Teamperformance and cathlab culture: dynamics of critical-care teamwork in the cardiovascular domain

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Disclosures

NONE
Overview

• Introduction:
  Work environment – Modern Cardiology.

• Research focus:
  A new frontier - Human Factors.

• Examples:
  • Teamperformance analysis – SAQ / cultural assessment
  • Simulation training.

• Discussion / Future perspectives.
Introduction: Modern Cardiology
What we do best..

- **Dapagliflozin** reduces death and hospitalisation in patients with heart failure

- **Complete revascularisation** is superior to culprit-lesion only intervention

- **Prasugrel** cuts ischaemic events in acute coronary syndrome patients

- **Ticagrelor plus aspirin** reduce ischaemic events in stable coronary patients with diabetes
“Let’s do something with Culture”
<table>
<thead>
<tr>
<th>Specialisation</th>
<th>Description</th>
<th>Example for healthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ageing</td>
<td>Human factors applications to meet the needs, capabilities, and limitations of the elderly and other special populations</td>
<td>Applying human factors principles to reduce inpatient falls\textsuperscript{50}</td>
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<tr>
<td>Augmented cognition</td>
<td>“Development and application of real-time physiological and neurophysiological sensing technologies that can ascertain a human’s cognitive state while interacting with computing-based systems”</td>
<td>Designing tools that can transmit feedback to the surgeon to improve laparoscopic grasp control\textsuperscript{44}</td>
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<tr>
<td>Cognitive engineering and decision making</td>
<td>“Research on human cognition and decision making and the application of this knowledge to the design of systems and training programmes”</td>
<td>Identifying cues and strategies experienced nurses use to recognise infants at risk for sepsis and necrotising enterocolitis to guide the design of training and decision support\textsuperscript{51, 52}</td>
</tr>
<tr>
<td>Communication</td>
<td>Human-to-human communication, especially when mediated by technology</td>
<td>Comparing the information accuracy of manual versus electronic patient status boards in emergency departments\textsuperscript{53}</td>
</tr>
<tr>
<td>Human performance modelling</td>
<td>“Development and application of predictive, reliable and executable quantitative models of human performance”</td>
<td>Model-based simulations to investigate how and why age and localised muscle fatigue affect postural control and fall risks\textsuperscript{54}</td>
</tr>
<tr>
<td>Industrial ergonomics</td>
<td>“Application of ergonomics data and principles for improving safety, productivity and quality of work in industry”</td>
<td>The design of a workstation for radiologists using appropriate ergonomic and biomechanics data</td>
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<tr>
<td>Macroergonomics</td>
<td>“Organisational design and management issues in human factors and ergonomics as well as work system design and human–organisation interface technology”</td>
<td>Evaluating system components at various organisational levels (eg, drug route; nurse to patient ratios; medication administration policies) and modifying them in a coordinated manner to aid safe medication administration during shift change\textsuperscript{27}</td>
</tr>
<tr>
<td>Perception and performance</td>
<td>“Perception and its relation to human performance”</td>
<td>Designing and evaluating visual, audio and combined displays for anaesthesiologists\textsuperscript{55}</td>
</tr>
<tr>
<td>Product design</td>
<td>“Developing consumer products that are useful, usable, safe and desirable”</td>
<td>Redesigning epinephrine autoinjectors for patients in an effort to reduce injection errors during anaphylaxis\textsuperscript{58}</td>
</tr>
</tbody>
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A New Frontier
Example (1)

- Teamwork in the cardiovascular domain
  - “Cathlab culture: a qualitative approach for improvement”
Cognitive and Individual domain - “Bloodlines”
KLM: learning from the professionals

• Qualitative analysis of local team culture and work patterns:
  • how to define our teamwork: who are we and what do we do?
• Organizational Psychologist / KLM senior safety trainer

• Stepwise analysis:
  I) understanding our teamwork (observations, interviews)
  II) what is our daily flow – where are obstructions?
    • Themes of improvement?
  III) what is needed to change this? – i.e. workshops, monthly meetings.
Work in progress...
Example (2)

• **Teamwork in the cardiovascular domain**
  • “Assessing teamwork in complex aortic surgery: how can we improve? A single centre experience with the SAQ as diagnostic tool”.
Learning from the Pro’s (2)
Safety climate analysis: SAQ-use.

**Safety Culture** (‘the script which is taught and used’):
- Group and individual values, traditions;
- Perceptions regarding safety during work;
- Individual and group competences;

All these aspects together can be seen in daily work as:

**Safety Climate** (‘the show we play’)

Examples:
- ‘While working with Doctor X, nurse Y feels insecure’
- ‘Doctor Z feels that continued blood pressure measurements are not necessary during wound closure’
<table>
<thead>
<tr>
<th></th>
<th>ETT</th>
<th>OTT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (N)</strong></td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td><strong>Male, (N,%)</strong></td>
<td>13(60%)</td>
<td>8(61%)</td>
</tr>
<tr>
<td><strong>Physician (N,%)</strong></td>
<td>11(48%)</td>
<td>7(53%)</td>
</tr>
<tr>
<td>≥5 years team tenure (N, %)</td>
<td>12(55%)</td>
<td>3(23%)</td>
</tr>
<tr>
<td>≥10 years healthcare tenure (N, %)</td>
<td>19(86%)</td>
<td>12(92%)</td>
</tr>
<tr>
<td>≥50 weekly workhours (N,%)</td>
<td>5(23%)</td>
<td>6(50%)</td>
</tr>
<tr>
<td><strong>Response (N, %)</strong></td>
<td>23(100%)</td>
<td>13(100%)</td>
</tr>
</tbody>
</table>

ETT = Endovascular Treatment Team; OTT = Open Treatment Team
Results
Example (3)

• Teamwork in the cardiovascular domain
  • “Simulations and team training.”
Conclusions

• HF science and principles in cardiology/cardiovascular medicine regarding teamwork is new, but promising.

• ‘Better well stolen than badly invented’ - HF principles from other domains are crucial

• Meaningfulness is created by ourselfs.
Discussion / Future perspectives

• Local research: how extrapolatable is this research on a national level? (cultural aspects of work).

• Beware of abstractness – meaningfulness is crucial.

• Leadership – mobilizing troops.

• Collaborations for the future – ‘Hybrid hospitals’/ Hybrid workspaces.
• Thank you for your attention!

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