



Understanding why maternity services go right - resilience mechanisms in different contexts

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Background

- Patient safety research so far:
 - Mainly a reactive focus
 - Adverse events - what, how, why, and influencing factors
- Less knowledge on:
 - Factors enabling organizations to anticipate, monitor, respond, and learn
 - Why some improvement measures work in one context and not in an other
- Knowledge gap: why organizations continue to perform safely under varying condition.

(Laugaland et al 2014; Hollnagel 2013; Krein et al 2010; Benn et al 2009)



Aim & research question

- Aim:
 - To explore the mechanisms involved in shaping resilience in the maternity services in two Norwegian hospitals.
 - To apply the four cornerstones of resilience and identify what mechanisms maternity wards use for anticipation, monitoring, response, and learning in their daily work.
 - To compare the two maternity wards to explore patterns of importance across different contexts.
- Research question:
 - What resilience mechanisms can explain why maternity services go right in different contextual settings?



Methods

- Design:
 - comparative case study of maternity services in a city-based university hospital and a rural-based hospital.
- Data collection methods:
 - qualitative interviews (38), observation and shadowing of staff (35 hours), and document analysis, (2011-2013).
- Analysis:
 - Content analysis of an existing data set (QUASER-Norway) based on Malterud (2011)
 - Theory driven analysis according to resilience in healthcare.

Hospital context

| Contextual aspects | Hospital 1 | Hospital 2 |
|--------------------------|--|--|
| Localization | District, rural areas | Urban, city |
| Population served | 107.000 inhabitants in the county | 490.000 inhabitants in the county |
| Teaching/non-teaching | Teaching hospital for nursing students | Teaching hospital for medical and nursing students, and others |
| Number of beds | 300 | 1100 (acute services, not psychiatry) |
| Number of staff | 2.336 | 11.000 |
| Organizational structure | Hierarchical | Flat |



Maternity context

| | Hospital 1 | Hospital 2 |
|------------------|--|---|
| Type of hospital | Local (small) | University hospital (large) |
| Maternity ward | 1 ward combining maternity/post-natal/gynecology services (recently merged) Ca 1000 births a year | 1 maternity ward 1 midwife-led ward 2 post-natal wards 1 observation ward Ca 5000 births a year |

Results - anticipation

| Mechanisms used to anticipate | Hospital 1 | Hospital 2 |
|--|--|---|
| Procedures | Quality handbook. High degree of use. | Quality handbook. High degree of use. |
| Organizing | «Duty-officer» - having oversight | Coordination midwife Coordiantion center |
| Forums to discuss safety at department level | Not specified - occurs in staff meetings | Not specified - occurs staff meetings |
| Medical equipment/ Preparedness | Fixed control routines | Fixed control routines |
| Team composition | Carefully planned based on competence | Carefully planned based on competence |

Results - anticipation

- Mechanisms:
 - Competence, team composition, distribution of responsibility, procedures, and preparedness were important mechanisms to anticipate variation.
- The managers and the coordination midwives:
 - Composed teams based on competence, learning needs, and allocated responsibility to foster ability to anticipate.
 - Made sure that the emergency preparedness was taken care of by using routines, simulation, and control of medical equipment.

Results - monitoring

| Tools used to monitor | Hospital 1 | Hospital 2 |
|------------------------------------|------------|------------|
| Quality indicators | High focus | High focus |
| Screening | Yes | Yes |
| Using medical equipment to monitor | CTG | CTG + STAN |
| Reporting of adverse events | Yes | Varying |

Results - monitoring

- Proactive and reactive indicators were important for the ability to anticipate and respond.
- They were used:
 - ...as a learning tool
 - ...as basis for evaluation of practice (own and others')
 - ... as a basis for comparison, internally and against other hospitals
 - ...to monitor the risk picture
- Involved both «everyday work monitoring» and «outcome monitoring» (Ross & Anderson 2015)

Results - learning

| Mechanisms of relevance for learning | Hospital 1 | Hospital 2 |
|--------------------------------------|-------------------------|----------------|
| Practice/simulation | Moderate focus | High focus |
| Training (new employees) | Good | Mediocre |
| Openness | High degree | Varying degree |
| Culture of blame | Low degree | Some degree |
| Quality improvement projects | Yes | Yes |
| Job rotation | No, only one department | Some degree |

Results - learning

- Learning mechanisms involved:
 - Simulation, theoretical courses, internal professional updates, and training scenarios to improve professional -, technical-, and non-technical skills in daily practice.
- Hospital 1:
 - Specific training for temporary staff (organization highly depended on temporary staff)
 - Open atmosphere, easy to ask for help
- Hospital 2:
 - High focus on practical training activities and simulation

Results - response

| Mechanisms of importance for ability to respond | Hospital 1 | Hospital 2 |
|--|---------------------------------------|------------------------------|
| Available resources/flexibility | Joint (maternity, post natal, gyn) | Coordination centre |
| Collegial support | High degree | Varying |
| Professional support | High degree | High degree |
| Quality of collaboration between professional groups | Good | Varying |
| Organizational learning | High degree, both informal and formal | Mediocre, more was desirable |
| Experience of IT | Unsatisfactory | Unsatisfactory |

Results - response

- Flexibility, available resources, openness, cohesion, and ability to collaborate were important mechanisms for the ability to respond.
- Hospital 1:
 - Joint use of resources within the department
 - Culture of openness, cohesion, and ability to collaborate.
- Hospital 2:
 - Coordination centre - provided an adaptive and risk-based allocation of resources and competence to solve acute situations safely.

Discussion

- Several similar mechanisms were involved in shaping resilient maternity services across both hospital contexts
 - The university hospital (2) had a larger repertoire of mechanisms that could be categorized under each resilience cornerstone
- Main differences between the two maternity wards were:
 - Mechanism repertoire
 - Degree of openness and collaboration between professional groups. The rural maternity ward (1) fostered a better learning environment compared to the city-based university hospital (2).
- Context sensitivity - the role of context in resilience needs further exploration!

Comparing with other contexts

- ED - Patient boarding and capacity for maneuver (Stephensen et al 2015)
 - Maternity admission face similar challenges: acute services, adaptation, allocation of resources and competence
 - Coordination centre - adaptive, risk-based maternity admission process
- ICU - the role of managing assistant nurse in work flow management (Paries et al 2013)
 - Maternity: Coordinating midwife on the ward - oversight, competence, experience, responsibility, and authority

Conclusion and further research

- Resilient maternity services depend on multiple mechanisms contributing to the ability of anticipation, monitoring, learning and responding, and not the least the dependencies between them.
- The particular context of each micro system under study is vital in understanding resilience.
- Further studies of why different clinical services (e.g. maternity, cancer care) go right, should incorporate larger sample of service providers, that provide similar clinical services (e.g. maternity or cancer care) but in different contextual settings (large, small, rural, city).
- By carefully mapping and incorporating context sensitivity in study design, we can enhance our understanding of context as a key element in producing different repertoires of resilience mechanisms.

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