

Black Sea Tele Diab

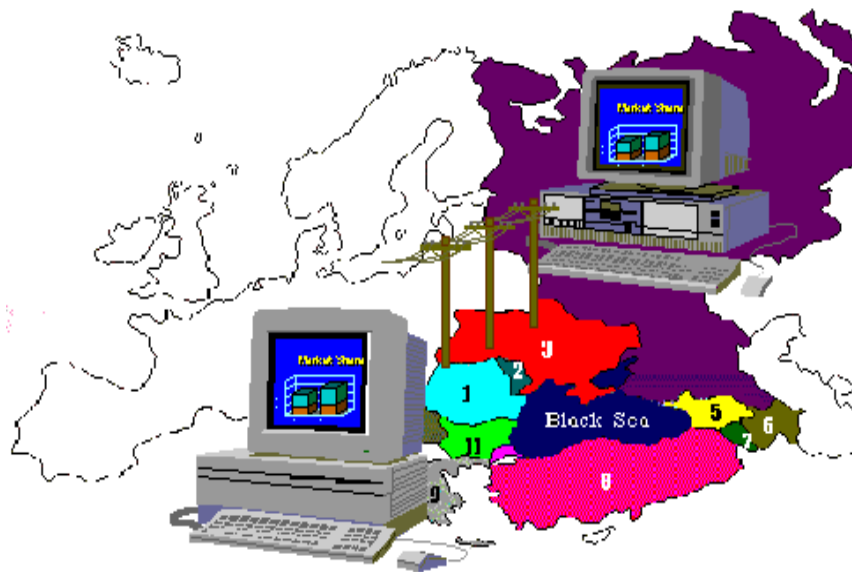
A register and EPR for patients with diabetes



TELEMATICS APPLICATIONS PROGRAMME

An Applied Research Programme of the
EUROPEAN COMMISSION, DG XIII C/E

Black Sea Tele Diab



Summary

The Black Sea Tele Diab System has been developed within the INCO Telematic Applications Programme, to store health care information on patients with diabetes. The Good European Health Record architecture is used to record a standard set of Diabetes data. The system can be used to support national and regional networks to monitor the care of patients with diabetes.

Setting the Scene

Diabetes is a major cause of morbidity, severe invalidate chronic severe complications and premature death. Around a quarter of all patients with diabetes will develop complications, the end result of which is blindness, renal failure, lower limb amputation, myocardial infarction or stroke. Although diabetes generally affects around 2% of the population it can account for as much as 10% of all health care resources.

In spite of agreed consensus on the prevention and management of diabetic complications the standard of diabetes care varies considerably between countries and centres.

Although part of this can be attributed to the availability of local health care resources, it is also due to the lack of appropriate information and to poor communication. The current economic constraints mean that it is important that every effort is made to maximise the effectiveness of current resources. This can be achieved by the development of appropriate clinical information systems, improving communication between centres of clinical excellence and outlying units, by the development of protocols describing best clinical practice and effective monitoring of patients.

Approach

The system provides a standardised software package for the storage and transfer of medical information and health care . The software utilises an electronic medical record architecture based on the Good European Health Record, developed within the Advanced Informatics in Medicine programme. This provides a common architecture for computerised health records in Europe, which can be used across clinical domains, countries and computer systems. Software development has been carried out by the partners in Eastern Europe. , The concepts applied and learnt in Diabetes will be generally applicable to other chronic diseases and this will help promote the development of medical informatics and communication technologies among CCE/NIS countries. The Diabetes data, which is based on the WHO (Europe) Diabcare Dataset <http://www.diabcare.de>, can be used to build local and regional registers of patients with diabetic complications that can be used to monitor health care outcomes. By linking with the WHO Quality Care Program <http://www.who.dk/>, a prospective database of diabetes can be built up, allowing a comparison between centres across the EU. The resulting epidemiological information can be used to promote the use of clinical guidelines and aid identification of best treatment strategies.

Results and Achievements

Key features of the GHER architecture are:

- provision of a common data structure for electronic health care records taking into account the need to protect patient confidentiality and to reproduce a legally binding clinical record;
- ability to incorporate a wide range of data types i.e. laboratory data, photographs, bio-signals;
- the 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.

The GEHR object model is in the public domain - <http://www.chime.ucl.ac.uk>.but has been implemented by only a few centres. Weaknesses in the model were identified and a revised model (GOM_{BSTD1.0}) was generated www.telemed.ro. The system was developed in Microsoft Visual C++ using a modular design with an object oriented approach.

The functions of the BSTD system are: Patient Records (EHCR), Clinical Protocols, Reports and Statistics, Graphs, Data Communication and System Administration.

Patient Records - allows the registration of a new patient, the recording of a new Data Sheet, corrections and the ability to search for and view a sheet.

Clinical Protocols - protocols that help the clinician with the management of diabetic patients.

Reports and Statistics - allows the printing of the selected sheets, the calculation of the WHO DiabCare Aggregated Data, the creation of reports, tables and graphs.

Data Communication – a module that allows the exchange of data between centres and export of data between the versions of the BSTD system.

System Administration - definition of the health care facility; definition of persons; designation as users or system managers; management of passwords and access rights for the users; definition of measurement units; limited customisation of the user interface.

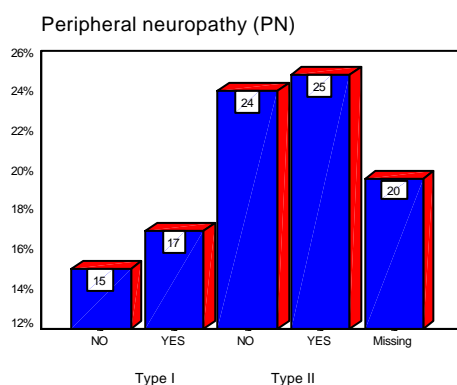
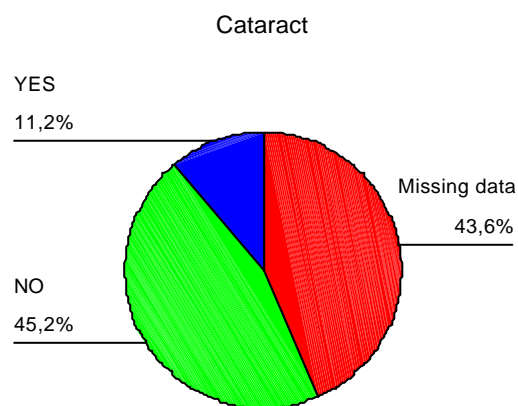
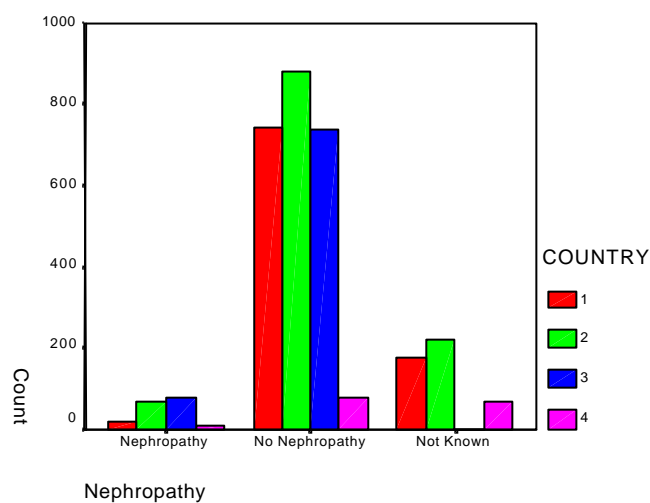
The clinical care protocols are linked to data entry screens and are an important feature of the system. These are treatment guidelines based on nationally or internationally agreed consensus statements, which can help the clinician with the management of patients. The protocols are coded in html format so that they can be accessed from outside the system and can be linked to other sources of information on line. Data communication is via Extensible Markup Language (XML), this provides a common pathway for both the transfer of data between different versions of the BSTD system and the export of data. BSTD object model – XML mapping has been carried out with structural information from GOM_{BSTD} stored as XML Attributes in the related XML Elements, so preserving the structure and integrity of the data.

The first English version of the system V1.1 was released in December 2000. This was translated into Ukranian, Romanian and Greek and has been evaluated in centres in Ukraine, Moldova, Romania and Greece. Formal evaluation of the system has been carried out by clinicians in the Diabetes Clinics. The evaluation revealed no major shortcomings and that the user interface was generally acceptable and had been well designed. However, the limitations of the WHO Diabcare Dataset in a general clinic setting were highlighted. As a result of this feedback, the data set was revised to include additional clinical items and patient demographic information - a prerequisite for the system to be used as diabetes register. The revised data set includes images, which might be taken during eye or foot examinations. The system was released in December 2000 for use in Romanian, Moldovan and Ukranian centres.

the BSTD software is available within the public domain for other workers to build on and develop Open Source <http://www.openhealth.com> so that it is The system is in routine use in Moldova, in 3 centres in Ukraine and 8 centres in Romania. It is being evaluated for use as a National Diabetes Register in Ukraine and by WHO Europe as a means of developing the Quality Care Programme in Eastern Europe

Conclusions:

- The BSTD software project has succeeded in delivering a competent piece of diabetes clinic software, in step with emerging standards
- BSTD systems operational in Romania, Ukraine, Moldova and Greece supports the development of epidemiological and quality of care research in Eastern Europe
- BSTD system is monitoring the key indicators for diabetes complications as in examples given below:



Contact Details

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In the Black Sea Tele Diab project centres from 5 different countries participate. These countries are United Kingdom (UK), Greece (GR), Romania (RO), Ukraine (UA) and Moldova (MO).

Key Project Participants:

University of Sheffield	(GB)
University of Hull	(GB)
University of Athens	(GR)
Institute "N. Paulescu", Bucharest	(RO)
Donetsk Medical University	(UA)
Academy of Sciences	(MO)
Romanian Society for Clinical Engineering And Medical Computing	(RO)

Contact details

E-mail: bstd@sheffield.ac.uk

URL: www.telemed.ro/bstd

Technical info: simion.pruna@telemed.ro