The Ringerike Pilot Hospital Model:
Helping the patients and the organization to understand and manage the processes of the patients journey that flow through and between Microsystems

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Senior Advisor Aleidis Skard Brandrud

Vestre Viken Hospitals Area

27 square kilometer
450 000 inhabitants
**Vestre Viken Health Trust** (is a unit of four hospitals)

<table>
<thead>
<tr>
<th>Location</th>
<th>Employees</th>
<th>Population</th>
<th>Tourists per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kongsberg</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ringerike</td>
<td>9500</td>
<td>75000</td>
<td>20000</td>
</tr>
<tr>
<td>Bærum</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Drammen</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Ringerike Hospital**

- 1000 employees
- 75,000 inhabitants
- 20,000 tourists a day

**Hallingdal local health center**

- 120 km north of Ringerike

**Ringerike Hospital Hönefoss**
The nomination

- May the 7th 2009 Ringerike Hospital was nominated as a National Pilot Hospital, together with four other Norwegian hospitals.

The National Pilot Hospital Project

The five Pilot hospitals were funded and followed up by The Norwegian Ministry of Health and Care Services for two years to:

- guide the project according to the basic values of equal rights
- mingle the Pilot hospitals for mutual learning,
- foster the Pilots hospitals’ influence on the national health care development.
Ringerike Pilot Hospital Aim

Transform the healthcare system to give the patients and the providers personal control over their situation, by providing information, communication and education, and coordinate and integrate the care across silos.

A review of > 70 studies indicates that it is important to patients to achieve personal control

1. **Cognitive control**
   - The situation should be *predictable and understandable*

2. **Instrumental control**
   - To *master the challenges, and have influence on the situation*

3. **Emotional control**
   - Belonging, respect, identity, *dignity, safety and emotional support*

*Patients with personal control get healthier (faster) in a better and more cost effective way. Their immune response is stronger and their quality of life is better, also in the terminal phase of life.*

*(Havlík 1989, Covey 1992)*
The process behind the nomination ....no quick fix!

1999 Patient focused redesign
2003 Horizontal mesosystem development with organizational adjustments
2004 Electronic mesosystem guidelines
2005 Balanced clinical monitoring system development
2009 Transitional care system development
2010 Web-based patient information system

1996 Strategy: Integrated multidisciplinary care within and between microsystems

THE BACKGROUND
A continual improvement **system** is needed

**BOX 2** Continual improvement system

**Success factor I: INFORMATION**
1. Provide continual and reliable information about best practice
2. Provide continual and reliable information about current practice
3. Benchmark systems and outcomes to others

**Success factor II: ENGAGEMENT**
4. Anchor the improvement work to the leadership at all stages
5. Focus on and engage the patient and family in all stages of the improvement work
6. Anchor the changes to the professional environment
7. Engage the staff in all stages of the improvement work

**Success factor III: INFRASTRUCTURE**
8. Base the infrastructure on improvement knowledge
9. Multidisciplinary improvement teams tailored to the topic
10. Develop a learning system tailored to the different target groups
11. Develop a system to facilitate the improvement work
12. Develop a follow-up system to secure sustainability


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**The theoretical framework**

**Continual improvement**

**The embedded systems of healthcare**

**The model of improvement**

“Every system is perfectly designed to get exactly the results it gets”  
(Paul Batalden)

“Improving healthcare means improving systems of care applying quality improvement methodology”  
(Don Berwick, Institute for Healthcare Improvement)
Healthcare (performance) is created in the meeting between the patient and the provider. Everybody's task is to contribute to make this chain of meetings as good as possible.

Healthcare is a complex system. Most Norwegian hospitals are trying to make the care safer by building silos to provide more evidence-based medicine, and to make the organization look simpler and easier to manage from a top-down perspective.
One consequence of organizing the care in silos

- Healthcare is a complex (adaptive) system
- The complexity that is cleared away from the top of the organization by organizing the care in siloes, ... is still there...
- It is only pushed down and into the mesosystems.
- The microsystems are struggling with some complexity challenges
  ....still are the most complex parts only visible in the mesosystems, where the patient and their families are travelling (alone).

The microsystems are trapped in silos
A chain of microsystems is the patients *mesosystem*

"The performance of a system is *not the sum* of the performance of its parts taken separately, but the product of their interactions"  
* (Russel Ackoff 1994)

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We need to know to what extend the microsystems are interacting


Studying adverse events

An analysis of 1158 patient complaints to the CEO of a Norwegian University Hospital from 1995 - 2001

35% Predictability
32% Treatment/care
24% Respect and dignity
5% Costs
4% Facilities

Always an other nurse or physician (asking the same questions). Conflicting information and conflicting performance. Inaccessibility, broken appointments, unpredictable waiting times, poor continuity/no follow up. Poor communication and coordination of the care between settings. Adverse health consequences upon discharge because of poor discharge planning"
The national study is only providing silo organized information about patient satisfaction
We need to know the patient’s experiences with the mesosystem, or else we don’t know exactly what processes we need to improve.

Data collection in focus group meetings from patients in a particular mesosystem

The critical Incident Technique (CIT)

- Inviting patients and family from a specific mesosystem
- 2-3 focus group meetings
- We let the story telling move uninterrupted around the table
- The researcher is observing, not interviewing, but summarizes the comments on a flipchart
Kvantitativ studie av gyn-pasienters utsagn

Vi kan lære av dine erfaringer som pasient hos oss:

<table>
<thead>
<tr>
<th>Avsløringskode:</th>
<th>Vel ikke/vaktelt</th>
<th>Vel ikke/vaktelt _</th>
<th>Vel ikke/vaktelt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I svært stor grad</td>
<td>I ganske stor grad</td>
<td>I liten grad</td>
</tr>
<tr>
<td></td>
<td>Absolutt ikke</td>
<td></td>
<td>Absolutt ikke</td>
</tr>
</tbody>
</table>

1. Opplyste du i møte med for du fikk bilde dass du skulle bli innlagt? Ja, men det gikk ikke noen. 1 2 3 4 0

2. Menen du at du på noen måte ble lettbehovnelig (etter at du selv kan holde deg)? 1 2 3 4 0

3. Hvilken grad snakket legene til deg slik at du forsto dem? 1 2 3 4 0

4. Hvilken grad snakket legene til deg slik at du forsto dem? 1 2 3 4 0

5. Hvilken grad snakket legene til deg slik at du forsto dem? 1 2 3 4 0

6. Fikk du vite det du syntes var nødvendig om hvordan undersøkelser skulle foregå mens du var innlagt? 1 2 3 4 0

The same questionnaire is given to the staff, asking them to answer what they THINK is the most common patient experiences in that particular mesosystem.

Kvantitativ undersøkelse av de ansattes perspektiv på de samme pasienterfaringene

Hva troer de ansatt om de mest opplevde pasienterfaringene?”

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<tr>
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Vestre Viken HF
Ringerike sykehus
### Comparing the patients’ and the providers’ priority of problems

<table>
<thead>
<tr>
<th>Prior. pas</th>
<th>Diff</th>
<th>Prior ansatte</th>
<th>Under-estimated problems</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>-26</td>
<td>27</td>
<td>...information about what to do if you get a relapse, or get symptoms or health problems when you are back home?</td>
</tr>
<tr>
<td>6</td>
<td>-16</td>
<td>22</td>
<td>...information about what symptoms or health problems to look out for after you left the hospital?</td>
</tr>
<tr>
<td>7</td>
<td>-24</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>8</td>
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<tr>
<td>16</td>
<td>-19</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

**Områder som ansatte og pasienter har vurdert likt**

**Under-estimated problems**

<table>
<thead>
<tr>
<th>Prior. pas</th>
<th>Diff</th>
<th>Prior ansatte</th>
<th>Under-estimated problems</th>
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<tr>
<td>40</td>
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<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**Over-estimated problems**

<table>
<thead>
<tr>
<th>Prior. pas</th>
<th>Diff</th>
<th>Prior ansatte</th>
<th>Over-estimated problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>26</td>
<td>17</td>
<td>...did the physicians talk to you in an understandable manner?</td>
</tr>
<tr>
<td>46</td>
<td>28</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>20</td>
<td>10</td>
<td></td>
</tr>
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<td>56</td>
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<td></td>
</tr>
<tr>
<td>61</td>
<td>60</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Healthcare is a setting-centered system**

“Our health care delivery system is increasingly setting-centered, whether examined by payment, quality improvement, accreditation, performance measurement, or how clinicians define their practice.

In many respects, the term “health care system” is a misnomer.

There are few mechanisms in place for coordinating care across settings, and often no single practitioner or team assumes responsibility during patients’ transitions”.

(Coleman 2006)
The patient is travelling in a chain of microsystems who are not sufficient integrated.

"Every system is perfectly designed to get the results it gets"

Batalden & Stoltz 1993

We need to transform the system.
Everybody's task is to contribute to make this chain of meetings as good as possible.

Healthcare (performance) is created in the meeting between the patient and the provider.
We wanted people to think process not function

organisational/departmental boundaries

No one is accountable for the patient's "end to end" experience

Asthma care process

Knee replacement care process

Chest pain care process

2003 Horizontal mesosystem development

Hospital CEO

Orthopedic

Generell surgery

Internal medicine

Maternity

Gynecology
Patients and families belong to the MET’s

The patient is the only person who know the whole journey through health care, so the MET’s define and describe the mesosystems based on focus group material together with patients.
2004: The online mesosystem guidelines are based on generalizable scientific evidence + particular context

Dismantling silos

Within 8 years an amount of 50 mesosystems were defined, and the organization was redesigned to be able to coordinate the mesosystem interactions.
2005 Balanced clinical monitoring system development

The clinical value compass

- Functional Status
  - Biologic or Clinical
  - Satisfaction Against Need
  - Cost
- Distribute measures around the compass.
- Consider both process and outcome measures.

(Nelson, Batalden & Plume 1996)

We started with a pilot at the maternity ward

"I'm counting on you."
The clinicians are learning to understand variation with statistical process control (SPC) by doing small tests of change.

Looking for special cause variations like:

- **Freak point**
- **Shift of level**
- **Trend**

During labour, when the midwives are using CTG to analyze the situation, they are mandated by law to sign the paper with date and time. Was this always done?

**A Cardiotocography (CTG)- challenge**

Schematic explanation of cardiotocography: heart rate (A) is calculated from fetal heart motion determined by ultrasound, and uterine contractions are measured by a pressure transducer (D). These numbers are represented on a time scale with the help of a running piece of paper, producing a graphical representation.

(Wikipedia)
Baseline: A mean of 40% of the CTG outputs for each of the 20 patients had been signed, and the variation was big.

Six months later, the mean increased from 41 to 73% (78%) but, no shifts of level were found.
An improvement cycle

I-chart: Percent signed CTG’s per patient during seven tests of improvement, Maternity ward 2005

- Baseline
- 2. and 3. no change
- 4. Significant improvement vs baseline
- 5. Sign. improvement vs phase 3, one freak point
- 6. Two freak points
- 7. No freak points
- 8. Everything else than 100% is a special cause variation

- Andelen signerte CTG’s
- Øvre kontrollgrense
- Nedre kontrollgrense

Sequences of 8 x 20 consecutive patients for each test

What was the secret of their success?

1. Training and certification
2. An updated control-chart on the whiteboard
3. More collaboration in the CTG-analyses among the midwives
4. Personal follow up by the leader
   - No shame and blame!!!!
   - But: How can we improve our system to make it easier for you to always sign the CTG’s?

NB: Dichotomous data like this, do better on a p-chart in the future
Monitoring patient experiences using small questionnaires based on the qualitative and quantitative studies described above.

1. 6 questions about cognitive control = Index 1
   - The situation is predictable and understandable

2. 6 questions about Instrumental control = Index 2
   - To master the challenges, and have influence on the situation

3. 6 question about Emotional control = Index 3
   - Belonging, respect, identity, dignity, safety and emotional support

Index #3 Emotional control, maternity mesosystem

The patients seem to have good emotional control
The complex healthcare system

The healthcare system is so complex, that we have to use information technology to be able monitor, manage and improve the system.
The mesosystem teams develop balanced measures (indicators) and dashboards to provide real-time information to microsystems and leaders.

The electronic monitoring system is bringing continual information based on real-time data from a system of:

- Integration:
  - DIPS
  - NPR
  - MFR
  - Satisfaction
  - Adverse events

- Processing:
  - Data connected to clinical key process variables (indicators)

- Presentation: SPC
Real-time-monitoring example:
Percent perineal tears 3 & 4 degree per vaginal childbirths per month

Real-time monitoring started in August 2010

Consecutive months from August 31, 2008 to January 31, 2011

The x-axis is temporary invisible, a problem that soon will be solved by the contractor

2009 Transitional care system development
Cross-site collaboration

• Develop a system for defining and describing micro- and mesosystems together with patient, family, primary care, general practitioners, social care and the hospital.

Transitional care, an example

• A rehabilitation care team from the hospital (ART) started in August 2008 to ambulate between the hospital and the primary care.
• The purpose was to build knowledge in the patients' individual caregiver system about what to do when the patient gets symptoms and health problems when the patient is back home.
Test results on one of the target groups

- The change was tested by interviews and measurements on one of the target groups: Chronic obstructive lung disease (COLD).
- The interviews showed that the ward nurses are saving about 2 hours discharge work on each «ART-COLD-patient»
- Within one year, more than 50 physicians were referring patients to ART
- The primary nurse center reported that ART has made them able to avoid a lot of hospitalizations by giving the patient adequate home-care, in different situations they were not able to handle before.

Test result August 2010

Included:
21 COLD patients, with more than 12 months recorded history before and after start-up ART in 2008.
2010 Web-based patient information system

www.hospitality.no/ringerike
Vestre Viken Health Trust (is a unit of 4 hospitals)

The context has changed. Today Ringerike hospital is a small part of a large organization.

The challenge of complex healthcare organizations

Vestre Viken Health Trust is removing the local hospital leadership, and building siloes across four hospitals, to provide evidence based medicine to the patient, and make the organization look simpler and easier to manage from the top.
Context + Mechanism = Outcome

- it is not possible to “spread” the Ringerike mesosystems to the other three hospitals in our new big organization.
- We need to learn to know the new context, and find out what mechanisms that work in this new, big setting, before we can start to build something new together.
- Even Ringerike hospital will not be the same as it was, because of large structural changes.
- But the continual improvement culture and system thinking at Ringerike is multidisciplinary and strong and is “sitting in the walls” (as we say in Norway) after all this years.