uk/resource/how-to-interpret-control-charts/

2) On your own, interpret the 4 control charts. For each chart, work through all 4 control chart rules to identify special cause variation. Annotate the chart before moving to the next chart. **(15 mins)**

3) As a group, discuss each chart and agree on which rules are met on each. **(10 mins)**

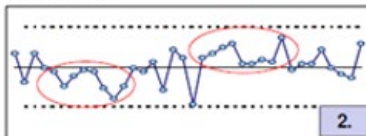4) Report your final answers to your facilitator. Discussion and Q&A **(15 mins)**

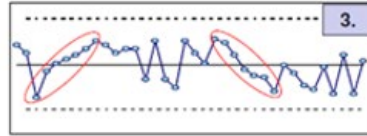## Control Chart Rules

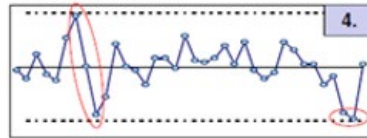**Rules for Detecting Special Causes**
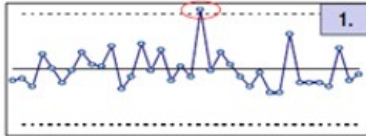
Six consecutive points increasing (trend up) or decreasing (trend down)

3.

A single point outside the control limits

1.

Two our of three consecutive points near a control limit (outer one-third)

4.

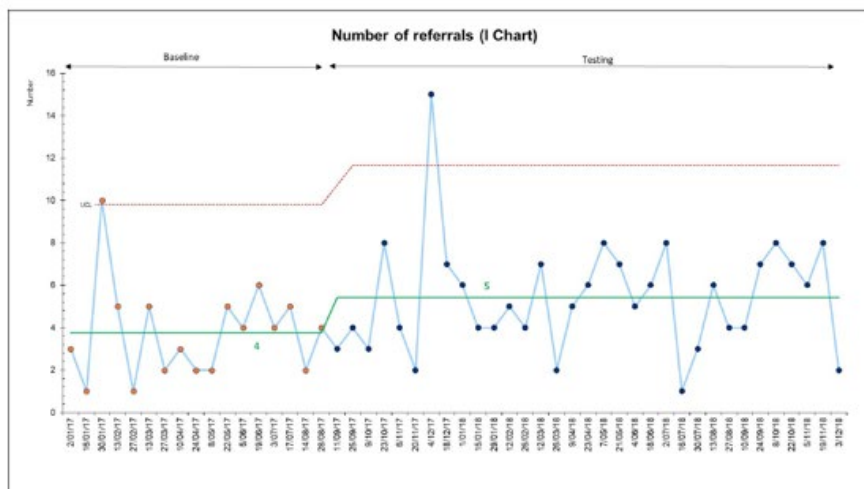Eight or more consecutive points above or below the centerline

2.

Fifteen consecutive points close to the centerline (inner one-third)

5.
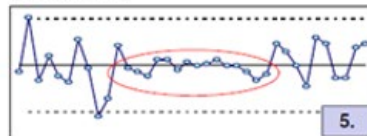
Which rules can you spot? 7 mins
Session 2, Activity 1

Number of referrals (I Chart)
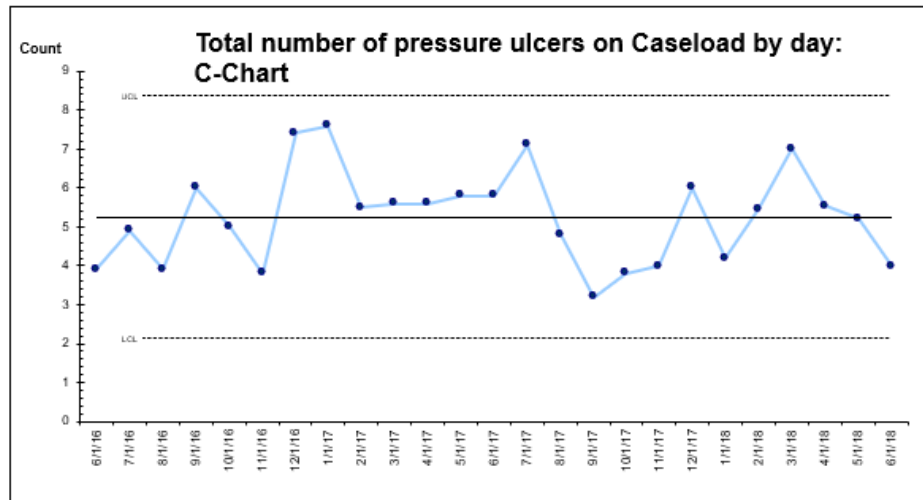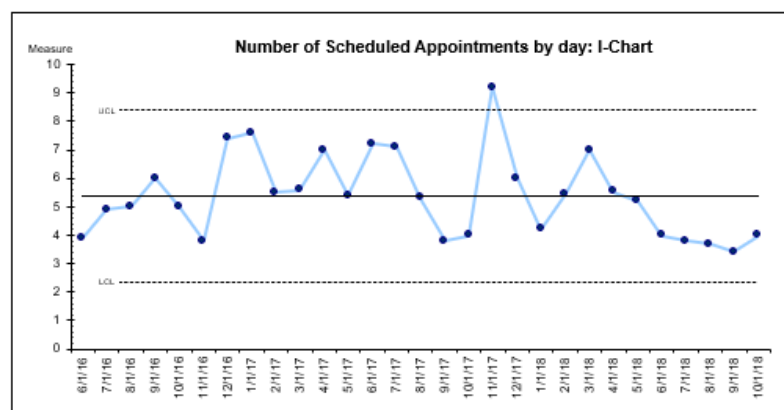
Which rules can you spot?

Session 2, Activity 2

Which rules can you spot?

Session 2, Activity 3:
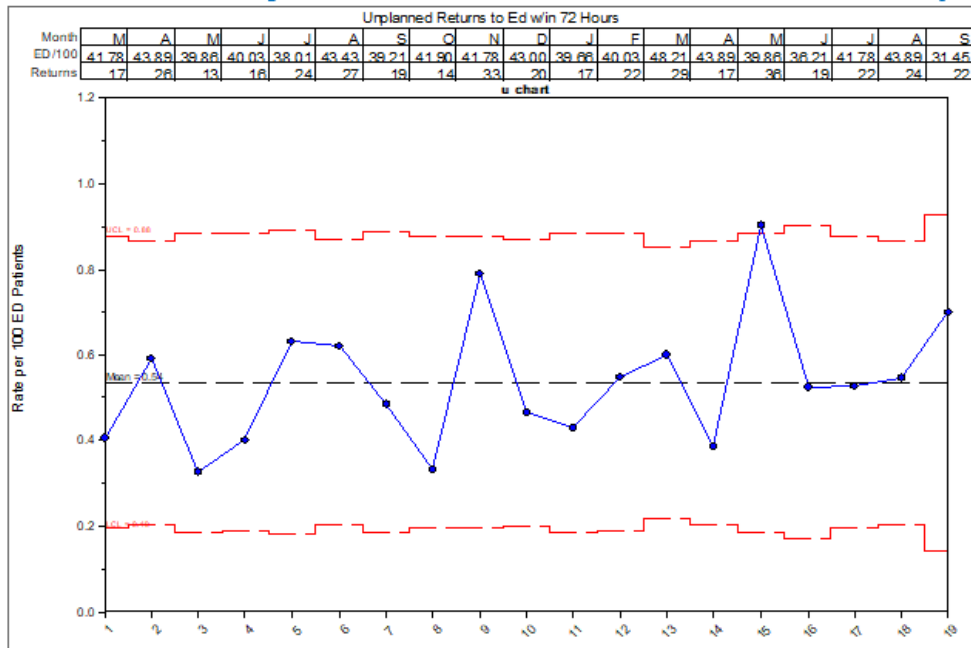
Which rules can you spot?

Session 2, Activity 4:

My Notes ✏️

Appendix 1

Charts

Is there a Special Cause on this chart? (1)

Unplanned Returns to Ed w'in 72 Hours

Month	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
ED/100	41.78	43.89	39.86	40.03	38.01	43.43	39.21	41.90	41.78	43.00	39.66	40.03	48.21	43.89	39.86	36.21	41.78	43.89	31.45
Returns	17	26	13	16	24	27	19	14	33	20	17	22	29	17	36	19	22	24	22

u chart

Rate per 100 ED Patients

UCL = 0.88
Mean = 0.53
LCL = 0.18

Is there a Special Cause on this chart? (2)

Percent Trauma Patients D/C to Home

Month	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Trauma Volume	626.7	658.0	597.0	600.0	570.0	651.0	588.0	628.0	626.0	645.0	594.0	600.0	723.0	658.0	598.0	543.0	627.0	658.0	582.0
# D/C to Home	231	241	220	227	260	233	238	250	270	240	227	228	264	278	261	208	268	293	264

p chart

%

UCL = 45.83
Mean = 39.93
LCL = 34.03

Number of Patient Compliments by Month (3) (XmR – I Chart)

Are there any special causes present? If so, what are they?

Any special causes? What is happening in this chart?

X No of 18 wk waiters

Spiral Journaling

One thing I learned from the teaching this morning…	One thing I learned about myself today…
What one tool I will use to understand the problem…	**What will help me to succeed in completing the action period work?**