Managing Complex Therapies Outside Hospitals. An Analysis of GPs Practices of how to support Medication at Home

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Abstract. Support systems for the management of prescriptions are commonplace in hospitals, whilst they are rarely found in general practice. This exploratory study draws on a qualitative survey conducted with focus groups to investigate the information needs of General Practitioners (GPs) in regard to the therapeutic management of complex patients, the purpose being to identify possible areas of application. The question addressed is whether the systems existing in hospitals can be usefully adapted and used by GPs or if a different approach needs to be adopted to design other tools. The analysis shows that the information needs of GPs relative to medication management are significantly different from those of their hospital colleagues because the former are not directly responsible for the administration but instead operate within a care network on which they cannot exercise direct control. This study suggests that support systems for therapy management should be designed on the assumption that it derives from cooperative work by a heterogeneous network of actors, and therefore with functionalities intended to satisfy the coordination needs of all the actors involved in the process.

Keywords. General Practitioners, Computer Supported Cooperative Work, medication management, focus group, qualitative methods, patient empowerment.

Introduction

Support to healthcare practitioners in medication management is a traditional area of interest for medical informatics, and one of those in which its applications are most widespread. The Computerized Physician Order Entry (CPOE) and systems to support decisions on the administration of drugs are tools used by numerous hospitals. They help among other things to reduce prescription errors [1], improve monitoring of assumptions [2], support decisions [3], and coordinate operators [4]. Nevertheless, only a small quantity of medicines are administered by the healthcare practitioners in hospitals while most consumption takes place in the home where patients self-administer medications, sometimes with the help or under the surveillance of family members or caregivers and under the supervision of a General Practitioner (GP).

Nevertheless, scant research attention has been paid to identification of systems to support GPs and patients in medication management in extra-hospital contexts, with

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the partial exception of patient reminder systems and e-prescribing. This paper investigates the information needs of GPs when managing patients with complex pharmacological therapies. The purpose is to reflect on whether medication management systems in use at hospitals should be employed in general practice, or whether other information and communication technologies should be developed to support the monitoring, education and therapy adjustment work commonly required of GPs.

1. Methods

The research work was carried out in a region of northern Italy through five focus groups consisting of GPs working in various zones of the region. The participants in the focus groups were selected from students at the local General Medicine Training School; the sessions were conducted jointly by a social scientist (principal conductor) and a student specializing in general practice. Present at each session was an average of 5.5 GPs. The focus group sessions were transcribed and analysed using template analysis [5] in order to identify emergent themes concerning information requirements in regard to medication management.

    The outline of the focus group stimulated the participants to describe and discuss their professional experiences with patients undergoing complex therapies, typically elderly persons. These are patients who are particularly frail and difficult to manage [6]. The following sections describe the analysis relative to the representations of the doctors in regard to the complexities of managing complex therapies and the applications required to support them. We deliberately chose not to ask directly about desired functions of a to-be-designed system. The implications for system design described in the last paragraph of this work stem from analysis of working practices and the issues which arise in management of these patients.

2. Results. The representation of complex therapies by the GPs

In the majority of cases, complex pharmacological therapy is the result of prescriptions issued by one or more specialist doctors working at a hospital. Such therapy is first produced and tested in a controlled environment where adverse reactions can be monitored, the patient's compliance has scant importance, and the technical complexity of the treatment is not an obstacle to its administration.

    The first result of the research is the conviction of the GPs that such therapy must often be remodulated and adapted to the individual patient once s/he has been discharged. One of the factors that make this work necessary is that hospital doctors formulate the therapies without sufficient information about the patient's overall history. This requires GPs to mediate between the requirements of the specialist medicine practised in clinics and hospitals and the concrete life-conditions of patients. GPs simplify the therapies prescribed by the hospital doctors by reducing or eliminating certain drugs in order to increase therapeutic compliance and prevent assumption of the drugs from obstructing the patient's normal activities. The wide array of situations foresees simplifications to render therapies more manageable in the home (e.g. too many medicines may be forgotten); make them more economically sustainable for the patient (e.g. hospital therapies do not consider the patient's economic circumstances); and protect the patient's overall well-being (e.g. an excessive number of medicines may affect the

social and cognitive abilities of an elderly patient, without giving him/her particular benefits).

A second aspect, closely connected with the first one, is the scant communication that takes place between the hospital and the GP when patients are discharged. This makes the work of the GPs more complex in various respects. For example, the GPs mentioned that elderly patients often have one or more chronic illnesses characterized by acute phases which are treated in hospital. Hospital therapy usually furnishes information specific only to management of the pathology's acute phase, without instructions on how to modify the therapy thereafter. Another example of the problems connected with scant communication concerns the activation of monitoring procedures and special care by hospital doctors that impacts on the GPs. In some cases, the GPs complained, prior consultation with them would enable more thorough evaluation of the patient's needs in light of the information that the GP could furnish.

A third aspect is that GPs are represented as key nodes in the network, but they are devoid of any real power except persuasion, and they cannot exercise control or coercion like their hospital colleagues. This complex network comprises the patients and their family members, as well as caregivers and other practitioners (district nurses, social workers), and therapy compliance depends, among other things, on the coordination of all these actors. For instance, if the patient receives home care, the GP must laboriously coordinate a variety of professional figures. Nurses and social service workers sometimes find a clear division of their tasks and responsibilities difficult to define. At the same time, the GPs seem not to have effective means with which to control and evaluate their work. On this basis GPs often reduce the therapy to make it compatible with the patient's everyday needs, the availability of family support, and his/her financial circumstances.

Finally, this set of factors explains the change that has taken place in the notion of the optimal prescription. At hospital, in the absence of issues concerning patient compliance, and in an environment regulated by healthcare personnel, medicine dosages can be maximum, and indeed augmented with the administration of further drugs (e.g. a gastrolesive drug with a gastroprotector). The need to lead a normal life entails action to reduce drug dosages from the theoretical maximum established in a controlled environment to the level most compatible with the patient's specific conditions and with the therapy's long-period sustainability in every respect.

3. Discussion

The GPs' representations evidenced that the therapy, and the medical work associated with it, assume different meanings within and externally to hospitals. There emerged a number of significant differences that can be summarized in a few closely-interrelated points.

Unlike hospitals, GPs do not have the task of directly administering drugs; nor do they need to concern themselves with supplies. The GP must rely on the patient and his/her care network for management of the medication. The GP acts on this network with education and persuasion, but s/he cannot control and verify execution of the therapy. In this context, the therapy must not only be clinically correct but also make sense to the patient and be compatible with his/her socio-material circumstances, lest it be abandoned or autonomously adapted by the patient him/herself.

In more general terms, GPs construct enduring relationships with their patients, and their work has long-term objectives. Management of complex therapies for the chronically ill is one of the most complex challenges owing to the impossibility of exercising stringent control. According to the GPs in the focus groups, this objective is achieved when the doctor can guide the care network towards a sustainable equilibrium in the medium-long period, intervening with discreet and tactful monitoring in order to induce the changes necessary [6]. We now concentrate on this point in order to suggest ways to develop systems to support the work of GPs..

3.1. Notes for the design of systems to support medication management

For several years, hospitals have had various systems in place for the management of drugs and therapies. The first question to answer is this: 'If these systems were suitably adapted, could they support the work of GPs in managing the therapies of their patients?'. The research suggests that this is not possible because of the above-described excessive differences of context between care in the home and in hospital – to which should be added that the stockage problems so important in hospitals do not exist in the domestic context.

Analysis of the focus group sessions and comparison among the systems present in hospitals makes it possible to suggest the development of tools to support complex pharmacological management. To this end, one may begin by identifying the fundamental criterion of CPOE systems, regardless of their specific functionalities. This criterion is the need to support the work of diverse practitioners by furnishing each of them with functionalities useful for their work, and by supporting coordination within the network. The doctor is thus able to use a decision support system; the nurses can be sure that the therapy has been administered and that there are no duplications; and the hospital storeroom can keep check on stocks and promptly supply the wards; and so on.

Likewise, therapy support systems outside hospitals should be designed in light of the consideration that the hoped-for benefits will derive from collaboration among different actors, each with its specific competence, rather than from the work of a single healthcare practitioner. This presupposes the creation of systems usable, in different ways, by all the actors involved in the patient's care and assistance. Like the systems present in hospitals, such systems should be integrated into the working practices of GPs, and they should help patients, relatives and caregivers in their everyday tasks, while at the same time enabling information to flow through the network and ensure its coordination. This approach would require careful analysis of these relations in order to identify the specific functionalities to furnish to each potential user of the system.

On the basis of the findings from the focus groups, we suggest the following functionalities of a system like the one outlined above. Useful for GPs would be a decision support system that helps them adapt the therapies of discharged patients, and an alert system that prompts them to conduct periodic re-assessments of those therapies. Patients could benefit from tools enabling them to verify interactions between the drugs prescribed and those for self-care (e.g. over-the-counter drugs, herbal remedies) as well as educational tools (e.g. on administration regimes) or devices that remind patients to take medicines. Such functionalities could also be beneficial to relatives and caregivers, for whom tools to coordinate patient support could also be envisaged (e.g. reminders concerning medicines about to expire or run out).

These suggestions concerning functionalities reflect just one point of view – that of GPs – who were the only category consulted in the research. Instead, a system like the

one outlined above would require analysis of the needs of all the actors involved in the therapy management process and the inclusion of other significant dimensions. When designing such systems, it would be necessary to consider domestic care practices, their intersection with forms of personal health information management [7] and taking into account medication particularities [8] also bearing in mind the emotional, and not merely functional, connotation of technical tools [9].

To conclude, systems of this kind should consider and support the fragile ecology of the formal and informal relations in the care network activated around the patient, rather than seeking their radical reconfiguration. An approach of this type would certainly be more difficult to design, but at the same time it would have the advantage of being based on already-existing relational networks and practices, and of encompassing the new forms of technologically supported patienthood and agency that now constitute a core component of healthcare models [10].

Acknowledgement:

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