Supervised implementation of guidelines for Diabetes management on the World-Wide Web

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Abstract
This paper describes a Web-based system designed to allow GPs to implement and adapt clinical guidelines for the management of type II Diabetes Mellitus under the specialist's supervision; the system will be tested in the Pavia area, Italy, with the collaboration of the Fondazione Maugeri Hospital.

Introduction and Background
In recent years, there has been a growing interest in the definition of effective strategies for allowing the early detection and prevention of complications of Diabetes Mellitus. In particular, it seems crucial to improve the average quality of care of type II Diabetes Mellitus (DM-II), which prevalence lies within 4-6% in Europe and USA. A recent European study has shown that the direct cost of DM-II accounts for up to 6.7% of total national health care expenditures1. It has been recognised that the capability of preventing and effectively managing DM-II is mainly an organisational problem. Evidence-based guidelines (GL), such as the ADA recommendations, should be implemented by GPs, and the patients conditions should be assessed more frequently by both GPs and specialists. A cost/effective way to improve organisation of managed care is to rely on IT solutions. However, a recent case-controlled study has shown that a GL-based decision support system had a very limited differential impact on clinical outcomes with respect to standard treatment2, also reporting a low physicians' compliance. Starting from this experience, we designed and implemented a new Web-based system for a supervised implementation of GL by GPs, that will be tested in Pavia, Italy, with the involvement the Fondazione Maugeri Hospital.

The system
The aim of the system is to overcome current limits of computerised GL implementation through two different mechanisms: i) an explicit representation of physicians' goals; ii) the assistance of diabetologists to GPs for DM patients diagnosis and treatment.

Since the system is meant to provide a supervised application of GL, it has two kinds of users, GPs and specialists: each patient is assisted by a GP, and each GP registers for being assisted by a specialist. GPs are provided with a clinical record, in which data collection is guided by the ADA and SID (Italian diabetological association) clinical recommendations. Such GL-based clinical record implements both GL for DM-II screening, including risk factors and diagnosis schemes, and GL for DM-II therapy. It also shows reminders, and checks for validity times of each clinical exams. Moreover, it requires to explicit the treatments goals that each patients should achieve, thus enabling a more flexible GL implementation, in which intermediate objectives may be clarified and controlled. The other innovative feature of the service lies in the surveillance activity performed by specialists. Once a GP has chosen a specialist for support, the system allows both physicians to look at the same data sets. GPs or patients may also require that such surveillance activity is anonymous. Therefore, GPs may ask for a second opinion consultation or specialists may provide unsolicited advice, when they think that a patient needs particular attention, i.e. a sudden therapy change. Moreover, a patient may be visited by the specialist, for example after diagnosis. In this case, the GP is allowed to look at the visit outcomes, and at the new therapy decided by specialists. The system has been implemented in Oracle PL/SQL and relies on an Oracle DBMS and Web-Server. Such system will run a pre-evaluation next year with 5 GPs and about 75 patients.

References