Co-Management ou Responsabilidade Partilhada entre a Medicina Interna e as Especialidades Cirúrgicas: A Identificação dos doentes de alto risco

Co-Management between Internal Medicine and Surgical Specialities: The Identification of the High Risk Patient

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Resumo

A qualidade da assistência a doentes cirúrgicos internados, idosos e portadores de co-morbilidades muitas vezes múltiplas implica, nos dias de hoje, a organização dos serviços hospitalares integrando equipas multidisciplinares capazes de abarcar a complexidade dos doentes. Os programas de *co-management* são, entre as formas de organização de serviços hospitalares, os que melhor se adequam para tratar estes doentes. A ponderação dos custos e riscos inerentes ao *co-management* obriga a critérios de seleção dos doentes.

O ajuste do risco cirúrgico dos doentes operados nos hospitais é um requisito que constitui uma precondição para monitorizar a qualidade dos cuidados prestados aos doentes. Factores do doente, do hospital e, inerentes à intervenção cirúrgica desenham um cenário de 3 eixos envolvendo o doente, que será inserido na grelha de decisão da escolha do tipo de abordagem mais adequada para cada doente.

A criação de evidência clinica decorrente de investigações inseridas dentro do conceito de *comparative effectiveness research* (CER) é um caminho aberto para uma Medicina Interna moderna. Estudos de selecção de doentes para tratamento multidisciplinar em função dos vários factores referidos e de colaboração no tratamento dos doentes cirúrgicos constituem para a Medicina Interna uma oportunidade de diferenciação que se pretende adaptada às estruturas hospitalares modernas.

Palavras-chave: Complicações Pós-Operatórias; Cuidados Pré-Operatórios; Equipa de Assistência ao Doente/organização & administração; Investigação sobre a Eficácia Comparativa; Medicina Interna; Médicos Hospitalares; Procedimentos Cirúrgicos Operatórios; Tomada de Decisão.

Abstract

Quality of care for older surgical in-patients, often suffering from pre-existing co-morbidity, requires hospital organization fostering the cooperation of multi-disciplinary teams. Co-management programmes have proved to be the most adequate for this purpose. However, the costs involved in this approach warrant careful patient selection.

Ascertaining surgical risk in individual patients is a pre-requisite for quality and outcome control. The patient's specific characteristics, the surgical procedure itself and the institutional environment are the three main groups of inputs for a comprehensive selection and decision-making framework.

Comparative effectiveness research is required to gather clinical evidence to support the rational use of collaborative and differentiated management of selected patients in modern hospital settings.

A literature-based review article was done that included an overview of outcomes research and outcome measures.

Keywords: *Comparative Effectiveness Research; Decision Making; Hospitalists; Internal Medicine; Patient Care Team/organization & administration; Postoperative Complications; Preoperative Care; Surgical Procedures, Operative.*

Introduction

The quality of care of surgical in-patients is critically dependent on the medical teams' capacity to integrate the complexity of multiple problems and pathologies. Cooperation between the two basic hospital specialists – internists and surgeons – has evolved over the years.

In the last 20 years the development of minimally invasive and more controlled surgical techniques has allowed for surgical intervention in older, more debilitated and more

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multi-diseased patients. Patients in surgical wards are prone to decompensate from the surgical stress burden superimposed on complex underlying pathologies and, often, drug interactions.

More than 230 million major surgical procedures are performed every year. Although the risk is very low for most patients, there is evidence that post-surgical complications are an important cause of mortality.[1,2] Also, patients who suffer complications and survive, endure long-term functional disabilities and have a reduced life-span.[3]

Even though differences exist between countries and institutions, most patients have a pre-operative anaesthetic evaluation, undergo surgery in operating theatres, recover in post-anaesthetic units for a number of hours, and are transferred to surgical wards thereafter. This standard approach is adequate for most cases but is insufficient for high risk patients.

A recent multi-centric study involving 28 European countries and coordinated by the European Societies of Surgery, Intensive Care and Anaesthesiology showed a higher than expected in-hospital mortality for non-cardiac surgery, namely 4%, against previously reported levels between 1.3% and 2%.[4] Seventy percent of readmissions for surgical patients are due to decompensated medical conditions.[5,6]

Internal Medicine's role in this scenario may potentially allow for earlier control of medical decompensated conditions and earlier diagnosis of post-operative complications. These reasons warrant the cooperation of Internal Medicine specialists in the surgical units, with special attention to medical complex patients and to the coordination of other specialists. Several cooperation models exist, with differing virtues and faults. Nowadays, the trend is toward models in which Internal Medicine specialists manage the complex patient, irrespective of the admitting specialist – the co-management / shared responsibility ("CSR").

Co-management / shared responsibility

Co-management / shared responsibility (CSR) of surgical patients refers to patient care in which the medicine physician daily assesses acute issues, addresses medical comorbidities, communicates with surgeons, and facilitates patient care transition from the acute care hospital setting; in this organisation model the management of surgical patients is shared between surgeons and hospitalists/internal medicine specialists. Adequate planning and careful implementation are required for such a model to succeed, of which the correct definition of the eligible patient population is paramount. Patients should not be elected on the basis of existing capacity. Indeed, excessive selection carries unnecessary costs and risks through, namely, diagnostic procedures. Identifying patients for CSR is fraught with difficulties due to the multiplicity and interaction of concurring factors for surgical outcome. These factors include (i) ex ante health status, i.e., pre-exiting known risk factors, (ii) type of procedure, i.e., factors inherent to the surgical act, (iii) intra and post operatory complications and (iv) specific conditions of the hospital, namely the number of procedures and skill of the operating surgeon, the availability of recovery units and the quality of supervision in the wards. Adequate patient selection and post-operative follow-up influence the surgical outcome.[7]

The three main factors for CSR eligibility are (a) patient related, (b) hospital related and (c) procedure related. The framework will have to be dynamic in order to accommodate changes in patient status and procedure type. According to a specific patient's evolution, CSR eligibility may be determined or reversed. The benefits and costs of CSR should be factored in in a multi-entry decision framework.

The main benefits of CSR are (i) inducing a prevention attitude in regard to complications; (ii) earlier detection of complications; (iii) integration and coordination of complication treatment, as opposed to discrete interventions dictated by acute situations. The main costs are (i) feelings of reduced autonomy and authority on the part of the surgeon in charge, (ii) increased variable financial costs linked to the number of referrals to CSR and (iii) increased fixed financial costs and lack of flexibility due to the increase in resident staffing to allow for the availability of CSR.

Comparative effectiveness research (CER) consists in comparing direct interventions in health care looking for the optimal approach considering patient and environment characteristics. Comparisons are performed using risk – benefit criteria to adequately support decision taking both at individual patient level and at general population level.[8] The USA has specific budgets for these activities.

Known pre-operative risk factors

A number of pre-operative characteristics influence surgical outcomes and may thus be used to select higher risk patients.

Co-morbidity, and in particular if multiple, is a major predicting factor for morbidity and mortality. Diabetes mellitus, chronic hepatic disease, chronic renal insufficiency, chronic obstructive pulmonary disease, primary and secondary neoplasms and cardiac disease in general and, in particular arrhythmia, coronary disease and cardiac insufficiency, are all know risk factors.[9,10]

Several indices assess risk using pre-operative factors. Among those, the ASA-PS score is perhaps the most known. It is easy to apply and uses the patient's general condition and the co-morbidities. It is a good predictor of potential post-operative morbidity and mortality. The most important limitations are: 1) but does not incorporate operative risk; 2) has a moderate interrater reliability; 3) has a diminished accuracy in settings with high overall mortality rates.[11–13]

The Charlson comorbidity index, is an index which factors pre-operative comorbidity in order to predict long-term survival. This index is difficult to apply at bedside or on pre-opera-

tive anaesthetic consultation and is commonly used in clinic--epidemiologic studies.[14]

Organ specific scoring scales also exist, such as the Revised Cardiac Index, which estimates the risk of cardiac postoperatory complications; this index does not incorporate several other prognostically important risk factors, which frequently justify the peri-operative morbility. Furthermore, it does not factor surgical risk.

Most indices leave out patient age which, by itself, carries an independent higher risk for post-operative complications, not only due to more pre-existent co-morbidity but also due to lesser organ functional reserve.[12,14,15]

More recently, driven by these limitations, online web-based calculators have been created and facilitated the implementation of more complex prediction risk tools into clinical practice. The key example of this is the American College of Surgeons risk calculator which uses clinical prediction models developed using the National Surgical Quality Improvement Program (NSQIP). The prediction models were derived in a very large multicentre observational dataset, have moderate-to-good accuracy at predicting a range of postoperative events, but is not validated in settings outside the USA.[16]

Last but not least, the pre-existence of chronic multiple medication must also be considered, both that directed at preserving homeostasis and that directed at neurologic or psychiatric conditions, including anxiolytics and hypnotics. The withdrawal of these drugs may induce significant discomfort.

Specific surgical procedure related risk factors

Surgical procedures are commonly classified as high, medium or low-risk on a scale of rising complexity from 1 to 5. What was classified 50 years ago as complex surgery such as biliary duct procedures or colonic resection is presently regarded as having a grade 3 complexity.

In grade 3 or less complexity procedures, the factors which are inherent to the patient dominate the mortality risk. In grade 4 or 5, although patient related factors still retain some importance, risk is dominated by the surgical procedure. Whenever innovative surgical procedures become standardized overtime and their own risk is more controlled, the patient's specific conditions become the major mortality determinant, but only on extreme situations.[17]

Long duration and emergency have a high impact on the overall surgical outcome. Emergency procedures carry higher morbidity and higher mortality, even after adjustment for all other concurring factors; the same is true for the duration of the surgical intervention.[1,15,18] On the study conducted by Rupert Pearse, the high risk population was defined as presenting a combination of (i) old age, (ii) co-morbidity, (iii) high risk surgical procedure, defined as carrying a mortality risk over 5% and (iv) emergency intervention.[4]

A number of post-operative risk scales exist, assessing morbidity and mortality risks and integrating both patient and procedure related factors. One of the most widely used and tested scoring systems is the P-POSSUM (Portsmouth Physiological and Operative Severity Score for the enUmeration of Mortality and morbidity). It incorporates a set of 12 physiological parameters and 6 intra-operative variables into a complex set of mathematical equations for predicting morbidity and mortality.[19] The most important limitation of this tool is its complexity and difficulty to apply, as well its tendency to overestimate or underestimate mortality and morbidity in some surgical populations.

There are other surgical risk scores as the Surgical Apgar score. Is a very simple 10 point risk index that predicts postoperative morbidity and mortality based on three operative characteristics: tachycardia, hypotension and estimated blood loss. It is validated in several institutions and countries and it allows early operative identification of patients who warrant more intensive monitoring.[20]

Recently, a new scoring system was developed – the S-M-PM, Surgical Mortality Probability Model – which uses 9 variables, including the ASA-PS score, the specific surgical risk and its urgency. This scoring system is simple and assesses the 30 day mortality risk for non-cardiac surgery, but is only adequate to measure the risk in a preoperative stage because it does not consider the intraoperative variables.[21]

Although these surgery specific scoring systems are useful, they do not incorporate the location of the post-operative recovery – namely if on an ICU – as a possible risk determining variable.[22] Another short-come of these scoring systems is that, by targeting the 30 day mortality risk, they do not address the risk of post-operative complications which are also the cause of significant morbidity, cost increase and increase in duration of stay. Cost and duration of stay control are increasingly under the scrutiny of third-party payers developing "pay-for-performance" approaches. Furthermore, some studies indicate a connection between post-operative complications in the first 30 days and long-term outcomes and suggest that better control of these complications may lead to longer term morbidity and overall cost reductions.[7]

Institutional environment related risk factors

One of the important factors for the surgical outcome is the supply-side possibilities on offer at a particular institution.

In contrast to the admission of medical patients, there are no universal criteria for the admission of post-operatory patients in Intensive or in Intermediate care units. Post-operative patients who were initially in wards and who at a later stage required transfer to ICUs had significantly higher mortality rates and costs than those who have their immediate post--operative periods in ICUs.[4,5] Objective and evidence-based criteria would be helpful in selecting up-front patients likely to benefit from admission in ICUs.

The concept of "failure to rescue" is useful in this context. It is calculated as the ratio between deaths from post-operative complications and all patients with such complications.[23] The focus of this approach is diverted from prevention of complications to their early detection and optimal treatment when established.

Conclusion

High risk surgical patients have high morbidity and high mortality, even in developed countries. Several pre-operative and intra-operative variables are determinants of these outcomes. Identification and signalling of high risk patients is still difficult but carries significant rewards.

The study of dynamic selection criteria and scoring for patients undergoing surgical procedures, including post-operative phases, integrating country and institution specific elements and data should be pursued to improve outcomes for complex patients and optimize Internal Medicine's intervention in theses settings.

The increase in the number of surgical interventions, which is likely in the coming years, will magnify in absolute terms the benefits that any improvement in the prevention and management of post-operative complications may bring. In this context, CSR programmes will probably thrive and disseminate, requiring further mutual adaptation and cooperation between Surgeons and Internists. ■

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