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Health care delivery in type 2 diabetes. A survey in an Italian primary care practice

Andrea Modesti[a], *Roberto Bartaloni*[a], *Franca Bellagamba*[a], *Rossano Caglieri*[a], *Katia Cenori*[a], *Giorgio Ciampalini*[a], *Attilio Costagli*[a], *Vanni Galloni*[a], *Cecilia Del Papa*[a], *Leonardo Modesti*[a], *Giulia Dell'Omo*[b], *Roberto Pedrinelli*[b,*]

[a] *"Modulo Pontedera" Progetto Regionale di Medicina d'Iniziativa, Pontedera, Italy*
[b] *Dipartimento di Patologia Chirurgica, Medica, Molecolare e dell'Area Critica, Università di Pisa, Italy*

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ABSTRACT

Aims: Evidence-based guidelines provide targets and performance measures for the treatment of type 2 diabetic patients but a wide gap separates guidelines-driven recommendations from their clinical application, a phenomenon hindering the transfer of proven benefits to affected populations.

Methods: We analyzed the quality of diabetic care delivered by 8 general practitioners joint in a group practice attending 571 diabetic patients (5.6% of the total enlisted subjects) by assessing process (% of HbA_{1c}, SBP and LDL-C determinations) and intermediate outcome (% of patients with HbA_{1c} <7% vs >8%, systolic BP <130 mmHg vs >140 mmHg, LDL-cholesterol <100 mg/dL vs >130 mg/dL) indicators.

Results: HbA_{1c} was at target in 49% of patients and >8% in 22%; SBP and LDL-C determination was available in about two-thirds of patients, only a minority at target for SBP and LDL-C. Antihyperglycemic and antihypertensive treatment was prescribed in most patients but only a third was on statins. During the post-evaluation phase, percentages of patients with HbA_{1c} >8%, SBP < 130 mmHg and LDL-C < 100 mg/dL and the drug prescription pattern did not change.

Conclusions: Several weaknesses affect primary care delivery to type 2 diabetic patients and efforts are needed to improve the management of this high-risk group.

* *Corresponding author at*: Dipartimento di Patologia Chirurgica, Medica, Molecolare e dell'Area Critica, Università di Pisa, 56100 Pisa, Italy. Tel.: +39 050 996712; fax: +39 050 540522.
E-mail address: r.pedrinelli@med.unipi.it (R. Pedrinelli).

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1. Introduction

Type 2 diabetic patients are exposed to morbid cardiovascular events and early death (e.g. [1,2]), a poor outcome postponed and, to some extent, prevented by persistent normalization of abnormal metabolic parameters and effective long-term treatment of coexisting high blood pressure (BP) and low density lipoprotein (LDL) cholesterol (C) [3], a solid evidence incorporated in guidelines providing treatment targets and performance measures for field clinicians (e.g. [4]). However, a wide gap separates evidence-based recommendations from their daily application, a worldwide phenomenon (e.g. [5–7]) documented also by Italian studies carried out in Diabetes Outpatient Clinic (DOC)s [8–10] and primary care practices [11–14]. Since this latter setting plays a pivotal role for successful primary and secondary cardiovascular prevention [15,16], additional information about the way general practitioner (GP)s approach the management of patients with type 2 diabetes is an essential step in the process of improving health care delivery and resource allocation by national community and political stakeholders.

For this reason, we analyzed the quality of care provided to a large group of type 2 diabetic patients in charge of an Italian primary care group practice.

2. Material and methods

2.1. Setting

The analysis involved 8 primary care physicians (A.M. coordinator, R.B., R.C., G.C., A.C, V.G., C.D.P., L.M., 1 female, mean age: 60 ± 2 yrs) and 2 nurses (F.B., K.C) partnered in a practice enlisting 10,156 adult subjects in Pontedera, a town in northwestern Tuscany (population ≥16 yrs: 24,489 according to the 2011 national census). The data were gathered in the context of "Medicina d'Iniziativa", a project sponsored by Regione Toscana, the regional branch of the publicly funded Italian National Health System aiming at the promotion of proactive, planned and population-based treatment strategies of chronic diseases in primary care [17]. According to the Italian law, a group practice is an organizational unit in which 3–10 partnered GPs share facilities and patient electronic health record systems, meet on a regular basis to adopt common guidelines and assess quality of care and prescription appropriateness under the coordination of a team physician [18]. GPs agreed to transfer their clinical records to two academic clinicians (GDO, RP) expert in cardiovascular prevention who analyzed the data.

2.2. Performance measures

Performance measures included process (i.e. the procedures actually done to the patient independent of their outcome) and intermediate outcome (i.e. surrogate measures related to incident hard end-points) indicators. The two sets of performance indicators are complementary in that a process measure (e.g. HbA_{1c} determination) can be obtained and still remaining outside the desirable range of values.

Process indicators utilized for the audit were percentages of patients with available HbA_{1C}, SBP and LDL-C determinations; outcome indicators were percentages of patients at target or not for HbA_{1C} (<7% vs >8%), systolic (S) BP (<130 mmHg vs >140 mmHg) and low density lipoprotein-cholesterol (LDL-C) (<100 mg/dL vs >130 mg/dL) as recommended at the time of the audit by the Italian association of family physicians (Società Italiana di Medicina Generale, SIMG) [19] following internationally accepted standards of care. HbA_{1C} determinations obtained from 3 to 9 months after the baseline evaluation were defined as appropriately timed. Antihyperglycemic, antihypertensive and statin treatment was coded as prescribed or not while no information about specific drugs was available in the records.

Patients with HbA_{1C} levels >8% were considered in need of therapeutic adjustment to achieve a better metabolic control. According to the Italian law, patients can access the local DOC either as referrals or on a voluntary basis.

2.3. Protocol

2.3.1. Baseline evaluation

Following the requirements of the project "Medicina d'Iniziativa" [17] and the agreements stipulated with Regional Health Administration, GPs were required to collect HbA_{1c} levels of all patients (fasting plasma glucose levels 126 mg/dL and/or prescription of antihyperglycemic drugs) attending the practice, either known or newly diagnosed, irrespective of age, diabetes duration or treatment. The baseline evaluation, carried out between March 2009 and November 2011, yielded 571 patients (5.6% of the overall enlisted population). To exclude patients with juvenile forms of type 1 diabetes, only subjects with diabetes diagnosed by age 30 or more were included in the analysis.

2.3.2. Post-baseline evaluations

After the baseline HbA_{1c} evaluation required by the "Medicina d'Iniziativa" project, management and timing of the post-baseline clinical and analytical controls was left to the clinical judgment of each individual GPs.

2.4. Analytical methods

HbA_{1C} were carried out by High Performance Liquid Chromatography at the local community Hospital of Pontedera. Quality control across laboratories is provided in Tuscany by the regional branch of the National Health System (Regione Toscana, Controllo di Qualità in Medicina di Laboratorio, see http://www.aou-careggi.toscana.it/crrveq for details). LDL-C were derived from Friedwald's formula on samples analyzed for total, high density lipoprotein cholesterol and triglycerides by enzymatic methods; BP determinations were obtained by standard methods either by nurses or GPs.

2.5. Statistics

Differences between means and proportions were analyzed by unpaired *t*-tests and chi-square, respectively ($p < 0.05$ as limit of statistical significance). Descriptive statistics were