Service improvement through collaboration

*Experiences from the Division of Medical diagnostics*

The Division of Medical Diagnostics

In Jönköping County Council

A county wide organisation offering service in;

- Medical Radiology
- Clinical physiology
- Laboratory Medicine

- ≈ 650 employees
- ≈ 40 workplaces
Collaboration with our customers to create a service with high value

Focus on both “people power” and “process power”

- Coach people to redesign their own processes
- Learn together with customers
- Learn from lead time analysis, errors and near misses

Three examples

1. “Improvements for children undergoing MRI examinations”
   Ewa.Geel@lj.se Radiographer

2. “Reduced turn-around time for blood culture”
   Marita.Skarstedt@lj.se Biomedical Scientist

3. “Improvements of the diagnosis of severe pneumonia”
   Maysae.Quttineh@lj.se Biomedical Scientist

   Anna.Osterstrom@lj.se Development Strategist
Ewa Geel  Radiographer

Radiology department
MRI section
Division of Medical Diagnostics,
Jönköping County Council, Sweden

Improvements for Children undergoing MRI examination
Statistics MRI study of children between 3 months - 6 years with and without anesthesia

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>81</td>
<td>120</td>
<td>156</td>
<td>174</td>
<td>142</td>
<td>132</td>
</tr>
</tbody>
</table>

Welcome to us William
Can mom be with me here in the meantime?

Does it feel good to lie still?
Close relation provides security

The examination is completed. You did just fine William!
Results: MRI examination for children aged 6-10 years old

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
<th>Without anesthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>85</td>
<td>40%</td>
</tr>
<tr>
<td>2009</td>
<td>120</td>
<td>51%</td>
</tr>
<tr>
<td>2010</td>
<td>108</td>
<td>62%</td>
</tr>
<tr>
<td>2011</td>
<td>122</td>
<td>63%</td>
</tr>
<tr>
<td>2012</td>
<td>124</td>
<td>69%</td>
</tr>
</tbody>
</table>

Our vision

• Is that more and younger children can undergo MRI examination without anesthesia to increase the access to
  – both MRI examination and
  – anesthesia resources for other children who really need anesthesia
Benefits

We have

- shortened our queues from 3 months to 2 weeks and

- as we can examine more and more children without anesthesia the Eksjö and Värnamo hospitals now can examine these children as well

Thank you for your attention
Reduced turnaround time for blood culture

Marita Skarstedt
Biomedical scientist, Clinical Microbiology,
Division of Medical Diagnostics,
Jönköping County Council, Sweden

Problem 1: More samples every year

Blood cultures at clinical microbiology, Jönköping

The Microsystem Festival Feb 27–March 1
www.lj.se/microsystemfestival
Problem 2: Waste of time

"Waste" for one sample:

8 h + 15 h = 23 h

Blood culture process
### Compare with other laboratories

One medical quality indicator is time from sampling to the incubation of a blood culture.

<table>
<thead>
<tr>
<th>No. of Laboratories</th>
<th>The same day</th>
<th>+ 1</th>
<th>≥ 2</th>
<th>No. of blood cultures</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 clinical microbiology laboratories in Sweden</td>
<td>58 %</td>
<td>40 %</td>
<td>2 %</td>
<td>17220</td>
</tr>
<tr>
<td>Clinical microbiology laboratory Jönköping</td>
<td>66 %</td>
<td>34 %</td>
<td>0 %</td>
<td>725</td>
</tr>
</tbody>
</table>

### Improvement 2010

#### Before improvement (2008)

![Before improvement chart]

#### After improvement (2010)

![After improvement chart]
Strategy for change

Pre-analytical process

Collaboration with customers.

Improve the incubation process

Introduce a new typing method.

Introduce rapid antibiotic susceptibility testing.

Collaboration with the infection clinic

Effects of new improvement

Ryhov County Hospital, Jönköping

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Collaboration with customers to improve the whole process

Collaboration in the preanalytical process with staff at the emergency department
- Sometimes there was a lack of transportation wagon observed and improve this process

Collaboration in the postanalytical process with physicians at the infection department
- The antibiotic treatment can the now be change the same day.

Effects for patients with cefotaxim resistant bacteria

- Time from sampling to response in average 55 h before versus 43 h after implementation. The minimum time was 24 h
Lessons learnt

- Prepare the personal well before introducing changes.
- Tacit knowledge will be forgotten
- Collaboration will improve the process

Message for others

- Patient focus is important
- Show results before and after and this is a driving force
- Collaboration is important for better outcomes.
Improvements of the diagnosis of severe pneumonia for better outcome

Maysae Quttineh
Biomedical scientist
Dept of Laboratory Medicine, Clinical Microbiology
Division of Medical Diagnostics

Community-acquired pneumonia (CAP)

• Represent the most severe form of the disease
• Require immediate treatment
• Microbiological sampling to analyse the causing agent
The analytical process of severe pneumonia

Sample 1
TAT ~ 48-96 h

Sample 2
TAT ~ 4-12 h

Sample 3
TAT ~ 2-5 days

Gothenburg

Problems facing the customers

• Collection of samples, 2-3 tubes/patient – too many!

• 9 orders/patient – too many!

• Variation in Turn-around-time (TAT)

Evaluation of the results

• The lack of some important bacteria species and viruses that could cause the infection
Collaboration partners

- Department of Laboratory Medicine, Clinical Microbiology
- Department of Infectious Diseases, Ryhov County Hospital
- Intensive care unit, Ryhov County Hospital

Aim of the collaboration

- Preserve value for customers with less work both for them and us
Strategy for changes

1. Task for the Physicians
   • Decide what infectious agents should be included
   • Determine the time for the analyse

2. The Lab’s task
   • Evaluate the best, most cost- and time effective test on the market that could live up to the criterias above

1. Determination of content and time of the analyses
   • The customers (referring physicians) needed determination of 10 respiratory tract agents

   • Commitment with our customers:
     If the sample is in the lab before 13.00, the results should be reported the same day

   • Working time in the lab is Monday-Friday 8.00-16.45

Is that possible?
2. Evaluation of the best method

- A new analyse method were introduced ("FTD respiratory pathfinder")
- 33 different respiratory tract agents
- Analyse time 2 h 15 min
- Turn around time (from need to answer) 4 h
After improvement

1 order, 1 sample

TAT= 4 h

1 analyse method

Results reported to physician by RoAs

Patient get appropriate treatment

Thank you!

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IMPOSSIBLE IS NOTHING.