Evidence-Based Clinical Practice Guidelines on Some Important Aspects of the Care of Critically Ill Surgical Patients Part II: Surgical Intensive Care Units, Implementation of Guidelines

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EXECUTIVE SUMMARY

The first part of the critical care guidelines of the Philippine College of Surgeons (PCS) and supported by GlaxoWellcome Philippines, Inc., dealt with resuscitation fluids, blood transfusion, assessment of volume resuscitation, nutritional support and cardiovascular support.[1] The second part deals with the last 2 aspects identified by the Technical Working Group (TWG) namely: surgical intensive care units and implementation of guidelines.

The literature search, limited to English publications, used both electronic and manual methods. Three electronic databases were used: 1) The Cochrane Library, Issue 4, 2000; 2) National Library of Medicine - Medline (PubMed, no time limit); and HERDIN (Health Research and Development Information Network) Version 1, 1997 of DOST-PCHRD. Manual searching of the reference lists of review articles and some important meta-analyses and randomized controlled trials (RCTs) were also done. The search terms used were: 1) Cochrane Library: surgical intensive care, guidelines implementation, 2) Medline: surgical intensive care, surgical intensivist, 3) HERDIN: intensive care.

Titles of all articles were printed and all members of the TWG went over the list and checked the titles of articles whose abstract they felt should be read. The abstracts of all checked articles were printed.

The printed abstracts were given to the members, who then decided which articles were to be included for full text retrieval. The full texts were obtained from the University of the Philippines Manila Library, and were appraised using standard forms.

LEVELS OF EVIDENCE

I. Evidence from at least one properly designed randomized controlled trial, meta-analysis.

II. Evidence from at least one well-designed clinical trial without proper randomization, from prospective or retrospective cohort or case-control analytic studies (preferably from one center), from multiple time-series studies, or from dramatic results in uncontrolled experiments.

III. Evidence from opinions of respected authorities on the basis of clinical experience, descriptive studies, or reports of expert committees.

CATEGORIES OF RECOMMENDATIONS

Category A : Recommendations that were approved by consensus (75% of the multisectoral expert panel).

Category B : Recommendations that were somewhat controversial and did not meet consensus.

Category C : Recommendations that caused real disagreements among members of the panel.

The following clinical questions were addressed:

1. Who should be in charge of the care of the critically ill surgical patient?
2. Are there benefits in having a surgical intensive care unit?
3. What are the benefits and risks of an open or closed surgical intensive care unit?
4. What are the economic incentives that will promote and sustain progress in surgical intensive care?
5. Is there evidence that implementation of guidelines can lead to improved clinical outcomes?
6. What guideline implementation strategies and methods have been shown to change knowledge and practices?

The TWG prepared a first draft of the manuscript which consisted of a summary of the strongest evidence associated with the clinical questions and suggested recommendations. The first draft was discussed and modified by a Panel of Experts convened by the PCS on August 11,2001 at the PCS building. A second draft was prepared by the TWG and this was discussed in a Public Forum on December 5, 2002 during the 57th Clinical Congress of the PCS held at Edsa Shangri-la Hotel. The guidelines were approved by the PCS Board of Regents on January 5, 2002.

Recommendations

Surgical Intensive Care Units

1. *The PCS and surgical specialty societies should reiterate that the responsibility for the perioperative care of surgical patients, including critically ill patients, rests with the operating surgeon or service.*

2. *A facility for the special care of critically ill patients should be made a requirement for both hospital accreditation and accreditation of surgical training programs.*

3. *A structured curriculum on surgical intensive care and a dedicated ICU rotation should be part of the core curriculum of surgical training programs.*

4. *The PCS should promote the development of surgical intensivists, including the provision of economic incentives.*

5. *The PCS should determine the characteristics of a hospital in which a dedicated surgical intensive care unit (SICU) must be present.*

6. *The choice of an open or closed ICU system will vary between hospitals. In an open system, the operating surgeon or service should maintain lead responsibility. In a closed system, the head of the ICU team that takes care of surgical patients should be a surgeon. In either case, there should only be one person or team that writes the orders.*

Implementation of Guidelines

1. *The PCS and surgical specialty societies should reorient their priorities and focus their activities towards the improvement of patient care.*

2. *The PCS should not only continue formulating EBCPGs but should also see to it that they are implemented nationwide.*

3. *The responsibility of facilitating and monitoring the implementation of EBCPGs at the hospital level primarily rests on the local chapters of the PCS and surgical specialty societies.*

4. *The PCS should form a standing committee that would concern itself with patient care in general, and with the implementation of EBCPGs in particular.*

5. *The PCS, surgical specialty societies, Department of Health (DOH), PhilHealth and other health insurance/maintenance organizations, and other concerned organizations should put priority on the national implementation of official EBCPGs by organizing at the soonest possible time a national hospital accreditation system that would specify, among others, practice standards and accreditation requirements regarding minimum acceptable quality of patient care indicators.*

6. *Even in the absence of a national hospital accreditation systems, the PCS, surgical specialty societies and the DOH should organize a joint Residency/Fellowship Accreditation body that would specify, among others, practice standards and accreditation requirements regarding minimum acceptable quality of patient care indicators.*

Technical Working Group

Adriano V. Laudico (general surgeon)
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Arturo S. De la Peña (general surgeon)
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Panel of Experts

1. M. Francisco T. Roxas (general surgeon, PCS)
2. Ma. Luisa D. Aquino (general surgeon, PCS)
3. Arturo S. De la Peña (general surgeon, PCS)
4. Rey Melchor F. Santos (general surgeon,PCS)
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Background

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Methods

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A second draft was prepared by the TWG and this was discussed in a Public Forum on December 5, 2002 during the 57th Clinical Congress of the PCS held at Edsa Shangri-la Hotel. The following questions / comments were given by the participants during the Public Forum:

1. In case where an internist refers the patient to a surgeon, and is admitted to the Surgical Intensive Care Unit (SICU) after operation, does it follow that he relinquishes his responsibility over the patient, or can he still be a part of the team?

2. Usually, patients are only referred to the surgeon by the internist. Therefore, the surgeon may feel it improper to take over the responsibility for the patient, and have a fear of the internist getting insulted and not referring to him anymore. Furthermore, many surgeons who are not competent at critical care would prefer to relegate this responsibility to the internist.

3. There may arise problems with other specialty societies (such as critical care medicine) in regard the implementation of these guidelines if they do not agree to it.

4. Who sets the guidelines in the establishment/accreditation of the SICU? Who sets the standards of the facility, equipment, nurses, and who chooses the Intensive Care Unit (ICU) head?

5. Once said guidelines are implemented, a curriculum to be followed for intensive care units should be formulated.

6. Who accredits the surgical intensivist? Is it the PCS? Do we, as Fellows of the PCS, seek accreditation as intensivists?

7. It would be ideal to have a SICU in many hospitals.However, it is expected to be a difficult task. A survey on the number of hospitals with existing ICU's should be conducted.

8. Who selects the person or team in a closed system?

The guidelines were approved by the PCS Board of Regents on January 5, 2002.

Results

A total 13,899 titles were printed, out of which 181 abstracts were reviewed. A total of 164 full text articles were critically appraised, of which 55 were included in the manuscript.

SURGICAL INTENSIVE CARE UNITS

1. Who should be in charge of the care of the critically ill surgical patient?

After World War II there was a progressive increase in complex operations as well as operations on complicated cases so that in 1948 an American surgeon opened an 8-bed facility which would have been the first surgical intensive care unit (SICU). This was followed by the establishment of similar facilities in the United States, and preceded by almost 2 decades the establishment of intensive care units (ICUs) for coronary care and other nonsurgical critical illnesses.[2]

However, a survey of chairmen of academic surgical departments in the United States and Canada revealed that in the late 1970's there were only 54 (50%) hospitals where the Department of Surgery had full administrative control of the SICU. In 97 (88%) the operating surgeon retained control of individual patient care. Only 55 per cent had a specified resident rotation in the SICU, and 47 per cent answered that they had no formal pedagogic activities on critical care.[3] A year later, an editorial in the Archives of Surgery stated that " An unfortunate trend has appeared in the United States: surgeons are relinquishing control of their surgical intensive care units (SICUs) to directors of critical care medicine affiliated with departments of medicine or anesthesiology... By abandoning their responsibility for postoperative management, surgeons will become

mere operating room technicians, and there will be fewer physiologically oriented surgical role models for students and house staff."[4] And yet another editorial in 1984 warned that relinquishing responsibility is tantamount to itinerant surgery: "Complications in the ICU are most likely related to the patient's preoperative condition, the choice of operation, and events occurring at the operating table... It was my impression that 90 per cent of the postoperative care was being determined my millimoles and partial pressures rather than by following basic surgical principles."[5]

The American College of Surgeons reacted by tasking its Pre- and Postoperative Care Committee to conduct its own survey which revealed that 67 per cent of responding hospital had SICUs. In 47 per cent the director was a surgeon, and: 53 per cent of ICU directors thought that surgeons were abandoning ICU patients to non-surgical specialists. The ACS Board of Reagents then circulated a position paper in 1983:[6]

Surgeons must continue as leaders in the care of the critically injured and gravely ill postoperative patient.

Only commitment to maintain and develop special competence in intensive care can provide this leadership.

This commitment requires a faculty competent to teach the essential skills, and a period during residency devoted principally to the care of patients in the intensive care unit. The essential knowledge and skills include:

- *Pathophysiology and treatment of acute organ system failure.*
- *Pathophysiology of recovery from trauma or operation.*
- *The unique technology for monitoring patient state and administering ICU care.*
- *The potentials and limitations of life support techniques.*
- *Organization and efficient utilization of resources.*

This was reiterated in the ACS Statement on Principles Underlying Perioperative Responsibility[7]. The American Board of Surgery, in the definitions of general surgery includes " complete care of critically ill patients with underlying surgical conditions, in the emergency room, intensive care units, and trauma/burn units[8].

Neither the Philippine College of Surgeons nor the Philippine Society of General Surgery, include postoperative care of the critically ill surgical patients (except the injured patient), in their definition of general surgery.

Several articles had dealt with this growing dilemma which is occurring not only in developed countries but in the Philippines as well. Alexander J. Walt even called it a fundamental philosophical question: " All would agree that decisions made now will ultimately influence the self-image of the surgeon and how he is viewed by colleagues in other specialties... The central question for surgeons is whether the patient in the SICU is better served by a surgeon or a non-surgeon as the responsible physician and as the administrator of the SICU. This generic question is often avoided or obscured by benign inattention or less benign hypocrisy.

- The care of the surgical patient is different from the care of the patient in the cardiac care unit or the medical intensive care unit.
- It is a surgeon who best knows when the surgical patient is too ill to have an operation and when the patient is too ill *not* to have an operation.
- Sophisticated read-outs in no way replace touching, visual observations, and even smelling of the patient and his secretions"[9]

In the Philippines, this abandonment of perioperative responsibility has even extended to preoperative cardiac evaluation[10, 11] and postoperative pain management.[12]

Every author who had written on the subject point to similar factors that had contributed to this dilemma: " Surgeons are too busy, too uninterested, too untrained, or too politically outmaneuvered."[9]

A survey of 296 approved general surgery residencies in the United States in 1988 revealed that although 91 per cent of the program directors agreed that surgical critical care was an essential component of general surgery, less than half of the training programs had an ICU service to coordinate resident education in surgical critical care. Among reasons mentioned by the authors were: unfamiliarity with new pharmacology and technology as well as economic pressures such as inability to bill for services rendered in the SICU[13].

In 1989, a survey of 188 non-university affiliated hospitals throughout the United States showed that surgeons did not have the principal managing role in the ICU for surgical patients in 70-75 per cent of the hospitals. Three main reasons were given: 1) increasing critical care knowledge; 2) lack of economic incentives (single "bundled-fee"); 3) professional liability. The authors commented that "Despite the reasons given for lessening our "burden" in the ICU, we must maintain the attitude that brought the surgeons to their respected status. We can delegate authority when appropriate and seek consultation when necessary, but we must retain responsibility if the surgeon's role in management of the critically ill is not to be further eroded".[14]

A comparison of ICU care of surgical patients between teaching and nonteaching hospitals revealed that teaching hospitals had more separate surgical ICUs (92% versus 37%), a dedicated ICU service/physician (37% versus 7%) and a surgeon as director of the ICU (67% verus 29%).[15]

In 1999, it would seem that the situation had not changed much in the United States. A commentary by F.A. Moore included the *multiple consultant syndrome*: "As the field of critical care medicine has become more complex, organ-specific specialists have prospered; it is not unusual for patients in the ICU to have multiple consultants. There is no financial penalty to the surgeon. It is an effective strategy for surgeons to generate reciprocal consultations from the medical specialists. It also increases operating room time availability and diffuses medicolegal responsibility. While most patients receive reasonable care with this model, complex patients do not. The term 'consultarrhea' amply describes a critically ill patient in evolving organ failure who can have a half-dozen, organ-specific specialists ordering many tests and conflicting therapies, with no one really in control. This is poor patient care. The bedside nurses know it, the residents know it, and the patient's families know it. This practice also promotes unnecessary expenses for tests and professional fees. Hospital administrators and insurance carriers are beginning to understand this issue. He proposes important initiatives that need to be done:

1) ensuring that general surgeons remain competent in critical care through ongoing education; 2) providing financial incentive for continued involvement by clarifying the global surgery fees so that care provided above and beyond routine postoperative care can be billed by the operating surgeon (i.e. unbundled ICU care); 3) maintain scientific legitimacy by performing high-quality research in surgical ICUs; 4) abandoning multiple consultants and embrace the critical care team that functions as an extension of the surgeon; and 5) providing leadership in ICU cost reduction.[16]

There have been very few Philippine publications on the care of critically ill surgical patients[17-21], and we cannot find one that deals with the SICU.

2. Are there benefits in having a surgical intensive care unit?

The previously cited references gave historical, professional and philosophical reasons that supported the benefits of surgeons continuing to be responsible for the care of critically ill surgical patients in what is now commonly called a SICU.

One of the earliest reports of significant outcome benefits came from the Buffalo General Hospital wherein a 6-year "before and after" study was started in 1973. Intervention consisted of: 1) a structured surgical unit with a stable staff; 2) uniform care protocols; 3) dedicated resident rotation; 4) nurse specialists; and, 5) a computer-based, care-oriented physiologic evaluation system. In spite of an increase in number of more serious cases, non-cardiac surgical mortality decreased from 18.8 to 10.5 per cent, trauma mortality from 25 to 7.5 per cent, and among surgical patients with complications of gastrointestinal disease mortality dropped from 19.7 to 8.3 per cent. There was also a significant decrease in the length of ICU stay of surviving patients. The report was presented at the 39th Annual Session of the American Association for the Surgery of Trauma. In the panel discussion that followed it was mentioned that in the Veteran's Administration Hospital in Tampa, Florida the ICU mortality decreased from 9 to 4.5 per cent, and general surgical mortality decreased from 9.5 to 6 per cent.[22]

ICU care is expensive and there are efforts to increase efficient use of resources. The bottom line is still: does the additional expense save more lives? An additional parameter, increasingly becoming more popular, is the quality of life of those who had survived. A report from the University of North Carolina showed that the answers to both questions were in the affirmative. Critically ill surgical patients with prolonged ICU stays (and with the poorest prognosis) had a 62.6 per cent survival to hospital discharge, 80 per cent rated their quality of life as fair or good at an average follow up of 18 months, and 45 per cent had returned to gainful employment.[23]

A report from Johns Hopkins University showed that restricting SICU admissions for gynecologic oncology patients would not necessarily have reduced the overall hospital expense in the group of patients since its median contribution to total hospital cost was not excessive."[24]

Scientific data generated from critically ill surgical patients have contributed immensely to the better understanding of critical illness in general, leading to improvement in clinical outcomes. SICUs continue to generate new information and evidence, including those in health economics. A "before and after" study showed that the implementation of a clinical practice guideline on infections in a SICU significantly reduced antibiotic costs without adversely affecting patient outcomes.[25]

A nonrandomized trial with historical controls in a trauma ICU in South Carolina resulted in a decrease in daily charges without compromising the quality of care. The intervention included guidelines, resident education and increasing physician awareness of cost containment. The guidelines included: 1) discontinuation of daily laboratory tests, chest X-rays and arterial blood gases, and residents were encouraged to rely more on their clinical skills and avoid unnecessary tests; 2) antibiotic awareness; 3) pain medication awareness.[26]

An overview of surgical critical care appeared in a 2000 issue of Surgical Clinics of North America. [27,28]

3. What are the benefits and risks of an open or closed surgical intensive care unit?

Alexander J. Walt was one of the first who discussed the issue of the closed versus the open SICU, stressing a balance between "incipient chauvinism" and the realities in most community hospitals where the ICU is shared between medicine and surgery. He also recognized that in some hospitals, the presence of surgical colleagues who have specialized in critical care as well as surgeons who have failed to keep up, may lean towards a closed system.[9] The Buffalo General Hospital SICU was an open SICU but with a very active Teaching Service.[22] In the University of North Carolina Hospitals the Critical Care Service for Surgery (CCSS) managed patients in conjunction with their primary services. "Our philosophy is that we will help and consult and take over some aspects of care as needed, but we really feel the primary services are the ones providing most of the care and we try to provide some standardization and quality control. So to some degree it does vary, but we think we play enough of a rule to make sure that the minimum standard is acceptable."[23] The William Beaumont Hospital in Michigan is a 929-bed community hospital with a 20-bed closed SICU managed by surgical critical care specialists.[25]

A retrospective cohort study at the Plain Health Care Center affiliated with the University of Manitoba reported that after conversion from an open ICU (medical and surgical), ICU mortality was reduced by 52 per cent (27.8% versus 13.4%, $p<0.01$), and overall hospital mortality was also reduced by 31.0 per cent (35.5% versus 24.5%, $p<0.01$).[29]

Another retrospective cohort study, at the Rhode Island Hospital affiliated with Brown University, reported that conversion to a closed SICU managed by a surgical critical care team was followed by a decrease in mortality (14.4% versus 6.04%, $p=0.002$), and occurrence of renal failure (12.8% versus 2.67%, $p=0.001$).[30]

A prospective study compared 2 cohorts of critically ill surgical patients. One group was managed by a critical care service (CCS) with certified intensivists and a dedicated staff. The other group (NCCS) was managed by surgeons who were not certified intensivists and whose staff had simultaneous duties elsewhere. Assignment to a group was primarily done by the attending surgeon. All patients were cared for by the same nursing staff. While CCS patients: had higher admission APACHE II scores (13.9 versus 11.8, $p<0.01$), CCS patients had 1) less complications/ICU stay (0.5 versus 1.07, $p<$ -01); 2) less days on ventilation (0.7 versus 2.8, $p<0.01$);3) shorter ICU stay (2.0 versus 2.8 days, $p<0.05$);4) fewer arterial blood gases (3.0 versus 6.1, $p<0.01$);5) fewer consultations (1.6 versus 2.8, $p<0.01$);6) shorter hospital stay (20.3 versus 23.6 days,

p<0.05);7) less Medicare-adjusted charges ($34,500 versus $47,500, p<0.01). Deaths during hospitalization were not significantly different (4 versus 6). The difference between the 2 cohorts was most evident in patients with the worst APACHE II scores.[31]

4. What are the economic incentives that will promote and sustain progress in surgical intensive care?

Economic factors are frequently cited as a major contibutor to a decreasing number of surgeons who are actively taking care of their patients in the ICUs in the United States. Meyer et al bluntly stated that "referring physicians may expect to provide the critical care management as an understanding when the patient is referred."[13] Holcroft was equally frank: "Referring physicians may elect to direct their referrals to surgeons who turn postoperative care back to them so that they can then separately bill for that care."[32]

But even if collegial mechanisms are found and "incipient chauvinism" and turf problems between surgeons, intensivists and anesthesiologists are solved, other economic problems remain. The time spent in the SICU may well be spent in the operating room where the surgeon expects to earn more.[13] Then there is the "single-bundled fee" method of remunerating operations, regardless of how long or how difficult the postoperative care is, particularly that spent in the SICU.[13-16]

Hanson et al. summarized the current state and future of critical care in the United States :[31] "The lack of an accepted paradigm for the delivery of critical care results from several factors. These factors include its youth as a discipline, contention over control of individual patient management, and the absence of a single academic advocate. In the future, the provision of critical care services is likely to be affected by diminishing reimbursement, loss of individual physician autonomy in health maintenance organization practices, increasing distinctions between hospital-based and office-based practices, the development of large hospital networks, and an increasing emphasis on demonstrable quality and efficiency in patient care. As provider organizations (insurance companies, health maintenance organizations, hospital networks) come to control a large number of beds in a geographic area, centralization of critically ill patients in well-managed, technologically sophisticated ICUs will become more attractive than less efficient alternatives. Similarly, as institutions increasingly opt for 'at risk' contracts, they will seek practice patterns such as the one described in this study, which demonstrably lower costs and improve outcomes."

Recommendations

1. *The PCS and surgical specialty societies should reiterate that the responsibility for the perioperative care of surgical patients, including critically ill patients, rests with the operating surgeon or service.*

2. *A facility for the special care of critically ill patients should be made a requirement for both hospital accreditation and accreditation of surgical training programs.*

3. *A structured curriculum on surgical intensive care and a dedicated ICU rotation should be part of the core curriculum of surgical training programs.*

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IMPLEMENTATION OF GUIDELINES

5. Is there evidence that implementation of guidelines can lead to improved clinical outcomes?

The overview on perioperative pain management[1] cited several reports that implementation of the clinical practice guidelines (CPG) on acute pain management of the Agency for Health Care Policy and Research (AHCPR, U.S. Department of Health and Human Services)[2] resulted in decreased postoperative pain in some hospitals[3-5] but not in some.[6] Implementation of guidelines of the American Society of Anesthesiologists (ASA) had also been successful in anesthesiology-based acute pain services.[7]

At the hospital level, in-house CPGs had improved the outcomes of critically ill surgical patients at the SICU.[8-10]

A Cochrane review assessed 11 articles on the effects of printed educational materials in improving the behavior of health care professionals and patient outcomes.[11] One report on patients with previous caesarian section showed a significant increase in the number of patients offered a trial of labor (44.6%, p=0.002), and in vaginal births (74.5%, p=0.003).[12] There was a reduction in referrals for chest x-rays by 30.5 per cent[13], and an overall percentage change in the number of x-ray requests.[14]

In England, a national CPG on hypertension in the elderly was successfully implemented at the district level using a participative educational method and resulted in a highly significant increase in the prescribed daily doses of the recommended drug.[15]

However, Worrall et al published a systematic review to look at the effects of the CPGs on patient outcomes in primary care. Out of 91 trials of CPGs from 1980 to 1995, 13 met the author's inclusion criteria.[16] The systematic review underwent a Cochrane structured abstract.[17] The review concluded that there was very little evidence that CPGs were effective in improving patient outcomes in primary care, and even in the instances that change was statistically significant, the changes were modest.[16,17]

There was also a set of related systematic reviews on trials on interventions to improve professional practice and health outcomes. The first was by Davis et al.[18] who

reviewed 50 trials, and this was later updated and enhanced by Oxman et al.[19] There were 102 trials published between 1970 to 1993, and the authors concluded that: " There are no 'magic bullets' for improving the quality of health care, but there are a wide range of interventions available that, if used appropriately could lead to improvements in professional practice and patient outcomes."

A Cochrane structured abstract of a 1994 systematic review conducted at the Nuffield Institute for Health, National Health Service Centre for Reviews and Dissemination mentioned that there were several reports that provided Grade 1 evidence of significantly improved patient outcomes.[20]

Grimshaw and Russell did a rigorous systematic overview and identified 59 published evaluations that met their strict inclusion criteria. All except 4 of the 59 studies detected significant change in the process of care towards the direction proposed by the guidelines, and in all but 2 of the 11 reports on patient outcome found some significant improvement. The size of the effects varied considerably.[21]

In Manitoba, Canada, Russell et al. demonstrated that, in a combined surgical and medical ICU, the utilization of 9 targeted laboratory tests were significantly reduced (range 19% to 46%, $p<0.001$), without an increase in ICU mortality rate.[22]

6. What guidelines implementation strategies and methods have been shown to change knowledge and practices?

"It is often assumed that merely providing information in an accessible form will influence practice. Although such a strategy is still widely used in an attempt to change behavior, there is a growing awareness that simply providing information may not lead to appropriate changes in the practice of health care professionals." So began a current Cochrane Review[11] that re-echoed the conclusions of numerous studies that had specifically looked at the various strategies and methods aimed at changing health worker behavior, and ultimately improving patient outcomes.

The following definitions of interventions were categorized according to the EPOC methods (Cochrane Effective Practice and Organization of Care Group) which was used by the large systematic reviews.[11,18,19]

1. Educational materials: Distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audiovisual materials and electronic publications.
2. Conferences: Participation of health care providers in conferences, lectures, workshops or traineeships outside their practice settings.
3. Outreach visits: Use of a trained person who meets with providers in their practice settings to provide information. The information given may include feedback on the provider's performance.
4. Local opinion leaders: Use of providers explicitly nominated by their colleagues to be "educationally influential."
5. Patient-mediated interventions: Any intervention aimed at changing the performance of health care providers for which information was sought from or given directly to patients by others (e.g. direct mailings to patients, patient

counseling delivered by others, or clinical information collected directly from patients and given to the provider).

6. Audit and feedback: Any summary of clinical performance of health care over a specified period, with or without recommendations for clinical action. The information may have been obtained from medical records, computerized databases or patients or by observation.
7. Reminders: Any intervention (manual or computerized) that prompts the health care provider to perform a clinical action. Examples include concurrent or inter-visit reminders to professionals about desired actions such as screening or other preventive services, enhanced laboratory reports or administrative support (e.g., follow-up appointment systems or stickers on charts).
8. Marketing: Use of personal interviewing, group discussion (focus groups) or a survey of targeted providers to identify barriers to change and the subsequent design of an intervention.
9. Multifaceted interventions: Any intervention that includes two or more of the last six interventions described here.
10. Local consensus processes: Inclusion of participating providers in discussion to ensure agreement that the chosen clinical problem is important and the approach to managing it appropriate.

These three systematic reviews included: 1) randomized controlled trials (RCTs); and 2) interrupted time series studies (before and after studies).

The Cochrane review had the strictest inclusion criteria and included 11 studies. The reviewers concluded that the effects of printed educational materials with no active intervention appeared small and of uncertain clinical significance. The additional impact of more active interventions produced mixed results. Audit and feedback, and conferences/workshops did not appear to produce substantial changes in practice. The effects of educational outreach visits and opinion leaders were large and likely to be of practical importance.

Oxman et al and Davis et al were more liberal with their inclusion criteria. Out of more than 6,000 articles, they identified 102 trials and came out with the following findings:

1. Educational materials: Most of the studies showed that the use of printed materials alone, including guidelines, failed to demonstrate changes in performance or health outcomes.
2. Conferences: Those wherein no explicit effort was made to determine practice needs or to facilitate practice change failed. On the other hand, more comprehensive strategies employing workshops as a central focus and using other educational and practice-reinforcing strategies were successful.
3. Outreach visits: Academic detailing, particularly if combined with other methods such as audit were also successful.
4. Local opinion leaders: The effectiveness of local opinion leaders ranged from nonsignificant to substantial.
5. Patient-mediated intervention: In combination with other methods, involving patients had also been shown to change practice and improve outcomes.
6. Audit, feedback and reminders: Effectiveness ranged from nil to moderate.

7. Marketing: Learning experiences based on objective practice-needs assessment or knowledge testing was shown to alter some aspects of physician performance.
8. Multifaceted interventions and local consensus processes: Using several types of interventions was effective. The evidence for the use of a local consensus process was less clear.

As the studies reviewed were usually of short duration, the long term sustainability of both practice change and improvement in health outcomes have not been rigorously tested. Nevertheless, there are two interventions which can be crucial to effectiveness and sustainability: accreditation and economic incentives.

1. Accreditation: In the United States, accreditation by the JCAHO (Joint Commission for Healthcare Organizations), a multisectoral nonprofit group, is required if hospitals and clinics want to be paid by insurance companies, and also if they want to have their training programs approved by the specialty organizations. The JCAHO User's Manual, a de facto clinical practice guideline/quality improvement prescription, is so influential that hospitals even maintain dedicated staff to see to it that the JCAHO standards and requirements are met.[23] Other versions of a single health facilities accrediting group can be found in other countries, particularly in British Commonwealth countries such as the United Kingdom, Canada and Australia.
2. Economic incentives (or disincentives). Even the richest and most powerful nation could not sustain runaway health costs, and because relations between physicians and third party payors have been adversarial, parties other than physicians have stepped in with "economic guidelines". While the adversarial relations remain and the war continues in editorials, mass media and in Washington D.C., various reimbursement caps have been in place for decades and more may be forthcoming. Although there is no level III evidence, it seems that economic rationalization measures has not resulted in a deterioration of clinical outcomes in the United States.

Recommendations:

7. *The PCS and surgical specialty societies should reorient their priorities and focus their activities towards the improvement of patient care.*

8. *The PCS should not only continue formulating EBCPGs but should also see to it that they are implemented nationwide.*

9. *The responsibility of facilitating and monitoring the implementation of EBCPGs at the hospital level primarily rests on the local chapters of the PCS and surgical specialty societies.*

10. *The PCS should form a standing committee that would concern itself with patient care in general, and with the implementation of EBCPGs in particular.*

11. *The PCS, surgical specialty societies, Department of Health (DOH), PhilHealth and other health insurance/maintenance organizations, and other concerned organizations should put priority on the national implementation of official EBCPGs by organizing at the soonest possible time a national hospital accreditation system that would specify, among others, practice standards and accreditation requirements regarding minimum acceptable quality of patient care indicators.*

12. *Even in the absence of a national hospital accreditation systems, the PCS, surgical specialty societies and the DOH should organize a joint Residency/Fellowship Accreditation body that would specify, among others, practice standards and accreditation requirements regarding minimum acceptable quality of patient care indicators.*

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