

The role of leadership in the quality of fracture care

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I sense a present day dichotomy that quite properly places the highest value on the saving of a life, but all too frequently shows a paradoxical indifference to the quality of living. There is no need to moralize on the value of human life, but there is a need for a balance of compassion for the crippled life. Granted that the unassailable priority in any system of health care is to first and foremost save a life, there must be equal priority, in the concept of complete care, to send the man whose life we have saved back to his way of life no less perfect than we are able to make him. Dr. Robert A. Chase has said it most succinctly, "To save a life after severe trauma is important, but not in itself sufficient to represent excellence in care. Immediate care may determine not simply death or survival, but the quality of survival".¹

During the past decade, doctors of this nation interested in trauma have been made abundantly aware of a new emphasis on emergency medical services. The thrust of emergency medical services centers in a pre-hospital life saving expertise and optimal transportation of the injured patient to a medical facility for definitive medical care.^{2,3}

Concurrently, sponsored by the National In-

stitute of General Medical Sciences, there have been organized ten research trauma centers in this country, where a new competence in patient care and basic research go hand in hand.^{1,4,5,6}

If I were to find the least common denominator of these worthy crusades in terms of emphasis on the dual concept of accidental death and disability, I would be obliged to acknowledge that the emphasis has been almost entirely on accidental death. The mobilization of resources in support of emergency medical services systems and trauma research to augment life saving and life support capability is vital to the effective resolution of the modern monstrous disease of trauma. No less vital is treatment of the specific injuries of the survivor.

The pendulum is well known to medicine. We doctors often embrace new concepts with enormous enthusiasm and find ourselves temporarily fickle to the solid stratum of a balanced norm. In time, we then reassess the diminishing returns of the high arc of the pendulum and once again woo the balance of its swing. I firmly believe we have come to such a chronological phase in the quality of fracture care and now must renew our courtship with fractures. If we are to be complacent about fractures we accept the morbidity of this disease in a most neglectful way.

In the honest pursuit of the necessary reformation implicit in EMS systems, let us not inadvertently disturb the balance of mortality/morbidity in an unnecessarily prejudicial way. It is not always necessary to forfeit to gain; to be indifferent to an old verity to seek a new strength. We can have both.

We are all aware of the staggering statistics of disability after trauma. There are 11,000,000 people injured in this country every year, and of these, 1,207,000 are hospitalized with motor skeletal trauma.^{7,8} This constitutes a large enough part of all causes of disability due to trauma to warrant our continued emphasis on a quality of care for such patients to stem the avalanche of crippling illness these injuries impose. Any hope of a significant lessening of the staggering toll of disability that follows in the wake of motor skeletal trauma lies in the training of our young surgeons. The success of such training resides in the leadership of their teachers.

The concept of the role of leadership in the

In brief . . .

"Today . . . we permit medical students to elect whether or not they choose to learn something about a disease that kills 116,000 and disables 11,000,000 Americans every year, and these young people are training to be doctors in this same America".

The author, formerly an associate professor of clinical orthopaedic surgery, College of Physicians and Surgeons, Columbia University, in advocating more thorough training of young surgeons toward improved definitive care of the patient with motor skeletal trauma, scans the passing years to review what was good, to see what has been gained, and to wonder what may have been lost in the quality of care.

Among his conclusions, he recommends the reestablishment of the functions of the old fracture services.

This is the Scudder Oration on Trauma, as delivered Tuesday, October 14, 1975, in San Francisco, Calif., during the 61st Clinical Congress of the American College of Surgeons.

quality of fracture care is indelibly identified in my mind with my mentors, Drs. William Darrach, Clay Ray Murray and Harrison L. McLaughlin, and with the Fracture Service of the Presbyterian Hospital in New York City. This is understandable because it was my residency on this service that first introduced me to these great teachers, and it was through these teachers that I developed a love for the surgery of trauma in its most catholic sense. To this I gratefully acknowledge that were it not for these associations, I would not have been invited to address you today. I am as completely certain of this as I am equally certain that I shall never forget the generosity of the American College of Surgeons for granting me the honor of this day.

The plotted course of my advocacy for leadership and definitive care of the patient with motor skeletal trauma is to scan the passing years to review what was good, to see what has been gained, and to wonder what may have been lost in the quality of care. It is my plan to present a chronicle, as objectively as possible, which can be held to the light of its own time and present time so that each of you may share with me a sense of perspective.

MY CHRONICLE begins with a brief survey of the highlights and attributes of the Fracture Service of the Presbyterian Hospital as a model and as a foundation for my discourse.

Dr. William Darrach started the Fracture Service when the Columbia-Presbyterian Medical Center opened in 1928.

The original permanent staff consisted of Dr. William Darrach, Dr. Clay Ray Murray and Dr. Barbara Stimson, the latter two fulltime. Dr. Stephen Hudack and Dr. Harrison L. McLaughlin joined the permanent attending staff in 1935 and Dr. Frederick M. Smith the following year. This was the attending staff when Dr. Darrach appointed me resident in 1938.

Tempting as it is to give a biographical sketch of these great teachers,⁹ I shall only quote Shun-Tzu who lived in the third century B.C.: "I say that in learning nothing is more profitable than to associate with those who are learned, and of the roads to learning, none is quicker than to love such men".

Our leadership emanated from a dedicated, unselfish, knowledgeable, and stimulating attending staff with extraordinary durability. They were either fulltime or geographic fulltime, were always at hand during the day, and lived close enough to be at the hospital within a few minutes at night. They enjoyed helping us and never indicated any indisposition.

Dr. Murray was fulltime and the ward service

was his province. He was on top of it every minute. His office was just a few steps off the ward and he was always available and enjoyed being available. His enthusiasm for teaching and patient care was boundless and contagious.

Accurate, well kept records are essential to teaching, research, and the care of the sick. The Fracture Service kept superb records. In the clinic the attending staff reviewed the chart and x-rays and discussed with the responsible resident each new patient, including the emergency cases treated the previous day and night. The approved diagnosis was entered in the chart by the attending surgeon to be picked up by the service secretary.

DIAGNOSTIC FILES were kept with meticulous accuracy by the service secretary for both inpatients and outpatients. The diagnosis and identifying chart number were filed on a card for each patient with a summary index at the end of the year of all cases treated as a total for that year, and a cross index of each category of injury.

Each patient's chart was a complete record with both inpatient and outpatient data in the same chart.

The Fracture Follow-up Clinic was Dr. Darrach's pride and joy. It was Dr. Darrach's conviction that the success of this clinic rested upon the employment of a fulltime secretary to manage it. The clinic was organized so that each weekly meeting of the clinic would have a definite anatomic designation. One week we would see injuries of the wrist, carpus, and fingers; the next week fractures of the forearm bones; the next, fractures about the elbow; and so on. This had a definite implication when it came to our follow-up review conference. The Fracture Follow-up Clinic was attended by the two residents and the entire attending staff including Dr. Darrach and Dr. Murray. Each had his own desk and each saw an equal number of patients. The average patient attendance was between 90 and 100.

There was a definite format for the entry made in each patient's chart. The secretary had a rubber stamp that stamped out on the record sheet a rectangular box with a line for the diagnosis, the interval since injury, and the letters A, S, and E. The A stood for anatomy, the S for symptoms and function, and E for economic rehabilitation. Each patient was scored in each of the three categories on the basis of four representing a result between 85 and 100 percent; three representing 60 to 85 percent; two representing 40 to 60 percent; one representing 10 to 40 percent; and zero anything below ten percent. The score for a patient relatively

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asymptomatic with normal joint function, normal anatomy, and full economic rehabilitation was designated as A 4, S 4, E 4. A patient with a rating A 2, S 3, and E 4 meant about 50 percent anatomic result, 75 percent functional result, and no interference with earning power. Anatomy zero was only given when there was nonunion or a destructive operation had been necessary such as amputation or fusion of a joint. This was a language we came to learn axiomatically.

THE FRACTURE follow-up conference was the most valuable teaching experience of the Fracture Service and was held weekly after grand rounds every Friday morning. It was frequently attended by many famous surgeons from our country and from abroad. It was a great inspiration to meet these men, witness their participation in our conference, and profit from their comments.

About twenty-five cases selected from the previous week's follow-up clinic would be presented with charts and all x-rays, recent and past, for each patient. As mentioned, each week covered a specific anatomic region. We would thus review many different configurations of fractures to the same bone or joint treated by various methods of treatment. In this way we learned from an accumulated experience the optimal choice of treatment based on a superbly documented record. Finally, at the conclusion of each presentation, all present would vote a consensus on the proper rating for that patient, and it would be permanently placed in the ASE box rating in his chart. It left no question about the evaluation of each patient as the product of a consensus, as opposed to one man's opinion.

These records were most valuable for clinical research and provided carefully documented, indispensable data for the two-volume textbook, *Surgical Treatment of the Motor Skeletal System*, edited by Dr. Frederic Bancroft and Dr. Clay Ray Murray published in 1945;¹⁰ the textbook, *Trauma*, edited by Dr. Harrison L. McLaughlin published in 1959;¹¹ and the textbook, *Surgery of the Elbow*, written by Dr. Frederick M. Smith and published in 1954 with a second edition published in 1972.¹²

The Fracture Service held high the concept that all fractures are a surgical emergency. That the type and urgency of treatment may be variable and the penalty of delay minor or catastrophic did not prejudice this axiom.

This was not an original idea. Hippocrates in his third book cautions that "extension of fractured or dislocated bones is not to be delayed to the third day but is to be carried out on the first day."

Dr. Scudder spoke with equal emphasis in his Oration on Fractures.

In our attitude toward fractures we must eradicate from thought certain deeply rooted conceptions of disease. There is no incubation period in a fracture . . . the accident is instantaneous. The fracture is present. The reparative processes begin immediately. Therefore, treatment should begin without delay so that the reparative processes may be facilitated instead of hindered. By treating a fracture instantly you treat the fracture. By treating a fracture after delay you treat a fracture plus complications. Early treatment is easy. Delayed treatment is difficult. Delayed treatment is dangerous. Late treatment is lamentable.¹³

THIS WAS the teaching of the Fracture Service, and I can hear the same words from Drs. Darrach, Murray, and McLaughlin still sounding in my ears this very day.

The Fracture Service had its own operating suite, entirely for its own use. This meant that an open fracture could be in the operating room within an hour of arrival at the hospital regardless of the time of day or night. It meant that elective, open operations could be scheduled at once. Dr. Murray was very enthusiastic about open reduction and internal fixation of long bone fractures properly done in a proper surgical environment. His writings stress the importance of immediate operation once the decision is made, in order to intercept the intense inflammatory response of the soft tissues which so rapidly supervenes after injury.

The emergency department organization also permitted immediate reduction of fractures with the cooperation of the Department of Anesthesiology. We sought an immediate definitive reduction under adequate anesthesia in the emergency department.

Improvement in the teaching of trauma to medical students was uppermost in Dr. Darrach's mind when he started the Fracture Service. He felt badly that the student had so little exposure to trauma teaching and knew so little about the subject. I am certain he had no misconception that every student would become a trauma expert. At the same time, he knew that a knowledge of the pathophysiology of trauma was an essential part of a well-rounded education for a medical student.

The Fracture Service gave a mandatory course in trauma which I will cite in some detail for its soundness in principle, its durability over the years, and for the opportunity it afforded medical students to learn something about tissue response to trauma as well as an overlook of the impact of trauma on the motor skeletal

system and the patient as a whole. The course entailed approximately 100 hours of teaching time for each medical student over a four-year period.

The entire first-year class, during its course in anatomy, was given four one and one-half hour clinics; two on the upper extremity and two on the lower extremity. At these clinics were presented patients and their x-rays designated to correlate cadaver anatomy with the dynamic anatomy and physiology of the extremities. The attempt was made to present patients showing bad anatomical or functional results based on ignorance of anatomic considerations or neglect or oversight of such factors in the course of treatment.

During the second year, as part of a course in general surgery, the Fracture Service gave a one-hour lecture and four three-hour periods in the animal laboratory devoted to reproducing examples of the bone phase and general phenomenon of healing following injury.

The student was provided with basic observations on the response of the tissues to these trauma, and on the attempts at repair which follow. Correlation between these observations and clinical conditions was provided by demonstrating patients and x-rays on the ward service.

DURING the third year, in groups of roughly eight, students became fulltime members of the Fracture Service for a period of two and one-half to three weeks during which time they were on call 24 hours a day in the emergency department, attended all clinic sessions, and had a three-hour daily morning session divided between didactic instruction and case presentations and discussions.

Student's work included formal instruction, ward rounds, and case work-ups and presentations. Each student was assigned in turn to new cases on their admission, and was responsible for the work-up of his assigned cases. Each student was also assigned a special topic for outside reading. The formal instruction covered injuries of the motor skeletal system by regions, and was supplemented by slides, x-rays, and patient demonstrations. Students assisted in procedures done on their patients, and occasionally assisted at operations in order to observe the gross pathology of recent trauma, and to be able to understand the reasons for urgency in certain types of injury.

During their work in the emergency department and clinic they not only saw, but were obliged to participate in the treatment of an average of from 200 to 250 new cases, and 500 or more active treatment cases divided among fractures, dislocations, and other associated motor skeletal lesions.

This then in part was the Fracture Service of the Presbyterian Hospital under the leadership of an extraordinary triumvirate, Dr. William Darrach, Dr. Clay Ray Murray, and Dr. Harrison L. McLaughlin. The ideal of their purpose was so clear that it made an indelible impact on those of us fortunate enough to have known the richness of their teaching.

I sincerely believe that those of you who personally knew these men and the Fracture Service will support my conviction that it was one of the finest teaching, research, and patient care units for motor skeletal trauma in the annals of American surgery.

Let us now take our leave of this chronicle and pursue our course to examine what has been gained or what may have been lost with the passage of time.

A NEW generation of young surgeons returned from World War II with a new interest in the surgery of trauma. Among these were many young surgeons trained in orthopaedics or about to continue training in orthopaedic surgery.

Prior to World War II, the treatment of fractures was primarily the province of the general surgeon who was more general than his specialized counterpart of today.

The American Association for the Surgery of Trauma was founded in 1938 by general surgeons with an original membership of 85 percent general surgeons. For the first decade (1939-1948), 43 percent of the papers presented at its annual scientific session were on the subject of fractures or allied motor skeletal trauma.¹⁴ We need make no issue of this except to say the lines between specialties were less finely drawn and fractures were treated by surgeons who wanted to treat fractures.

In general, the orthopaedists of the twenties, thirties, and forties were committed to the treatment of prevalent bone and joint tuberculosis and the reconstructive surgery of epidemic poliomyelitis, among many other orthopaedic conditions demanding their full attention. In the late forties and early fifties, two great discoveries were made that had a profound effect upon orthopaedic surgery. The discovery of streptomycin and isoniazid completely revolutionized the treatment of bone and joint tuberculosis,¹⁵ and the Salk vaccine virtually eliminated poliomyelitis.¹⁶

The time was right and certainly no specialty group was better qualified to take care of fractures than the orthopaedist by virtue of the anatomy and function of the structures common to both orthopaedics and fractures, as well as the special skills and technical knowledge

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required by the reconstructive surgery of fracture complications.

After World War II, the shift in stewardship of fractures was most acceptable to general surgeons. During their war experience a new interest grew from a new experience in thoracic, vascular, and abdominal surgery, but most particularly in the newly acquired knowledge of shock, fluid replacement, pulmonary and renal function, and metabolism and energy requirements in trauma. The general surgeon shifted his interests from the management of fractures to the management of the injured patient.

There was no Orthopaedic Department at the Columbia-Presbyterian Medical Center when Dr. Darrach started the Fracture Service. Orthopaedic patients were referred to the New York Orthopaedic Dispensary and Hospital then situated on East Fifty-ninth Street.

In the early forties, negotiations were underway for an affiliation, strongly urged by Dr. Darrach, between the New York Orthopaedic Hospital and the Presbyterian Hospital. The war intervened but in 1945 the affiliation was formalized and the NYOH moved to the Center in 1950.¹⁷

THE DIRECTOR of the New York Orthopaedic Hospital, Dr. Alan DeForest Smith, was generously disposed to give full support to Dr. Harrison L. McLaughlin, then director of the Fracture Service. During Dr. Smith's directorship, until his retirement in 1956, the Fracture Service and the Orthopaedic Service enjoyed a symbiosis of amicable mutual autonomy. The Fracture Service retained its independent functions with its own attending staff, its own ward and clinic to include follow-up clinic, and its own operating time for ward and private patients. The Orthopaedic Service had a similar arrangement. The fracture resident spent a year on the Fracture Service as part of his three year training in orthopaedics at NYOH.

This arrangement continued until the sixties to the mutual advantage of the Fracture and Orthopaedic Services without interruption in fracture training for the residents or in teaching for the medical students.

It is a well known and much respected fact that the first Fracture Clinic in the United States was established in 1917 by Dr. Charles L. Scudder at the Massachusetts General Hospital in Boston. Of considerable interest is a lesser known fact that it was staffed from its inception and for many years after by both general surgeons and orthopaedic surgeons, and each succeeding chief was appointed either from general surgery or orthopaedic surgery, a clear indication that the treatment of fractures at MGH

enjoyed the support of the joint staffs.¹⁸ This was an ideal multidisciplinary arrangement with the student, resident, and fracture patient enjoying the best of two worlds.

From 1947 to 1957, this Clinic was superbly directed by Dr. Edwin F. Cave, recognized nationally and internationally as one of the great leaders in orthopaedics and the surgery of trauma. He was succeeded by another great surgeon and leader, Dr. Otto E. Aufranc.

IN 1947, Dr. Preston A. Wade, past chairman of the Committee on Trauma and past President of the American College of Surgeons, originated a Fracture Service at the New York Hospital staffed entirely by general surgeons. In 1955, the Hospital for the Ruptured and Crippled affiliated with the New York Hospital under a new name, the Hospital for Special Surgery. Dr. Wade's service then became very much like the service of his close and dear friend, Dr. Eddy Cave. It was staffed equally by general surgeons and orthopaedic surgeons training both general surgical and orthopaedic residents who alternated as chief resident of the Fracture Service. Dr. Wade taught a very thorough mandatory course in trauma for medical students.¹⁹

In the early sixties, the Fracture Service at the New York Orthopaedic Hospital was absorbed into the Orthopaedic Service. Its separate attending staff was assigned to the general orthopaedic service and the responsibility for trauma patient care was assumed by the entire attending staff. The ward service ceased to exist as a separate unit. The followup clinic was shared with orthopaedic followup clinic with an attenuation of its former record keeping and review conference. Its operating time was assigned to the general Orthopaedic Service. As a result of these changes, trauma was obliged to assume a position of reduced priority.

Concurrently, there emerged a vigorous hand service, implant service, and scoliosis service. Briefly, this shift of emphasis has not been favorable to trauma, as important as it is to serve the needs and growth of a burgeoning and distinguished orthopaedic hospital. Not only has this had an adverse effect upon the actual teaching of trauma to residents but much more devastating is the attenuation of resident thinking about the relative importance of trauma to an orthopaedic surgeon and to his patients.

The unavailability of assigned operating time for acute trauma has posed a serious problem. The daily elective operating schedule barely has time for its own completion. Therefore, acute trauma is operated at night or whenever a fortuitous opening in the elective schedule permits scheduling a trauma case. The absence of a

recognized priority for the operative scheduling of acute trauma imposes an irreconcilable delay in the treatment of acute trauma. I firmly believe this to be an abrogation of the sacred tenets of proper fracture care.

IN JULY of this year, there was a reorganization of the Orthopaedic Service to reconstitute a fracture service in some form at the New York Orthopaedic Hospital.

It is essential to the issue to ascertain if the situation described is entirely parochial or is representative of the stewardship of fractures throughout the country. To this end, I wrote Dr. Cave and Dr. Wade to inquire about the organization and present status of their Fracture Services, and also sent a questionnaire to the directors of the 190 Orthopaedic Training Programs in the United States.

Dr. Cave kindly referred me to his *History of the Fracture Clinic of the MGH* from which I quote as follows: "In 1967, the Fracture Ward Service essentially ceased to exist as a separate unit and gradually was absorbed into the Orthopaedic Service".¹⁸

Dr. Cave also referred my letter to an active associate of the MGH and I quote his reply: "Dr. Cave has sent me your letter concerning the Massachusetts General Hospital Fracture Service in particular reference to the present position of a Fracture Service at the Massachusetts General Hospital. Following Dr. Otto Aufranc's move out of MGH, the Fracture Service as an organized part of the MGH Orthopaedic Service sort of dwindled away. Fracture patients since have been cared for on the general orthopaedic ward with resident rotations not made particularly for the treatment of fractures . . . At the present time there is a reorganization going on to reestablish the functions of the old Fracture Service if not its formal organization".

Dr. Wade referred me to a former member of his service to learn the present status of the Fracture Service at the Hospital for Special Surgery-New York Hospital Medical Center. The only change of significance is that the general surgical attending and resident staffs have been gradually phased out of the service organization. The fracture service still maintains a chief of service, an assigned attending staff, and its own separate ward, clinic, and operating time.

Dr. Wade's views on the transition are most pertinent to our interest, and I quote: "I have always felt that fracture training was necessary to a general surgeon, but in the light of recent advances in general surgical areas, heart surgery, chest surgery and vascular surgery and the rest, it seems that this is an obsolete idea".

Dr. Wade had much more to say but concluded: "You can gather from my remarks that I have finally come to the conclusion that fracture care will most certainly become an orthopaedic responsibility in the country in the future and I believe it will be a good thing for surgery even though I still have a nostalgic feeling for the old service that I definitely copied, and tried to emulate, from Drs. Darrach, Murray, and McLaughlin's service at the Presbyterian Hospital, and the MGH service run by Diddy Cave".¹⁹

The transitions I have described have occurred in the fracture services personally known to me, but this is not enough; we must look to the country at large.

Dr. Hugh Stephenson in 1971,²⁰ and Dr. Andrew C. Ruoff III²¹ and Dr. Jack Wickstrom in 1974² reported their results of a questionnaire sent to the medical schools of the United States concerning, "the training of physicians in handling medical situations between the onset of the accident or illness and the commencement of definitive care".

My questionnaire sent to the directors of the 190 orthopaedic training programs was designed to ascertain the status of teaching, training and patient care after the patient arrives at a medical facility for definitive care.

THERE WERE 83 respondents representing 44 university hospitals, 18 university-affiliated hospitals, 11 non-affiliated hospitals, and ten government hospitals (Public Health, Army, and Navy).

The respondents were asked how many hospitals took part in their program and there were a total of 323 hospitals reported. For the rest of the questionnaire, the program directors were asked to answer in terms of the major or key hospital used in their program.

The total number of orthopaedic beds reported was 6,261. The number of beds occupied by fracture patients was 2,476. Therefore, the average percentage of fracture bed occupancy was 40 per cent.

The total number of orthopaedic cases operated per year was reported as 90,930. The fracture cases operated per year were 33,699. Thus, the average number of fracture cases operated was 37 per cent.

This gives us an approximate figure of 40 per cent fracture bed occupancy and operative cases per year in 83 training programs representing the major hospitals in the program.

To simplify our communication, I propose to give the statistical summary of each subject category as a percentage, followed by a parenthesis containing two numbers. The first number

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will be the affirmative replies and the second number will represent the number of respondents. For example, 100 percent (83 of 83) of the residency training programs teach residents, i.e., 83 affirmative replies from 83 respondents. Thus, you will be kept informed of the number of respondents answering each question, and can weigh the value of the percentage.

THE QUESTION was asked, which of the following distinct subservices do you have? The letter accompanying the questionnaire defined a subservice in the context of the question as a service with an attending surgeon as chief; with residents rotating through the service; with a separate outpatient clinic to originate and follow patients of that service; with attending staff permanently assigned to supervise clinic, ward and operative cases; and with a service chief resident on rotation or graduate fellow appointed for that specific service. Twenty-nine percent had a fracture service (24 of 83). Forty-one percent had an implant service (34 of 83). Forty-nine percent had a scoliosis service (40 of 83). Seventy-three percent had a hand service (60 of 83). It is appreciated that part of hand surgery deals with trauma.

These data indicate to me that implant, scoliosis, and hand surgery have a more vigorous leadership than trauma surgery, and we are now aware that 40 percent of orthopaedic bed occupancy and operations deal with trauma. Therefore, I must believe that orthopaedic leadership assigns trauma to a low priority.

In the 62 university and university-affiliated hospitals 58 percent (36 of 62) indicated they had a fracture followup clinic, however, half of these conduct their followup examinations during regular clinic hours. Therefore, I deduce that only 29 percent of these programs conduct a weekly clinic expressly for followup purposes. Of those reporting a followup clinic, 83 percent (29 of 36) have a sitdown review conference with medical students and residents to discuss the continuity of results of fracture treatment.

The fracture followup clinic and review conference is a valuable teaching experience for residents and medical students, and the record chart data I consider to be the heart of clinical research. Any attenuation of interest in such a valuable teaching and retrieval mechanism deserves the most serious reevaluation.

A diagnostic file for fracture patients discharged from hospital care was maintained by 62 percent (50 of 81) and a diagnostic file for outpatient fracture patients by 38 percent (31 of 81).

House staff coverage of the emergency department was as follows: senior resident alone

nine percent (7 of 83); assistant resident alone 23 percent (19 of 83); assistant and senior resident together 61 percent (50 of 83); surgical intern alone seven percent (6 of 83). In 12 percent (10 of 83) a professional salaried emergency department MD covered the emergency department with residents, in only the university and university-affiliated hospitals.

Sixty-one percent (48 of 79) reported that a daily audit was made by an attending surgeon covering all emergency cases treated the previous day.

Asked if the daily elective operative schedule provided time to permit the immediate scheduling and operating of acute fracture cases, seventy-six percent (61 of 80) were in a position to give immediate attention to emergency operative cases consonant with the finest principles of fracture care. However, 24 percent (19 of 80) replied that such cases were operated, quote: "as soon as possible"; "in two to three days"; "fit them in" and, "after hours".

ASKED if general surgeons at their hospital treat fractures, the university hospitals reported that such was the case in nine percent (4 of 44); university affiliated hospitals 11 percent (2 of 18); nonaffiliated hospitals ten percent (1 of 10), and government hospitals zero.

At those hospitals where general surgeons do treat fractures, the consensus was that the general surgeons treat between five and ten percent with 10 to 95 percent treated by orthopaedic surgeons.

Asked if general surgical residents rotate through their residency training program 67 percent (55 of 83) replied in the affirmative.

The data on the teaching of medical students is most interesting. Please bear in mind that the questionnaire was directed to ascertain the teaching of fractures and motor skeletal trauma and not emergency medical care. The non-affiliated and government programs were deleted because of the avowed informality of their medical student teaching. Only seven of these 21 programs teach medical students at all, usually on an elective basis.

The average minimum number of hours of fracture teaching for each student over his entire medical school experience was eight hours for both the university and university-affiliated programs, and the average maximum number of hours taught was 45 hours for the university and 14 hours for the university-affiliated programs.

I can only conclude that the teaching of trauma to medical students is woefully inadequate.

Further questioning shows that the teaching of motor skeletal trauma is mandatory in only 19 percent of the programs (10 of 52), elective

in 37 percent (19 of 52), and both mandatory and elective in 44 percent (23 of 52), that is, a short introductory course with the privilege of taking an elective if the subject appeals to the student.

Whether or not we oblige our medical students to be trained in trauma, I am impelled to make certain observations with constructive intent.

In the context of today the prevalence of trauma makes it inevitable that trauma will play a part in the host response of many patients who will traverse the experience of our young doctors regardless of their specialty training. I am aware of the prevalent current practice of choosing a specialty in the first year of medical school and closing one's mind to those aspects of a medical education not entirely pertinent to the specialty chosen. May I say that trauma will emerge to embarrass these minds.

Today in our permissive society we permit the students to elect whether or not they choose to learn something about a disease that kills 116,000 and disables 11,000,000 Americans every year, and these young people are training to be doctors in this same America.

I submit that a basic knowledge of trauma is essential to all physicians if only to develop the acumen to be aware of a patient's need and the

judgment to make a wise referral for the skilled care of that need.

I would like to quote Dr. Charles Locke Scudder from the first oration on fractures given almost a half a century ago: "When one considers the extent to which the present acknowledged fundamentals of both the non-operative and operative treatment of fractures are neglected by some members of the surgical profession, it is difficult to restrain a savage rage".

In summary, the leaders of trauma in America in the past decade have dedicated themselves to the improvement of emergency medical services and trauma research and these efforts must not falter.

It is my fervent hope that the leaders of trauma will dedicate themselves in the coming decade to an equal effort to improve the quality of teaching and patient care in the definitive care environment.

To these ends, I dedicate this oration. A model has been drawn. The motivation and solution lie in the hearts and minds of those who find a message here.

I close with this quotation from George Santayana: "We must welcome the Future, remembering that soon it will be the past; and we must respect the past remembering that once it was all that it was humanly possible".

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