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Medical and surgical co-management – A strategy of improving the quality and outcomes of perioperative care

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ABSTRACT

With the increase of ageing population, rates of chronic diseases and complex medical conditions, the management of high-risk surgical patients is likely to become a great concern in most countries. Considering all these factors, it is certainly rational and intuitive that internists should be included into a collaborative model of medical and surgical co-management, where their multi-potentiality and synthesis capacity require them to coordinate the multidisciplinary team and to be the leading agent of change. In this regard, our aim was to present the official position and approach of the Working Group on Professional Issues and Quality of Care of the European Federation of Internal Medicine (EFIM), for implementation of this strategy of care, encouraging internists to assume an important role and to provide continuity of multidisciplinary care, from the decision to operate through to rehabilitation and recovery. Moving from the traditional model of medical care of the surgical patients to the co-management model, from a reactive simple consultation to a new pro-active continued service, may optimize the quality and perioperative care, improving the survival, shortening hospital stays, replacing the old strategy of late and complication treatment to an early and preventive one.

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1. Introduction

According to a report of the United Nations, the number of people aged 60 years or over has recently substantially increased around the world. If in 2015 the proportion of people aged 60 and over was 1/8, the projection for 2050 is showing a 1/5 proportion with a total estimation of 2.1 billion people [1].

The increasing proportion of older population will result in an increasing prevalence of chronic disease and complex medical conditions that will have further implications for the future health care systems. Non-communicable diseases are major contributors to the total burden of disease. On an institutional basis, it's impossible to segregate patients as purely medical or surgical. The majority of surgical patients request an integrated medical care due to their complex conditions [2].

Along with the aging of the population, patients are living longer and high-risk patients are experiencing more surgical interventions than ever before. A cohort study demonstrated a higher than expected mortality rate among patients who had undergone non-cardiac surgery [3]. Thus, it's clear that the frequency and the costs of surgical complications will rise considerably, jeopardizing the safety of the patients and the sustainability of the healthcare system.

Considering all these factors, health systems have to be prepared for the increasing demand of more complex and costlier services and interventions that require well-coordinated, integrated hospital care. The changing demography of populations and the presence of multiple co-morbidities require supervision by an internist as an important part of the health care landscape.

It is imperative to minimize the impact of these changes through evidence-based strategies. Co-management is a tested strategy to improve health care outcomes in surgical settings where the responsibility for patients' care is divided between the internist and the surgeon.

This position paper will provide an overview of the role and principles of medical and surgical co-management, especially its impact in clinical outcomes and benefits of care.

2. Limitations of current traditional consultation

The way in which physicians from different specialties cooperate has long been a topic for debate. The basic concepts for an effective medical consultation were described by Goldman and consist on the following requirements: responding to the question asked, establishing the urgency of the consultation, collecting data, making specific recommendations and communicate them directly to the requesting physician, offering educational information, providing contingency plans and appropriate follow-up [4].

As surgical techniques have improved over the years and more elderly and people with multi-morbidity are being operated on, many times internists are asked by the surgeon to perform a standard consultation to evaluate a patient prior and after surgery. Preoperative risk assessment and perioperative management are important aspects of clinical practice in internal medicine. Internists are often asked to identify comorbid disease conditions and to provide risk stratification for complications of surgery. It is also important to optimize medical conditions for surgery risk reduction. For this purpose, guidelines to limit perioperative morbidity and mortality have been developed [5–9].

The demands of modern day practice have called on the internist to refine new knowledge and skills. If the internist consultant makes evidence-based recommendations it is reasonable to consider that he can improve the outcome of the surgical patient. The knowledge of the internist across all fields of internal medicine often allows him to replace multiple subspecialty consultants and ultimately improve patients' outcomes.

There are some limitations regarding the role of traditional medical consultation in the care of the surgical patient. In the traditional (also known as formal) consultation, the internist evaluates a patient only at the request of the surgeon who maintains responsibility for all aspects of the patient's care.

In the United States, the ethical principles for standard medical consultation were established by the Judicial Council of the American Medical Association (AMA) [10]. According to these principles, the surgeon retains sole authority and responsibility for identifying patients who would benefit from an evaluation by the consultant and determines the scope of the internist's involvement. The internist gives recommendations to the surgeon but does not write orders or call other consults. Studies have shown that up to one-half of the internist's recommendations are ignored by the requesting physician [11]. Communication between the internist and the patients is limited to data gathering, avoiding sharing his views directly to the patient. The treatment plan of the patient is the responsibility of the surgeon and if the internist disagrees with this plan of care he should discuss the disagreement with the surgeon. All communication is routed through the surgeon [4,12].

Traditional medical consultations suffer from many other problems. Among them is the delimiting or transferring of responsibility for the patient, the transmission of information, the urgency of consultations, the unjustified repetitions, or the delays in their request. For these and other reasons, consultations have for years been known to be expensive and ineffective [13].

In summary, when performing a traditional consultation, the internist assumes a secondary role and adopts a focused strategy. The consultation only occurs at the invitation of the surgeon and refers to a limited set of issues. With this scenario, patients' medical comorbidities may not be optimized preoperatively and the opportunity to prevent complications is lost. The internist makes recommendations, not orders, and communicates them to the surgeon.

3. Co-management - general principles

In general, medical co-management is defined as sharing responsibility, authority, and accountability for the care of a hospitalized patient across clinical specialties [14]. Medical and surgical co-management is a collaborative model between internists and surgeons for the care of surgical patients [15]. In this type of collaborative model, the internist is asked to assume the management of specific aspects of the patient's care [12].

Recently, the popularity of co-management of surgical patients by internists has grown, with an increase between 2001 and 2006 by over 11% per year. This increase is due to several factors, including advanced surgical techniques with increasing number of elderly patients with multiple co-morbidities undergoing surgery [16,17]. In the USA, according to the Society of Hospital Medicine (SHM) survey data from 2005, 85% of hospitalist groups are involved in some kind of co-management [18].

Medical and surgical co-management can be presented in several forms. The primary responsibility of care can be assumed either by surgeon or internist. Co-management relationships are based on written agreement established between surgeon and co-managing internist and use protocols and rules negotiated before initiating patient care. The co-management agreement involves the entire surgical and medical team and also hospital administration. Unlike traditional consultation, the co-management relationship is more formal [19]. It requires clearly defined roles between surgeon and internist [20]. It is mandatory for the internist and surgeon to have a frank verbal discussion about the role of each other regarding responsibility and communicate (to the patient and the team) who of them have the lead and the primary responsibility of the patient [12].

As opposed to traditional consults, that are limited to the specific question, in the co-management arrangement the internist has a more global approach, addressing all medical issues and is directly responsible for the surgical patient's medical problems. Usually, the co-managing internist has latitude to write orders, to choose what tests to perform and which treatment to implement. The internist can directly

discuss the medical aspect of the care plan with the patient.

In summary, co-management is a collaborative model, patient centered, protocol-driven used to optimize the care of surgical patients. Under co-management, the internists identify patients who can benefit from their expertise and cover the whole spectrum of medical problems. This model shares decision making and responsibility.

4. Advantages and disadvantages of co-management

There are many surgical subspecialties that request co-management service [21,22,14]. Co-management interactions have advantages that are due to the internist's flexibility in selecting patients and determining which problems to address. Identifying medical conditions that are related to surgical outcomes, the internist recommends potentially lifesaving interventions. At the same time, the internists, with a very broad scope of the practice, are expected to manage the patients. That is why co-management has the advantage of reducing the potential complications. Another important advantage of co-management is to reduce the rescue failure, that is, to detect and treat as soon as possible the complications that may occur [23]. The co-managing internist is free to deliver information directly to the patient and to any care provider involved in patient's health, therefore improving global communication.

Another advantage of this model is that, due to the existence of written orders, the recommendations of the consultant internist have a better chance to be followed. The number of recommendations should be precise and limited, when possible.

Co-management also has risks and disadvantages. Divided responsibility can conduct to fragmentation of care, associated with omissions or repeated tasks. This happens especially in areas of overlap between internist and surgeon. Efforts should be made to discuss potentially controversial recommendations with the team. To avoid these it is necessary to have a good coordination and communication between stakeholders. Direct communication is important and can prevent misinterpretation.

In well-designed co-management provisions, all the partners work in an equitable way according to the rules of engagement. They collaborate to improve care and share responsibility for patients. However, the relationship can become inequitable with a perception of one of the consultants as a subordinate member of the care team. The presence of a co-managing physician can lead to the disengagement of the surgeon from his responsibilities to manage perioperative care of the patient assuming his role only in the operating room [14]. The presence of an additional physician for surgical patients' care makes the process of care to become more complex, increasing the likelihood of miscommunication and errors. To avoid this, it is important to clearly define all the responsibilities and expectations for all parties. Both internist and surgeon have to discuss the possible complications connected with future rescued operative treatment, using different risk scales adapted to that particular case and adopting an agreed, safer solution for the patient.

5. Evidence and practice of co-management models

The benefits of co-management consist in its impact on clinical outcomes, efficiency of care and satisfaction with care.

Concerning clinical impact, current published data underline different results of the co-management model in improving patients' outcomes.

For instance, the implementation of this model on vascular surgery inpatients was associated with a significant decrease in mortality rates, improved patient safety and lower pain scores [24]. The same favorable results have been reported by other studies that analyzed co- management programs in surgical wards. According to these studies, the implementation of co-management programs was associated with a reduction of medical complications, length of stay, 30-day readmissions, number of consultants, and cost of care [25–27].

A review that compared several implemented models of shared care for elderly patients with hip fractures showed that the integrated co-management model, where the geriatrician is integrated into the orthopedic and rehabilitation team, was associated with the lowest mortality rate and the lowest length of stay [28,29]. In a retrospective study of pediatric spinal fusion patients, the introduction of selective hospitalist co-management was associated with significant decreases in median length of stay [30]. However, identification of the right patients who will have the highest benefit from co-management is crucial, in light of the associated costs [14].

On the other side, other observational studies failed to indicate that co-management improves patient outcomes. Some studies that compared the effects of co-management care and standard care on mortality of elderly patients with hip fractures did not find significant difference in survival of these patients, despite the shortened time of surgery and decreased length of stay in hospital [31,21]. One prospectively randomized trial showed that internist co-management of orthopedic patients undergoing joint replacement was associated with decreased incidence of minor complications (urinary tract infections, fever, and hyponatremia) but without impact on major complications, actual cost per case or mortality [32]. After implementation of co-management between neurosurgeons and internists, a retrospective analysis showed that there are no differences in mortality rate and readmission rate or length of stay. However, the co-management model appeared to reduce hospital costs and improve professionals' perceptions of care quality [11,33].

An important issue related to the effectiveness of the co-management is its impact on satisfaction with care, viewed from both sides: providers and patients. Surgeons and nurses often prefer co-management rather than standard consultation, considering that this model optimizes the medical condition of surgical patients, especially through prompt identification and treatment of unstable patients. Two studies demonstrated that 90% of surgeons and nurses working in the orthopedic and neurosurgery wards consider that hospitalist co-management improves professionals' perceptions of care quality [32,33].

Regarding the patients' perception of co-management, studies have not found significant change in patient satisfaction. Patient satisfaction scores used Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey as marker of overall quality of the patient care, including patients' satisfaction [25,33].

6. Opportunities for internal medicine in co-management

More than ever, the progressively complex and aging patient population requires comprehensive assessment when performing preoperative evaluation to detect any comorbidities that may compromise the surgical outcomes. The patient-centered model of care requires a generalist approach [34]. Because the internists have experience in all medical specialties, independently or in co-management, they can provide medical consultation to other services. Due to the competitive advantages of the internal medicine physicians (competence, flexibility, multi-potentiality and synthesis capacity), it is expected of them to coordinate and actively manage the non-surgical medical conditions. Although the co-management model assumes to share responsibilities, clearly delineated according to the physician's expertise and preagreement, it is very important that a single physician should be accountable for ensuring that the care is provided in a coordinated approach. Taking into account the professional qualities of the internist, previously exposed, in the co-management model of care, it is his/her opportunity to coordinate the multidisciplinary team and to be the case-manager.

The internists can ensure that coordinated care is provided in the most efficient and effective way. In the co-management system, the implementation of patient centered care by a multidisciplinary team requires team work, structured around a general internal medicine approach, in line with the guidelines. This way, health care can be

delivered at a high standard, even for the most complex patients.

The Society for Hospital Medicine (SHM) has developed a guide for building a co-management program [35]. The elements identified as crucial for a successful co-management are:

- Identify the stakeholders (e.g., surgeons, internists, hospital administrators);
- Clarify roles and responsibilities (the role of surgeon and internist should be clearly defined in the co-management agreement);
- Identify champions (a person with leadership skill from the medical and surgical groups who moderates the negotiation of the agreement and periodically evaluates the service);
- Obtain resources and support (before creating the service the stakeholders should estimate the costs of this service and obtain funding);
- Measure performances (evaluate the benefit of the service regarding the clinical outcomes and efficacy of care).

7. Conclusions

Co-management is a collaborative model between the surgeon and the internal medicine physician, patient centered, based on a negotiated agreement, used to optimize the care of surgical patients. This type of multidisciplinary interaction has advantages and also disadvantages that must be taken into account when this model is implemented, in order to provide high quality, safe and efficient care for surgical patients. The produced evidence is in favor of a wide spread of these co-management models, in particular when the patients are old, fragile and with multi-morbidities. Co-management represents a shift in the traditional model of medical care to the surgical patients, from a reactive and on demand model to a pro-active and a continuity model, from a late and complication treatment based model to an early and preventive one. Besides, this model allows surgeons to concentrate in their core business, leaving the optimization of the pre-surgery medical condition and post-surgery surveillance of medical complications to the internists, better prepared for this function.

The European Federation of Internal Medicine (EFIM) Working Group on Professional Issues and Quality of Care supports the overall concepts of co-management of surgical patients and calls upon the internal medicine national societies to sustain the implementation of this model, where the internal medicine physician is expected to coordinate the multidisciplinary team and to be the leading agent of change. We also recommend the monitorization of its impact on clinical outcomes, patient safety, efficiency of care and satisfaction.

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