Human Factors in Clinical Handovers

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Reinforce and expand knowledge about handovers

- What is “Human Factors”? 
- What is a handover?
- What goes wrong in handover?
- What can we do about it?
What do I do?

HUMAN FACTORS or ERGONOMICS

The science of:
* What people do well
* Why they do it well
* What people do NOT do well
* Why they do NOT do it well
Humans in Complex Systems

- **Humans:**
  - are a fundamental component of ANY system
  - are uniquely able to function in uncertainty, and make trade-offs
  - *create* safety in complex systems

- **Complex systems:**
  - are inherently unsafe
  - always function at the limits of capacity
  - require safety to be traded for other aspects of system performance.

“*Human Error is the inevitable by-product of the pursuit of success in an imperfect, unstable, resource constrained world.*” (Dekker, 2003)
Systemic influences on HUMAN performance

Organisation

People

Tasks

Technology

Environment

Safety Culture
Resilience
Learning from Accidents

Workspace Design
Geographical distribution
Physical Constraints

Task standardization
Roles & Rules
Prediction & planing

Selection
Training
Assessment

Design
Procurement
Integration

“HUMAN FACTORS”

Human Factors in Design

Low Control Compatibility

High Control Compatibility
What is ‘Clinical Human Factors’?

Enhancing clinical performance through an understanding of the effects of teamwork, tasks, equipment, workspace, culture, and organisation on human behaviour and abilities, and the application of that knowledge in clinical settings.

www.chfg.org
WHAT IS A HANDOVER?
Handover Classification System (Cohen & Hilligoss, 2010)

Handoff Types

Between-Unit or Intra-departmental
- between-unit transfer of a new patient

Within-Unit or Inter-departmental
- within-unit continuing patient transfer
- within-unit new patient transfer
- within-unit temporary role assumption transfer
Handover Conceptualised

Team 1

Handover

Team 2
## Principle Components of Handover

### Table 2

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 5: All relevant information was selected and communicated</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 2: The person handing off the patient continuously used the available documentation (anaesthesia record, patient chart, etc) to structure the handoff</td>
<td>0.69</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>Item 7: The person handing off the patient clearly communicated her/his assessment of the patient</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1: Handoff followed a logical structure</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 3: Not enough time was allowed for the handoff</td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 6: Priorities for further treatment were addressed</td>
<td>0.58</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>Item 13: Documentation was complete</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 12: The team jointly ensured that the handoff was complete</td>
<td></td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Item 11: Questions and ambiguities were resolved (active enquiry by the person taking on responsibility for the patient)</td>
<td></td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Item 8: Possible risks and complications were discussed</td>
<td>0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 10: There was tensions within the team during handoff</td>
<td></td>
<td></td>
<td>0.76</td>
</tr>
<tr>
<td>Item 9: It was easy to establish good contact at the beginning to the handoff</td>
<td>0.31</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>Item 16: Patients’ experience was considered carefully during handoff (respect)</td>
<td>0.36</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Variance explained (%)</td>
<td>21.87</td>
<td>16.81</td>
<td>11.28</td>
</tr>
</tbody>
</table>

*Qual Saf Health Care 2010;19:e44. doi:10.1136/qshc.2009.038430*

Manser et al. 2010

- **“Information Transfer”**
- **“Shared Understanding”**
- **“Working Atmosphere”**
Handover Conceptualised

Team 1  Handover  Team 2

Skills
Protocols and Procedures
Technology and Tools
Environment and Organisation
Handover as a Dynamic Process

- Information & situation constantly changing

**Team 1**
- Summarising picture
- GIVE control

**Team 2**
- Building picture
- TAKE control

**Skills**
- Protocols and Procedures
- Technology and Tools
- Environment and Organisation
What about more complex handovers?

Hospital at Night Handover

- H@N Handover
- Medical & nursing handover
- AM ward rounds
- PM ward rounds
- Huddles
- "Ecosystem" of multiple handovers
- CSP Site security staffing handover
- New events:
  - Theatre
  - Admissions
  - 2222
  - PICU
  - Discharge
- Evening Short day
- Long day Nursing handover

Jane Carthey, 2011
‘Framing’ of handovers

- Information Transmission / Processing
- Deviations from normal / Stereotypical narrative
- Revealing Problems / Resilience
- Transfer of Responsibility / Accountability
- Social Interaction
- Networked knowledge / Distributed Cognition
- Reinforcing values / Cultural Norms

- Patterson & Wears 2010, The Joint Commission Journal on Quality and Patient Safety 36(2)
Increasing Interest

PubMed Publications on “Handover”

PubMed Publications on “Handoff”
Gaps in current understanding

“...rarely consider the dynamic nature...”

“...narrow definition of handover as information transfer....”

“....focus on standardisation....”

“....discrepancy between objective assessment and satisfaction....”

“...lack of systematic research...and adequate measures of effectiveness....”

Handoff Incidents


- In 458 incidents the most prevalent failure types:
  - transfer of patients **without adequate handover** 28.8% (n = 132)
  - **omissions of** critical information about the patient's **condition** 19.2% (n = 88)
  - **Omissions of** critical information about the patient's **care plan** during the handover process 14.2% (n = 65).

- The most prevalent failure detection mechanisms:
  - expectation mismatch 35.7% (n = 174)
  - clinical mismatch 26.9% (n = 127)
  - mismatch with other documentation 24.0% (n = 117).
“Of course, there is a process ………but everyone does it differently”

Handover as a Dynamic Process

Information & situation constantly changing

Team 1
- Summarising picture
- GIVE control

Handover

Skills
- Protocols and Procedures
- Technology and tools
- Environment and Organisation

Checking Processes
- Establish Currency
- Monitor Changes

Team 2
- Building picture
- TAKE control
Handover as a Dynamic Process

Information & situation constantly changing

Team 1
- Summarising picture
- GIVE control

Handover

Team 2
- Building picture
- TAKE control

Skills

Protocols and Procedures

Technology and Tools

Environment and Organisation

Control Overlap
Handover as a Dynamic Process

Information & situation constantly changing

Team 1

Summarising picture
GIVE control

Building picture
TAKE control

Team 2

Handover

Technologies

Skills
Protocols and Procedures

Handover as a Dynamic Process

- Information & situation constantly changing
- Team 1
  - Summarising picture
  - GIVE control
- Building picture
  - TAKE control
- Team 2
- Handover
- Technologies
- Skills
- Protocols and Procedures
“...the transfer from the operating theatre to the intensive care unit is one of the most difficult stages in the care of a child.”

- p. 214, Learning from Bristol (2001)

NOTE

TRANSFER OF:

- safety-critical monitoring & support equipment from theatre to ICU
- patient care, information & plans from operating team to intensive care team
Multiple specialists
Complex tasks
Complex interfaces
Time pressure
Need for accuracy
Lessons from F1 and Aviation

Technology

Training Regimes

- Process Organisation
  - Task Allocation
  - Task sequence
  - Discipline and composure

- Teamwork
  - Leadership
  - Involvement
  - Briefing

- Threat and Error Management
  - Checklists
  - Predicting and Planning
  - Situation Awareness
Resistance to Change

“It’s fine as it is”

“We’ve always done it like this”

“We don’t have time to do it like this”

“It might make things worse”

“But so many other things are wrong”

“We’re different here”
Ten challenges in improving quality in healthcare: lessons from the Health Foundation’s programme evaluations and relevant literature

Mary Dixon-Woods, Sarah McNicol, Graham Martin

ABSTRACT

Background: Formal evaluations of programmes are an important source of learning about the challenges faced in improving quality in healthcare and how they can be addressed. The authors aimed to integrate lessons from evaluations of the Health Foundation’s improvement programmes with relevant literature.

Methods: The authors analysed evaluation reports relating to five Health Foundation improvement programmes using a form of ‘best fit’ synthesis, where a pre-existing framework was used for initial coding and then updated in response to the emerging analysis. A rapid narrative review of relevant literature was also undertaken.

Results: The authors identified ten key challenges: convincing people that there is a problem that is relevant to them; convincing them that the solution chosen is the right one; getting data collection and monitoring systems right; excess ambitions and ‘projectness’; organisational cultures, capacities and contexts; tribalism and lack of staff engagement; leadership; incentivising participation and ‘hard edges’; securing sustainability; and risk of unintended evaluations of programmes to improve quality in healthcare.

A large portfolio of such programmes (table 1) has been assembled by the Health Foundation, an independent charity working to improve healthcare quality in the UK. The programmes have diverged in their scope and remit, but all are united by their focus on technical skills, leadership development, clinical engagement, capacity, knowledge and the will for change. In a perhaps unique contribution, the Health Foundation has commissioned independent evaluations of each of them. The evaluation reports represent a resource that could provide generalisable insights into the challenges faced in trying to improve quality in healthcare and how improvement processes could be optimised.

In this article, we provide a review of the findings of these reports and specifically focus on the challenges in the context of

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Making Change

- Identify the problem
  - Break it down
  - Generate multiple solutions

- Involve everyone
  - Be visible
  - Obtain support and establish “Champions”
  - Use the most negative people
  - Don’t listen to “No”

- Make the change
  - Gather evidence
  - Plan, Do, Check, Act
Overview of the New Process

Prior to Transfer

- Patient Transfer Sheet obtained from theatre
- Bedspace & equipment prepared in CCC

Technology Transfer

- Equipment is configured in CCC
- SAFETY CHECK

Information Handover

- Anaesthetist then Surgeon hand over information using Information Transfer Aide Memoir
- SAFETY CHECK

Discussion & Plan

- Group discussion
- Anticipation of problems
- Immediate care strategy agreed

Training time = 30 minutes
## Compounding Errors

**Errors in BOTH Equipment AND Information:**

<table>
<thead>
<tr>
<th></th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1 in both</td>
<td>39%</td>
<td>11%</td>
</tr>
<tr>
<td>&gt;4 in both</td>
<td>13%</td>
<td>4%</td>
</tr>
<tr>
<td>Correlation</td>
<td>$r=0.513$</td>
<td>$r=0.262$</td>
</tr>
<tr>
<td></td>
<td>$p&lt;0.01$</td>
<td>$p=0.186$</td>
</tr>
</tbody>
</table>
Ineffective  |  Effective
--- | ---
Good  |  Poor

Team performance /20
Number of Errors /16

Pre-Intervention
Post-Intervention
Pre (Predicted)
Post (Predicted)
“This is great….

……but we can make it better”

Consultant Anaesthetist, February 2007

Acceptance of Change

Continuous Improvement

High Reliability
Some useful rules of thumb

Avoid notions of blame; understand motivations

Trying harder will not work (& “should” is dangerous)

Good outcome ≠ good process

Is it easy to do right and hard to do wrong?

Do we know what “right” looks like?
Thank you for listening

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Selected Publications


