Engineering resilience into Intensive Care units

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Intensive Care Units  Context

§ Production of high-risk care (pushing the boundaries)
§ Under-specified (land of the unexpected and of uncertainties)
§ Not sized for peak hours
§ The lack of care production may be more dangerous than the lack of care precaution
§ Lots of economical, political, psychological pressures

>> Recurrent overflow of operational capacities
A “large” ICU (36 beds, about 350 staff)
A major merging in 2006 triggering a major organizational crisis (turn-over, absenteeism, burn-out)
But:

- 20% more patients admitted and treated
- Peak hours properly handled
- Decrease of readmission rates
- Only 0.25 of the SAPS predicted deaths
  (one of the best outcome in Switzerland for one of the worse average SAPS)

The HUG-ICU has been resilient over the last period!
Why has HUG-ICU been resilient?

Can a better understanding of the WHYs of this resilience allow for stabilizing gains? further improvements?

24 months research project
Mixed team Dédale-HUG
Funded by HUG-ICU
Research phases

- Review of resilience conceptual framework
- Key features of a resilient system RAG HRO ...
- Translation into ICU context language
- Data gathering and analysis

Resilience Assessment Framework
Data gathering

Observations:
« Nurse Resources Manager »
Medical visit
Night activities
Nurses in charge of two simultaneous serious patients

Analysis of responses to unexpected situation development
Analysis of adverse events
Focus groups (1/2 day)
Documents review
Analysis of relevant performance, quality and safety indicators
Interviews with all levels of hierarchy and all main jobs

120 hours of observation
36 individual interviews
4 focus groups
The resilience observation framework

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Observed organizational resilience features

§ High level of anticipation

§ High uncertainty management skills:
   E.g. ability to act without a diagnosis (clinical misunderstanding)

§ High tactical flexibility: frequent shifts of perspective
   from care to resuscitation, from care to withdrawal

§ High degree of operational flexibility
   a lot of expert technical gestures but few binding protocols

§ High resources management skills
   Dynamic reallocation of experienced people to difficult cases

§ High level of performance and stress monitoring
   A rich set of indicators monitored

§ High level of learning activities
Some interesting additional items

§ “Polycentric governance”
§ The role of shared values
§ “Margins of manoeuver”
§ “Constraints that deconstraint”
§ The benefits of “coopetition”
§ Trust and confidence
§ The role of individual commitment
From organizational crisis to “polycentric governance”? 

$\$2006$ merging triggered an organizational crisis

$\$Top$ management$ layer: disagreement$s, lack$ of legitimacy

$\$Self$ organization$ among$ the$ physicians$ staff$ to$ cope$ with$ daily$ needs

$\$Physicians$ had$ to$ manage$ admission$ decisions: potential$ conflicts$ with$ other$ Departments$ in$ the$ hospital

$\$Minimum$ conflict$ line: admit$ anyone$ “deserving” intensive$ care

$\$Merging > more$ beds > more$ flexibility
High level values

§ Developed corresponding high level goals and values

§ Key paradigm: “Distributive justice”
  Anyone deserving intensive care must be admitted
  Redistribution of available care resources
  No privilege for patients already admitted: one in, one out

§ High solidarity among physicians, high degree of adherence to that goal

§ Supported by management, extended to the whole staff

§ Shared values that make sense of the job (decisions)

§ Patient flow management becomes a critical issue
Patient flow: a permanent management of “margins of manoeuvre”

§Permanent anticipation of potentially available beds during staff meetings, pre-visit, etc.
  Continuous update of “jokers” list

§Nurse Resource Manager: a senior nurse in charge of dispatching nurse resources,
  anticipating potential admission requests (in contact with other departments in the hospital)
  monitoring response capacities
  visiting nurse teams at work to check state and potential
  talking to physicians, attending staff meetings

§Update of back up solutions within other departments: agreements with trustable staff (ex ICU) to accept “delocated” IC
Constraints that deconstraint

§ Rules for autonomy:
- flexible roles and levels of delegation (to residents, to trainee nurses, to new comers)
- depends on workload and individual competence image
- protection envelopes: sentinel events, deviation from target margins, alerting signals, call back rules, …
- Cross-jobs monitoring (e.g. senior nurses on residents)

§ Rules for adapting rules:
- High level values (“patient interest”) drives risk management
- “Sacrificing” decisions principles
- Team involved in decisions, not a solo exercise
- Senior or additional expert advice taken when needed
The benefits of “coopetition”

§ Very strong, binding team work culture
  strong values of solidarity and mutual support among caregivers
  strong group pressure on individuals

§ But different roles still have different interests and visions
  E.g: difficult case admission during night: interesting case for doctors,
  lot of disturbance and additional work for nurses and caregivers

§ This “coopetition” is a moderator of decision making
  binds decision makers to play the consensus game, to adhere to
  accepted values and principles

§ Collibration (Dunsire): the expression of different interests is
  encouraged to facilitate a balanced decision
Because of the flexibility of tasks and roles definition, a critical condition of robustness is the coherence between allocated competences and needed competences. A permanent, dynamic, competence allocation process is a thorough competence management process at the unit level. Also implies that individual and collective competence images be accurately tuned, far beyond official and formal qualifications.

In other words mutual trust and self confidence are a core issue. There are many formal and informal mechanisms to establish the relevant levels of trust and confidence.
The role of individual commitment

§ High degree of personal commitment (for a proportion of staff) and devotion to the job and to the team
§ Resilience at the organization level partially gained through individual “heroism”
§ A high individual price justified by shared values & team solidarity, and rewarded (compensated) by social recognition
§ People who cannot sustain it for a long time leave the Unit
§ Turn over as a “resilience” factor at the organization level!

But a high price to pay: long and difficult-to-build expertise is lost as well
Conclusion

§ Most resilience features (+ HRO) as described by theory can be easily observed.
§ … but most have not been intentionally « engineered » into the ICU.
§ Rather emerged from empirical evolution, and were facilitated by self organization processes through the organizational crisis.
   Are they just the “natural” response of an organization facing the kind of constraints an ICU faces?

§ Could they be more intentionally engineered?
§ Is crisis a good strategy to design a resilient system?
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Thanks for your attention