Impacts of problem situations on anaesthetists’ health

“Is organisational resilience maintained at the expense of individual resilience?”

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Resilience in anaesthesia?

- **Department level, patient safety perspective**: ability to make the patient survive the operation in presence of contingencies, pressures, surprises, etc.;

- **Staff individual level, occupational health perspective**: ability to cope with job constraints and keep reasonably good physiological and psychological health

- Are the two perspectives correlated?
The conditions for resilience at a given level of organisation are not simply the resilience of the components of the system at that level

- e.g.: the resilience of species depends on the fragility of individuals, allowing evolution and adaptation (Darwin’s model)
Department level, patient safety perspective:

Is the anaesthesia-patient system resilient?

- What indicator can be used to measure that?
  - Daily needs for adaptation: in the literature: it is estimated that an unexpected event ("surprise") occurs in 20% of the cases: A high level of uncertainty, variability, challenging situations (but no real record of that!)

- In 1999, "Problem situations" Monitoring System developed and organized in two anaesthesia departments of 2 University Hospitals
  - 212 problem situations related to patient safety recorded over 18 months and analyzed by the staff during "safety" meeting; 177 « errors » in the care process (Eur J Anaesth, 21, 2004)
  - more than 48,000 anaesthesia done in the reference period (18 months/2 departments)

- This means 9600 potential surprises and therefore 9388 surprises were treated by the anaesthetists without the need to report a problem

A high rate of adaptation! (conscious or unconscious)
Consequences of problem situations for the patient

Short term

<table>
<thead>
<tr>
<th>Conditions</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>51</td>
</tr>
<tr>
<td>Minor Morbidity</td>
<td>56</td>
</tr>
<tr>
<td>Corporal Injury</td>
<td>19</td>
</tr>
<tr>
<td>Major Morbidity</td>
<td>60</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>26</td>
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</table>

Long term

<table>
<thead>
<tr>
<th>Consequences</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>22</td>
</tr>
<tr>
<td>Minor Morbidity</td>
<td>3</td>
</tr>
<tr>
<td>Awareness</td>
<td>17</td>
</tr>
<tr>
<td>Prolonged hospitalization</td>
<td>7</td>
</tr>
<tr>
<td>Major Morbidity</td>
<td>19</td>
</tr>
<tr>
<td>ICU</td>
<td>10</td>
</tr>
<tr>
<td>Death</td>
<td>134</td>
</tr>
</tbody>
</table>

High level of recovery!
Staff individual level, occupational health perspective:

- (Ability to cope with job constraints, surprises and keep reasonably good physiological and psychological health)
- **Are anaesthesists « resilient »?**
- What indicator can be used to measure that?
- Mainly « negative indicators » available:
  - Stress, burn out, suicide, absenteeism,...
- Paradoxical results...
Study on Stress in anaesthesia
(Nyssen & al. BJA, 2003)

- Different questionnaires:
  - PSSM-A: stress level
  - Wocq: working condition and control questionnaire
  - Burn out questionnaire

- Measurement of Mean Stress Level among anaesthetists
  - Moderate level: 40-60; High level: > 60

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthetists</td>
<td>151</td>
<td>50.6</td>
</tr>
<tr>
<td>Policemen</td>
<td>129</td>
<td>52.2</td>
</tr>
<tr>
<td>Office employers</td>
<td>816</td>
<td>52.81</td>
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</table>
### Burnout per age

- **N= 151**

<table>
<thead>
<tr>
<th>Age</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30</td>
<td>4</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>30-35</td>
<td>8</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>+35</td>
<td>11</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

- 40% of the anaesthetists suffer from Burnout

Every year, young residents abandon their studies, commit suicide.

What species is sacrificed?
Apparent paradox

- Rather low level of stress (compared to other jobs)
- Rather high level of burn out
Burn out as a chronic, cumulative process

Burn out is a result of accumulated stress, when compensation mechanisms are exhausted.

Stressful events e.g. work challenges,...

Sleep deprivation
Sleep disturbance

Chronic stress

Fatigue

Burn out

Time
Additional explanation, “Who are the survivors?”

The effects of stress on health can be mitigated by 4 factors:
- High level of job satisfaction
- High level of job challenge
- High level of work commitment
- High level of empowerment

All anesthetists report a high score on the first 3 factors

Young anesthetists lack of empowerment and therefore suffer from chronic stress (40% of the variance of stress is explained by job control variables)
Long term effects of problem situations (n=212) for anaesthetists
Comments on long term effects

- No relation between the effect of the problem situation on the anaesthetist and his/her level of experience.
- No relation between the effect of the problem situation on the anaesthetists and the immediate consequences for the patient.
- However, not surprisingly, long term consequences for the patient influence significantly the impact of the problem situation on the anaesthetists.
- Anaesthetists report more impacts when the problem is perceived as avoidable and when the patients’ ASA is high!

What matter is the feeling of not having, or having lost, control!
To the question: « what would have helped you after the problem situation? » 80% answered: « talk about it! »

- Social support, shared values appear as root material to support individual resilience
  - when individual coping strategies are no longer able to compensate for stressors

- They also contribute to system resilience (better communication, information sharing, goals sharing, etc.)
Divergence

- To be resilient the system needs empowered staff at the front line
  - For economic reasons young anaesthetists take a lot of the workload
  - They permanently perceive their lack of empowerment

- Doubts, fear, etc. also feed resilience at the system level: they contribute to regulate risk taking strategies

- Resilience at the system level is (partially) built on fragilities at the individual level
Conclusions

Resilience at the system level:

- Contributes to resilience at the individual level (via successes)
- Depends on mechanisms that also build individual resilience (shared values)
- Is also (partially) built on fragilities at the individual level (doubts, fear)
Thanks!
Reported problem situations and risk evaluation?

- Asa index as a measure of morbidity of the patient
- Distribution of ASA similar in our sample and in OR
- No general effect of ASA index on the immediate consequences reported
- However, post hoc analyses show higher ASA index associated with cardiac arrests
- A general effect of ASA index on long term consequences: patients with high ASA index have more long term major csqs.

ASA index is a predictor of individual patient robustness!