Journal of Visceral Surgery (2016) xxx, xxx—xxx

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RECOMMENDATIONS

How to implement an enhanced recovery program? Proposals from the Francophone Group for enhanced recovery after surgery (GRACE)

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KEYWORDS
Enhanced recovery;
Surgery;
Implementation

Introduction

More than twenty years after the initial publications from pioneer teams [1], and a few years after the publication of several randomized studies, cohort studies, and meta-analyses that proved the efficacy of enhanced recovery programs (ERP) in terms of reduction of morbidity and shorter hospital stay [2,3], the time is ripe to implement enhanced recovery after surgery programs in various specialties [4]. The Francophone Group for Enhanced Recovery After Surgery (Groupe francophone de réhabilitation améliorée après chirurgie [GRACE]) drew up the following propositions with the goal of helping different health care establishments and teams to implement these programs.

Generalities of enhanced recovery after surgery programs (ERP)

A better understanding of the pathophysiologic phenomena that surround surgery (surgical insult or stress), the development of mini-invasive surgical techniques, improvement of perioperative analgesia, and the publication of several scientific studies

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http://dx.doi.org/10.1016/j.jviscsurg.2016.05.008

Please cite this article in press as: Slim K, et al. How to implement an enhanced recovery program? Proposals from the Francophone Group for enhanced recovery after surgery (GRACE). Journal of Visceral Surgery (2016), http://dx.doi.org/10.1016/j.jviscsurg.2016.05.008

on perioperative care with a high level of evidence have led to the advent of ERP [5]. In the mid 1990s, Henrik Kehlet from Copenhagen was the first to talk about ''fast-track surgery'' in colorectal surgery. Larger studies then helped develop the paradigm now known as enhanced recovery, because the word ''fast'' refers only to the secondary benefit of better postoperative convalescence and reduced overall morbidity.

Many studies, especially in colorectal surgery [6], have shown that ERP was able to reduce postoperative complications by nearly 50%. This reduction of morbidity concerns mainly ''medical'' complications. But, aside from this objective and easily measurable effect, the quality of life of patients is also improved as they have less postoperative pain, ileus and fatigue. The result is a significantly shorter duration of hospital stay and convalescence without any significant increase in the re-hospitalization rate.

ERP was initially evaluated within the framework of colorectal surgery. But indications have rapidly extended to other specialties in gastrointestinal (bariatric, pancreatic, gastric, esophageal), orthopedic, thoracic, urologic, gynecological and cardiovascular surgery.

Enhanced recovery program

General principles

ERP typically include three phases: preoperative, intraoperative and postoperative. The overall philosophy behind all ERP is to reduce the nocive effects of surgical aggression by a variety of medical and surgical means thereby allowing patients to recuperate quickly under the best conditions. In addition to usual measures (antibiotic and thromboembolic prophylaxis per clinical practice recommendations, screening and treatment of anemia), the main principles of the program are summarized in Table 1.

Table 1 Principal measures (elements) contained in the ERP, irrespective of the specialty.

Preoperatively
Improve nutritional status by suitable management
Limit fasting period to a strict minimum
Reduce the incidence of insulin resistance by glucidic loading
Explain to the patient the sequence of events concerning the operation and his or her role during the entire procedure
Avoid routine prescriptions such as pre-medication and colonic prep
Intraoperatively
Prefer minimal-access surgery
Prefer anesthetic protocols with little opioids and multimodal management of pain
Prevent intraoperative hypothermia
Ensure appropriate and monitored intraoperative vascular volume
Perform meticulous hemostasis
Postoperatively
Ensure multimodal analgesia with little opioids
Avoid routine use of naso-gastric tubes, drainages and bladder catheter
Control postoperative bleeding
Feed patients early
Encourage early mobilization

Programs by specialty

Several specialties are involved. The protocols for which the elements (perioperative care measures) have the highest levels of evidence are those for colorectal surgery. The only protocol that was formally established by the French Society of Anesthesia and Intensive care and French Society of Gastrointestinal surgery (Société française d'anesthésie et réanimation [SFAR] and the Société française de chirurgie digestive [SFCD]) was for colorectal surgery [7]. The ERAS Society® has also published a series of recommendations for colorectal surgery, foregut surgery, urology and gynecological surgery (www.erassociety.org).

The GRACE group has produced a generic summary of enhanced recovery programs for several specialties, accessible on their website — www.grace-asso.fr. More detailed protocols for gastrointestinal, orthopedic and thoracic surgery are also available, after membership subscription.

However, more than a written protocol is needed to correctly implement an ERP in daily practice [8]. The implication of several health care stakeholders and a structured organization are essential elements for success.

Stakeholders involved in ERP

Patients

The main particularity (as for ambulatory surgery) of ERP is to consider the patient as the principal, active, central actor in the care process. The role of the patient is primordial for successful management. Patient participation should begin as soon as the initial consultation, before the operation, and should continue afterwards, even after the patient leaves the hospital.

The patient should be informed as soon as possible of the details of the program, of his or her role in the management plan, and how discharge from the hospital will take place. Both oral and written information is provided (clear and understandable document), and/or eventually a computer-based slide show or video, and can be delivered by the caretakers (surgeon, anesthesiologist, and nurse) to all clinic personnel and repeated as necessary when the patient comes for treatment. This information is essential; each team has to define the best way to deliver it to the patient according to local conditions.

In order to involve the patient in his/her own care plan, the care-provider team should provide the patient with a notebook that should be filled in every day.

Early ambulation, in which the patient must take an active part, is also essential. The patient transition from a ''passive horizontal position'' to an ''active vertical position'' is a well-recognized major factor of success in the ERP. But, early mobilization proceeds in parallel with other recovery measures. A patient who has been well informed before surgery, who does not have any pain, nausea, intravenous lines or gastrointestinal tubes, or complications... will more easily accept mobilization from bedrest.

Caretakers

The ERP is a multimodal, therefore multidisciplinary, approach that requires collaboration between the various

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stakeholders (anesthesiologist, surgeon, nutritionist, nurse, auxiliary personnel, physical therapist, administrative personnel). The care team is composed of a ''trinomial leader'' (surgeon, anesthesiologist, nurse) and other specialists, or any other corporate association whose participation is essential: nutritionist, physiotherapist, and auxiliary nurse. This allows all stakeholders to converge on the same common target.

It behooves the entire (medical and paramedical) team to implement an ERP that then will be considered as the health care standard and involve all institutional stakeholders.

The administration

The role of administrators is essential for the success of an ERP. This includes the responsibility of training the medical and paramedical personnel within the framework of a pre-established Continuous Professional Education program. The administration should organize the human and material resources necessary to implement the ERP. The cost of this investment will be absorbed later, by the reduction of morbidity and duration of hospital stay (such a return of investment has been shown in all the medico-economic studies published to date). The role of the administration is also to validate a team-based function charter, participate in the free-flow application of the program, answer the functional requirements of the team, particularly at the outset, by designating and/or hiring a dedicated nurse or auxiliaries.

Calendar of implementation

An inventory of fixtures should be in place before implementation to determine where improvement in patient management can be made, to document the improvement and progress associated with each phase of implementation and thus to reinforce the acceptation of and compliance with the ERP. The calendar should be established before the implementation phase, and should be the fruit of common shared thinking originating from all stakeholders (physicians, nurses, administration). Adherence to a calendar is essential, because this guarantees mid- and long-term pursuit of implementation.

The first year

The calendar recommended by GRACE is summarized in Fig. 1. The first multidisciplinary kick-off meeting: in order to present the project (including the therapeutic education document) to the entire team including the administrative executives.

This is followed by an initial practical implementation phase with a compendium of the program elements (composite measures).

A second evaluation meeting should appraise how well the program started and, above all, any constraints encountered that need to be discussed and overcome.

Next, there is a 6-month implementation phase assessed by a local audit within the framework of the database ''GRACE-AUDIT'' (vide infra).

Finally, a third meeting should take place before the end of the first year to optimize the program and apply the elements that seem most difficult to set into motion.

Follow-up

After the first year, the entire caretaker team should meet at least once a year for an audit including:

- the number of patients included in the data base;
- the proportion of patients entered, compared to the total number of patients treated during the same period;
- the degree of implementation, for each element of the protocol;
- and corrective measures to increase the degree of implementation where necessary.

Team spirit

Team spirit is essential for the success of the ERP. A glance at the protocol is enough to reveal the importance of collaboration between the members of the team. The involvement of various players at different moments of perioperative management entails developing a team spirit. For the ERP to be successful, each member of the team should be aware of as many aspects of management as possible, which means that team spirit should be a daily preoccupation. Team spirit is undeniably associated with improved quality of care and risk management [9].

Likewise, and perhaps, even more so than for ambulatory surgery (because major surgery is involved), team spirit, daily communication and collaboration are necessary for the success of all ERP.

The constraints and how to lift them

Several constraints may be encountered, especially at the outset [10]. It is important to remember not to want to have everything in place at the start, but rather to implement the program progressively, intervention by intervention (or groups of interventions), according to the degree

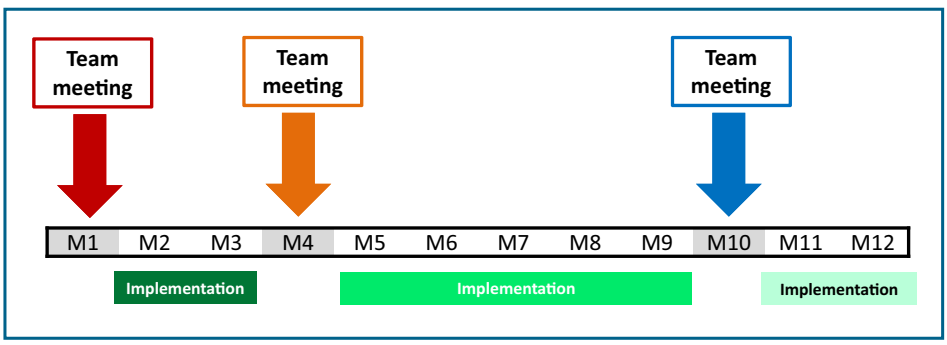

Figure 1. Proposed calendar of implementation during the first year.

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Table 2 Factors able to limit implementation of the enhanced recovery program.

Factors related to the patient (or close relations)
Resistance to changes (part of human nature)
Fears concerning innovation
Belief that fasting the night before surgery is important
Fear of alimentation before return of intestinal activity
Fear of too early ambulation
Fear related to leaving the hospital too quickly
Fear of economic constraint on care (need of bed for another patient...)
Factors related to health care stakeholders
Fear of economic constraint on care
Resistance to change and to discard ideas and procedures that are anchored in daily practice (classical constraint for innovation)
Incomplete knowledge of latest scientific progress
Absence of motivation
Rapid turnover of caretakers (not familiar with ERP)
Conviction that ERP should apply only to selected patients
Belief that ERP does not apply to the elderly
Factors related to resources
Absence of availability and difficult access to documentation on ERP
Lack of time to train and form the teams
Time necessary to educate the patient
Time necessary to fill in the audit data bank
Organization of stakeholders taking part in management of patients after early discharge

Constraints encountered during the first steps of implementation.

of motivation of the different stakeholders. Three types of constraints, inter-linked to several factors, are listed in Table 2.

To resolve these constraints, one must:

- designate strong leaders (trinomial care-providers) and good communicators who are capable of convincing the rest of the team, particularly, those who are most reluctant;
- develop a team spirit, based on a written and adopted protocol for each disease;
- not neglect the information and training of all the members of the care-provider team;
- every day, try to convince by example and show that once the program is applied to one's own patients, morbidity is decreased and outcomes are better;
- not hesitate to program team meetings to show the audit outcomes and to facilitate access to specific documentation available on the site www.grace-asso.fr.

Audit

Daily evaluation of professional practices helps improve the quality of care. It is important to choose end-points and continuously evaluate the audits.

Which end-points?

Principal criteria include duration of postoperative hospital stay, the difference between real and theoretical duration (according to pre-established discharge criteria, cf. GRACE protocols), overall morbidity, degree of implementation (number of elements applied in daily practice). Secondary criteria included the rate of patients participating in an ERP compared to all patients admitted for the same surgical indication, patient quality of life, patient satisfaction, return to activity at least equivalent to that before the operation, or return to work, if employed.

Auto- and hetero-evaluation

Auto-evaluation is necessary and useful especially during the initial phase of implementation and until the moment when ERP becomes the daily standard of care. Any one team can develop their own evaluation software, but GRACE provides this free of charge, thanks to the basic functionalities integrated into GRACE-AUDIT. After connection, and as long as the user has entered at least 10 patients, a simple click on ''Audit'' leads the reader to a diagram showing the rate of implementation for each element of the ERP, specialty by specialty. The reader can learn quickly and without complex manipulation which elements need to be improved. The software also provides the reader with a curve plotting the number of implemented elements against the postoperative duration of hospital stay, the average duration of stay, and the average difference between the real and theoretical durations (thus targeting any organizational problems that might account for these differences). When there are many patients, the software can furnish the ratio between the number of elements implemented and morbidity.

The GRACE-AUDIT software also allows each participant to compare his or her results to the global data bank, just by a simple click on ''see all centers''.

The role of GRACE

The GRACE group was created to develop large-scale implementation of ERP in French-speaking countries (Belgium, France, Switzerland). Several tools are therefore available to help establishments in their implementation of ERP.

GRACE has also established the label ''Centre GRACE'' that can be awarded to any center that wants to develop an ERP. With this, the member has access to the precise specifications of GRACE (dedicated team, experts in postoperative recovery, rehabilitation, yearly participation in a scientific manifestation on this theme, participation in the data bank GRACE-AUDIT). The label can be renewed every year according to the yearly report of the GRACE center.

The site www.grace-asso.fr was conceived to achieve several targets; part is free for all, the rest only for subscribers. The former is accessible for both the public and patients. The latter, professional, includes a bibliographic chapter (bibliography and scientific watch), a chapter ''GRACE Centers'' where all the label-approved centers are listed with their domain of expertise, and a section where the reader can find the ''Audit'' software, free of charge but requiring a registration, and supported by the French National Assurance company (Caisse nationale d'assurance maladie). The database GRACE-AUDIT includes different modules on colorectal, bariatric, orthopedic (hip and knee), liver and pancreatic surgery. The KIT-GRACE implementation tool

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contains: an instruction manual, PowerPoint slide shows concerning the protocols and the means of implementation (the user can use these immediately as they stand or improve them (blog) as they use it).

Disclosure of interest

The authors declare that they have no competing interest.

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