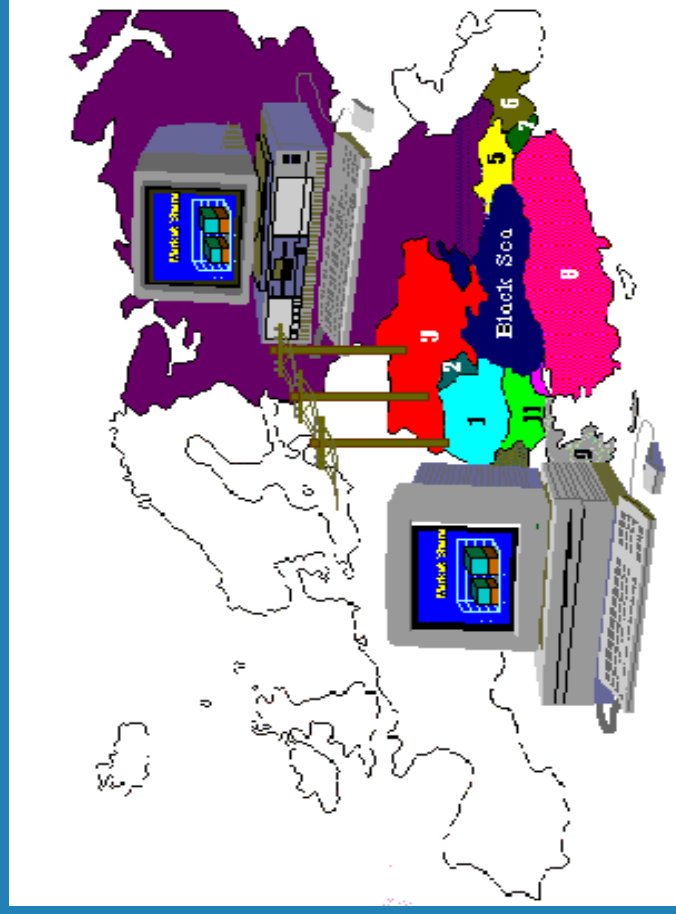


# Black Sea TeleDiab system



Black Sea TeleDiab. Dr. Simion Pruna, Sincromed, Bucharest, Romania

# What is the BSTD system?

- Project about:
  - A chronic disease, Diabetes
  - Data set based on WHO Basic Information Sheet
  - GEHR architecture, for protecting the security and privacy of patient data
  - IT and standards trends
  - Tool for competition between medical units
  - It's about Quality assessment in Diabetes Care
  - "The Need for Quality in EEC"
  - Define "Good Centre" with a benchmark result

# BSTD AIMS

- \* Promote medical informatics in Eastern Europe and New Independent States
- \* Software package to store information relating to patients with diabetes
- \* Provide framework for monitoring the outcome of diabetes care

# Establishment of a central computer

- \* The central computer will include a feedback mechanism to the different parties and serve the purpose of e.g.
  - benchmark
  - national statistics
- \* This can be done by placing the information on
  - a web-page <http://www.telemed.ro>
  - or by ordinary mail.

# Clinical records

- ✧ Historical account
- ✧ Record treatment, problems, planned actions
- ✧ Legal record
- ✧ Means of communication
- ✧ Support clinical care
  - Decision support, audit, research, education

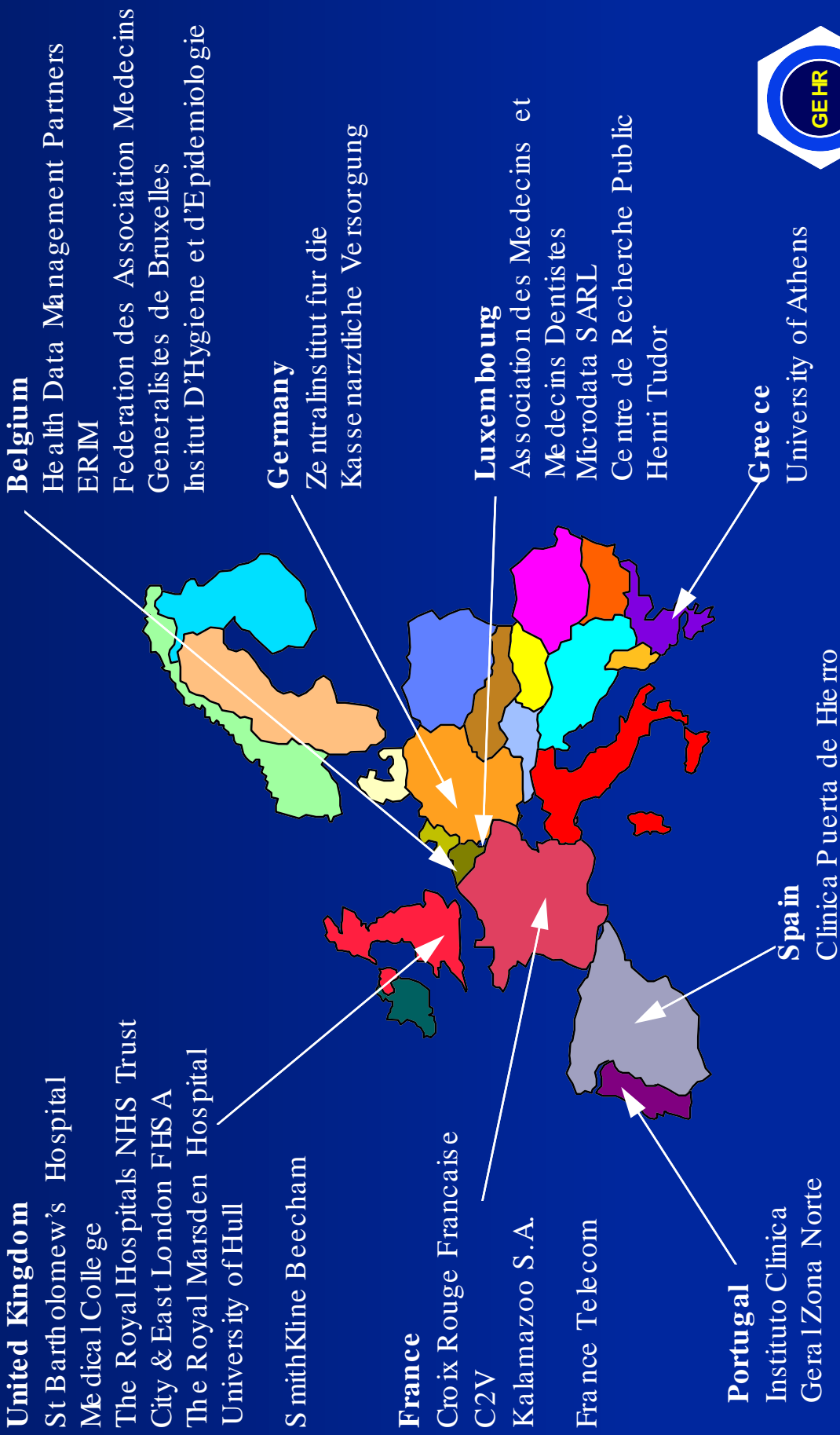
# Electronic Health Care Records

- \* Single subject of care
- \* Owned by particular organisation
- \* Medico-legal record
- \* Appropriate access rights
- \* Provision for exchange of information
- \* Global distributed record
- \* Mirror paper records

# Good European Health Record - GEHR

- \* First complete data structure for EHCRs
- \* Ability to incorporate a wide range of data types
- \* Facility to transmit medical records safely across telecommunications networks
- \* Incorporation of mechanisms for translation of the information into different languages
- \* Support for the process of clinical care and medical education

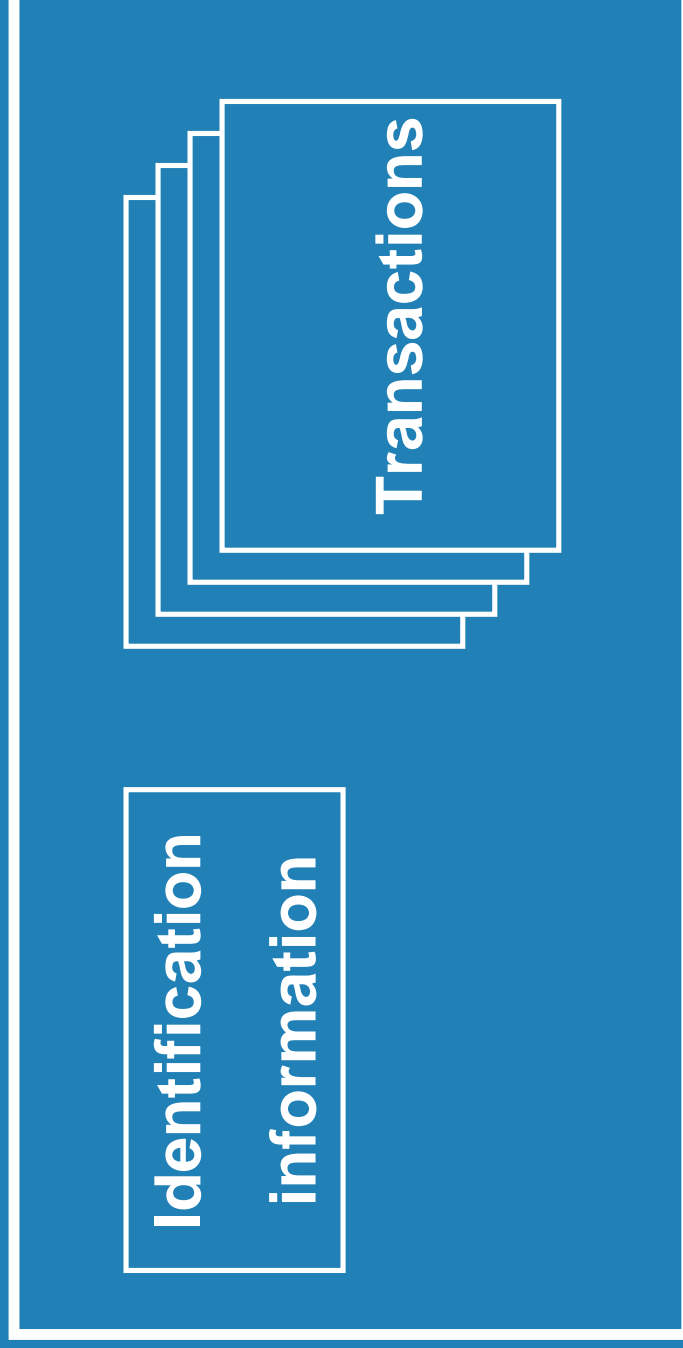
# Countries represented in the Good European Health Record Project





# GEHR Object Model (GOM)

EHCR



# BSTD<sub>GOM</sub> model - transaction

- \* 'Information recorded about a patient by a single author in one institution at one point in time'
- \* Interaction with HCR by a HCP at one point in time
- \* Authorising HCP commits the transaction
- \* Permanent record that cannot be erased

# BSTD<sub>GOM</sub> model - types of transaction

- \* Contact - encounter with patient
- \* Admin - administration details (demographics)
- \* Report - information recorded in absentia
- \* Summary - relates to past care
- \* Continuing care - planned care
- \* Nota Bene - critical information
- \* Trigger - conditional actions

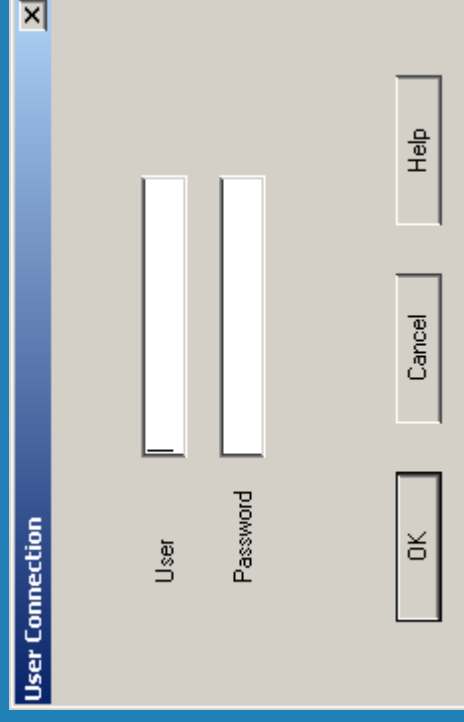
# GOM - components

- ✧ Transaction
  - provides medico-legal requirements
  - mechanism to control amendments
- ✧ Health record item (HRI)
  - structure for content (name and value)
- ✧ HRI collection
  - aggregation of HRI's, defines scope
- ✧ Headings

# Software demonstration

- \* Installation
- \* Patient registration
- \* Data entry
- \* Modify data
- \* Printed / graphical reports
- \* Diabetes Aggregate Data
- \* Inclusion of images

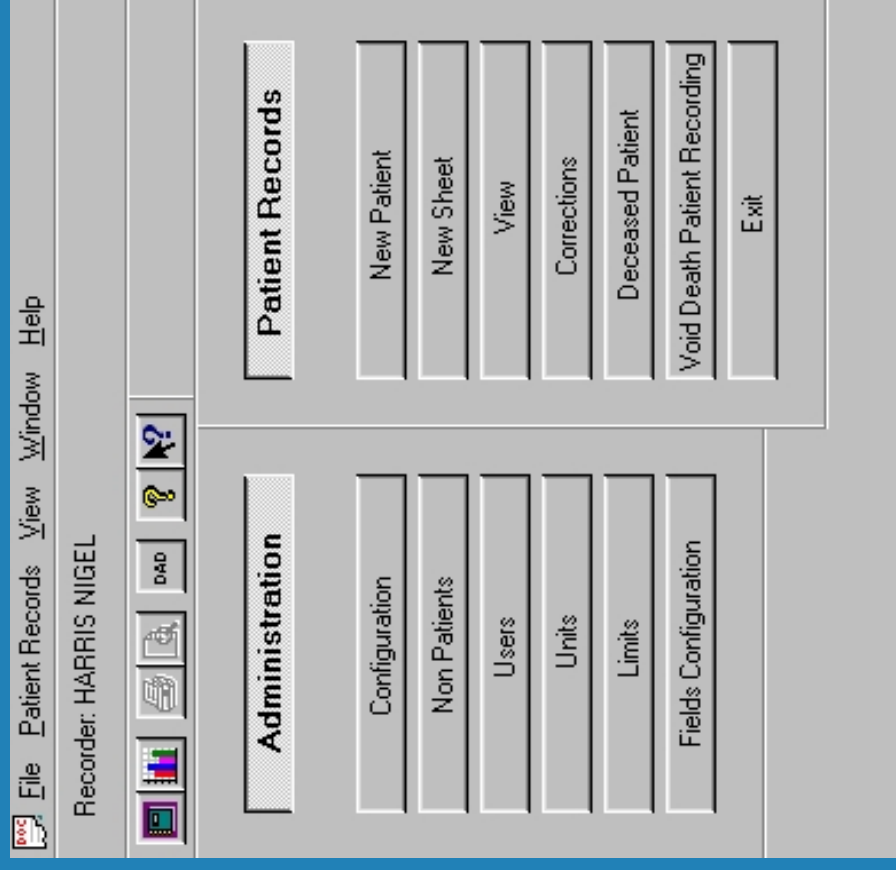
# Security of the BSTD



# Functional Aspects

The main menu.

- Only authorised persons may have access to the system.
- These administrative functions are not normally visible.



# Authorisation system access

**New User**

User:

Surname:

Forenames:

Password:

Verify:

Selection:

**Rights**

**Administration**

- Configuration
- Non Patients
- Users
- Units
- Limits
- Fields Configuration

**Patient Records**

- New Patient
- New Sheet
- View
- Corrections
- Deceased Patient
- Void Death Patient Recording

**Security**

- Reports
- Graphs
- DAD



# Types of users

**Patient Identification**

Patient present  
 Yes  
 No

Place of recording  
Date of recording: 30/07/2000 22:50:29  
Date of filling: 30/07/2000

Physician  
Physician responsible for the patient's care

ID - Number  
Patient Number

Diabetes Type  
 IDDM  
 NIDDM  
 Other  
 Unknown

Forenames  
Date of Birth

Diabetes since  
DAD since  
INS since

Gender  
 Male  
 Female  
 Unknown

Nota Bene

Buttons: Register, Save, Cancel, Help, Copy

# Type of measurements

**Corrections - patient: Test Test**

| ST.VINCENT TARGETS | Symptoms                           | Examinations           | Quality of Life/Emergencies | Management  | Additional Treatment   |
|--------------------|------------------------------------|------------------------|-----------------------------|---|------------------------|
| Comments           | Reasons for Consultation/Admission | Pregnancies            | Risk Factors                | Education/Diab.Pat.Org.                               | Measurements           |
| Weight             | <input type="text"/> Kg            | <input type="text"/> ? | Blood pressure              |   |                        |
| Height             | <input type="text"/> cm            | <input type="text"/> ? | Systolic                    | <input type="text"/> mmHg                             | <input type="text"/> ? |
| BG                 | <input type="text"/> mg/dl         | <input type="text"/> ? | Diastolic                   | <input type="text"/> mmHg                             | <input type="text"/> ? |
| HbA1               | <input type="text"/> %             | <input type="text"/> ? |                             |   |                        |
| HbA1c              | <input type="text"/> %             | <input type="text"/> ? | Cholesterol                 | <input type="text"/> mg/dl                            | <input type="text"/> ? |
| Creatinine         | <input type="text"/> mg/dl         | <input type="text"/> ? | HDL-Chol                    | <input type="text"/> mg/dl                            | <input type="text"/> ? |
| Microalbuminuria   | <input type="text"/> mg/24hrs      | <input type="text"/> ? | Triglycerides               | <input type="text"/> mg/dl                            | <input type="text"/> ? |
| Proteinuria        | <input type="text"/> g/24hrs       | <input type="text"/> ? | Fasting                     | <input type="checkbox"/> Y <input type="checkbox"/> N |                        |

[View Clin.Prot.](#)

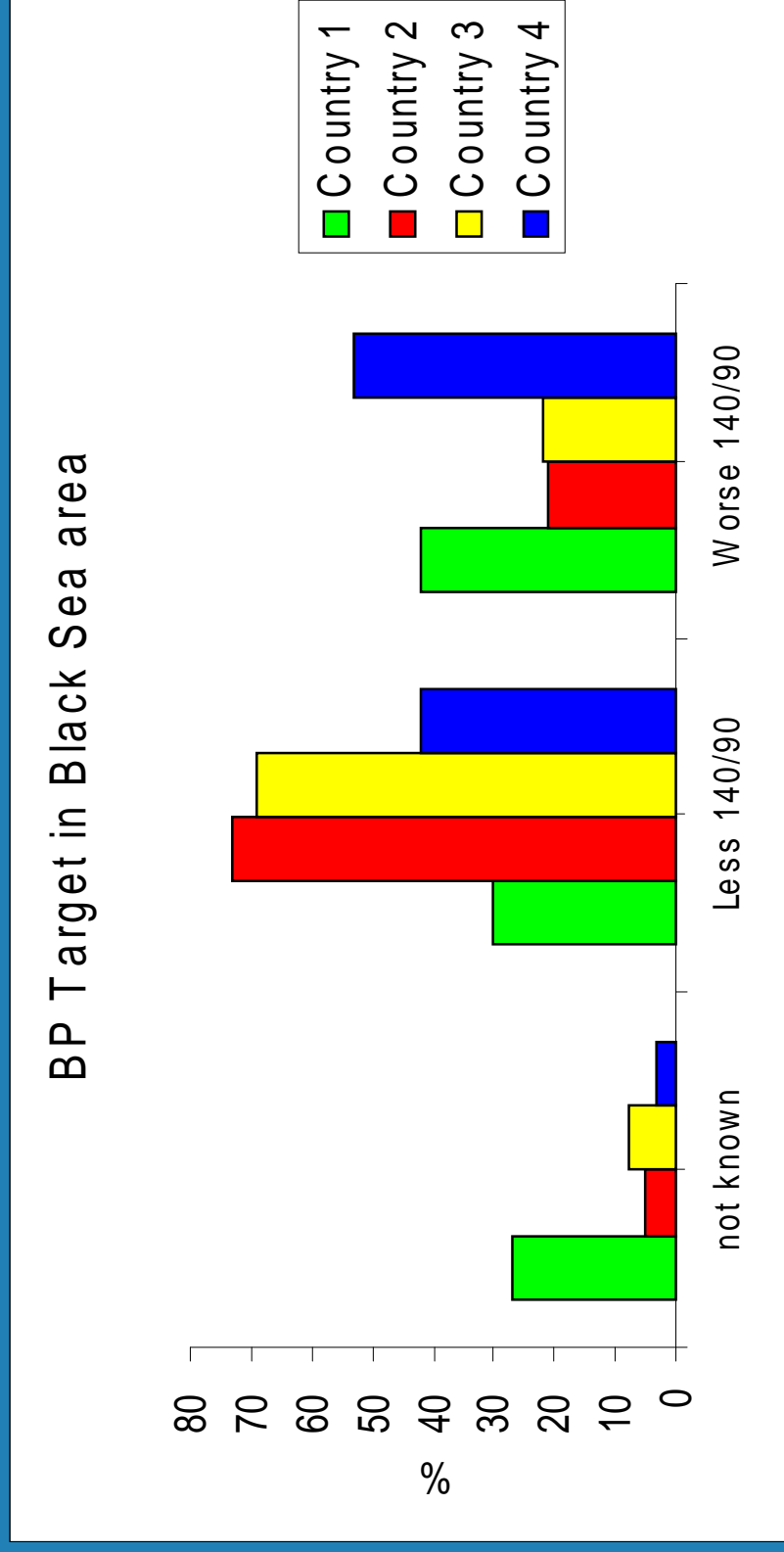
Give most recent values of last 12 months.  
Blood pressure is measured sitting (or lying down) after 5 min rest.  
BG refers to fasting blood glucose.  
Data on microalbuminuria and proteinuria may be mutually redundant.  
Fasting refers to measurement of blood lipids.

# Clinical Protocols

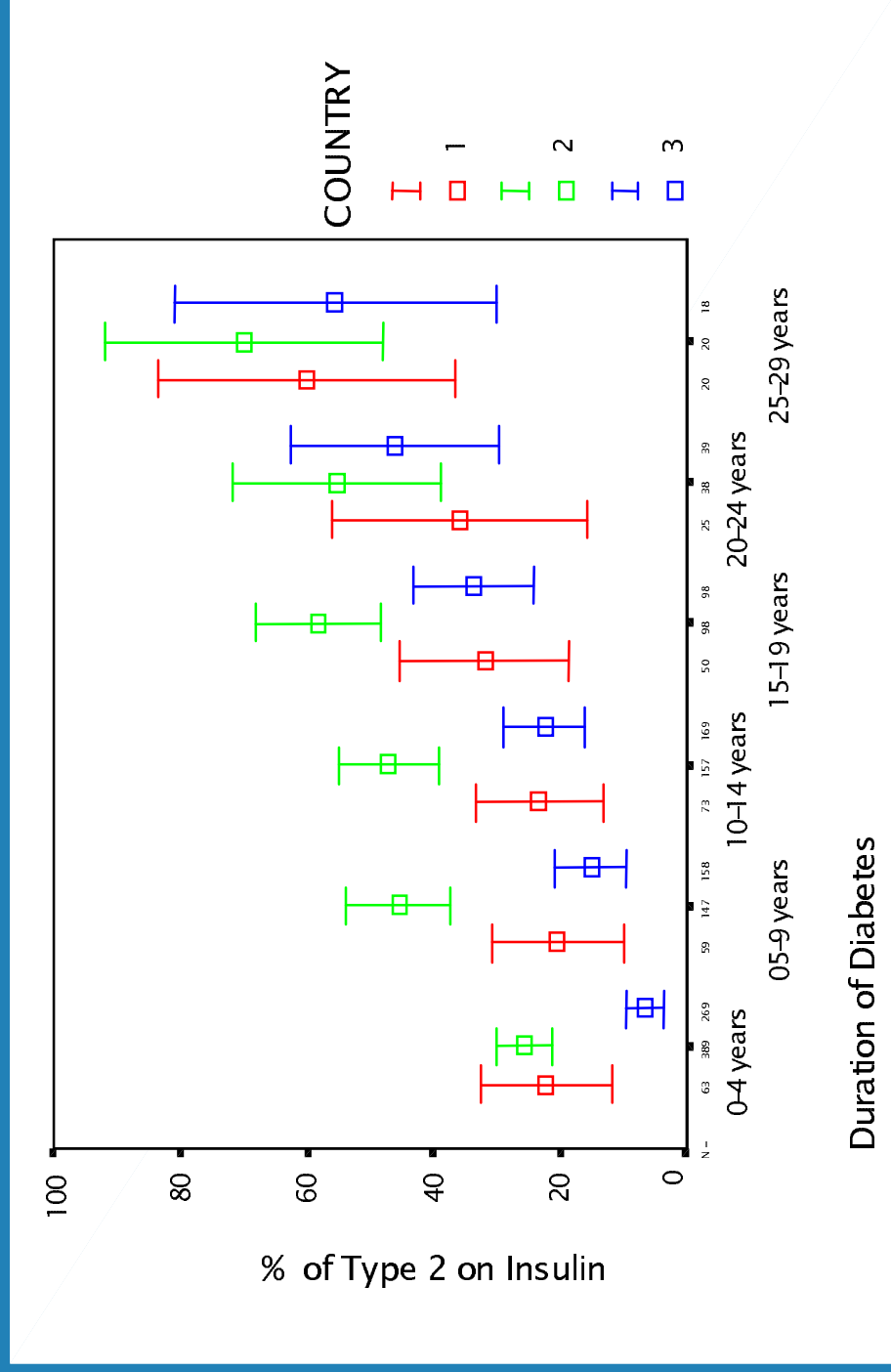


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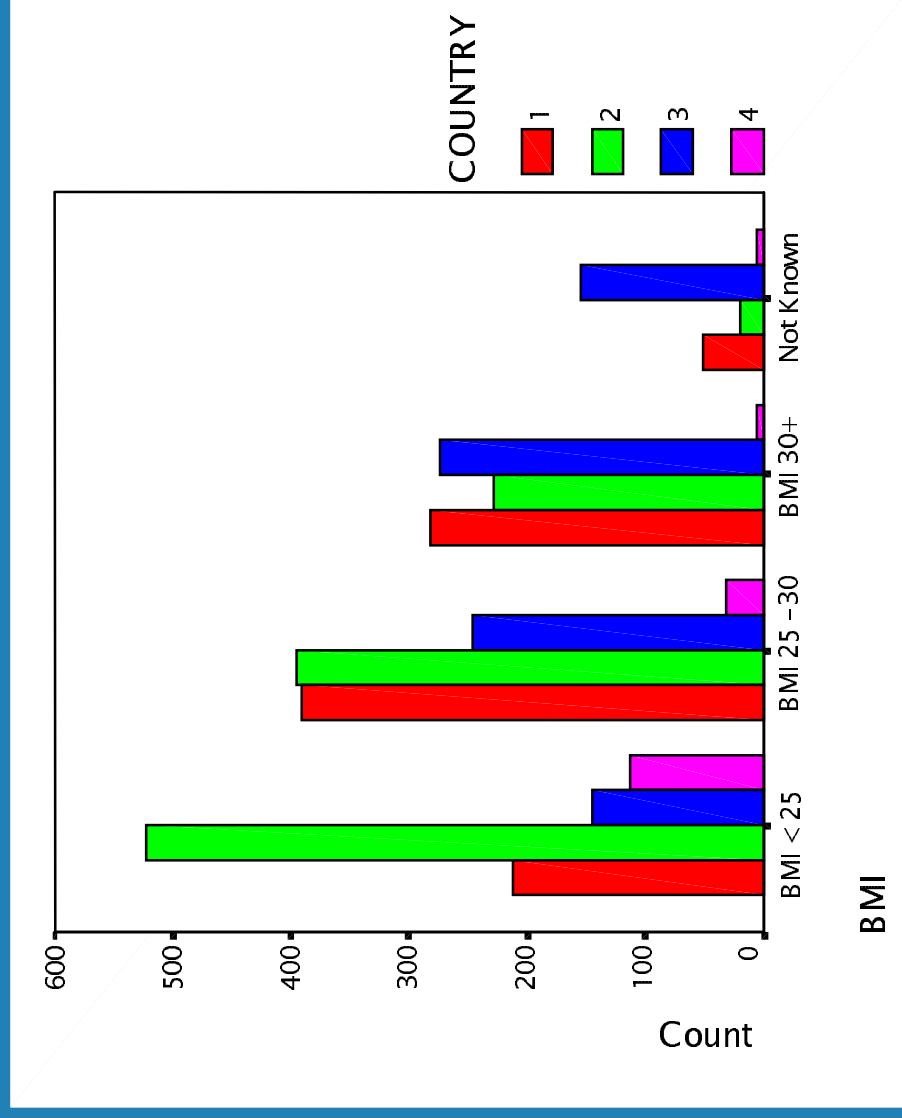
# Diabetes Aggregated Data (DAD)



# Comparative meaningful benchmarking audit

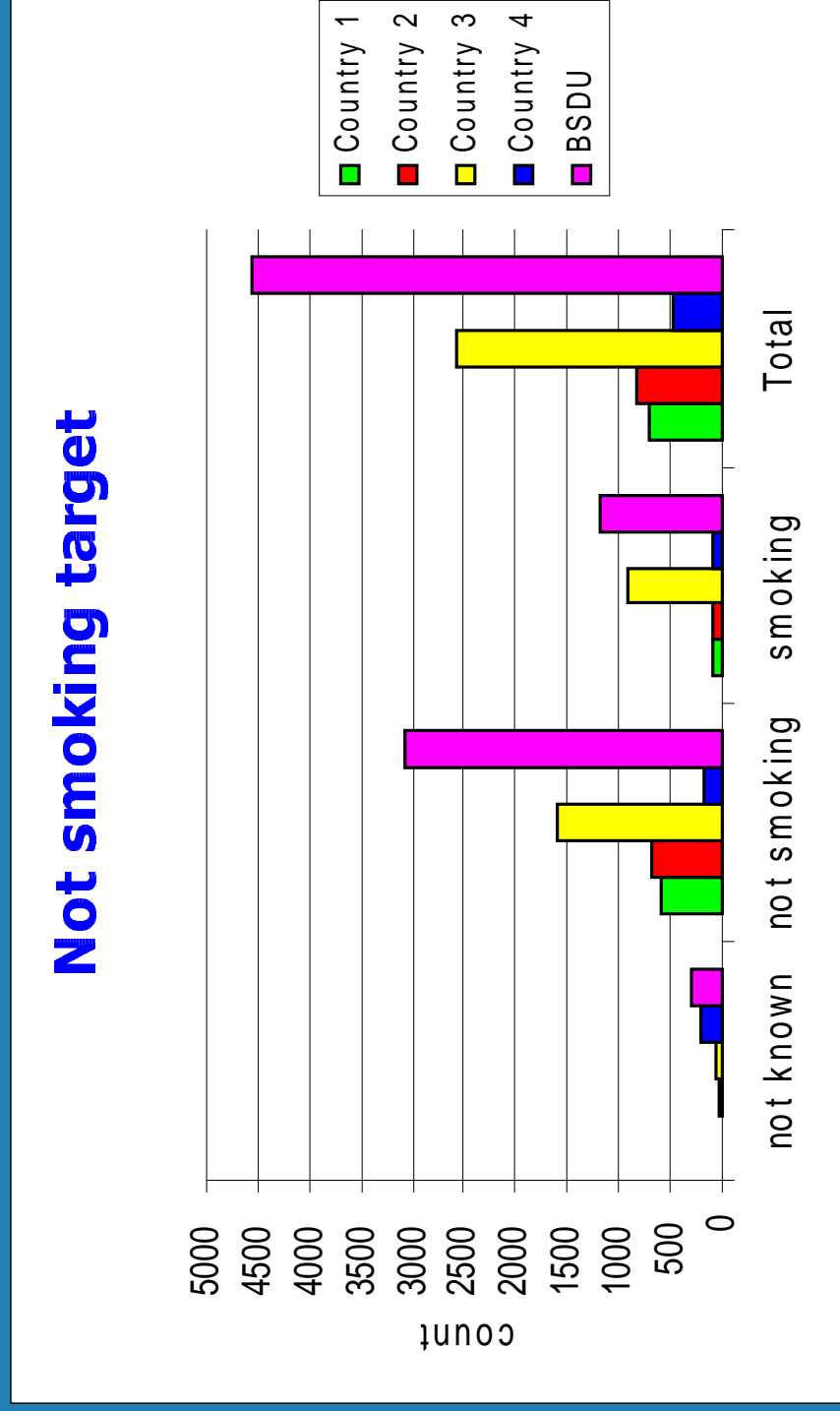


# Healthy eating

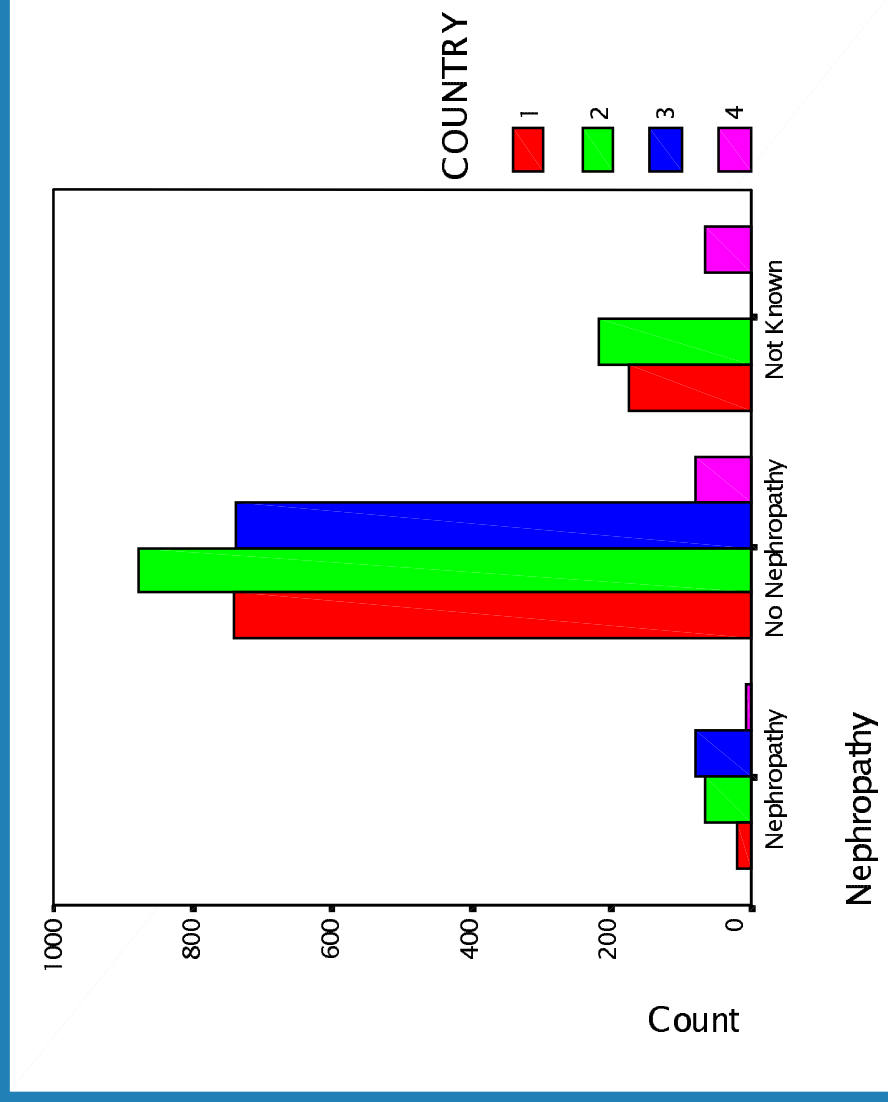


# Risk factors

## Not smoking target



# Diabetes Nephropathy





# Diabetes Aggregate Data

Diabetes DAD

Date: 13/05/2000

**DiabCare Aggregated Data (DAD)**

| Access code | Country | Diabetes type | Age Group | Duration | Year |
|-------------|---------|---------------|-----------|----------|------|
|             | ROM     | NIDDM         | [15, 64]  | <= 5     | 1999 |

Total number of patients 452  
Number of male patients in selected group 43  
Number of female patients in selected group 42

| Indicator   | Number | Reference                       | Number |
|---|--------|---------------------------------|--------|
| 1<br>Number of patients with a<br>wellbeing score of more than 12             |        | Number of<br>patients in survey |        |
| 2<br>Number of patients with severe<br>hypoglycemia (last 12 months)          | 4      | Number of<br>patients in survey | 27     |
| 3<br>Number of patients with severe<br>hyperglycemia (last 12 months)         | 4      | Number of<br>patients in survey | 26     |
| 4a<br>Number of patients with HbA1c less<br>than or equal to upper limit + 2% | 17     | Number of<br>patients in survey | 23     |
| 4b<br>Number of patients with HbA1c less<br>than or equal to Incal mean + 4SD | 23     | Number of<br>patients in survey | 23     |

For Help, press F1

# The Problems for Quality programs

- ✦ The indicators from DiabCare Aggregated data (DAD) is an indicator list with:
  - each measure being repeated for 3 age categories
  - 5 duration categories for each year for 3 patient categories (Type 1, 2, unknown)
  - This gives a total of **810 indicators per year per reporting centre (node)**

# What is new about this system?

- ✦ To integrate the quality indicator data into the EPR systems
  - Without additional work load for the medical staff.
  - Without additional data collection activities
  - To decide the relevance of each indicator for quality management of health care
  - How can generic quality indicators data be integrating into an existing EHCRC system

# BSTD - Summary

- \* Good distribution (RO, UKR, MOL)
- \* High satisfaction rate
- \* Interest from additional countries
- \* Data fed back to WHO

# User Feedback

- \* Evaluated in two phases
  - Pre - and post - installation, Bucharest
- \* 5670 patients registered
- \* High degree of satisfaction among users
- \* Key observations included:
  - no negative impact on clinical care provided
  - units of measurement varied between centres
  - some further interface improvements identified
  - some additional fields felt desirable

# Conclusions

- ✧ The software project has succeeded in delivering a competent piece of diabetes clinic software, in step with emerging standards.
- ✧ The software is at a standard comparable with clinic IT systems marketed in Western Europe
- ✧ There is a need to act reasonably quickly to move to wider implementation, and move beyond the scope of the research program.