

## **Optimal care for the injured patient: the role of the specialty training programs**

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The influence of Dr. Charles L. Scudder will be apparent in today's oration. Among the goals that he conceived for his committee was the establishment of special fracture services, designed not only to improve the care of patients, but also to be training grounds for surgeons. Thus, in the mind of him whose memory we now honor, hospital organization and graduate training were inseparably linked. My title indicates my purpose to re-examine this relationship.

As we review the work of the group chaired by Dr. Scudder, originally known as the Fracture Committee, but later broadened to serve all trauma due to injury, we see that the strategic aim has never wavered. Optimal care for the injured patient has been the goal for over fifty years. Tactics have varied; their progression can be traced as new objectives have been chosen and attacked, and either conquered or at least surrounded and besieged. One good example of tenacity was the long battle of the seat-belts. I am pleased to report that the first two governments within the range of the committee to legislate obligatory wearing of seat-belts have been those of my home provinces of Ontario and Quebec. Consider also the

### **In brief . . .**

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enormous efforts of the committee dedicated to improvement in pre-hospital emergency care, emergency departments, and postgraduate education of practising surgeons. The saga of the Committee on Trauma has been beautifully recorded by Dr. Oscar P. Hampton, Jr.<sup>(1)</sup> I can only indicate my pride at being a second generation member and my happiness at being your speaker here today.

### **The need to re-examine standards for training in trauma**

The major theme of this oration concerns the limitations of our current standards for residency training in the care of trauma. At the onset let me make the point that training for the care of injuries proceeds from day to day in residency programs at a level that is generally satisfactory. I am not crying havoc. Nevertheless, there can be little grounds for complacency until we have assessed our present standards as expressed in guidelines and requirements of our educational authorities, and satisfied ourselves that these are up-to-date and are effectively applied. Our goal of better care demands that training programs upgrade continually their teaching and experience in trauma according to realistic standards.

You may well ask: "Why bring that up?" You could point out that the American College of Surgeons is a part of every residency review committee with a major interest in trauma, except for orthopaedic surgery; that the College has a channel to the Liaison Committee on Graduate Medical Education, the body now responsible for the accreditation of all training programs in the United States; and that the American boards lay down the necessary requirements for certification of specialists. All

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such assertions would be true, but you would be overlooking one important factor, a missing link in the chain of educational authority so far as trauma training is concerned. Let me remind you that the boards and other educational authorities have heretofore resisted the development of comparable mechanisms to govern trauma as a separate discipline. In so doing, the specialties took on an obligation to make absolutely certain that the care of injuries was covered adequately in their training programs.

You may protest that the examinations of the boards provide assurance that all necessary elements of training have been covered. I must insist that this is only partly true. Performance at examinations does not reveal the qualities of judgment and technical ability that are needed to be competent in trauma care. The qualifications of a resident completing advanced training, his actual performance under fire, can be evaluated best by his own faculty, guided by specialty-specific standards. Normally, these standards are known to the program director and his faculty through the requirements published by the specialty via the boards and residency review committees in the United States and the Royal College of Physicians and Surgeons of Canada.

The enrichment furnished to the residency training process by national associations is less available to training in the field of trauma. There being no board or other specialty authority to provide specific guidance to program directors, training in trauma tends to follow a line of least resistance. Effective improvements result more from the initiative of dedicated heads of programs than from a coherent set of standards. Lacking a parent body, the orphan trauma makes its way as best it can, dependent on cooperation of the individual specialties, each with its own priorities.

Our search for ways and means to better the condition of our orphan will lead us to examine standards currently in force. Before proceeding to that phase of our enquiry, however, I would like to introduce a second theme. I would suggest that progress in categorizing hospitals for the care of injuries may not only help us to resolve the problem of optimal definitive care for injured patients, but may provide a solution to many difficulties in the field of residency training.

#### **Optimal hospital resources for (training in) the care of the seriously injured**

Specialty training programs are a composite of hospital services which taken together can provide full training in the specialty. As was foreseen by Dr. Scudder, a well-arranged and well-staffed treatment service makes the best teaching setting. The personnel on services handling substantial numbers of serious injuries develop the self-confidence and the ability to move quickly that mark the competent team. Each specialty program committed to providing training in trauma should include at least one such service. Therefore, the hospital offering a high level of capability for handling trauma becomes an indispensable resource for training programs in selected specialties.

The latest project of the Committee on Trauma concerns this hospital environment. The document entitled "Optimal Hospital Resources for Care of the Seriously Injured" was published recently in the *BULLETIN* of the College.<sup>(2)</sup> Not only does this document clarify the resources and organization needed by a hospital to be acceptable for treating injuries, but I believe that it will upgrade trauma training in the future. By virtue of the principle that optimal treatment services are essential for optimal training, the document forms a basis for identifying clinical units suitable for incorporation into training programs. It also names five specialties that must at all times be prepared to bear the brunt of trauma care. To these we shall return.

The document is designed to provide a basis for categorizing the capabilities of hospitals for the management of one specific entity, the seriously injured patient. In 1971, the American Medical Association published guidelines entitled, "Categorization of Hospital Emergency Capabilities", in which enterprise the Committee on Trauma played an important role.<sup>(3)</sup> The purpose of the AMA guidelines was to permit the categorization of hospitals in relation to their ability to deal with emergencies over the entire range of clinical entities. Experience has shown, however, that the task of achieving a high rating for the care of emergencies in all medical, pediatric, obstetrical, psychiatric, and non-traumatic surgical fields, in addition to all trauma, is beyond the practical capacity of all but a few hospitals. It became apparent that the emphasis on emergency care obscured an equally important capability, namely the in-house definitive care which must follow admission and the resolution of the emergency itself. Furthermore, and of increasing importance as regionalization of medical services developed, it was found that hospitals have varying capabilities for handling different

kinds of serious conditions. For example, a hospital may show a superior ability to care for cardiac, respiratory, or metabolic problems but be inadequate to handle critical injuries. The reverse may be true of another institution.

The new document provides guidelines to hospitals desiring to develop capabilities for handling serious injuries. The spectrum of resources determining the level of categorization ranges from optimal through intermediate to minimal. The dominant resource affecting the level of categorization is specialist availability.

Surgical specialists listed as required to be available in-hospital 24 hours a day are five in number for the optimal hospital: general, neurological, orthopaedic, thoracic, and urological surgery. The fact that in-hospital specialty requirements may be fulfilled by competent residents indicates that the authors expect that the optimal hospital will also be a major training institution. The remaining specialist surgeons are listed as being necessary to support the optimal, but at a lesser level of availability, namely on-call and promptly available from inside or outside the hospital. Similar distinctions as to availability are made for the non-surgical specialists. Lists are included of resources needed to support all aspects of the care of injured patients in the operating suite, recovery room, intensive care units, emergency department, and other special capabilities. The necessary program for quality care assurance is outlined.

The document recognizes that hospitals able to meet all the criteria will not be numerous. Hospitals with less than full resources will be the majority, falling at various levels on the scale of capability. The scale reflects the judgment of the authors as to which specialists may be desirable but not essential and which may be on-call but not in-house. A hospital would raise its category by moving closer to the optimal in terms of physical facilities but more especially in breadth of staff appointments with ensured availability.

The plan proposed is based on the assumption that personnel are fully trained and qualified. This must be so by definition in the hospitals with optimal resources. There is certainly no indication that the staffs of hospitals in lower categories need be any less well-trained. In fact, in hospitals at the intermediate level, where only general surgery and orthopaedics are required to be organized as specific services, the expertise in these two specialties must be both deep and broad.

The idea, on the face of it, is scarcely new. In his Oration on Trauma 15 years ago, Dr. Preston A. Wade concluded with the following prediction: "There will come a day when an

accident victim will be transported . . . by qualified personnel to a well-equipped, specialized trauma facility where he will be promptly cared for by surgeons trained in all phases of trauma care".<sup>60</sup> What is new is that the American College of Surgeons has now described the trauma facility in specific terms, has thrust beyond the emergency department into the definitive care environment, and has named the specialists essential to provide the services.

This crucial step having been taken, a logical extension of this new initiative would be to make sure that all the essential staff are optimally trained. Assuming we agree that there can be no substitute for a sound grounding in a first class residency program, let us now turn our attention to mechanisms governing such training.

#### Graduate training systems as they relate to trauma

A brief account of the national systems of Canada, the United States, and Britain would be helpful to us in appreciating the current status of specialist training and some of the difficulties in relation to the field of trauma. We should appreciate that in these countries the basic organization for advanced specialist training is now firmly established, so that each system should be able to correct observed deficiencies in training patterns.

#### CANADA

The Royal College of Physicians and Surgeons of Canada provides the most cohesive of the systems. Since its incorporation in 1929, the College has become the national body providing specialist qualifications in all branches of clinical and laboratory medicine and surgery with the exception of family medicine. The College is responsible for regulations defining requirements for training, the assessment of eligibility of candidates, and the conduct of the certifying examinations in the 33 recognized specialties. It surveys and accredits all specialty training programs. Over 300 programs have been granted full approval, all university-affiliated and providing a full four or five years of training.

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During the past year, the documents governing the requirements for accreditation of the training programs were brought up to date. These documents provide Canada-wide standards by which the training programs sponsored by the universities are judged. The more basic document, entitled "General Information Concerning Accreditation of Specialty Training Programs", contains guidelines for organizational arrangements in the faculties of medicine and teaching hospitals, general essentials common to all specialties, and information on the conduct of the on-site surveys. The more specific or special requirements for programs in each specialty are produced by the specialty advisory committees and are published separately. The specialty committees, each of which is representative of the national specialty, have many responsibilities of which the heaviest is the supervision of training programs. Questions related to the number of trainees appropriate to a given program, the numerical levels of beds, inpatients, and outpatients, and technical procedures are resolved by guidelines from the specialty committees.

The great development in recent years in Canada has been acceptance of the concept of integrated training that unites the strengths of several institutions into a coordinated program. No one now doubts that this arrangement is superior to training based upon a single hospital or unrelated sequences of short-term appointments. Nevertheless, although graduate education has become a joint venture of the university medical school and its affiliated institutions, the essence of specialist training continues to reside in the teaching hospitals where residents learn to care for patients under the guidance of the staffs. The development of university-sponsored programs has not diminished the importance of the hospitals.

The general requirements for accreditation lay great stress on the need for training programs to organize clinical teaching units (CTU) within participating hospitals. Since early in the 1960's, when national health insurance in Canada began to erode the so-called public services, the CTU has constituted the essential setting in which the general educational and the specialist experience takes place. Normally, a CTU is a geographical unit of 25 to 35 beds.

The essence of a CTU is that it is a team

enterprise in which each member of the team is assigned an appropriate level of responsibility. The Royal College has defined the criteria for an acceptable unit in more detail than need be given here. However, the main features may be summarized as follows:

1. All teaching staff members serving on the unit must be appointed jointly by the university and the hospital.
2. There must be an identifiable head of each CTU at any given time, with full authority over the unit.
3. The entire staff, including teachers, nurses, students, and residents, shall function as a team.
4. The senior or chief resident includes among his duties that of seeing that members of the house staff team assume professional responsibilities that are appropriate to the level of training of each.
5. Patients admitted to the unit must be assigned to a member of the staff of the unit.
6. Staff members must exercise the double responsibility of providing excellent professional service and excellent teaching. Staff members who fail to meet these obligations, as judged by the internal evaluation procedures of the faculty, should be relieved of service on the teaching unit.

It should be added that each of the surgical specialties includes a statement in its special requirements to the effect that the specialty service in each participating institution must be organized into one or more CTU. Despite the difficulties of its application, the principle has been accepted by the great majority of clinical teachers as the best solution to the very serious problem of providing supervised, graded responsibility under the Canadian health insurance scheme.

The Canadian equivalent of the "Requirements for Certification" published by the American boards is a series of concise statements of specialty training requirements. In these a brief preamble presenting the general scope and objectives of the specialty is followed by regulations listing training required to qualify for the examinations for certification. Here again the specialty committees play a major role in determining content of training.

Let us examine next to what extent this system has responded to the challenge of designing programs adequate in content and experience in trauma, and in laying down criteria for the resources to be provided for training in trauma by programs seeking accreditation. I shall focus on the five key specialties that we have identified already as being in the front line of trauma care, namely general, neurological, orthopaedic, thoracic, and urological surgery.

The Canadian requirements for certification, as I have noted, contain preamble sections of a general nature. The documents for *General Surgery* and *Orthopaedic Surgery* each call for the following:

*"During the course of training, the candidate must acquire a satisfactory knowledge of the basic principles common to all surgical practice. These principles include shock, resuscitation, postoperative care and complications, trauma to all parts of the body and the response to trauma, fluid, electrolyte and acid-base disturbances, infections, etc. . . ."*

The preamble to the requirements in *General Surgery*, following a description of body areas and systems in which the candidate must have clinical competence, concludes with the following:

*"... in some circumstances, the general surgeon may be required to provide not only the initial care but more advanced management of trauma in the nervous, cardiovascular, respiratory, genito-urinary, and musculo-skeletal systems"*.

The *Neurosurgery* requirements state simply that "experience should be gained, in a clinical setting, in the care of surgical emergencies including trauma".

*Thoracic Surgery* (cardiovascular and thoracic surgery) and *Urology* make no reference to trauma in their requirements for certification.

It has been mentioned that the requirements for accreditation of specialty training programs fall into two sections, the general and the special. The general document, applicable to all specialties, contains certain stipulations related to emergencies and trauma.

Emergency care is stressed in both the general initial management of the severely ill and injured and in training in emergencies related to the specialty. Requirements for the emergency department as a teaching facility are mentioned in terms of supervision and hierarchical instruction. It is also stipulated that the training program must contain at least one clinical teaching unit that admits substantial numbers of emergencies related to the specialty. It is suggested that the affiliation of one or more additional institutions may be necessary to provide an adequate case load for the emergency component of the program. This section of the general document concludes with the following statement:

*"Teaching units heavily committed to the care of seriously ill and injured patients, such as cardiology services and trauma units, must be supported by acute care units organized for teaching. All necessary consultative and laboratory services must be available. Special arrangements should be provided for the care of*

*multiple injuries, as these patients usually require a team approach to management and constitute an important learning opportunity for residents in several disciplines."*

The special requirements found in the "Requirements and Guidelines for Accreditation of Specialty Training Programs" in the five key surgical specialties contain only a simple repetition of the general dictum that an organized emergency department and an intensive care unit must be included in the program. Otherwise, there is no further reference to trauma.

May I stress that I am not being hypercritical of any educational authority under consideration, least of all my own Royal College. The policy of the College is to encourage initiative in the medical schools and individual programs rather than to prescribe solutions to problems best solved at the local level. It must be recognized, however, that the College's responsibility for national standards for training programs demands evaluation of available resources and how well these are applied to every facet of required training. The paucity of guidelines for the trauma component of the specialty training programs clearly requires further study.

#### UNITED STATES

Turning now to the United States, we find that graduate medical education has recently acquired an upper level mechanism to coordinate its many agencies. As yet it is not clear how detailed the direction is to be that will start from the Coordinating Council for Medical Education and the Liaison Committee for Graduate Medical Education and pass down through the specialty boards and residency review committees to the training programs. I am assuming for purposes of our discussion that the new higher bodies will not supplant the existing mechanisms that regulate specialty training but rather will support the boards and residency review committees in reaching their objectives.

The first group of basic documents that govern training in the United States are the "Requirements for Certification" published by the American specialty boards.<sup>(5)</sup> It must be presumed that each of these present all that

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the board has chosen to record in terms of content and experience required to qualify as a specialist.

The American Board of Surgery presents a paragraph which I shall quote in full, as it contains the only reference to trauma in the requirements document:

*"The board interprets the term 'general surgery' in a comprehensive but still specific manner. Candidates for examination are expected to have a detailed knowledge of surgery of the gastrointestinal tract and other abdominal conditions, of the breast, of the head and neck, of the peripheral vascular system, of the endocrine system; and of the principles of trauma and management of musculoskeletal and head injuries. In addition, they are expected to possess an adequate breadth and depth of understanding of the principles of and experience in the more common problems in cardiothoracic, gynecologic, neurologic, orthopaedic, plastic, pediatric, and urologic surgery."*

The American Board of Orthopaedic Surgery indicates that nine months of the three years of orthopaedic surgery education must be devoted to "Fractures/Trauma". In the United States and Canada, this is the only "requirements" of the five specialties to demand that a minimum time assignment or proportion of experience be reserved for trauma training. Orthopaedic surgery also requires experience in surgery of the hand.

The American Boards of Neurological, Thoracic, and Urological Surgery make no mention of trauma in their Requirements for Certification.

Turning to the "Essentials of Approved Residencies", we find under the head of "General Requirements" a paragraph on emergency service.<sup>65</sup> Reference is made to emergency departments and accident wards of hospitals. It is advised that "advantage should be taken of this opportunity to obtain experience in the care of these types of cases". This is the only reference to injuries in the general requirements.

The Special Requirements for Residency Training in *General Surgery*, under the heading of Scope of Training, contains a paragraph beginning:

*"Residencies in general surgery should offer broad surgical education which will provide*

*residents with detailed knowledge of surgery;*

Then follows a paraphrase of the statement already quoted from the requirements of the American Board of Surgery.

The Special Requirements for Residency Training in *Orthopaedic Surgery* confines the reference to trauma to the following sentence:

*"Surgical and orthopaedic facilities must be satisfactory and clinical material sufficient to afford residents adequate experience in the correction of congenital and acquired deformities and in the treatment of fractures and other acute and chronic disorders which interfere with the proper function of the skeletal system and its associated structures."*

The Special Requirements for Residency Training in the specialties of Neurological, Thoracic, and Urological Surgery contain no reference to training in the care of injuries. One presumes that trauma is implied within the general statement that training must provide graded responsibility in "all aspects of the field".

#### BRITAIN

An outside yardstick might be helpful to us at this stage, so let us consider how the British system deals with training in the five key surgical specialties. Since World War II the specialist in Britain has been recognized by an appointment as Consultant in the National Health Service. Only within the past few years has the completion of a formal training program become the prerequisite for recognition as a specialist. Specialties are clearly demarcated with little of the overlapping found in North America. The Joint Committee on Higher Surgical Training classes general surgery as one of nine specialties of surgery, thereby compressing its historically wide scope. Speaking of Australia, Professor E.S.R. Hughes has touched this note with the remark that "A diploma in general surgery is no longer regarded as a certificate of competence, or a license to proceed, in all facets of surgery".<sup>66</sup> The same process is occurring in Canada, with one result being that it may no longer be proper to assign an unrealistic range of surgery, including most of trauma, to every general surgeon.

The basic surgical experience in Britain is obtained in three or four years after graduation during the phase known as general professional training. This phase culminates in the examination for the diploma of Fellowship in one of the Royal Colleges, attesting to a "satisfactory degree of clinical judgment and knowledge of surgery in general". Pre-Fellowship requirements include mandatory training in trauma

and emergencies. Thereafter each prospective consultant surgeon must continue in the post-Fellowship phase of training and be awarded a certificate of completion of higher training in one of the nine specialties. The requirements for higher training are defined by the specialist advisory committees. Each period covers three to five years post-Fellowship depending on the specialty. A minimum of two years must be spent as a senior registrar or lecturer in a post approved for training in the specialty.

The British are keenly aware of the danger that too much rigid planning may lead to standardizing mediocrity. Their documents are brief and to the point. Most specialties avoid detailed objectives or curricula. Gifted people are encouraged to develop flexible and sometimes unorthodox training patterns. The critical importance of perpetuating scientific medicine through scholarship, research, and other forms of special studies is stressed repeatedly.

The recognition of posts and programs approved for higher training is in the early stages of development in Britain, the process being barely ten years old. The guiding principle is specialist responsibility for quality of training. Surveyors making on-site visits work in teams, at least two specialists and sometimes a third physician-teacher chosen from outside the specialty. A broader accountability is maintained through the supervising function of the Joint Committee on Higher Surgical Training. The actual survey procedures are thorough in the number and detail of the personal interviews held. Much emphasis is placed upon assessing the adequacy and variety of the workload in order to be sure that a program is providing full experience. The members of the teaching group are scrutinized individually, evidence being recorded of participation in continuing education, professional associations, research, as well as fitness and enthusiasm for the teaching role.

The competition for approval of posts and programs is much more apparent than on our side of the Atlantic. This is due to the maturity of the medical care system, where manpower requirements and attrition rates are known. The size of the establishment for training posts is determined by the manpower needs for each class of specialist. One aspect of this restraint on specialist production is that no institution may expect to be approved for higher training unless it can produce good reasons why it should be so recognized. The pressure on the institutions is considerable, for to the familiar rule of "no approval, no trainees" is added the new element of competition for a fixed allotment of approvals.

The published recommendations of the spe-

cialist advisory committees provide Regulations for Certification, Requirements for Training, and Criteria for the Recognition of Training Posts and Programs.\*

The references in these documents to training in trauma are as follows:

*General Surgery* includes in its criteria a statement that the trainee should have adequate emergency work with considerable responsibility. There is also a paragraph that reads:

*"There must be an adequate load both elective and emergency and there should be opportunity to gain experience in all aspects of general surgery including vascular surgery, gastrointestinal surgery, surgical oncology, and on occasions trauma, urology, and thoracic surgery."*

The quotation "and on occasions trauma . . ." seems to imply that "all aspects of general surgery" does not necessarily include trauma; that is to say, trauma may or may not be a component of specialist training in general surgery.

The recommendations for *Neurological Surgery* state quite specifically:

*"Six months of the five year period should be spent in an accident service offering special experience in the diagnosis and treatment of head, and, if possible, spinal injuries"*.

*Orthopaedic Surgery* has the most detailed criteria. It is recommended that the three to four years of pre-FRCS training before starting in the specialty training program should contain rotations in general, plastic, neurological, and vascular surgery.

The specialist training period after the Fellowship must be four years of training in an approved center:

*"... not less than two years must be spent in the field of trauma and two in elective orthopaedics"*.

The sole basis for program approval in orthopaedics is the training center, a group embracing several institutions and providing full facilities. In trauma alone, the program

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\*The British documents quoted were obtained through the courtesy of the Secretary, Joint Committee on Higher Surgical Training, Royal College of Surgeons of England, Lincoln's Inn Fields, London WC2A3PN.

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must provide "an annual minimum of 1,000 to 2,000 new in-patients with injuries and several thousand new out-patient fracture cases".

In addition, special facilities for training in hand injuries are essential, and a special unit for peripheral nerve injuries is in some measure essential for approval. Approval also requires an accident unit within the training center. Details of the relationship of the orthopaedic service with the emergency department, neurosurgery, plastic surgery, vascular surgery, etc., as well as physiotherapy, occupational therapy, and other rehabilitation services are factors for consideration in granting approval. These unambiguous criteria would be a useful model for guidelines in the United States and Canada.

The regulations for *Thoracic Surgery* make no mention of trauma. It must be presumed that trauma is encompassed in the requirement that "training programs will offer exposure to the full spectrum of cardiothoracic surgery . . ."

The only reference to trauma in the criteria for *Urology* is to attendance at a spinal injuries center.

#### **A Mechanism to Provide a Greater Emphasis on Training in Trauma**

The foregoing summation of published requirements for training in the care of trauma is not presented in a pessimistic spirit. In all three countries we can be positive about our progress, especially when we recollect that the whole concept of programmed graduate education in medicine is relatively recent. The introduction of more structured training is at best a complex undertaking. The need to provide the special skills required to deal effectively with injured patients compounds the difficulties of designing programs based on body systems. It is not surprising that there should be areas still incompletely understood.

The reasons for the meager references to trauma in the published requirements that have been reviewed may lie in the nature of specialism. Each specialty justifies its existence by virtue of a special scientific base and special expertise. The clinical conditions that identify the unique nature of the specialty must be accorded prime consideration in arranging educational priorities. Whatever the reasons, they are not related to deliberate neglect but

to a lack of emphasis on trauma as a distinct component to be integrated into training programs.

An urgent need is for a mechanism to promote a greater emphasis on training in trauma, in order that the potential of our training programs may be more fully realized. A useful starting point would be a study to explore the feasibility of a permanent committee to provide a point of focus for all residency training with a significant trauma component. Such a Conjoint Committee on Graduate Education in Trauma would be composed of representatives of selected specialties appointed by their boards and national associations. In addition, the American College of Surgeons and the American Association for the Surgery of Trauma would play major roles. The new committee should probably be constituted as a fact-finding and advisory body rather than an extra bureaucratic level. It should not be a new board. It should not disrupt the present pattern of responsibility for graduate education; rather it would work with boards and residency review committees to improve training in all aspects of trauma including the research component.

Among the questions to be settled at an early stage of the deliberations would be whether there is any fundamental fault in current training patterns whereby trauma is divided up between specialties according to their usual parameters based on systems and anatomical areas. I would anticipate that current patterns would be reaffirmed as the best basic arrangement as long as they continue to reflect realities of practice on this continent. It would appear that the average practitioner in the five key specialties, general, neurological, orthopaedic, thoracic, and urological surgery, divides his time between clinical work specific to his specialty and injuries that come his way requiring treatment. Such a division of his practice seems quite logical. Each surgeon, regardless of specialty, needs the security of a referred elective practice built up through demonstrated expertise in aspects of his specialty unrelated to the care of trauma; for the majority of surgeons trauma is secondary to other specialist activity. Trauma in practice tends to fluctuate in volume and in the income generated. It also tends eventually to shift to younger surgeons. Nevertheless, most surgeons enter practice expecting to treat injured patients as the need arises and hopeful that their training will prove adequate. It would seem, therefore, that the most justifiable course is to train each resident to full competence in diagnosis and treatment of injuries related to his specialty.



Reaffirmation of this premise would lead to recognition of a major objective of the training programs, namely to ensure that every resident receives full training in selected injuries that fall within the specialty parameters. Pursuit of this objective should lead to more specific guidelines in the statements of "requirements" and in particular in the "essentials of approved residencies". The same would apply to the comparable instruments of the Royal College in Canada.

The "essentials" would become less general and more circumscribed and thus more capable of being evaluated by the accreditation process. Particularly important would be some quantitative guidelines that would ensure inclusion in each training program of teaching units able to provide sufficient clinical exposure for the residents. This would correct a situation sometimes found in programs that are otherwise quite satisfactory, but where the range of types and numbers of severe injuries admitted to the teaching units are clearly inadequate. Special requirements developed on this principle should define the teaching setting necessary for the emergency department, where residents must learn to handle the primary treatment phase, including the art of consultation between specialists, under conditions of well-supervised but genuine responsibility. Similar criteria would be elaborated for training in intensive care, out-patient follow-up, and rehabilitation.

The guidance thus provided would fill a gap that presently exists. Program directors and their faculties need standards by means of which they may compare their programs, judge deficiencies, and instigate improvements. Furthermore, at the time of an accreditation visit, the programs could be asked to demonstrate to the surveyors that they are in fact providing the actual segments of training which together will fulfill all the declared objectives for training in the specialty, including those related to training in trauma. The trauma component would thus be emphasized to an appropriate degree.

Training of the general surgeon in the care of injuries presents some special problems. The current definition of the specialty in use in Canada results in training in the care of injuries to the trunk and abdominal viscera being the principal feature of the majority of programs, so far as trauma is concerned. This is logical to the degree that in this area there is no question of overlap with other specialties. Some training may be given in trauma to the thorax and to soft tissues and blood vessels of the limbs. The other essential area of expertise of general surgeons is in supportive care. In

the past, the training in resuscitation, fluid therapy, cardiopulmonary care, and nutrition has been more thorough than that provided by the other specialties. It is imperative that surgical intensive care be mastered by each resident in general surgery as a foremost priority; otherwise there is a possibility that the initial care of major injuries may be taken over by default by non-surgical specialists.

A good basic plan for training of the "standard" general surgeon should produce a satisfactory level of performance of general surgeons working in the larger centers with a full complement of specialists. It should be possible to train an individual in accordance with this plan, and still do justice to the non-traumatic segments of the program, within the usual four-year span of time. However, even this limited objective of concentrating on the specialty-specific injuries and related skills in the field of supportive care calls for some systematic planning by the program director and his faculty. As we have indicated, the teaching settings must be organized and staffed so as to provide excellent teaching and graded responsibility, with adequate variety and volume of injuries admitted to the teaching units. Care must be exercised to maintain a good balance between resources in terms of patients available and the number of trainees in the program. It might be necessary to appoint a staff surgeon to the specific task of supervising the trauma component of the specialty training program.

While the majority of general surgeons may be trained according to this basic pattern, the surgeon who would practice in remote communities must have training in the care of injuries beyond those of his specialty. This difficult assignment may require more time beyond the normal four-year program. Guidance is needed as to how the programs should arrange this extra training.

One further question that our new committee on training in trauma should consider concerns the need to train a leader for the trauma team in treatment settings dealing with large numbers of severe injuries. This individual, in addition to being competent to direct the management of major multisystem trauma, should also be active continually in the aca-

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demie field. He may be basically a general, orthopaedic, or a plastic surgeon. It would seem inescapable that he must have further training and research experience after completion of the residency program. Fellowships in selected centers promise the best solution, followed by a staff appointment to an active trauma unit. Questions of status and security arise for such a person.

The new committee would perform a needed service as a forum for discussion of the goals of trauma training within the programs of the specialties concerned. It would not be difficult to make a list of interesting questions. As an example, one could explore the question of the training goals in orthopaedic surgery. Is it a goal to train the residents for general traumatology, or simply for the care of musculoskeletal injuries? And further, if it should be a prime objective of programs in orthopaedic surgery to ensure a reasonable comprehension of the diagnosis and management of patients suffering critical injuries to multiple organ systems, how is this training accomplished and competence achieved? Questions of this nature should be discussed in the open, not behind walls erected by each specialty. A better integration of the efforts of all specialties would surely follow.

The need for better data on which to base refinements of the training systems would soon become apparent. For instance, ideally speaking, decisions as to needs to be met in trauma training should be related to results of studies that evaluate the quality of care of injured patients. Thus the deficiencies identified in practice could be corrected at the level of the residency programs as well as by continuing education. More information on performance of the products would in the long run enhance the role of the specialty training programs in relation to optimal care for the injured patient.

The great attraction to the College's new document on hospital resources lies in the bold reference to the optimal as the principal objective. For too long we have been content to expound minimum standards in our documents and guidelines for specialty training programs. Unfortunately, it is human nature for a minimum standard to become gradually accepted as the optimum. Why not adopt a scale for training programs based on optimal resources? Who is to provide these more sophisticated guidelines? They must emanate from the specialties themselves, under the aegis of an integrating agency. By assisting the specialty training programs to fulfill their proper role in trauma training, a new coordinating body

could contribute greatly to the welfare of injured patients.

The academic base in the departments of our schools and teaching hospitals has received scant attention in this lecture, of that I am aware. My respect for this essential element has been recorded elsewhere<sup>(7,8)</sup>. I would acknowledge also my great debt to predecessors on this podium, those Scudder Orators who have addressed the theme of specialist training<sup>(9-14)</sup>.

In closing, let me express again my gratitude for the great privilege of speaking here today, and of attempting to develop concepts taught by Charles L. Scudder many years ago. In final tribute to his durable committee, I could do no better than to echo the concluding sentence of the historical account by Dr. Hampton<sup>(1)</sup>:

*"It seems reasonable to state that the committee has had, and in the future will have, a profoundly favorable effect on all phases of care of the injured in the United States and Canada and perhaps throughout the world."*

#### References

1. Hampton, OP, Jr.: The Saga of a Committee: The Committee on Trauma of the American College of Surgeons, 1922-1973. *Surgical Clinics of North America* 53: 1289-1304, (Dec) 1973.
2. Optimal Hospital Resources for Care of the Seriously Injured. *Bull Am Coll Surg* 61: 15-22, (Sept) 1976.
3. Categorization of Hospital Emergency Capabilities. American Medical Association, Chicago, 1971.
4. Wade, PA: The Injured Patient and the Specialist. *Bull Am Coll Surg* 47: 73-82, 94, (Mar-Apr) 1962.
5. Directory of Approved Residencies, 1974-75. American Medical Association, Chicago, 1975.
6. Hughes, ESR: Surgery in Australia. *Bull Am Coll Surg* 61: 18-20, (June) 1976.
7. Gurd, FN: The Education of the Academic Surgeon. *Ann Roy Coll Phys Surg Can* 1: 284-289, (Oct) 1968.
8. Gurd, FN: The Academic Basis for the Surgery of Trauma. *Trauma* 9: 95-103, (Feb) 1969.
9. McLaughlin, HL: Education in Trauma. *Bull Am Coll Surg* 43: 41-44, 70-71, (Jan-Feb) 1958.
10. Cave, EF: Trauma, Specialism and the College. *Bull Am Coll Surg* 49: 61-65, (Mar-Apr) 1964.
11. Holdsworth, F: Achievements and Problems in the Treatment of Trauma. *Bull Am Coll Surg* 55: 13-16, 25, (Mar) 1970.
12. Fitts, WT, Jr.: Men for the Care of the Injured: A Crisis Facing the '70's. *Bull Am Coll Surg* 55: 9-17, (Dec) 1970.
13. Wickstrom, J.: Education in Trauma: the Surgeon's Responsibility. *Bull Am Coll Surg* 60: 7-14, (Apr) 1975.
14. Gaston, SR: The Role of Leadership in the Quality of Fracture Care. *Bull Am Coll Surg* 60: 16-23, (Nov) 1975.