A web-based system to facilitate local, systematic quality improvement by multidisciplinary care teams: development and first experiences of CARDSS Online

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Overview

• Introduction
  – Question from the field about quality improvement in cardiac rehabilitation
• Systematic quality improvement
• Existing systems
• CARDSS Online
• First experiences
• Conclusion
Could you help us **improve the quality** of cardiac rehabilitation in the Netherlands?

- Patient education
- Physical exercise
- Lifestyle counseling
- Psychosocial support
The problem with quality improvement (QI)

Although healthcare professionals express strong support for the principle of quality patient care, engagement in local QI initiatives is often difficult because they:

- Assert high-quality is already provided
- Are reluctant to engage
  - Perception of ineffective, waste of resources, harmful effects
- Devolve responsibility
  - Conflict doctors and managers
- Not familiar with the fundamental concepts of QI

Systematic quality improvement

- Model for Improvement
  - Plan-Do-Study-Act (PDSA) cycle

- Performance feedback
  - Should include explicit goals

- Goal-setting theory
  - Goals should be self-formulated
  - And believed to be important and feasible

Existing systems

• Scientific literature describes few systems that support the process of (constituents of) systematic QI

• Some systems provide structured performance feedback
  – No systematic QI principles or effective goal-setting

• Commercial software often offers management information from patient records
  – No systematic QI principles or benchmarking
CARDSS Online

• An online system that facilitates local, systematic QI by actively involving multidisciplinary care teams in the entire PDSA cycle and goal setting process.

• Used by local QI teams during educational outreach visits
System requirements

i) Monitoring of indicator-based performance

ii) Selecting aspects of care for improvement

iii) Developing quality improvement plan

iv) Periodically adjusting the QI plan
i) Monitoring of indicator-based performance

**Structure**
1. Specialized education for patients with chronic heart failure  No
2. Rehab professionals work with a multidisciplinary patient record  Yes
3. Patients participate in patient satisfaction research  Yes

**Process**
6. Complete data collection during needs assessment for rehabilitation  30%
7. Patients finish their rehabilitation programme  91%
8. Rehabilitation goals are evaluated afterwards  44%
9. Cardiologists receive a report after the rehabilitation  60%

**Outcome**
16. Patients improve their exercise capacity during rehabilitation  40%
17. Patients improvement their quality of life during rehabilitation  78%
18. Patients quit smoking  69%
ii) Selecting aspects of care for improvement

Pre-selection

Test CR clinic

Pre-selection > Prioritizing > Final selection > Action plan

Start date trial: 01-07-2012
Feedback reports
○ Feedback report: Test Hospital (period 1) DATE: from 01-07-2012 to 01-08-2013

Open report

Structure
1. Specialized education for patients with chronic heart failure
   - No
2. Rehab professionals work with a multidisciplinary patient record
   - Yes
3. Patients participate in patient satisfaction research
   - Yes

Process
6. Complete data collection during needs assessment for rehabilitation
   - 30%
7. Patients finish their rehabilitation programme
   - 91%
8. Rehabilitation goals are evaluated afterwards
   - 44%
9. Cardiologists receive a report after the rehabilitation
   - 60%

Outcome
16. Patients improve their exercise capacity during rehabilitation
   - 40%
17. Patients improvement their quality of life during rehabilitation
   - 78%
18. Patients quit smoking
   - 69%
PDSA: Plan

ii) Selecting aspects of care for improvement

Prioritizing and sorting

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Importance</th>
<th>Feasibility</th>
<th>Expected time needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Specialized education for patients with chronic heart failure</td>
<td>Very Important</td>
<td>Hard</td>
<td>Within 1 month</td>
</tr>
<tr>
<td>2. Complete data collection during needs assessment for rehabilitation</td>
<td>Important</td>
<td>Very Hard</td>
<td>Longer than 3 months</td>
</tr>
<tr>
<td>3. Cardiologists receive a report after the rehabilitation</td>
<td>Important</td>
<td>Hard</td>
<td>Within 3 months</td>
</tr>
<tr>
<td>4. Patients improve their exercise capacity during rehabilitation</td>
<td>Not so important</td>
<td>Very Hard</td>
<td>Longer than 3 months</td>
</tr>
</tbody>
</table>

Pre-selection > Prioritizing > Final selection > Action plan

CardiSS Online
ii) Selecting aspects of care for improvement

Final selection

Pre-selection > Prioritizing > Final selection > Action plan

<table>
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<tr>
<th>Indicator</th>
<th>Importance</th>
<th>Feasibility</th>
<th>Expected time needed</th>
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<tbody>
<tr>
<td>6. Complete data collection during needs assessment for rehabilitation</td>
<td></td>
<td></td>
<td>30%</td>
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<tr>
<td>1. Specialized education for patients with chronic heart failure</td>
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<td>Not so important</td>
<td>Very hard</td>
<td>Longer than 3 months</td>
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Final selection QI plan

Cancel QI plan
iii) Developing quality improvement plan

PDSA: Plan/Do

Test CR clinic

Pre-selection > Prioritizing > Final selection > Action plan

Action points QI plan

6. Complete data collection during needs assessment for rehabilitation

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>Improvement goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no complete data collection during needs assessment for rehabilitation because of missing results of the psychosocial condition of the patient.</td>
<td>Discussion about the available questionnaires for the psychosocial condition.</td>
<td>To choose questionnaires for depression and social support and start with administration.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Action points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organize a meeting to choose the questionnaires.</td>
<td>Psychologist</td>
</tr>
<tr>
<td>Make appointments about who, how, and when to administer the questionnaires.</td>
<td>Psychologist and Nurse</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Description</th>
<th>Action points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss specialized education CHF patients with the cardiologists.</td>
<td>Nurse and Cardiologist</td>
</tr>
</tbody>
</table>

Cardiss Online
iv) Periodically adjusting the QI plan

**PDSA: Check/Act**

### Adjusting QI plan

**6. Complete data collection during needs assessment for rehabilitation**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Discussion about the available questionnaires for the psychosocial condition of the patient.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causes</td>
<td>To choose questionnaires for depression and social support and start with administer.</td>
</tr>
<tr>
<td>Improve goal</td>
<td>To choose questionnaires for depression and social support and start with administer.</td>
</tr>
</tbody>
</table>

**Action points**

<table>
<thead>
<tr>
<th>Description</th>
<th>Names</th>
<th>Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organize a meeting to choose the questionnaires.</td>
<td>Psychologist</td>
<td>30-09-2013</td>
<td>Completed</td>
</tr>
<tr>
<td>Make appointments about who, how and when to administer the questionnaires.</td>
<td>Psychologist and Nurse</td>
<td>31-10-2013</td>
<td>Continued</td>
</tr>
</tbody>
</table>

**1. Specialized education for patients with chronic heart failure**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Their is no specialized education for patients with chronic heart failure (CHF).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causes</td>
<td>Until now cardiologists have not supported such education (lack of time).</td>
</tr>
<tr>
<td>Improve goal</td>
<td>Discuss specialized education CHF patients with the cardiologists.</td>
</tr>
</tbody>
</table>

**Action points**

<table>
<thead>
<tr>
<th>Description</th>
<th>Names</th>
<th>Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss specialized education CHF patients with the cardiology partnership during their next meeting.</td>
<td>Nurse and Cardiologist</td>
<td>17-09-2013</td>
<td>Cancelled</td>
</tr>
</tbody>
</table>
System architecture

CR clinic
- EPR for CR with CDS
- Local QI team

CARDSS Online website
- Data upload tool
- Feedback report tool
- QI Plan tool

Back-end system
- Data validation & Import tool
- Dataset

Dataset
- Results quality indicators
- QI goals & actions
- CARDSS db
First experiences

<table>
<thead>
<tr>
<th>CARDSS-II trial</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of CR clinics</td>
<td>11</td>
<td>n.a.</td>
</tr>
<tr>
<td>Number of patients in database</td>
<td>3.977</td>
<td>n.a.</td>
</tr>
<tr>
<td>Number of patients per clinic</td>
<td>361.6 (246.5)</td>
<td>158 to 1006</td>
</tr>
<tr>
<td><strong>Educational outreach visits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of EO visits organized</td>
<td>24</td>
<td>n.a.</td>
</tr>
<tr>
<td>Duration of EO visits (hours)</td>
<td>2.3 (0.5)</td>
<td>1.5 to 3</td>
</tr>
<tr>
<td><strong>QI Team</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of members per QI team</td>
<td>6.5 (0.9)</td>
<td>5 to 8</td>
</tr>
<tr>
<td><strong>QI Plan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of planned QI goals</td>
<td>6.8 (1.8)</td>
<td>4 to 9</td>
</tr>
<tr>
<td>Number of actions per QI goal</td>
<td>2.0 (0.4)</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Number of planned QI goals on:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Structure indicators</td>
<td>1.8 (1.1)</td>
<td>0 to 3</td>
</tr>
<tr>
<td>- Process indicators</td>
<td>4.0 (1.0)</td>
<td>2 to 6</td>
</tr>
<tr>
<td>- Outcome indicators</td>
<td>0.6 (0.8)</td>
<td>0 to 2</td>
</tr>
</tbody>
</table>
Conclusion

• We developed a system to facilitate local, systematic QI in multidisciplinary teams
  – Plan-Do-Study-Act (PDSA) cycle
  – Goal setting theory

• Currently we are performing a cluster randomized trial to assess the effectiveness in the field of CR in the Netherlands
  – Outcome measures: guideline concordance and performance on quality indicators
Thank you for your attention