CLAHRC Healthcare Improvement Support System (HISS)

Dr Vasa Curcin
Research Fellow
Department of Computing
Imperial College London

CLAHRC Programme

Collaboration for
Leadership in
Applied
Health
Research and
Care

5 year programme

£10m central funding (NIHR)

£10m from local health economy partners

CLAHRC Vision

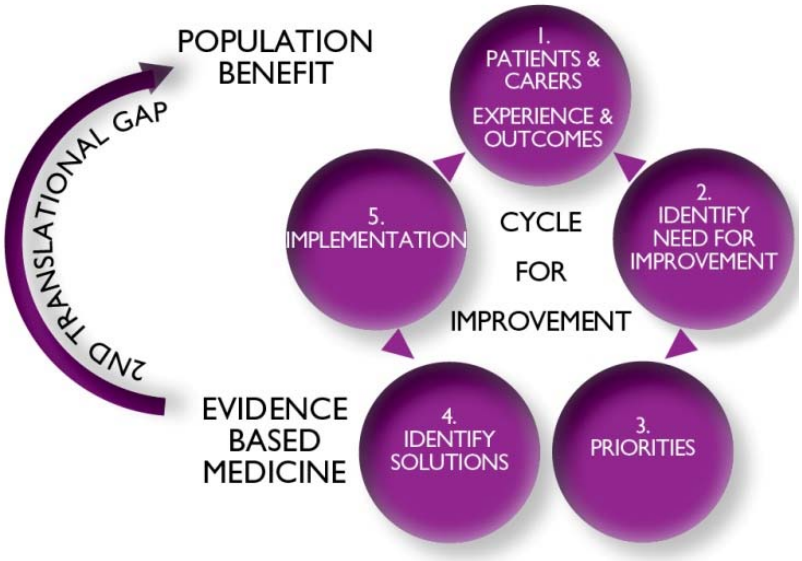
To continuously improve the quality of patient care by accelerating the implementation of evidence based research and innovations into practice

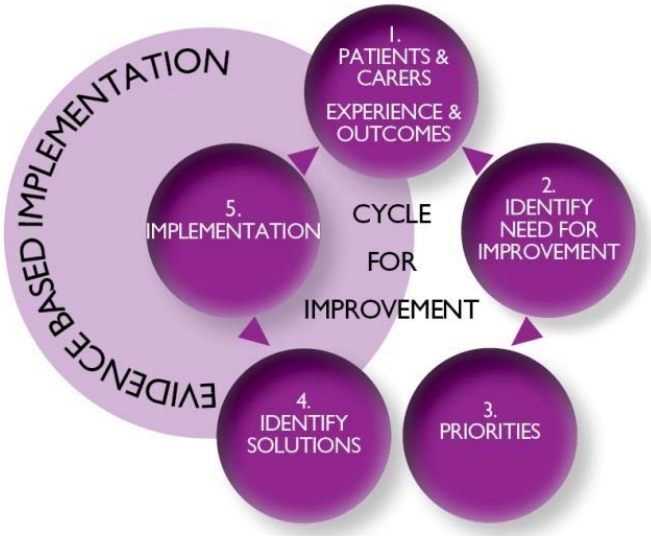
- Improvement projects
  - Four overlapping rounds of 18-month projects
  - 50 project teams in total so far
  - Each project implementing evidence locally to improve care
- Evaluation
- Collaborative Learning and Delivery
- Patient and Public Involvement

Health Improvement Support System (HISS)

- Model-driven improvement
  - Process model agreed by the implementation team in the clinical setting
  - Using process maps and action-effect diagram
- Model used to generate the software environment for the team:
  - Web data entry forms (general and team-specific)
  - Quantitative and qualitative live reports
  - Team management tools

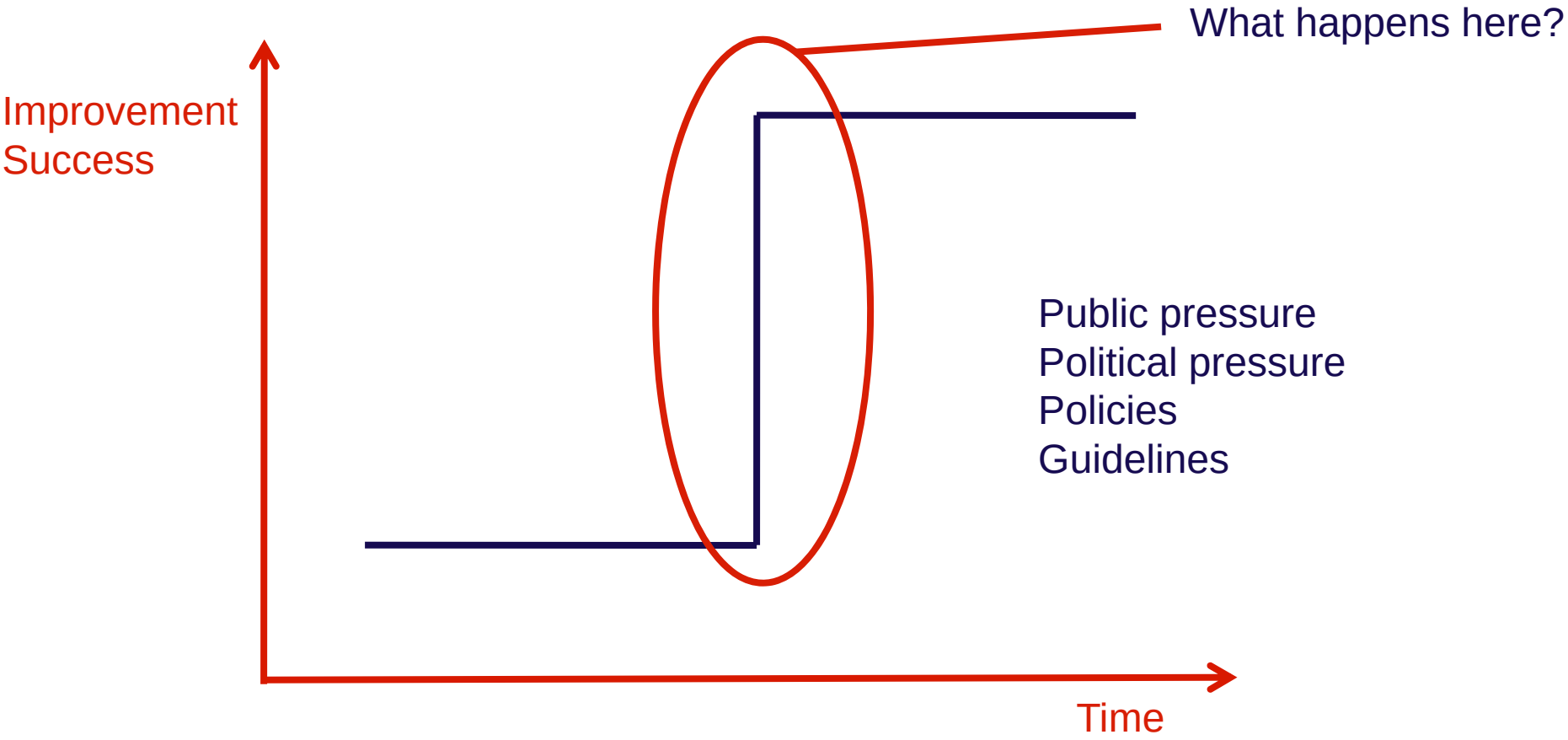
The CLAHRC approach





- From evidence based medicine
- To evidence based practice
- Via evidence based implementation
- Cycle managed through an informatics backbone

Change… is not that simple



Change principles

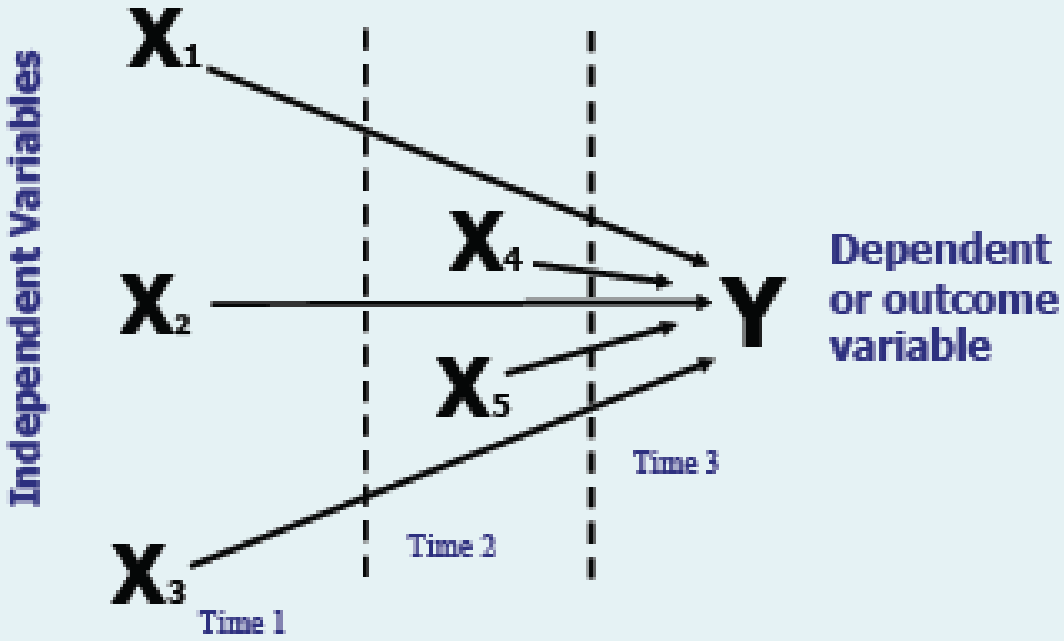
Is life this simple?

X ⟶ Y

(If only it was this simple!)

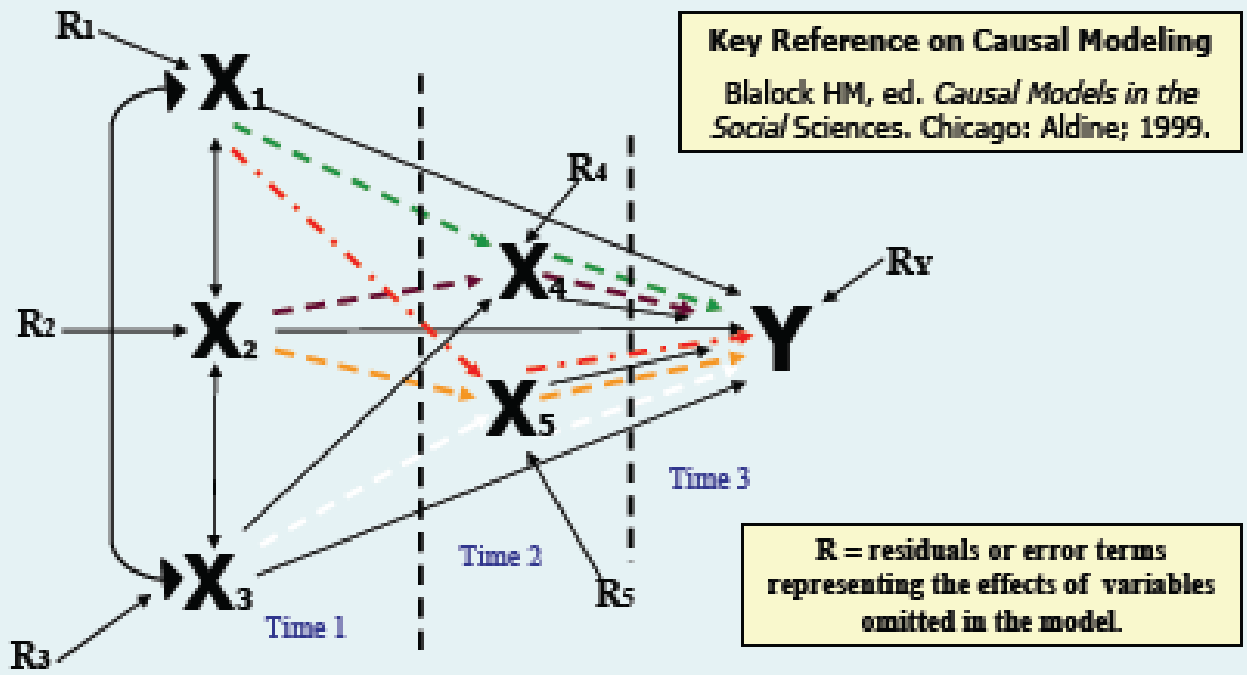
No, it looks more like this

In this model there are numerous **direct effects** between the independent and variables (the Xs) and the dependent variable (Y).



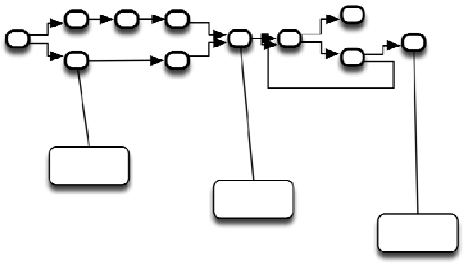
Or probably more like this…

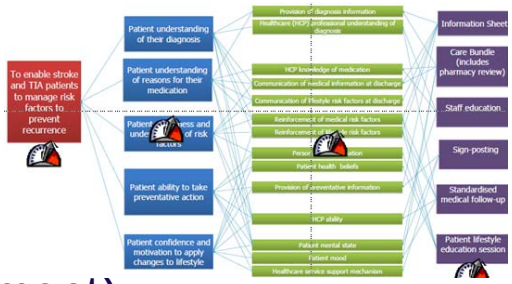
In this case, there are numerous **direct** and **indirect effects** between the independent variables and the dependent variable. For example, X_1 and X_4 both have **direct effects** on Y plus there is an indirect effect due to the **interaction** of X_1 and X_4 conjointly on Y.

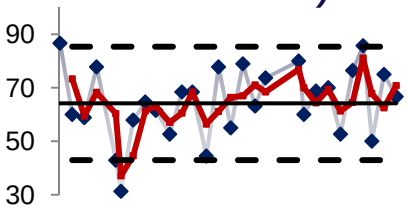


CLAHRC Methodology

- Map context and set aims
  - Process mapping
  - Stakeholder engagement
  - Action effect diagrams
- Agree improvement measures
- Collect baseline data
- Data collected on a daily/weekly basis
  - Quantitative (project specific)
  - Qualitative (sustainability, patient-public involvement)
- Live report feedback
- Model for Improvement
  - Plan-Do-Study-Act







PDSA measurement cycle

The PDSA cycle to test a change idea

- what changes are to be made to the next cycle?
- can the change be implemented?

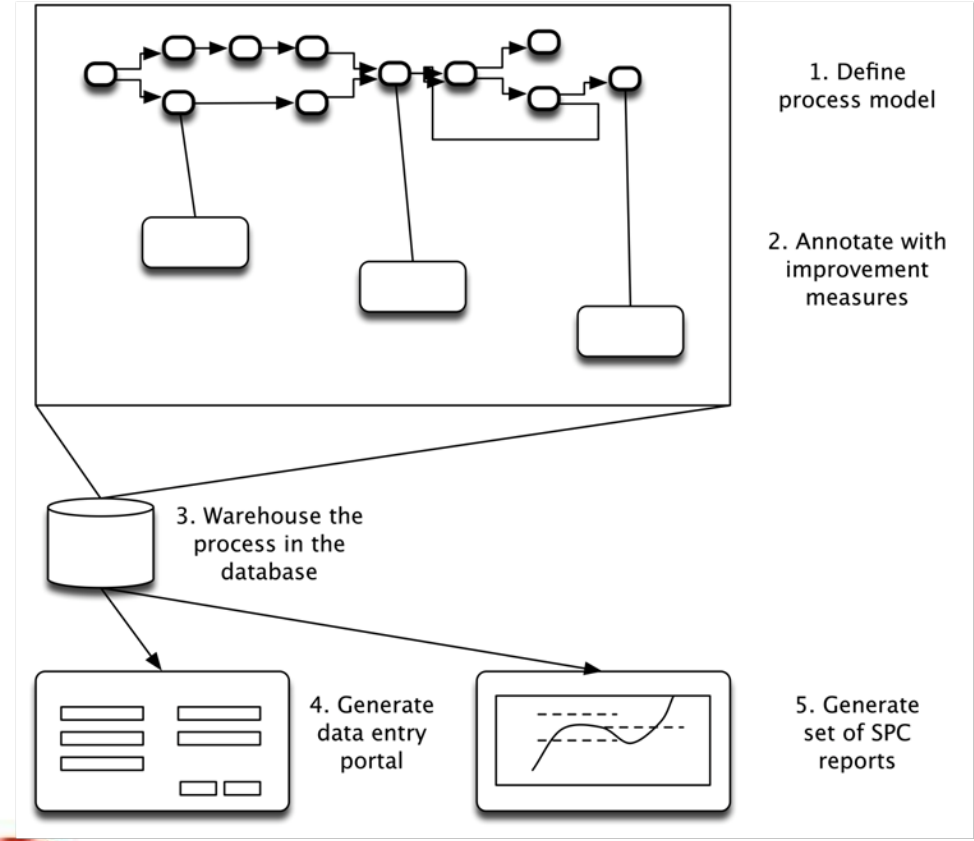
- set objectives
- ask questions
- make predictions
- plan to answer the questions (who, where, when)
- plan to collect data to answer questions

- complete the analysis of the data
- compare data to predictions
- summarise what was learned

- carry out the plan
- collect the data
- begin analysis of the data

Healthcare Improvement Support System (HISS)

- Healthcare process specified
- Improvement measures defined in terms of process
- Qualitative data to provide context
- A web-based data entry tool captures data on a daily/weekly basis
- Live reporting available, with statistical process control (SPC) charts



HISS model

- Process annotated by data capture points
- Each data capture point contains:
  - Metric with user label, formal definition and data type
- Improvement measures agreed with the users
- Measure is expressed in terms of data points captured
  - Optional filters
  - Aggregation on a specified period (week/month/etc.)

ID	Short Name	Prompt	Type	Required?	Definition
D1	Week commencing	Week commencing for completed nurse assessment forms	Date	Yes	The week commencing for the date entered on the Nurse Assessment form.
D2	Ward	Name of Ward	AMU/AAU/Osterley	No	The name of the ward to which the patients were admitted at the time the nurse assessment form was completed
D3	Positive assessments	Number of patients with signs/symptoms of diabetic foot	Number	Yes	The number of patients identified with either ulcer, infection, ischaemia or charcot
D4	Negative assessments	Number of patients with no signs/symptoms of diabetic foot	Number	Yes	The number of patients identified with neither ulcer, infection, ischaemia or charcot
D5	Assessments not done	Number of patients where assessments not done	Number	Yes	The number of patients where all responses to questions entered as "Not done"
D6	Doctors form completed	Date doctor's form completed	Date	Yes	The date, where available, when the doctors assessment form as been completed where appropriate

ID	Name	Calculation	Definition
M1	Number of diabetic foot assessments completed by nurses	SUM [D3] + [D4] + [D5]	The number of patients screened by nurses during the previous week
M2	Percentage of patients screened who required doctor assessment	([D3]/M1)*100	The percentage of patients identified requiring further assessment in the previous week
M3	Percentage of patients identified by nurse screen that required and received doctor assessment	([COUNT D6 If D6 NOT NULL]/[D3])*100	The percentage of patients identified requiring further assessment and followed by a doctors assessment in the previous week

Data entry

CLAHRC Web Reporting Tool

clahrc.doc.ic.ac.uk:55050/DataEntry/DiafootEdit.seam?usersUserId=641&projectProj

NIHR CLAHRC for Northwest London

NHS National Institute for Health Research

Project: Diafoot | Home | Reports | Resources | Tom is logged in. | Logout | Session expires in: 29:21

Add Diafoot

Week commencing for completed nurse assessment forms *	
Name of Ward	Click to select
Number of patients with sign/symptoms of diabetic foot *	0
Number of patients with no sign/symptoms of diabetic foot *	0
Number of patients where assessments not done *	0
Number of doctors form completed *	0

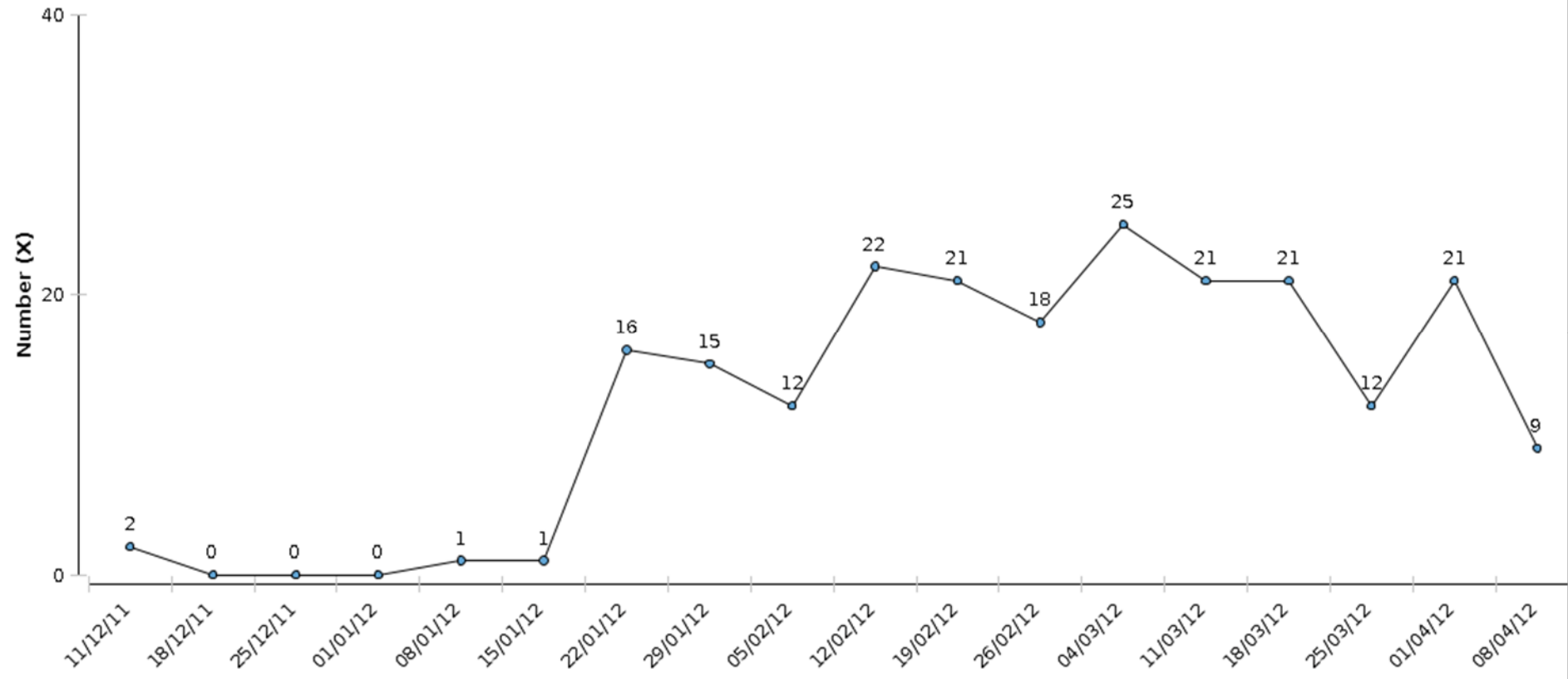
* required fields

Save | Cancel

Imperial College London | Web Reporting Tool User Guide | Chelsea and Westminster Hospital NHS Foundation Trust

Report element

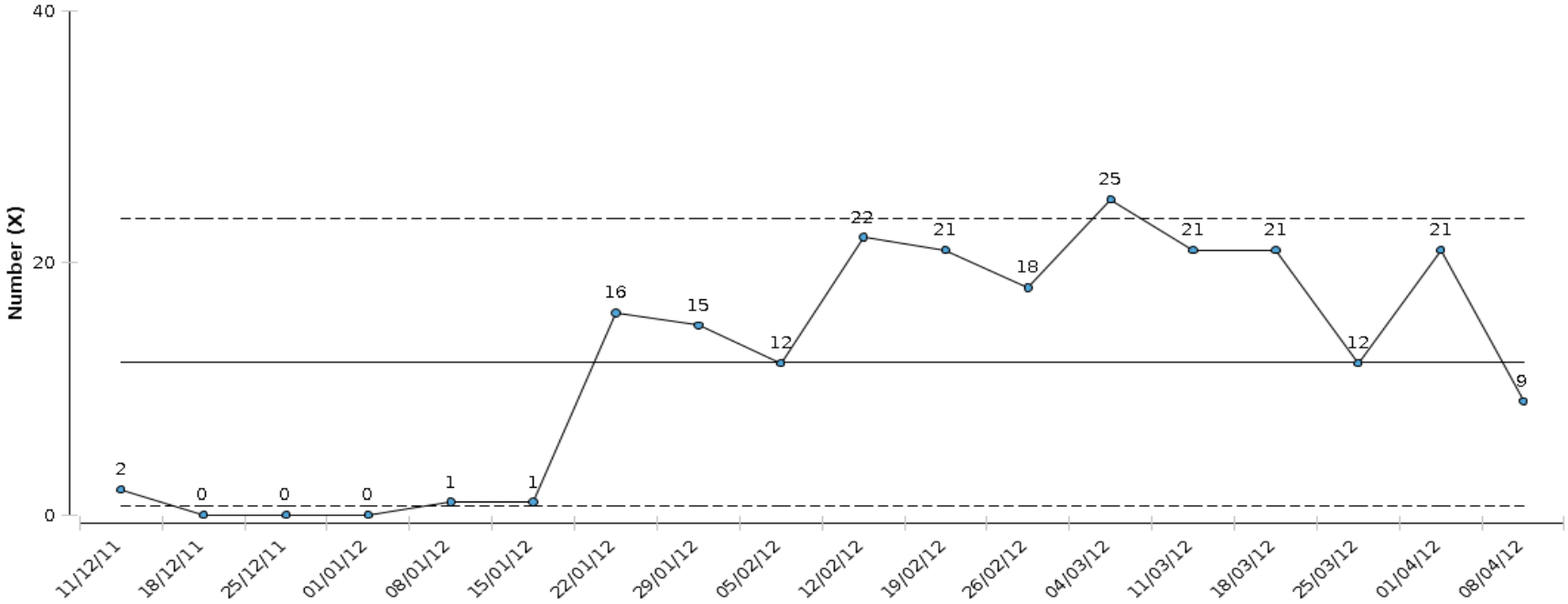
Number of diabetic foot assessments completed by nurses



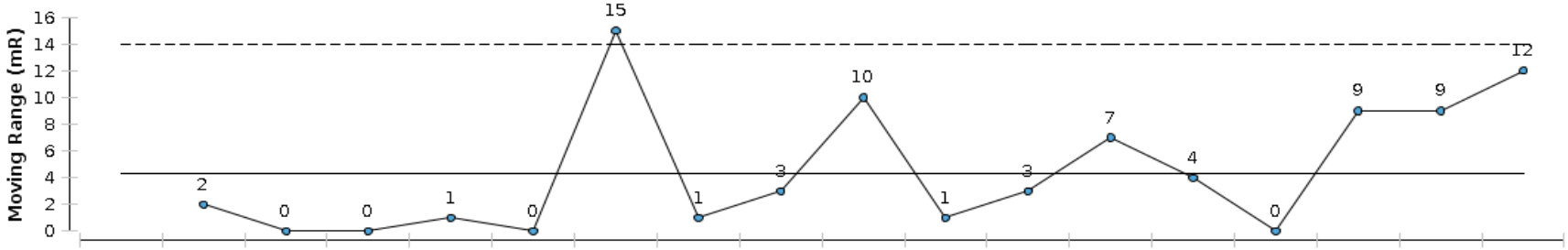
Report with SPC annotation

Number of diabetic foot assessments completed by nurses

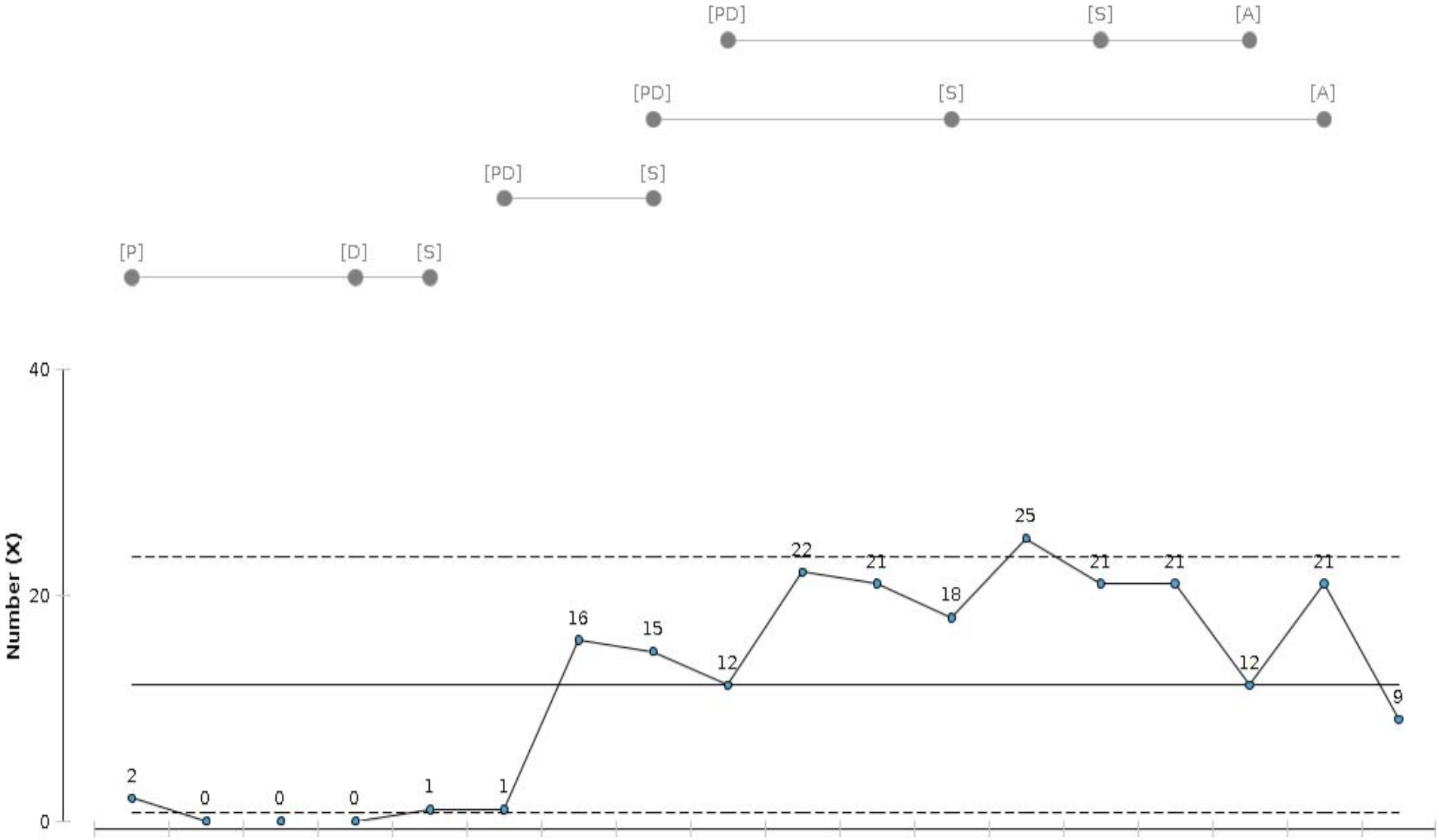
Top control: 23.4
Average: 12.1
Bottom control: 0.7



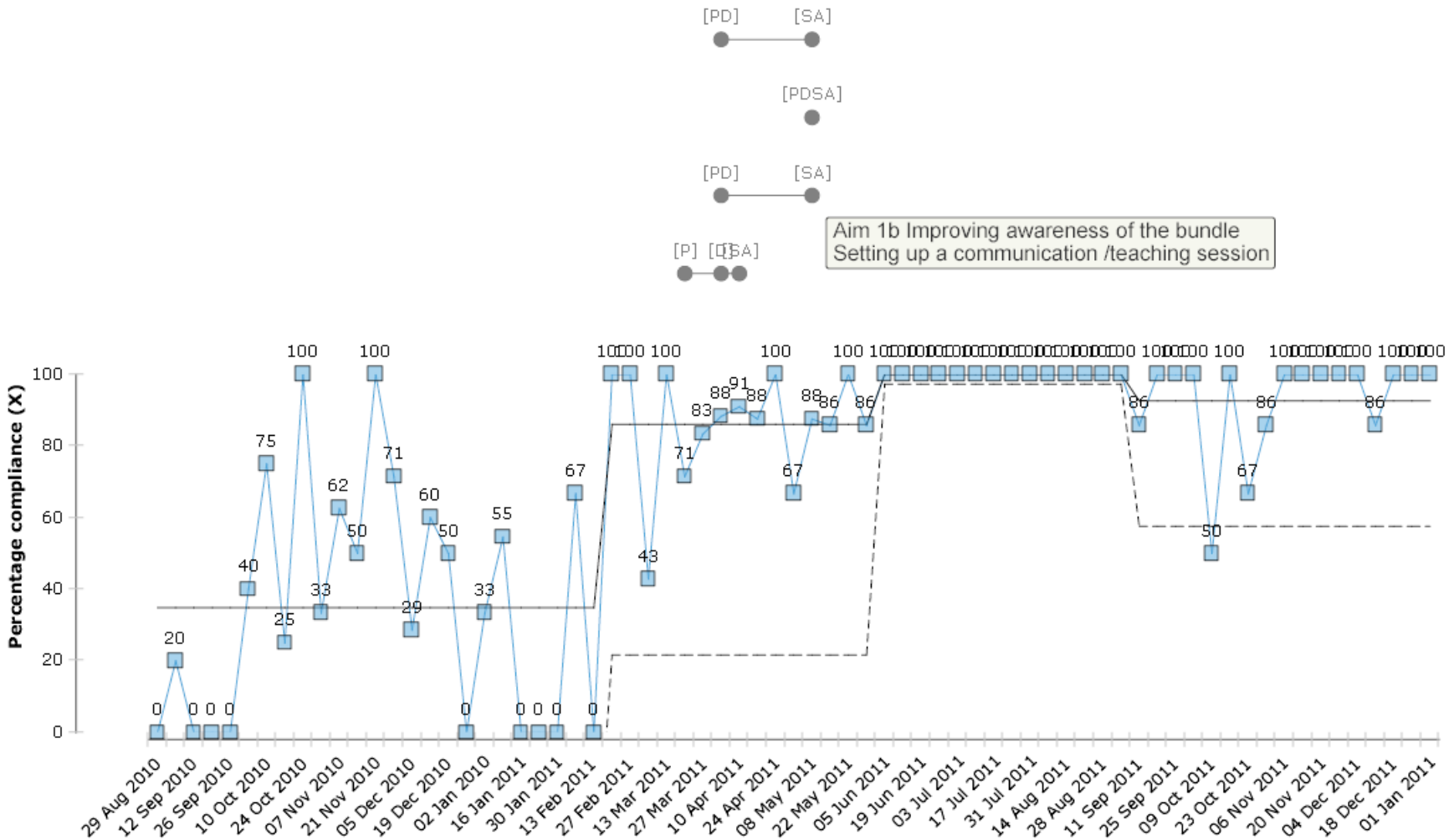
Top Delta: 14
Delta Bar: 4.3



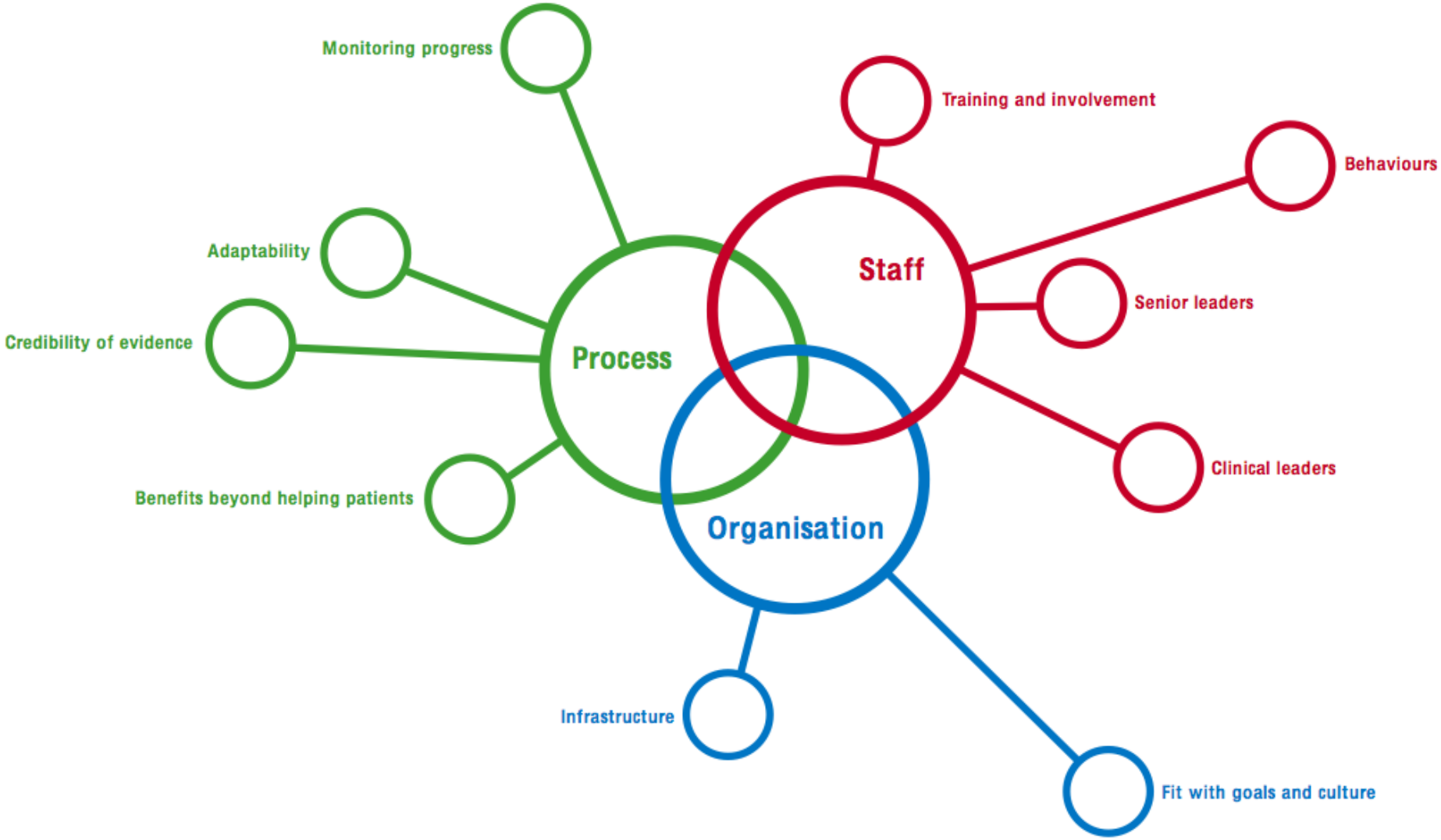
Report with PDSA annotation



Tracking improvement



Sustainability model



Sustainability entry

Add Sustainability

The NHS Institute for Innovation and Improvement has identified 10 factors that affect the long term success of improvement initiatives within an organisation. As a member of a CLAHRC team you should complete this model, below, prior to each Collaborative Learning and Delivery event. This allows your team to

- understand the range of views within the team,
- identify challenges to sustaining the work of their project,
- prompt discussions on how longer term success can be embedded,
- take action accordingly.

More information about the NHS Sustainability Model can be found here.
Please select the current level of each factor that best describes your personal perspective of the project. More information on how to complete this section can be found here.

CLD event * Spring CLD 2012 (25th April 2012)

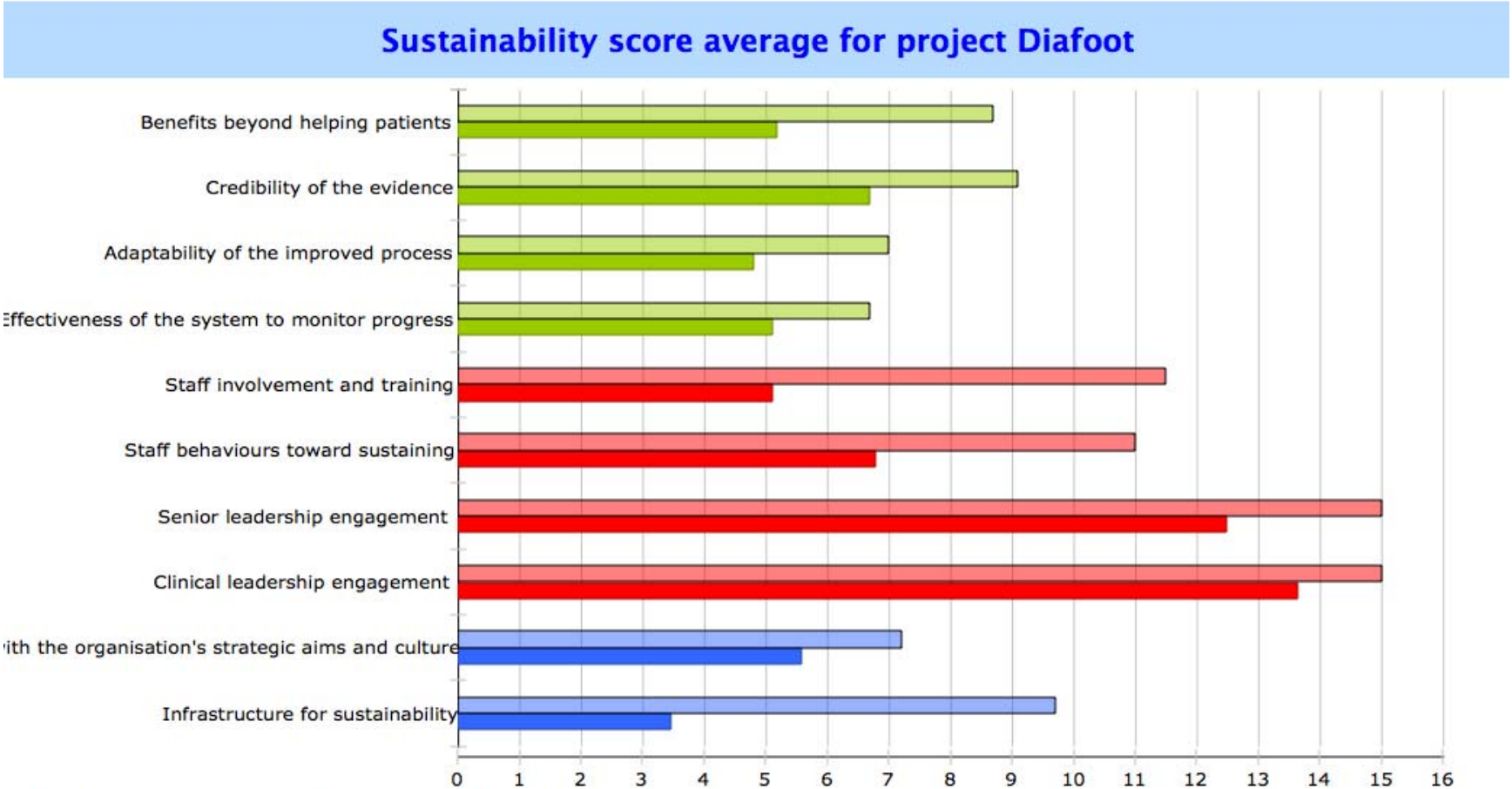
Benefits beyond helping patients *

- ○ The change improves efficiency and makes jobs easier
- ○ The change improves efficiency but does not make jobs easier
- ○ The change does not improve efficiency but does make jobs easier
- ○ The change neither improves efficiency nor makes jobs easier

Credibility of the evidence *

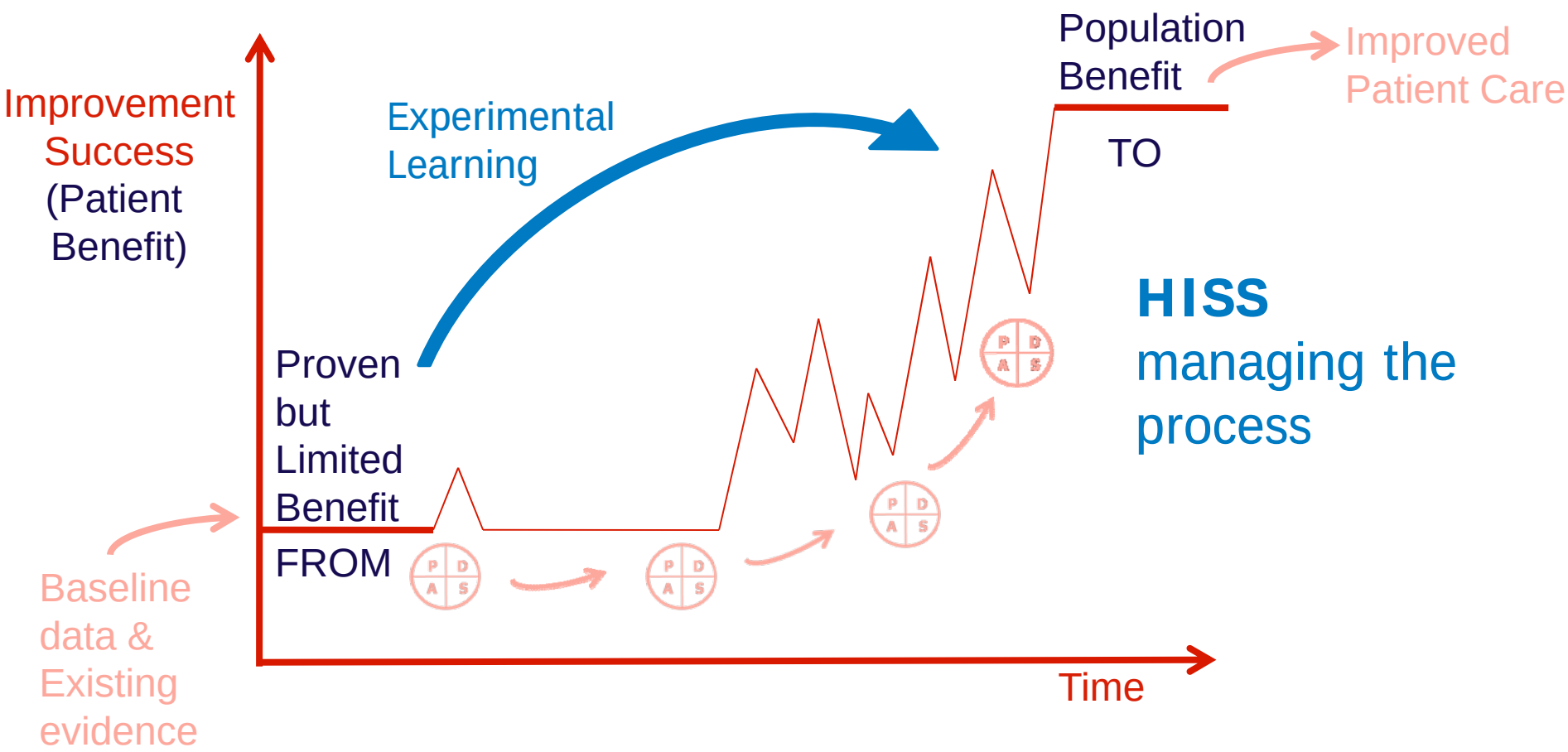
- ○ Benefits of the change are immediately obvious, supported by evidence and believed by stakeholders

Sustainability report



ale bars denote maximum possible score, while the solid bars are the average for the team.

Lessons for healthcare change



Summary

- Generic change process management framework
- HISS system is currently evaluated by UK's NIHR for wider adoption in the NHS
- We are open to pilot projects with EU and US partners
- Vasa Curcin, vasa@imperial.ac.uk
- http://www.clahrc-northwestlondon.nihr.ac.uk/