Visual Management (VM) in Healthcare Workshop

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LIIPS aims to facilitate improvement in the quality and safety of healthcare in Leicester, Leicestershire and Rutland (LLR) by connecting people across health and academia in the practice and science of improvement.

Aims

• Spread knowledge – my research, your experience
• Create a working group
• Direct and possibly initiate future research
Visual Management (VM)
Workshop Agenda

• Best Practice VM
• VM in Healthcare – examples of current practice
• Analysis of own images
• Future Developments – Electronic Ambitions
• Summary, future plans and close
Visual Management (VM)

Visual management is the use of visual data to manage operations and is often used to support teams in their decision making. It is an element of lean thinking.

(Bateman & Lethbridge 2014)
Visual Management (VM)

– Creates a shared vision
– Lets everyone see how well the process is operating, ‘at a glance’ status
– Manage demand (pull)
– Enables and promotes group discussion
– Supports individual and team decision making for continuous improvement
– Highlights issues and bottlenecks

Are you ready for this level of visibility?
Visual Management in Healthcare

Figure 1. Framework for Safe, Reliable, and Effective Care

- Supports decision making
- Shared vision
- At a glance status
- Highlights issues and bottlenecks

VM design principles

Macro

- Layout that reflects the flow
- Cognitive workspace of 7
  - Miller (1956).
  - Principle idea one of limited cognitive workspace
  - this has implications for the overall design of boards and how they are structured
<table>
<thead>
<tr>
<th>Cell overview</th>
<th>Cell performance</th>
<th>Cell improvement, history and plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell members</td>
<td>Weekly OTIF</td>
<td>Weekly CA</td>
</tr>
<tr>
<td></td>
<td>Weekly QC</td>
<td>Quality status (ext. data)</td>
</tr>
<tr>
<td></td>
<td>Weekly DT</td>
<td>Weekly Eff</td>
</tr>
<tr>
<td></td>
<td>Weekly H&amp;S</td>
<td>Op excel. aim</td>
</tr>
<tr>
<td></td>
<td>Weekly 5S</td>
<td>Improvement actions</td>
</tr>
<tr>
<td>Attendance planner</td>
<td>Monthly risk assessment</td>
<td>Op excellence status</td>
</tr>
<tr>
<td>Skills matrix</td>
<td>5S audit scores</td>
<td>5S yellow tag log</td>
</tr>
<tr>
<td>Process flow</td>
<td></td>
<td>Improvement summary</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Flow that confuses
- apologies for quality
Cognitive workspace demonstration

• Think of your top 15 favourite books or films in order of preference
• Do not write it down – hold it all in your head
Cognitive workspace

• Most people can hold about seven things in their head at once.
• Beyond this we all forget
• Implications for elements of a visual artefact (communication board, KPI dash board etc)

• But you know more than seven things – how do you structure?
  – In “chunks” or narratively
Detailed design

• Using the right graphical tool to convey data

• Using colour sparingly – just to highlight key features

• Avoid using excess borders and boxes – looking at minimum ink to data ratio
Using the right graphical tool

• Usually graphs
  – Shah, P. & Hoeffner, J. (2002) – perception of angle length, area etc issues with aspect ratio etc.
  – Pie charts limited use
  – Taking averages (mean) of non-additive data
    • Need to use an alternative type of average such as mode or median
  – Showing non-continuous data as continuous
    • Radar charts !!!!!!
Graph Comprehension

Ease of comparative comprehension

1. Position on scale
2. (=) Length or direction or angle
3. Area
4. (=) Volume or curvature
5. (=) Shading or colour saturation

Adapted from Shah, P. & Hoeffner, J. (2002)
Other points

• Aspect ratio: It’s easier to discern variations in angle off 45° than any other angle i.e. close to 0° or 90°
• Do not use 3D for where the third dimension conveys no additional data
• Pie charts - useful for showing comparative share but issues with comparative area comprehension
Radar chart for customer feedback for a service

Implied relationship between factors

This is a negative factor i.e. zero is good
Radar chart for customer feedback for a service

*Same data different order – area is different*
Same data different format
Same data different format

- Recommend
- Quality
- Follow up
- Website
- Safety
- Queue time (neg)
- Excessive boarders that add no data
- Excessive colours
- Vibrating colours

- Excessive gridline
- Heavy gridline
- Unnecessary two decimal points
Simplicity vs relevance, Tufte, data density and multiples

• Do people want it ‘simple’?
• Or do they mean relevant?
  – i.e. more data that is relevant to them
• Tufte says people like dense data graphics (maps) and the ability to compare
• My experience is that this is true for data density for frequently used data
What has happened?

- Q2 website improved and recommendations gone up
- Q3 Queues have got worse and recommendation and quality have gone down
- Q4 Queues and website have got better and recommendation and quality have gone up
- This is quite hard to read and interpret
Plot over time

- Recommend
- Quality
- Website
- Queue time (neg)
- carpark
- Follow up
Simplified plot over time
removed recommend echoes quality, removed carpark does not change
At the end of the break note down any points you might like to use in your own visual stools
Best Practice VM

VM Tools Should Be:

- Not simple – satisfying and relevant
- Clear
- In Real Time
- Based at Point of Use
- Show Progress Towards an Agreed Goal

(O’Brien, Bassham, Lewis 2015)
Best Practice VM

Three questions for your own workplace:

1. What do I need to know?
2. What do I need to share?
3. What questions am I frequently asked?

(O’Brien, Bassham, Lewis 2015)
VM Examples

Freestanding

Wall mounted

(Source: Zarbo, Varney, Copeland, Angelo, Sharma 2015)
### VM Examples

#### Printed whiteboard

(Source: Bassuk, Washington 2014)
VM Discussion
Communications Board

Used?

Clear Labelling

Good Board flow as this relates to unit plan view

Useful Legend

+ Good Use of Colour

Used?

Icons, useful? Do all know their meaning?

Possibly relocate to another position

(Source: Dr S Robinson 2017)
Communications Board – clearly well used

Useful use of colour difference

Missing delineation /outlining

Dividing tape loose and missing in places

(Source: Dr S Robinson 2017)
Use of board

• Frequency?
• Who leads?
• Agenda?
• What is it for?
• Who will participate?
• Other stake holders?
• Who manages and updates?
Split into small groups to either audit or design

• Each group to have either:
  – current material to audit
  – An operational unit where you would like to have a communication board design

  – People who have neither, of these join a group that does
VM Discussion Point

• Discuss the photographs you have brought with you.
• How are they used?
• Who updates the visual boards and when?
• Are they an effective visual tool?
  1. What you need to know
  2. What you need to share
  3. Do they address support problem solving?
VM Discussion Point

Do the examples satisfy some of the key functions of Visual Management

– Creating a shared vision
  • Letting everyone see how well the process is operating
  • Showing ‘at a glance’ status
  • Enabling and promoting group discussion
– Supporting individual and team decision making

What improvements, if any, would you make to the layout
Audit your own material

Macro
• Layout that reflects the flow
• Cognitive workspace of 7

Detailed
• Using the right graphical tool to convey data
• Using colour sparingly – just to highlight key features
• Avoid using excess borders and boxes – looking at minimum ink to data ratio

Data density and multiples
• Can use this approach?
Discussion on implementation

• What was key to successful implementation?

• What were the project failings?

• What about confidentiality?

• What would you have done differently?

• What else would you want to know about?
Digitisation
A Look to the Future?

• Increasing drive to digitise information – Seen by some to improve efficiency
• What about interaction?
• Access to information from other departments via single database
• Valid for all situations?
• What about confidentiality?
Technology

Used in Brazilian Health care
- Shows status of surgery
- Allows for example surgeons to track surgery progress
- They then log in and this changes status
Summary

• How can we support each other?
  – Life QI group?
  – Visits
  – Research
    • Ideas
    • Give me examples of how you have used
  – Run workshop again?
    • Send me your examples (with a narrative if poss.)

• Support your own learning
  – Reading
  – Actions
References I


• Fillingham D. 2007, Can lean save lives? *Leadership in Health Services* Vol. 20 No 4 pp. 231-241


References II

- Miller, G.A. (1956), *The Magic Number Seven, Plus or Minus Seven*. Psychological Review, 63, pp. 81


