“The community pharmacist and the case management of the diabetic patient”

Non-profit observational study on the role of the local pharmacist and the pharmacy of services in the case management of the diabetic patient.

PROTOCOL

Version n. 1 del 01/10/2018

Approved by:

dr. Raffaele La Regina

I, the undersigned Raffaele La Regina, declare that I have read this study protocol and accept its procedures. I undertake to conduct the study according to the ethical principles expressed in the Helsinki Declaration, as amended, and in the Good Clinical Practice - GCP.

Any deviation from the study procedures will only take place if necessary, in order to safeguard the health and well-being of the patients.

I agree to conduct or supervise the study myself.
I also declare that my study collaborators will have access to the study protocol and its amendments and that they are aware of their obligations.

Dr. Raffaele La Regina

Study Coordinator

Date 01.10.2018 *Sign*

KEY STAFF

Study Coordinator **Dott. Raffaele La Regina**

Ricercatori

Study Coordinator of the observational study is dr. Raffaele La Regina, a community pharmacist at Farmacia La Regina dott. Rocco Vito, located in San Rufo (SA).

The study is promoted by the project itself as a project work of the Integrated Territorial Assistance Master's Degree at the Telematic University Pegaso, in collaboration with:

- Telematic University Pegaso
- "Federfarma Campania"
- "Federfarma Salerno"
- HTN – Health Telematic Network S.r.l.
- BSI - Biochemical Systems International S.p.a.
- Next Sight S.r.l.

Conflict of interest

The promoter of the study states that, during the period between the two years before the start of the study and the end of the study, there was no condition of conflict of interest. The subjects involved have been able to collaborate for didactic, training and non-profit research activities.

TAVOLA DEI CONTENUTI

Glossary

CRF	*Case Report Form*

1. Introduction

Study title

"The community pharmacist and the case management of the diabetic patient"

Non-profit observational study on the role of the community pharmacist and the “pharmacy of services” in the case management of the diabetic patient.

1.1 Background and rational of the Study

Over the last few years, the Italian National Health Service has witnessed numerous and substantial changes, even more evident if one looks at the workload that this system is called to face when it comes to chronic diseases. In fact, while the progress of science has led to better outcomes in the treatment of acute diseases resulting in an increase in the average age of the population and an increase in the number of people suffering from chronic diseases, even multiple, on the other the changed socio-economic conditions activities have led to an increase in the number of elderly and socially fragile individuals. It takes very little to understand that these epidemiological and socio-sanitary mutations pose a serious threat to the stability of our health system.

To meet these new needs, the different countries of the world are analyzing and adopting various models of chronic disease management. Even if with different methodologies, all the models developed so far put the patient at the center of attention, in its uniqueness and with its needs, and propose to provide the latter with complete assistance, through the integration of health and social services.

In this scenario, also the role of pharmacist, historically linked to the dispensation of drugs upon presentation of a medical prescription and to a final control action to ensure a delivery of medicines in total safety, over time has evolved. In order to carry on this evolution, the pharmacist has been asked for new skills, to realize what has been defined as "the pharmacy of services", through which the pharmacist is recognized the possibility of becoming a strategic figure to meet the changed needs of the population on the one hand and the Italian National Health System on the other and to support the latter in the transition from a "waiting" medicine to an "initiative" medicine.

Diabetic disease and the resulting chronic complications, today, have a very significant impact on patients and their families, on morbidity and mortality, as well as having a strong economic impact on the health system. Despite this, most of the patients do not carry out what is foreseen by their

diagnostic therapeutic assistance path (PDTA) due to several reasons such as long waiting times, the need to move to undergo examinations, which is not so easy for young people of working age as well as older people, lack of homogeneity in access to care and in the provision of services and more. The community pharmacist, therefore, represents, for the position in which it is located within the Italian National Health Service, a potential not yet considered. In fact, it could take on the role of case manager (a professional who manages one or more cases entrusted to him according to a pre-established path, such as PDTA, in a defined space-time context) of the patient suffering from type 2 diabetes mellitus due to the capillarity territory, to the hourly availability superior to any other territorial health structure, to the health skills in its possession and to what it can offer in terms of services within the so-called "pharmacy of service".In this scenario, the pharmacist would not replace any of the other actors already present in the multidisciplinary care team but would integrate in the same and, moreover, being already an agreement with the Italian National Health Service, the conferral of this role would not cause a excessive increase in costs, such as that resulting from the hiring of new staff to achieve the same objectives.

2. Literature review

In the literature, the evidence relating to the pharmacist's involvement in chronic management of the type 2 diabetic patient is few and heterogeneous.

In the present studies (1-6), pharmacists working in hospital or primary care clinics, in first person or through telemedicine tools, are involved in providing educational sessions, performing therapeutic reconciliation and monitoring therapeutic adherence. In general, in each study where the pharmacist is given the opportunity to become an active part of the diabetic patient's care team, the improvement of therapeutic outcomes, recourse to hospitalization and the consumption of resources is evident. These effects are all the more evident when prescription skills are also recognized to the pharmacist, not provided for by current Italian legislation.

In literature, when we talk about telemedicine and pharmacists we often refer only to telemonitoring of glycemic values (7). Furthermore, telemedicine is seen as an advantageous tool only for rural and isolated areas, but its potential can also be appreciated in urban areas (8-10). In fact, from its use in the early diagnosis of complications and in the follow-up of diabetic patients it would result not only a reduction in the workload of health facilities that could devote more time to the care of those

patients who require more information than those who only need undergo a screening of the complications, but also a reduction of the costs related to the personnel and the infrastructures necessary to carry out the activities foreseen by the diagnostic therapeutic assistance plans. Moreover, the possibility of being able to undergo the necessary examination at any hour of the day, would certainly improve the adherence of the patients to the planned checks, a rapid identification of the complications and an early start of the necessary treatments.

On the other hand, clinical self-analysis equipment and telecarefertation systems (ecg, ocular fund, etc.) have reached maturity so that they can be used without reserve in the clinical management of patients.

The scenario at the base of the present study in which the contracted community pharmacist assumes the role of case manager of the patient suffering from type 2 diabetes mellitus and the pharmacy becomes the place where to perform the checks foreseen by the individual assistance plan in a flexible way (smart clinic), appears to have not been the subject of previous studies.

3. Study Objectives

Primary Endpoint

The primary objective of the study is the variation - compared to a historical cohort - of the percentage of adherence to PDTA (patients who performed the scheduled checks at 3-6-12 months / total of patients enrolled x 100) in the cohort of patients enrolled in the study and therefore followed by a case manager identified in the community pharmacist with the opportunity to perform the checks provided in telemedicine and self-analysis, thanks to the exploitation of the “pharmacy of service”.

Secondary Endpoints

The secondary objectives of the study are:

- variation in waiting times for the execution of the examinations envisaged by the PDTA;
- variation in levels of HbA1c, LDL-cholesterol, arterial pressure

- assessment of the economic impact secondary to the establishment of the figure of the Case Manager and the use of the "pharmacy of service";
- assessment of the variation in the quality perceived by patients in carrying out this innovative treatment path, compared to the traditional model.

4. Study procedures

The study, whose duration will be 12 months (November 2018 - October 2019), which does not include any cost for the Italian National Health Service and for the same patients participating, is of type:

• observational

• prospective,

• single-center,

• no profit.

The following are the main phases of the research project.

Phase 1: Patient Enrollment (November 2018)

In the first phase, with a total duration of one month, patients are enrolled, presenting the characteristics indicated below, in a number equal to as a result of the detailed calculation in paragraph 8.

Phase 2: Review, database validation and definition of Individual Assistance Plan (December 2018)

In December 2018, the database is validated and the individual assistance plans defined by the general practitioners involved.

Phase 3: Case Management e follow up (December 2018- October 2019)

In the remaining months the Case Manager follows the patients in carrying out the checks provided by the reference PDTA and the Individual Assistance Plan drawn up by the attending physician.

ECG (performed with an electro cardiograph Microtel BT and reported by the HTN Srl power station), ocular bottom (performed with Nexty non-mydriatic fundus camera and reported by Next Sight Srl) and self-analysis (glycated hemoglobin, lipid profile and microalbuminuria, performed with Farmascreen device of Biochemical Systems International Spa) will be carried out directly in the pharmacy using the above mentioned reporting equipment and platforms. For the services requested that can not be carried out at the pharmacy, the pharmacist proceeds with the prescription from the General Practitioner, the booking of the exam by means of the CUP service and the execution of a telephone reminder service that reminds the patient when 'exam. Each performance is reported to the attending physician by sending the report in electronic format.

5. Study estimated duration

The study will last 12 months, from November 2018 to October 2019.

6. Inclusion and exclusion criteria

Recruitable patients:

- age> 18 years,
- patients with type 2 diabetes mellitus;
- able to express consent to the study
- regularly attending the trial site (Pharmacy La Regina Dr. Rocco Vito)

7. Case Report Form (CRF)

Electronic data collection forms are provided (Case Report Form - CRF) necessary for the collection of clinical information of the patient, together with those of an organizational and management nature.

The detail of the information to be collected is defined in the data collection forms.

For the purpose of a homogeneous data collection, for each patient belonging to the target population, a form is provided, whose structure generally foresees the following macro-areas:

- general information on the patient (ID, gender, age, etc.);
- near and remote pathological anamnesis
- vital parameters and input blood analysis

- examinations and procedures required for follow-up
- results and reports of the controls carried out during the follow up;
- perceived quality questionnaire.

8. Sample size and statistical analisys

Starting from the percentage of adherence to all the controls envisaged by the PDTA in a historical cohort described in the work carried out by the Emilia Romagna Region on the prevalent cases of 2015 (11) equal to 4%, a simple size of 20 patients is necessary to demonstrate the effectiveness of our intervention in order to increase the percentage of adhesion to 29%, with an error α of 0.05 and a statistical power (error 1-β) of 95%. To avoid any dropouts or consensus withdrawals, the necessary sample was doubled to 40 patients.

The formula used to calculate the simple size is as follows:

$$N = \frac{p_0 q_0 \left\{ z_{1-\alpha/2} + z_{1-\beta} \sqrt{\frac{p_1 q_1}{p_0 q_0}} \right\}^2}{(p_1 - p_0)^2}$$

$$q_0 = 1 - p_0$$

$$q_1 = 1 - p_1$$

$$N = \frac{0.04 * 0.96 \left\{ 1.96 + 1.64 \sqrt{\frac{0.29 * 0.71}{0.04 * 0.96}} \right\}^2}{(0.29 - 0.04)^2}$$

$$N = 20$$

p_0 = proportion (incidence) of population
p_1 = proportion (incidence) of study group
N = sample size for study group
α = probability of type I error (usually 0.05)
β = probability of type II error (usually 0.2)
z = critical Z value for a given α or β

The statistical analysis of the collected data will be developed through descriptive analysis.

The economic evaluation will be performed by comparing the costs incurred in the traditional path and the costs deriving from the application of the model under study, calculated with reference to the regional rate where appropriate.

The assessment of the perceived quality will be carried out through a short anonymous questionnaire administered at the end of the study to all the subjects enrolled.

All categorical variables measured in this study will be expressed as an absolute number and a percentage. Continuous variables will be expressed as mean and standard deviation or median and interquartile range [IQR], depending on the normal or non-data distribution.

The differences will be analyzed by chi-square tests, t-tests for unpaired data or by Mann-Whitney U tests, depending on the nature of the variable.

Any difference with a $p < 0.05$ will be considered statistically significant.

9. Results expected by the study

The problem of the poor adherence to the controls envisaged by the PDTA diabetes is a well-highlighted phenomenon but to which it is difficult to find a solution that gives tangible results in the short and long term, as can be seen from what can be found in the literature. The main causes of non-adherence reported in the aforementioned study (11) emerged from the focus groups conducted with patients and operators are the lack of a reference figure present continuously over time, motivating and able to give answers on several fronts (eg a nurses in group medicine and / or in the homes of health) and the difficulty of reconciling the management of the disease with the rhythms of life.

The present study by overcoming these critical issues, thanks to the use of the unexpressed potential of the “pharmacy of service” (remote execution of the services provided by the PDTA) and of the pharmacist, as a case manager, alongside the basic and specialist medicine, it will improve the current quality of care for type 2 diabetic patients (+ 25% adherence to the PDTA), with a view to sustainability.

10. Ethical Considerations

To protect privacy, the patients of the group described above will be identified only by means of progressive numerical codes (ID).

The data will be treated with confidentiality and confidentiality and disclosed only in aggregate and anonymous form.

The protection of subjects will be guaranteed as recommended in the Oviedo Convention (Convention for the Protection of Human Rights and the dignity of the human being in relation to the application of biology and medicine: Convention on Human Rights and Biomedicine - 4 April

1997) and in the Helsinki Declaration on ethical principles for medical research and whose aim is to provide advice to doctors and other participants in medical research.

All patients will be called to sign an informed written consent, with particular reference to the processing of personal data.

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