CEEQNET II. INTERIM REPORT  (Technical part)
(NOVEMBER 2005)

Unified Central and Eastern European surveillance/monitoring system for healthcare quality and efficiency indicators

CEEQNET   (Central and Eastern Europe Quality Network)

Ústav zdravotníckych informácií a štatistiky
(Institute of Health Information and Statistics, Slovak Republic)

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Project partners:

This report forms the update of the 1st. Interim report and the 1st Interim report should be considered as an integral part of the following materials.

Objectives of the CEEQNET project

- Project offers a unification methodology for efforts of five Central European countries (Austria, Czech Republic, Hungary, Poland, Slovak Republic) in the quest for standardization and harmonization of measurement methods used for evaluation of healthcare performance.

- Collaborating countries have a certain volume of data collected for various reasons in the process of providing health care.

- Project focuses on proper use of these existing relevant data sources.

- Project aims at forming a „community of excellence“ of institutions using their data for quality performance improvement compatible with the EFQM or CAF quality management models. The end result is seen in strengthening the role of health care consumer of Europe (eHealth application for hospital performance measurement and reporting) enabling appropriate informed choice of health care service providers by the consumer.
EU REPORT WITHIN THE HEALTH INFORMATION STRAND

I. TECHNICAL INFORMATION

<table>
<thead>
<tr>
<th>1. AREA OF ACTIVITIES / WORKING PARTY</th>
<th>Health care surveillance and evaluation/ Health Systems Working Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. TITLE OF PROJECT</td>
<td>Unified Central and Eastern European surveillance/monitoring system</td>
</tr>
<tr>
<td></td>
<td>for healthcare quality and efficiency indicators (CEEQNET)</td>
</tr>
<tr>
<td>3. START DATE OF THE PROJECT</td>
<td>1. 5. 2004</td>
</tr>
<tr>
<td>4. DURATION OF THE PROJECT</td>
<td>26 months</td>
</tr>
<tr>
<td>5. PROJECT LEADER / ORGANISATION</td>
<td>Aleš Bourek / IHIS Slovak Republic (Institute of Health Information and Statistics)</td>
</tr>
<tr>
<td>6. PROJECT NUMBER</td>
<td>Agreement number 2003105</td>
</tr>
<tr>
<td>7. SANCO REPRESENTATIVE</td>
<td>Steffen Zenner</td>
</tr>
<tr>
<td>8. COUNTRIES INVOLVED</td>
<td></td>
</tr>
<tr>
<td>CANDIDATE COUNTRIES:</td>
<td></td>
</tr>
<tr>
<td>EFTA/EEA COUNTRIES:</td>
<td></td>
</tr>
<tr>
<td>OTHERS:</td>
<td></td>
</tr>
<tr>
<td>[x] A (Austria)</td>
<td></td>
</tr>
<tr>
<td>[x] CZ (Czech Republic)</td>
<td></td>
</tr>
<tr>
<td>[x] HU (Hungary)</td>
<td></td>
</tr>
<tr>
<td>[x] PL (Poland)</td>
<td></td>
</tr>
<tr>
<td>[x] SK (Slovak Republic)</td>
<td></td>
</tr>
</tbody>
</table>

9. REPORT STATUS
Second Interim

10. EVENT. TIMELINE
| Stages of project/Deliverables | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 | Month 13 | Month 14 | Month 15 | Month 16 | Month 17 | Month 18 | Month 19 | Month 20 | Month 21 | Month 22 | Month 23 | Month 24 | Month 25 | Month 26 |
|-------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Data sources analysis         | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| General design of information system | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | E       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Realization of information system | 1) Development of indicators | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| 2) Development of information technology (IT) systems and applications | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| 3) Development of quality measures and standards in specific areas | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Implementation of information system | Deliverable: Development and promotion of strategic approaches and measures in specific areas | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Ongoing                       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Evaluation of project results | Deliverable: Evaluation and assessments of specific issues carried out | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Framework establishing        | 1) Creation and operation of networks and platforms | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| 2) Linkage of networks        | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Training                      | Deliverable: Training of key staff | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
| Project termination           | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       | x       |
CEEQNET
DATABASE AND ITS LOGICAL MODEL,
DIMENSIONS, CHARACTERISTICS
BASIC DESCRIPTION OF ORACLE DISCOVERER FUNCTIONS

CQN_Stage_HI_1_02
November 2005
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Introduction

Objective of this document is to describe current state of CEEQNET database in the following fields:

1. Database logical model
2. Dimensions, characteristics
3. Database access tools (for browsing and editing sheets)
4. Imported data

Logical model is described in its own chapter. Other three fields are clearly described using the demonstration/example sheets included in the following text, which are available at the following website:

http://othelo.dzm.stapro.cz/discoverer/viewer

It is only possible to connect to this website, if the connection parameters (user name, password, database name and end user layer name - EUL) is known. For security reasons these parameters are not included in this document and will be individually sent to all authorized users upon their request.

The general link to the CEEQNET project is the website http://www.ceeqnet.com

Individual sheets are described in separate chapters. User is also introduced to dimensions, characteristics and basic tools for working with sheets and pages.
Section inside dotted and dashed frame is not handled/implemented in the data storage.
Economical and human resources data logical model
List of dimensions

- PERIOD
- COUNTRY
- HOSPITAL (ZZ)
- PRIMARY CASE DIAGNOSIS
- GENDER
- URGENCY (CASE PLANNING)
- TYPE OF CASE ADMISSION
- TYPE OF CASE ENDING
- TURNOVER TYPES
- PROFESSION TYPES
- Clinical field
- Type of expenses (costs) center
- Operational procedures
- Secondary case diagnosis

Dimensions implemented in application by 1.12.2005 are marked in capital letters.

List of characteristics

- Primary characteristics
  - Number of cases
  - Age
  - Length of stay (LOS)
  - Costs and revenues (turnovers)
  - Number of employees („heads/human resources“)
  - Weighted number of employees („duties“)
  - Working hours
  - Salaries

- Secondary characteristics
  - Average age
  - Average length of stay (ALOS)
**Demonstration/example sheets**

Purpose of these sheets is to:
- Allow confirmation of data imported into database
- Allow confirmation of working dimensions in application
- Explain basic user methods

So the main goal is not to display respective characteristics (those will represent just a very small set of processed data), but to display “the underlying/carrying base” and tools for creation and testing of characteristics.

Application contains three worksheets:
- Pers – human resources data
- Ucto – economical data (accounting)
- Worksheet 1 – Clinical data

Worksheet 1 contains four demonstration sheets; three of them are described in the following chapters.
Imported data summary

System now contains data of seven hospitals from three countries (Czech Republic, Slovakia and Poland). These are mostly clinical data. Its sources were primarily hospitalization statements required by local authority bodies.

Imported data summary till 25.11.05

1) Czech Republic
   a) Chomutov hospital
      i) Hospitalization data – cases
   b) Karlovy Vary hospital
      i) Hospitalization data – cases

2) Slovak Republic
   a) Nové Zámky hospital
      i) Organizational structure
      ii) Capacity characteristics
      iii) Hospitalization record
      iv) Accounting
      v) Human resources
   b) Martin hospital
      i) Organizational structure
      ii) Capacity characteristics
      iii) Hospitalization record
      iv) Accounting – account states only for the whole hospital in the year 2004
      v) Human resources – cumulated for the year 2004
   c) Žilina hospital
      i) Organizational structure
      ii) Capacity characteristics
      iii) Hospitalization record
      iv) Accounting – account states only for the whole hospital as they were in December 2004
      v) Human resources
   d) MoD (Ministry of Defense) Bratislava hospital
      i) Organizational structure
      ii) Hospitalization record

3) Poland
   a) Lodz hospital
      i) Organizational structure
      ii) Hospitalization record
      iii) Accounting – turnover only for January 2004
   b) Sucha Beskidzka hospital
      i) Hospitalization record – without links to organizational structure and PESEL codes

4) Hungary – none yet (due to administrative problems relating to the proposed change in collaborating institution and Country Manager)

5) Austria – none yet (but dataset of 3 large University hospitals already submitted by Country Manager and being worked on)
**Oracle Discoverer Viewer**

Oracle Discoverer Viewer is a user-friendly tool used for CEEQNET analysis reporting. It gives immediate access to all information in data storages, data marketplaces and OLAP systems. With Discoverer Viewer users can easily transform data into information using well known and intuitive interface – online accessible by means of a web browser. Discoverer Viewer supports different languages (e.g. languages of all countries concerned in the CEEQNET project plus English). Language selection is effected via the login page. For detailed manual to Discoverer Viewer tool, please visit the following address http://download-uk.oracle.com/docs/html/B13987_04/toc.htm Application also contains online help (“help” link in the top right corner of the screen).
Individual demonstration/example sheets

Demonstration/example sheet 01

Country selection

Country selection is made by choosing objects from the appropriate dimension. Current version contains the following options

- Czech Republic
- Poland
- Slovakia
- All
Hospital selection

Hospital selection is performed by choice of objects from the appropriate dimension. If country has already been selected, the list will only contain hospital from this country. By using “all” option, we are able to obtain consolidated data of all hospitals.
Period selection

Period selection is made through the choice of objects from the appropriate dimension.

The shortest period for clinical data is a quarter term. However, sheet is set to one-year period by default (because this is most common period for quality characteristics).

By using “all” option, we are able to obtain consolidated data of all periods.
Chapter ICD-10 selection

Chapter selection is made by choice of objects from the DIAGNOSIS dimension. This dimension has the following levels:

- (All)
- Chapter ICD-10 (first letter selection, e.g. I = blood circulation)
- Three-letters diagnosis (e.g. acute myocardial infarction)
- Four-letters diagnosis (e.g. acute transmural myocardial infarction of lower layer)

These levels (as levels in all dimensions) can be used separately or all together. In the sample list, levels are used in the following way:

<table>
<thead>
<tr>
<th>Chapter ICD-10</th>
<th>Page item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-letters diagnosis</td>
<td>Sheet item, “Y” axis</td>
</tr>
<tr>
<td>Four-letters diagnosis</td>
<td>Sub-item</td>
</tr>
</tbody>
</table>
Three-letter diagnosis selection

Three-letter diagnosis is on „Y“ axis and is represented by individual lines.
Four-letter diagnosis selection

- Step „Expand“ – DRILL-DOWN

Four-letter diagnosis represents a dimension “sublevel”. We can display it by complete list modification (explained later), when four-letter diagnoses for all objects selected by other dimensions are displayed. We can also expand a dimension object by clicking on the blue triangle before the name of three-letter dimension. Result can be seen on the example above.
- **Step „Collapse“ – DRILL-UP**

We can return to a previous state by using the “Collapse” menu option after clicking on the right mouse button.
- **Step: Viewing of the page lines**

Not all lines corresponding to our selection are displayed on one page.

One page always displays only the pre-selected number of lines (25 on the picture below). We are informed about this by title 1-25 of 76. Number 76 is the total count of three-letter diagnoses, in chapter MKN-10 - Blood circulation, containing any values (with respect to selection in all used dimensions).

To display the following lines we can use the „Down“ option.

![Screenshot of a spreadsheet showing diagnoses and counts](image)

<table>
<thead>
<tr>
<th>Diagnosis Description</th>
<th>COUNT1</th>
<th>COUNT2</th>
<th>COUNT3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatic fever without myocardial infarction</td>
<td>2</td>
<td>NULL</td>
<td>NULL</td>
<td>2</td>
</tr>
<tr>
<td>Rheumatic fever with myocardial infarction</td>
<td>NULL</td>
<td>2</td>
<td>NULL</td>
<td>2</td>
</tr>
<tr>
<td>Rheumatic fever with heart</td>
<td>NULL</td>
<td>1</td>
<td>NULL</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal</td>
<td>78</td>
<td>33</td>
<td>NULL</td>
<td>111</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>63</td>
<td>109</td>
<td>NULL</td>
<td>172</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>NULL</td>
<td>2</td>
<td>NULL</td>
<td>2</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>20</td>
<td>9</td>
<td>NULL</td>
<td>29</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>1166</td>
<td>736</td>
<td>NULL</td>
<td>1802</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>55</td>
<td>72</td>
<td>NULL</td>
<td>127</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>6</td>
<td>11</td>
<td>NULL</td>
<td>17</td>
</tr>
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<td>Rheumatic fever with heart and renal disease</td>
<td>28</td>
<td>19</td>
<td>NULL</td>
<td>47</td>
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<td>153</td>
<td>128</td>
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<td>281</td>
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<td>465</td>
<td>NULL</td>
<td>1060</td>
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<tr>
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<td>464</td>
<td>753</td>
<td>NULL</td>
<td>1217</td>
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<td>16</td>
<td>19</td>
<td>NULL</td>
<td>35</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>1</td>
<td>2</td>
<td>NULL</td>
<td>3</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>17</td>
<td>14</td>
<td>NULL</td>
<td>31</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>3115</td>
<td>3720</td>
<td>NULL</td>
<td>6835</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>216</td>
<td>182</td>
<td>NULL</td>
<td>400</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>69</td>
<td>55</td>
<td>NULL</td>
<td>124</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>1</td>
<td>2</td>
<td>NULL</td>
<td>3</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>10</td>
<td>10</td>
<td>NULL</td>
<td>20</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>5</td>
<td>13</td>
<td>NULL</td>
<td>20</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>7</td>
<td>16</td>
<td>NULL</td>
<td>23</td>
</tr>
<tr>
<td>Rheumatic fever with heart and renal disease</td>
<td>20</td>
<td>15</td>
<td>NULL</td>
<td>35</td>
</tr>
</tbody>
</table>
Gender selection

Gender selection is performed by choice of objects from the appropriate dimension. In the presented sample list 1 gender dimension is used for the „X“ axis.
Indicator: number of cases

Indicator is always present in the „data area“. Besides the total number (COUNT) it is also possible to select average, maximum or minimum value.
**Demonstration/example sheet 02**

**Step „Dimension change“ – DICING**

On this sheet, the following is illustrated:

- Exchange (compared with sheet 1) of page dimension and „X“ axis dimension – namely COUNTRY and GENDER dimensions; this step is called DICING
- Adding additional characteristics to the data area
- Usage of average value (AVG)

**Indicator: length of hospitalization and age**

Other characteristics are Age (average age is shown here) and Length of hospitalization (average length is shown here).

Proportional indicators (including AVG values) allow easy comparison. E.g. - for the selected diagnosis average lengths of hospitalization are different, however average age is very similar in all three compared countries (see red frame).
**Step „Expand“ - SLICING**

This step can be applied to the „X“ axis as can be seen on the example below, where average length of stay and average age values for individual Slovakian hospitals are displayed. This function works differently than diagnoses expansion (DRILL-DOWN method), where we displayed detailed data by moving in one dimension (DIAGNOSIS = MKN-10). In this case, we are using another dimension (HOSPITAL). This method is called SLICING.
**Demonstration/example sheet 03**

Sheet 3 demonstrates

- Use of “mapped“ dimensions „URGENCY“ and „TYPE OF ENDING“
- Sheet modification by displaying percentage of case number indicator.

**(un)planned admissions selection**

Planned and unplanned admission selection is made via the URGENCY dimension.
Type of ending/termination of hospitalization (including death) selection
Type of hospitalization episode end selection is made via the TYPE OF ENDING dimension.

### Mapped and unmapped dimensions

Sheet 01 contains the following unmapped dimensions common for all countries.

- **PERIOD**
- **COUNTRIES**
- **HOSPITAL (ZZ)**
- **MAIN CASE DIAGNOSIS**
- **GENDER**

Sheet 02 also contains some dimensions based on classifications and codebooks, which are different in each country.

- **URGENCY (CASE PLANNING)**
- **TYPE OF CASE ENDING**

These codebooks have to be “mapped” in order to create the unified dimension level for included countries. In sheet 02 we used this mapped dimension level. National “unmapped” level is disclosed/hidden.
Absolute/percentage value of indicator display

When percentage values are added, total sum of all lines is 100%. For this reason it is recommended to put source dimension for percentage values on “X” axis.

In the example below, TYPE OF ENDING dimension is on the “X” axis, which allows finding the mortality rate relating to the respective diagnoses.
**Sheets layout**

Using the Tools/Layout option, we are able to change the layout of each sheet by means of exchanging the line, column or page dimensions.

**Layout selection**

We must choose “Move” or “Exchange”
Object of layout change selection
We can select the indicator or dimension.
Selection of layout change movement type
Cross-table layout

Moves between pages, “X” and “Y” axis or data area can be made through use of symbols:
COUNTRY MANAGER COUNTRY SPECIFIC INPUTS

Country managers input was not only related to the factual collaboration with participating hospitals, but all Country Managers were also confronted with the frameworks of their each respective country (legislative etc.). All Country Managers during the progress of their work needed to solve challenges relating to practical implementation of the CEEQNET project objectives into real life settings. This undergone “experience” is seen as a valuable product of the project (description of not only what was done, but how it was done), and the Country Managers were asked to comment especially on the following:

From the point of view of a „category“ of barriers:
- Absolute barriers (which form an obstacle for reaching the specified goals of the project)
- Relative barriers (resulting in the shifting of the timeline or unexpected effort on the part of country managers)

From the point of view of the „type“ of barriers:
- The legislative barriers
- Lack of interest or concern from the side of management of hospitals to provide a certain data type
- Technology barriers (obstructions relating to the process of exporting data)
- An unexpected complexity relating to data extraction from existing datasets
- Unexpected complications relating to communicating the needs (requirements) of the CEEQNET project with respect to each individual hospital

Following is a list of comments and observation collated from CEEQNET Country Managers:

Austria:

The Austrian Country manager submitted complete MBDS data sets of 3 large Austrian hospitals. It contains all individual inpatient stays (hospitalization episodes) each for the year 2004. That means that in regard to the objectives of the project all necessary data of 3 Austrian hospitals are delivered and available for the project use.

The description of the MBDS data is available and it is at the project manager’s disposal. Therefore no lack of interpretation is to be expected.

There are no technological barriers as the interface is clearly defined. During meetings with the subcontractor (STAPRO) it was confirmed that the datasets are totally unproblematic from the technological point of view.

Legislative barriers are not relevant as the name of the individual patient was anonymized as required by the Austrian legislation with respect to the data security and personal data protection laws.

Report has been prepared by Dr. Reli Mechtler Head of the Department of Health System Research, University of Linz, Country Manager CEEQNET project, Austria

Czech Republic:
The basic task in this stage of the project was aimed at contracting 4 hospitals in the Czech Republic, possessing and using a suitable system enabling the tracking and analysis of indicators compliant with the tasks of the CEEQNET project, having adequate skills in the problematic of performance measurement and showing an interest in an international benchmarking project. Although only hospitals in the Czech Republic already active in the end of specified tasks (having an installed hospital information system and working with healthcare indicators) it has been observed that the willingness to collaborate on international level is problematic. It is obvious, that the system of evaluation of indicators this still perceived more or less as a tool serving the management of each individual hospital facility, are at its best for the use of groups responsible for a hospital facility. We have seen that especially benchmarking on the international level and participation of third-party national coordinating institutions evokes thoughts about the possibility of hospital data sets ending in inappropriate hands. This was also the reason for the need of many explanatory meetings with the managements of possible collaborating healthcare institutions and slow progress with regard to the signing of contracts. Extensive collaboration with lawyers and preparation and subsequent modification of the text of contracts for collaborating institutions adhering to the legislation of the Czech Republic as well as provision of a high level off security of all data and information to be provided to the national Institute of Public Health was necessary. Despite this intensive activity, one of the hospitals (Kolin) dropped out of the project and from the part of the General Faculty Hospital in Prague there are still segments of the contract unsigned, relating to additional information about the process and implementation of the project. Should the contract with the GFH in Prague not be signed until the end of this year, then the contract with Faculty Hospital of Olomouc will be elaborated on.

In view of the above, it is possible to summarize:

**From the point of view of a „category“ of barriers:**

**Absolute barriers**
So far no absolute barriers have been observed in the Czech Republic and the provision of requested data sets will, of course, be possible.

**Relative barriers**
All existing barriers are of the relative type. Considerable effort must be made in order to select and contract a collaborating institution (hospital or healthcare facility), resulting in a time lag of some steps as defined in the timeline of the project.

**From the point of view of the „type“ of barriers:**
There are no legislative barriers in the legal framework of the Czech Republic. There is a certain level of discomfort of the collaborating hospital managements seen on the level of inadequate personal data protection and on the level of publishing hospital data relating to quality and productivity of the healthcare institution in an international context and comparison. Due to the fact, that some check healthcare institutions are undergoing the process of transformation into a private company, there was a lack of interest to collaborate on the CEEQNET project. Only after being acquainted with the aim and scope of the CEEQNET project, many of the approach to managements began to realize the significance and outreach of benchmarking and proper evaluation and use of indicators in healthcare for their own work and for the aims of groups responsible for founding a healthcare organization.
Conclusion:
Due to the fact that a considerable amount of hospitals in the Czech Republic monitors indicators of quality and uses adequate and relevant ICT technologies, it will not be a problem in the final stage to fill the CEEQNET hospital database. At this stage of the project the observed time lag with regard to the proposed timeline is mainly produced due to a decreased level of managerial awareness of provided healthcare services.

Report has been prepared by MUDr. Věra Chaloupková, Country Manager CEEQNET project, National Institute of Public Health, Czech Republic.

Poland:
General outline
Currently there are 4 hospitals contracted and active in the program in Poland:
- The Barlicki University Hospital in Łódź
- Damian Medical Centre
- District Hospital in Sucha Beskidzka
- Provincial Hospital in Elbląg

The John Paul II Specialist Hospital in Krakow that was approached at the very initial phase of the project finally decided to withdraw on the basis of organizational restructuring on May 23rd, 2005 and has been replaced with the District Hospital in Sucha Beskidzka, invited to join CEEQNET.
In order to follow the terms of the Grant Agreement, stating that 4 hospitals from a country participate in the Project, the 4th healthcare organization: Provincial Hospital in Elbląg signed a contract on Sept 02.2005.

Apart from a contract with CEEQNET partner, i.e. NCQA, each hospital has signed data confidentiality agreement with STAPRO.
A contact person and an IT representative have been established in each hospital; Country Manager and country IT person, Piotr Chruścielewski, started networking and communication with hospitals regarding the data requested.
Until now, one can observe different progress in data transfer; their volume and quality as the problems that appear on the way differ locally in the 4 hospitals.

Case Review
The Barlicki University Hospital in Łódź
The first hospital invited to join CEEQNET in December last year.
Progress regarding data transfer is the most advanced here. Statistical, financial and organization data requested have been sent to STAPRO.
Insignificant problems have been encountered, concerning the interpretation of organization structure, but that has been resolved in communication with the subcontractor.

District Hospital in Sucha Beskidzka
The hospital has sent organization, financial and statistical data. The problems encountered here might be defined as the ‘common problems”; resolved within communication with Polish IT person.
**Damian Medical Center**

The only private hospital from Poland, and also the most problematic one. The problem is based in it’s business-oriented structure: there are no medical specialization departments. Each statistical card and medical costs are globally assigned to the ‘medical department’. Therefore it is not possible to connect costs to medical specialization etc. The situation has been consulted with STAPRO; finally a decision has been taken to retain the hospital in the Project and continue data analysis.

Please note that the data transfer in an acceptable manner is a result of numerous communications of Country Manager and hospital’s contact person and management.

**Provincial Hospital in Elbląg**

The hospital has been the last one to be contracted with CEEQNET. Data requests have been presented and some samples have already been sent. The main problem relates to extracting cost data from a system – the necessary data can be found only in a system report (one for a cost center per month). The report form makes it difficult to transform it into the requested file structure. The local IT person is unable to read it from a database (lack of adequate knowledge or lack of will to do so) so data will have to be transformed by some scripting. The files were supposed to be sent by a hospital at November 21st, 2005 but none has been received so far.

**Common problems:**

The common problems encountered at the local level in each of the hospitals relate to:

- **Organization structure** – The organization structure is not unified: most of the hospitals have rather “flat” organization structure. Almost everywhere organization units are also cost units. Sometimes there is no well-prepared organization structure.
- **Cost category assignment** – cost categories prepared for the project are not clear enough, and some assignments to hospitals cost categories are not definitely defined. It has been reported to the subcontractor.

It has been suggested to analyze and change the cost assignment at the end of the project.

- **Local IT person general skills** – the general knowledge of hospital structure, organizations and financial notions is relatively weak.

Such situation requires the need to address both the IT and a Financial Department individuals.

The IT representatives find it also difficult to prepare each file in a requested structure, so that some additional work has to be done to adapt them to Project requirements.

- **Local IT person English skills** – none of the hospitals have sent data translated into English. Every time data has to be translated by the Country Manager and Polish IT person. There were also some problems linked with understanding of Project materials and data when in English.

**Other remarks:**

**Absolute barriers**

There seem to be none. The biggest one is the Damian Medical Center problem, caused by totally different organization of this hospital. As a result only some part of data will be comparable to other hospitals.

**Relative barriers**
Data transfer: it is expected, that the requested hospital data covering 2004 will be transferred till December 31, 2005.

**Legislative barriers**
No legislative barriers have been observed, with respect to hospital contracting.
The contract for the IT country representative has not been developed and signed yet.

**Low motivation of the participating hospitals**
Hospitals seem to be relatively little interested in participation in the Project. This might call for the more clear and substantial defining of the short and long-term benefits that result from participation in CEEQNET, such as:

- The hospital will get results from the study, including its own data compared to all the other CEEQNET hospitals (this is already in progress and requires the online registration and use of databases through the https protocol)
  - Members of the CEEQNET Network will get a report with their own data compared to all other hospitals on the study.
- The hospital is involved in a European Project
Hospitals will advertise this fact at their own convenience:
  - They can include this fact on their own documentation.
  - They will be able to use the “CEEQNET network logo” (if we shall have one) during the 3 years of the project.
  - There will be public lists of organizations involved on the project on the web page. (Is there any?) All organizations will be named on the final reports to the European Commission, and other appropriate forums.
- Chief Executive Officer
  - Will personally be named a collaborator of the project, getting a certificate for it.
  - His/her name will be included on the final publications for the European Commission. If possible, they will also be named as contributors on other papers or presentations.
- Hospital Contact Person/ Hospital IT Person:
  - These professionals will be officially named and will get a personal certificate highlighting their contribution towards the project.
  - Their names will be included on final publications for the European Commission. If possible, names will also be named as contributors on other papers or presentations.

The financial incentive of 2000 Euro for a hospital does not seem to be a sufficient motivation factor.
The level of communication between STAPRO as data recipient, Country Manager, Country IT Person and hospitals needs to be cultivated.
As yet no feedback related to data analysis has been provided from the subcontractor or Project management. This is due to the fact, that only in the last 2 months the data-stream from 4 participating countries has been established.
The local country management has to be more thoroughly instructed with regard to the real time availability of data/system access by the participating hospitals.

**Technology barriers**
Each hospital has a different IT system and a different structure. Each one has to be considered separately. Data received from hospitals require a lot of transformation. Even statistical files that should be in the same format slightly differ. Local IT professionals are not involved enough due to the lack of motivation and unstated potential benefits.

**Unexpected complexity relating to data extraction**
As described in the previous remark – hospitals are sending data in different formats; the Country IT Person is responsible for data verification and transformation into the proper form.
**Communication problems**
The reflections concerning communication problems overlap with remarks already stated on improving communication among STAPRO-country management - hospitals and initiating feedback on data provided. So far, lack of response from STAPRO has been limited to data acceptance and control. 
Data is verified by the country IT person and by STAPRO, however there is no regular feedback to the IT national representative. Some constructive feedback might result in better assessment of project result in the local environments.

**Next steps:**
The next step for country management includes requesting personal data from hospitals. It should be prepared till the end of 2005. It hasn’t been requested in the first phase because some consultation had to be made in this area (job categories etc).

Report has been prepared by Barbara Kutryba, CEEQNET Country Manager, NCQA, Poland

**Slovak Republic:**
There are 4 hospitals participating in the CEEQNET project in the SR:
- Faculty Hospital of Martin
- Hospital with Policlinics in Nové Zámky
- Hospital with Policlinics in Žilina
- Ministry of Defense Hospital, Bratislava

Slovak hospitals participating in the CEEQNET project were specified after comprehensive evaluation process comprised of both special discussions and evaluation of the statistical data that are annually submitted from the selected hospitals to the Institute of Health Information and Statistics, Bratislava.

Now it can be stated that each selected hospital i.e. its Hospital IS is in accordance with range requirements (evaluation criteria) stated in the evaluation process and we can confirm that our choice was appropriate

Only Ministry of Defense Hospital, Bratislava seemed to be a difficult hospital, i.e. hospital with specific and proprietary hospital information system. There were some problems with this hospitals accounting as this hospital does not need to provide economic data to the Information System of the MOH of the Slovak Republic (other hospitals are required to submit records with selected economic indicators.). This hospital (Ministry of Defense Hospital, Bratislava) is controlled by the department of the Ministry of Defense and therefore Ministry of Defense Hospital, Bratislava cannot be controlled by the department of the MOH SR.

Data from all hospitals was delivered in time. Data from the MoD Hospital, Bratislava was delivered in October 2005.
According to my opinion such time delay was due to small involvement of the IT experts from the hospital (MoD Hospital, Bratislava).

There were also some problems with the data collection due to the arrangement of the data collection( i.e. new data requirements during the process of the data collection – some data
requirements were specified at the beginning of the data collection process and other data requirements were added after the first part of the data collection was submitted (e.g. data selection according to the costs centers, selection of the payments according to the months etc.).

There was also another problem: How to collect data on surgical procedures? Now SR is at the beginning of the legislative process on adoption of the act on recording of the surgical procedures in hospitals and in outpatient wards too.

It is expected that by the end of the 1st Quarter of 2006 that the Catalogue of Health Procedures Codes could be adopted. It is expected that this Catalogue could be applicable in January 2007.

Report has been prepared by PhDr. Daniela Brašeňová, Country Manager, CEEQNET project, Slovak Republic

**RELATING PUBLICATIONS / PRESENTATION**

During the course of the year 2005 the CEEQNET project has been presented at various international meetings and has drawn interest from the professional community (interest has been voiced from countries such as Greece, Germany, Italy and Turkey for the inclusion of hospital facilities into the framework of the project if possible in the future).

1. CEEQNET was included in the conference book of abstracts and a poster and short presentation of the project was accepted for the 22. Conference of ISQua (International Society for Quality in Healthcare) “INNOVATING FOR QUALITY” held 25-28 October 2005, Vancouver, Canada.


Short version is available on the ISQua website http://www.isqua.org.au

Following is the summary of presented material:

**Objective**

*Administrative healthcare data* based system for healthcare quality performance evaluation – Austria, Czech Republic, Hungary, Poland and Slovakia.

Cataloging and description of currently used systems of performance measurement, methodologies, data sets

**Performance** defined as composed of:

• Clinical production (Volume & Product Portfolio)
• Clinical productivity (Human & Financial Inputs / Outputs)
• Quality of care

**Methodology**

**National data audit in areas:**

Clinical, Capacity, Human resources, Accounting

**Questionnaire:**
Systems of performance measurement, methodologies and data sets used in each participating country

Results

For every tested QI the CEEQNET project identifies:
- If National MBDS enables to define the indicator
- If Common MBDS enables to define the indicator to be coherent across countries
- What are the known factors of indicator distortion in individual countries
- If indicator is “trans-culturally compatible” (measures or reflects in another country what was meant to be reflected or measured in the country of origin of the indicator)

Common data model enabling formation of a universal data-base for 5 countries

QI sets

CEEQNET accessible data sets are cross-matched against international QI sets (OECD-HCQI, iQUIP, AHRQ-HUCP, NHS 2001) to find out if HC data in Central Europe can be used for constructing some indicators defined in the above named QI systems.

Reporting

- Set of Oracle Discoverer® worksheets online via Internet.

Conclusions

Challenges of consistency of data sources (for Common MBDS needs)

Complex mapping is only partly possible.

Challenges of transformation of data for data model needs

The only country with transparent, logical and complex data model is Austria

First known factors limiting benchmarking between countries

- Different ways of organizing acute inpatient care
- Different descriptions of hospital and care types
- Absence of common coding of list of procedures
- Low level of reliability of procedures and diagnoses coding in some countries

Project aims at forming a „community of excellence“ of institutions using their data for quality performance improvement compatible with the EFQM or CAF quality management models. The end result is seen in strengthening the role of health care consumer of Europe (eHealth application for hospital performance measurement and reporting) enabling appropriate choice of health care service providers.

CEEQNET project was presented to the participants of the 10th. International Symposium for Health Information Management Research iSHIMR, Thessaloniki, Greece, 22-24. September 2005.

3.

CEEQNET project was presented during the “Improvement Clinic” workshop of the 10th European Forum on Quality Improvement in Health Care, 15. April 2005, London, UK

4.

CEEQNET was presented at the Mezinárodní konference Slovenské lékarské komory - Indikátořy kvality poskytovanej zdravotnej starostlivosti. (International Conference of the
Slovak Medical Chamber – Indicators of Quality of Provided Health Care Services) as: *Unified Central and Eastern European surveillance/monitoring system for healthcare quality and efficiency indicators "CEEQNET"*, 13. May 2005, Bratislava, Slovak Republic. Activities of the CEEQNET project speeded the coding of secondary diagnoses and creation of the Coded List of Procedures now being implemented in Slovak health care system.

5.

CEEQNET presentation has been accepted for a half-day workshop of the 11th European Forum on Quality Improvement in Health Care, to be held 26-28th April 2006 in Prague under the “Theme 7” Measurement for improvement, learning and accountability as “Increasing efficiency of cost-effectiveness analyses through risk–adjusted benchmarking of performance measures”. See also http://www.qualitybmjpg.com/

CONCLUSIONS

The clinical data logical model was slightly modified. The Austrian data model was chosen as a basis of the common data model for its exactness, transparency and relative simplicity. At the same time, this model is the most suitable from the CEEQNET point of view, thanks to its highest ability to provide information. Despite of the need of a higher need of transformation of data from other countries, this model seems to be the best for its exemplary logicality.

For each involved country, the data specification of a hospitalization (hospital episode) record for acute care was created. While in Poland, Slovakia and Austria the definition seems to be unambiguous, in the Czech Republic the definition differs (between health insurance companies and statistical authorities). These differences could be a potential source of significant decrease of precision of performance and quality measurement and need to be investigated further. Such investigation should be especially focused on separation between acute and “other” care, in connection with the ending/termination of an acute care case. “Other” care means country specific (from taxonomy and nomenclature point of view) areas of health care (nursing, long term etc.).

In the selected data model, every hospitalization case has (in addition to the relation to a hospital and a country) its basic attributes: demographical (age, gender), clinical (diagnosis, urgency, admission, disclosure, length of stay). In the current implementation phase of the data model, no links between the data model and secondary diagnosis or procedures have been introduced.

Country specific dimension were mapped to a common CEEQNET dimension (not applied for ICD-10, countries and gender – these dimension are same in all involved countries). List of procedures was not re-mapped either. It is evident, that only selected areas should be mapped in future, especially the ones defining appropriate quality and efficiency measurement (e.g. all procedures representing total hip replacement).

Further database development (enabling of currently dormant functions) will be focused on the following areas: secondary diagnosis and treatment relevant procedures.
Non-programmers work should follow: identification of significant measures obtained through the performed data collection in all participating hospitals and identification of potentially useable Quality Indicators (“Quality Indicator Candidates”) taking into account also on models from other countries or international organizations and investigation of the level of precision and distortion within these measures in the countries participating in the CEEQNET project.

**Further steps of the CEEQNET project**

**From formal aspect:**
- Complete names of dimension objects in English language.

**From factual aspect - programming**
- Integrating new dimensions: OPERATIONAL EFFICIENCY, SECONDARY DIAGNOSIS, FIELD
- Creation of mapping for Operational acts (selected ones) and Fields

**From factual aspect - imports**
- Additional hospitals and periods data import. This step relates especially to a time lag in Hungary, where the initial National partner organization and Country Manager had the project participation terminated as of May 2005 and a decision was taken by the Project Leader to replace the Hungarian partner by the Semmelweis University, Budapest, Hungary Dr. Éva Belicza, PhD. – as the new Hungarian Country Manager. Since the definitive financial report of the former Hungarian participant has not been finalized, formal collaboration with the new partner is still unofficial, though Dr. Belicza was already present during the 2nd CEEQNET meeting in Krakow, Poland and her organization and she herself is known to be in a position to provide the needed inputs for the CEEQNET project in order to include Hungarian hospitals in this study. We hold high hope, that the formal side of this change will not become such an obstruction, that Hungary will not be able to be successfully incorporated into the final analysis and report. Great effort is made by the Project manager in order to include the new Hungarian partner into the project as soon as possible. Next meeting of CEEQNET (3rd.) is planned for January 12-13 in Budapest, Hungary.

Report finalized by A.Bourek, November 30, 2005
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