CLAHRC Healthcare Improvement Support System (HISS)

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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

What happens here?

Public pressure
Political pressure
Policies
Guidelines

Time

Improvement
Success
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 $Y$.

Key Reference on Causal Modeling

R = residuals or error terms representing the effects of variables omitted in the model.
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.)
<table>
<thead>
<tr>
<th>ID</th>
<th>Short Name</th>
<th>Prompt</th>
<th>Type</th>
<th>Required?</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D1</td>
<td>Week commencing for completed nurse assessment forms</td>
<td>Date</td>
<td>Yes</td>
<td>The week commencing for the date entered on the Nurse Assessment form.</td>
</tr>
<tr>
<td></td>
<td>D2</td>
<td>Ward Name</td>
<td>AMU/AA U/Osterley</td>
<td>No</td>
<td>The name of the ward to which the patients were admitted at the time the nurse assessment form was completed</td>
</tr>
<tr>
<td></td>
<td>D3</td>
<td>Positive assessments</td>
<td>Number</td>
<td>Yes</td>
<td>The number of patients identified with either ulcer, infection, ischaemia or charcot</td>
</tr>
<tr>
<td></td>
<td>D4</td>
<td>Negative assessments</td>
<td>Number</td>
<td>Yes</td>
<td>The number of patients identified with neither ulcer, infection, ischaemia or charcot</td>
</tr>
<tr>
<td></td>
<td>D5</td>
<td>Assessments not done</td>
<td>Number</td>
<td>Yes</td>
<td>The number of patients where all responses to questions entered as &quot;Not done&quot;</td>
</tr>
<tr>
<td></td>
<td>D6</td>
<td>Doctors form completed</td>
<td>Date</td>
<td>Yes</td>
<td>The date, where available, when the doctors assessment form as been completed where appropriate</td>
</tr>
<tr>
<td>ID</td>
<td>Name</td>
<td>Calculation</td>
<td>Definition</td>
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<td></td>
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<tr>
<td>----</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>Number of diabetic foot assessments completed by nurses</td>
<td>SUM [D3] + [D4] + [D5]</td>
<td>The number of patients screened by nurses during the previous week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td>Percentage of patients screened who required doctor assessment</td>
<td>([D3]/M1)*100</td>
<td>The percentage of patients identified requiring further assessment in the previous week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Percentage of patients identified by nurse screen that required and received doctor assessment</td>
<td>([COUNT D6 If D6 NOT NULL]/[D3])*100</td>
<td>The percentage of patients identified requiring further assessment and followed by a doctors assessment in the previous week</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data entry

Add Diabfoot

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

* required fields

Save  Cancel
Number of diabetic foot assessments completed by nurses
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
Tracking improvement

Aim 1b Improving awareness of the bundle
Setting up a communication/teaching session
Sustainability model
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](#).

<table>
<thead>
<tr>
<th>CLD event *</th>
<th>Spring CLD 2012 (25th April 2012)</th>
</tr>
</thead>
</table>

**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

Sustainability score average for project Diafoot

- Benefits beyond helping patients
- Credibility of the evidence
- Adaptability of the improved process
- Effectiveness of the system to monitor progress
- Staff involvement and training
- Staff behaviours toward sustaining
- Senior leadership engagement
- Clinical leadership engagement
- Alignment with the organisation’s strategic aims and culture
- Infrastructure for sustainability

The bars denote maximum possible score, while the solid bars are the average for the team.
Lessons for healthcare change

FROM Baseline data & Existing evidence

Experimental Learning

Proven but Limited Benefit

TO Population Benefit

Improved Patient Care

HISS managing the process

Time

Improvement Success (Patient Benefit)
• 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

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• http://www.clahrc-northwestlondon.nihr.ac.uk/