Basic knowledge of microsystems
## Todays agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 10    | Introduction - welcome  
Who are we in this room?  
Your expectations  
Experiences of microsystems and improvement |
| 12-13 | Lunch                                                                   |
|       | Improvement work  
Spagetthi challange                                                       |
| 16:00 | Finish                                                                  |
Our microsystem

- Who are you?
- Expectations of this day?
- Experiences in improvement work
What is microsystem?
It is in the nature of the system to small systems build larger systems
Why do we have to work with microsystem?

Health care used to be simple, safe and ineffective. . .
... but now it is complex, efficient, and potentially dangerous

( and expensive)
"Every system is perfectly designed to get the results it gets."

Donald Berwick
In one unit there can be……

• 150 organizational PM
• 100 guidlines in care
• 30 department-specific guidelines
• 23 357 articles about COPD (Chronic obstructive pulmonary disease)
• 70 089 articles about Lungcancer
• 30 different salary criteria
• …
If you go astray long enough you start to feel at home
In one unit there can be……

- 150 organizational PM
- 100 guidlines in care
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- 23 357 articles about COPD (Chronic obstructive pulmonary disease)
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- 30 different salary criteria
- …
Drive the train in 200 km/h

... and lay the rails for the future
Success Characteristics that are associated with high performance

1. Leadership - Strong Leadership
   - Great Organizational Support
2. Staff - Focus on Staff (Professionals)
   - Education and Training of Staff
   - Interdependence of Care Team
3. Performance Result Focused
4. Process Improvement Focused
5. Patient-Centered (Patient Focus)
6. Community and Market Focus
7. Information & Information Technology Orientation

Not a single bullet but rather a special blend.
• A health care clinical microsystem can be defined as the combination of a small group of people who work together in a defined setting on a regular basis—or as needed—to provide care and the individuals who receive that care (who can also be recognized as members of a discrete subpopulation of patients.)

• It has clinical and business aims, linked processes, a shared information environment and produces services and care which can be measured as performance outcomes. These systems evolve over time and are (often) embedded in larger systems/organizations.

• As any living adaptive system, the microsystem must: (1) do the work, (2) meet staff needs, (3) maintain themselves as a clinical unit.
Some challenges the system must handle

- New laws
- New guidelines
- New staff
- Costs
- New patients
- And even old ones……
My God, what's going on Lisa? Is it disaster mode, major trauma alarm, is the entire hospital burning, has ten train accidents occurred, or is it a super deadly pandemic outbreak ....

The computers do not Work.
The daughter's daughters' partner is a nurse.
Take the focus from......
Create value

to the patients perspective
What is value?

\[
\frac{\text{Clinical Quality} + \text{Service Quality}}{\text{Cost}} \times \text{Evidens} = \text{Value}
\]
What is clinical quality?

- Right treatment to the right need
- Medicine
- Nursing
- Rehabilitation
What is service quality?

- The relation caregiver - patient
- access, easy – hard (booking routines, waiting time,)

Has separate, general processes undependent by the clinical results
Discussion at the table

- Do you talk about values at your work?
- And what do you talk about?
Seven questions showing the way

for the microsystemteam on their journey to the best possible results.

1. What is the purpose of our existence?
2. How do we measure?
3. How do we define the gap between today and the best possible future?
4. How do we develop connection maps to describe the work that is being done?
5. How do we identify waste and links that do not work?
6. How do we prioritize which processes that are in most need of improvement work?
7. How do we integrate improvement work as a natural part of everyday work?

Ref: Henriks, Bojestig, Nilsson, Edvinsson
Drive the train in 200 km/h

... and lay the rails for the future
Science of Improvement: Learn to combine subject matter knowledge and profound knowledge in creative ways to develop effective changes for improvement.

Professional knowledge
- Subject knowledge
- Personal skill
- Values, ethics

Improvement knowledge
- Appreciation of a System
- Understanding variation
- Psychology
- Theory of Knowledge

Improvement of diagnostic and treatment + Improvement of processes and system in healthcare

Higher value for the patients

Source: W. Edwards Deming
The true journey of discovery is not to search for new sights and places, but to see the old, familiar with new eyes.

Marcel Proust 1871-1922. French Novelist
How to create **awareness** of what is going on?

- Videos
- Photos
- Follow a colleague and observe
- Ask for stories from patients and families
- Benchmark other organizations
- Walk a mile in the patients shoe
- Ask question. 5 P guide.
Tools and methods to learn about and influence your microsystems:

- 5 P
- Waste – 5 S
- PDSA – small scale test
- Fishbone diagram
- Spaghetti diagram
- Valuecompass
- Image of the system
- Simple rules
- Scoreboards
Different glasses
<table>
<thead>
<tr>
<th>Purpose</th>
<th>Patients</th>
<th>People</th>
<th>Processes/Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Why are we going to work?</td>
<td>• Who are they?</td>
<td>• How do we use the staff members competence in the best way?</td>
<td>• How do we learn more about our processes?</td>
</tr>
<tr>
<td>• What values shall we create?</td>
<td>• What are their needs?</td>
<td>• Who are they? Skills and talent?</td>
<td>• How do we use the results?</td>
</tr>
<tr>
<td></td>
<td>• How do we involve them?</td>
<td></td>
<td>• How can we be better at linking?</td>
</tr>
</tbody>
</table>

To map, reflect, create a dialogue and systematically improve

Ref: Godfrey, Nelson, Batalden

Region Jönköpings län
• How do we learn more about our processes?
• How do we use the results?

Processes/

• How do we learn more about our processes?
• How do we use the results?
• How can we be better at linking?
What is a process?

A chain of activities in a recurring flow that creates value for anyone.
Different kind of processes

- Producing products
- Producing services

What’s the different?
Producing products

- Goods are produced and can often be checked afterwards
- Possible to correct defects that do not let the customer to suffer
Producing services

• Services are produced and consumed at the same time.

• In every encounter with the patient / client it is the "moment of truth".

• IMPORTANT TO DO THINGS RIGHT FROM THE BEGINNING!
How can you describe processes?

- Photos
- Flowchart
8 kinds of waste

**Talent**
Underutilizing people’s talents, skills, & knowledge.

**Inventory**
Excess products and materials not being processed.

**Motion**
Unnecessary movements by people (e.g., walking).

**Waiting**
Wasted time waiting for the next step in a process.

**Transportation**
Unnecessary movements of products & materials.

**Defects**
Efforts caused by rework, scrap, and incorrect information.

**Overproduction**
Production that is more than needed or before it is needed.

**Overprocessing**
More work or higher quality than is required by the customer.
Why measure?

Research?  ?  Judgment?

Improvement?

Your answer will guide your journey in quality measuring!
To create understanding for the context - visualization

- What do you measure?
- What do YOU think is most important to measure?
- How and when do you talk about the measures?
5 Tips
Okay, this really need to be a good thing.
Create environment for learning

Look not for talent - create environments that let talent come forward.

(Hageskog – coach for the Davis cup team between 1985 -2002, 6 wins)
1. Recognize everyone's initial ideas.

To use a team's strength it requires that each person bring their unique knowledge and perspectives.

Brainstorm first by yourself - then share with the group. Otherwise, it is risk of "Anchor Effect" - the brain fooled by first impressions.

2. Practice makes perfect - even for the team.

If a team does well in a test situation, the team will do well in the future.

It's not enough to just put together a number of talented individuals.

The group's capacity increased by teams that are estimated high in social sensitivity - ie the ability to read other people's feelings.

Wolley et al (201) Evidence for a Collective Intelligence Factor in the Performance of Human Groups
Science 29 : Vol. 330 no. 6004 pp. 686-688
3. Mix the team at regular intervals.

There is a balance between well-bedded team that have practiced team work and team transitioned to the "groupthink".

Dissenting opinions may be depressed by the group.

Ensure that new people can get into the team.

“Well-bedded” teams feel they are friendlier and more creative but it is new teams that generate more and better ideas.

4. Prepare for fiasco

One way to avoid groupthink is to prepare for the project becoming a fiasco

Imagine that the project completely failed - brainstorm individually first and then together - Why?

Make a plan of action to avoid the causes of failure.

5. Timing is everything!

- The perception if a meetings quality was good or bad is not about the length, number of breaks – it’s about if the meeting begins and ends on time.

Will you only have one meeting per week - meet at 15.00 on Tuesdays!

Be careful with the order of the agenda. Team devote more time to the first items than the last.

Have standing appointments. They are on average 34% faster and maintain quality in terms of content and decisions.


“You can’t impose anything on anyone and expect them to be committed to it”

Edgar Schein, Professor Emeritus
MIT Sloan School
"Everybody likes changes but it is to change themselves people reacts against"
Psychology of Change
- we respond differently to changes!

- Innovators – "Inventor" 3%
- Early adopters – "Hop on" 13%
- Early majority 34%
- Late majority 34%
- Laggards – "Over my dead body" 16%
<table>
<thead>
<tr>
<th>Personalized, gentle, loyal, trustworthy, friendly, spontaneous, informal, friendly, calm, relaxed, considerate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical, patient, thoughtful, thorough, objective, specific, precise, logical. Systematic, methodical thinker</td>
</tr>
<tr>
<td>Are Independent, creative, friendly, exciting, humorous, sociable, stimulating, intuitive, outspoken, open, accepting, entertaining</td>
</tr>
<tr>
<td>Objective, confident, practical, determined, competitive, results-oriented, targeted, steady, independent, strong, proactive, organized</td>
</tr>
</tbody>
</table>
Subjective, shoots up, not independent, overprotective, insecure, dependent, cowardly, sentimental, haunting, indecisive, submissive, soft, powerless

Unrealistic, manipulative dreamer, diffuse, impractical, volatile, irascible, opinionated, stressful, confusing, hasty, boastful, light-headed, over dramatic

Green - Stable
Indecisive, limited, over technical, supercritical, boring, regular, single-track, over serious, indifferent, cold, complicated, slow

Yellow - Inspirer
Presumptuous, cross, tough, arrogant, egotistical, cocksure, egotistical, aggressive, cold, impatient, eager beaver, suspicious, arrogant, insensitive, assertive, loner, dominant

Blue - analytic

Red - Dominant
E. Schein (1985). *Organizational change and leadership*

"We act into a new way of thinking."

New way to work and to use methods and tools.
Find the gaps, sort out the causes and make small tests to reduce gaps

1. 

5 P to understand its context.

Describe the process from the patient's perspective through photos and interviews.

Where are the biggest gaps between current and best practices?
How do we measure this?

Fishbone Diagram
- Define the problem
- Ask the question why, why, why
- Brainstorming about possible causes
- Sorted and grouped into categories.
- Multi-voting

2. 

Plan small tests (Set goals, measure and time)

Conduct the test

Study results – was the change also an improvement?

Decide - new test?

3. 

Gör Studera

Planera

Agera

Studera

Gör
I have a really good idea!  
Yes, yes, but I do not have time. We'll talk about it sometime in the future.
Activity is not always a change

This is NOT change

Planning
Have a meeting
educate employees
Making a protocol
Designate responsibilities
to someone
Writing on the intranet

This is change

Expanding phone time
Change schedules based on needs
5 S in a drug-store
Provide feedback to employees on adherence to guideline
Reduce the number of steps in a care process
Improvement areas

Responsive Relevant - important Focus on the patient

Region Jönköping's län
How do we work with improvement today?

Random?

- Firefighting
- Fixing bugs
- Designate a scapegoat
- Amateur
- Intuitive evaluation

Systematically?

- Common model and theory
- Prevent and create new professionally planned evaluation
Successful improvement work

• Talk about a successful improvement

• What were the ingredients? If we write a Cookbook - how would it look like?
Goal!
What to accomplish?
Is a change an improvement?
What test shall we do?

data!

Goal!

ideas!

test!

Improvement model Nolan, Deming m fl

PDSA-cirkeln

Act Plan
Study do
"the marshmallow challenge"
Instructions

• Build the tallest freestanding structure you can!: The winning team is the one with the highest building – measure away from the table to the top of Marshmallow. This means that the building can not be supported by a higher structure as a chair, ceiling or similar.

• WHOLE Marshmallow must be on top of the building :. Cut to share or eat parts of the marshmallow is not allowed and will lead to disqualification of the team. ?

• Use as much or as little as you want of the material: The team can use few or all 20 of spaghetti or as mkt or a bit of tape and rope as they want.?

• Divide the spaghetti, string or tape: It's okay to share the spaghetti, tape or string.?

• The challenge lasts 18 minutes: The team must NOT hold onto the building when the time expires. Stir man or supports the building at the end of the exercise will be disqualified.
What did we learn?

- [http://marshmallowchallenge.com/Welcome.html](http://marshmallowchallenge.com/Welcome.html)
- Tom Wujec presents some surprisingly deep research into the "marshmallow problem"
Improvement model Nolan, Deming m fl

What to accomplish?

Is a change an improvement?

What test shall we do?

Goal!

data!

ideas!

test!

PDSA-cirkeln

Act | Plan
Study | do
Measurements a prerequisite for improvement

Now
Measures

Tests

Learning over time

Learn while doing
Small tests, does not (necessarily) lead to small changes
Before and after
Waiting times physiotherapist

<table>
<thead>
<tr>
<th>Week</th>
<th>Number of Days</th>
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<tbody>
<tr>
<td>v 20</td>
<td>18</td>
</tr>
<tr>
<td>v 35</td>
<td>5</td>
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HYPOTHESIS
Increased efficiency in the daytime gives shorter waiting time

TEST from w 26
Breakfast with oatmeal
Measure and analyse over time

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<td>v 23</td>
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<td>14</td>
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<td>9</td>
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<td>v 34</td>
<td>15</td>
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Waiting times physiotherapist

TEST from w 26
Breakfast with oatmeal
HYPOTHESIS
Increased efficiency in the daytime gives shorter waiting time
Measure and analyse over time

Waiting times physiotherapist

TEST from w 26
Breakfast with oatmeal
HYPOTHESIS
Increased efficiency in the daytime gives shorter waiting time
FAIL
First Attempt in Learning
"Rules"

- If it works— Don’t break it
- Do more of what works
- If it doesn’t work— do something different
- IF it goes to slow – lower the speed
Example OP/IVA Jönköping

Before

From 3 moment to 1
Saving 1,5 h / day

After
Exemple Ear departement Jönköping

Before

After
Self dialysis

- https://vimeo.com/40156052
Discussion at the table

- What do you take with you from this day?
- What will you start with?
We cannot solve our problems with the same thinking we used when we created them.

*Quote from Albert Einstein*
Creative solutions
http://www.youtube.com/watch?v=ivg56TX9kWI&feature=related

Make people use the stair......
"In times of change learners inherit the earth; while the learned find themselves equipped to deal with a world that no longer exists"

Eric Hoffer
References

- Dartmouth Microsystem Website: www.clinicalmicrosystem.org
- IHI Website: www.IHI.org/Programs
References


– Clinical Microsystems provides an on-line version of the Clinical Action Guide. Hanover, NH: Health Care Improvement and Leadership Development at Dartmouth College. (See Clinicalmicrosystems.org)
References

References


