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Our Fashionable Killer

The Oration on Trauma

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THE COMMITTEE ON FRACTURES of the American College of Surgeons was organized in 1922 under the chairmanship of Dr. Charles L. Scudder of Boston. Its aim was to improve the treatment of fractures in this country and Canada. It has had many outstanding activities and accomplishments in the generation since. The first Fracture Oration, suggested and sponsored by this committee, was given in 1929 and has been continued at all Clinical Congresses since. In 1939 the Committee on Fractures was combined with the Committee on Industrial Medicine and Traumatic Surgery as the Committee on Fractures and Other Trauma. Its field of interest was widened to cover all forms of trauma. In 1949 the title of the committee was shortened to the Committee on Trauma, and in 1951 the Fracture Oration became the Oration on Trauma. I am greatly honored to stand in the shoes tonight of the many distinguished surgeons who have preceded me in this assignment and to present to you the twenty-second oration in this field.

Progress in medical knowledge and care in the United States in the past 50 years has been a major factor in raising the expectation of life at birth from 47 years in 1900 to 68 years in 1949. Some common diseases of two generations ago have all but disappeared, others have diminished markedly. The result has been a complete rearrangement of the order of frequency of deaths from various causes (Table 1). Each new medical triumph which diminishes mortality tends to raise the comparative position of death from accidental causes. From seventh place in 1925, deaths due to trauma reached fourth place in 1936, remaining there most years

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since. Occasionally they were fifth, once third. In spite of any and all improvements in medical care there will be many immediate deaths from accident. New mechanical inventions frequently create new hazards. In transportation, for instance, the limit of speed demanded by man may never be reached, but, now that some men have flown faster than sound, few will question that commercial planes will reach at least this speed sooner or later. With each increase of speed there has followed a greater chance of accident when the moving meets the immovable object. All of us have lived through the period of steadily increasing horsepower until we now have airplanes powered with over 25,000 horses. Each sign of progress increases the chance from a single weakness in a man-directed or man-made machine. The National Safety Council and similar organizations try to educate the public to prevent the tragedies of our machine age. It is doubtful if they will ever be able to keep abreast of man's apparently insatiable desire to take the long chance and move with greater speed. The medical profession must give wholehearted cooperation in safety education.

The major medical discoveries which have lengthened the span of life are those in the fields of the infectious and metabolic diseases of children. How has this affected the comparative incidence of death from trauma in children? In 1913, in children under 10 years of age, there were more deaths from diphtheria alone than from accidents. In the same year, in the ages 10 to 19, there were more deaths from tuberculosis than from accidental causes. In 1951 (Table 2), the latest reported year, accidents killed more children aged one to 14 years than any disease. In fact, accidents killed approximately 11,000 while the total of deaths

TABLE 1
CAUSES OF DEATH 1951 ALL AGES*
(Per 100,000 Population)

Heart Disease	356
Cancer	141
Vascular Lesions†	107
Accidents	63
Pneumonia	29
General Arteriosclerosis.....	21
Tuberculosis.....	20
Nephritis.....	17
Diabetes.....	16
Immaturity (infant).....	16

*National Office of Vital Statistics.
†Affecting central nervous system.

from all nine of the most important nonaccidental causes is only 13,000. It does not appear that we care for our children and youth as well as we like to think that we do. Accidents are the leading cause of death among all persons aged one to 36.

THE CHIEFEST KILLER

Fortunately¹ only about one per cent of accidental injuries results in death. In 1953 it is estimated that there were 95,000 accidental deaths and a total of 9,600,000 injuries. The classification (Table 3) of the latter is interesting. The automobile accounts for only about 13 per cent and industry almost 20 per cent. Accidents in the home make up 44 per cent. Injuries in the farming industry have increased inordinately as it has become a mechanized rather than a manual industry. In 1953 more accidental deaths occurred in farming than in any other major industry. It is estimated that there were 1,250,000 injuries, the same as the motorcar. The economic loss resulting from all injuries has been placed at \$9,700,000,000 for 1953, an average of over \$26,500,000 each day during the past year. The medical cost is about 700 million dollars. During this brief period in which I will be speaking to you there probably will be 11 persons killed and 1,100 injured in this country. Of every 17 persons in the United States, one suffered a disabling injury in 1953.

CHALLENGE TO MEDICAL PROFESSION

The trauma problem therefore presents a tremendous challenge to the entire practicing medical profession. Of course, all injuries do not receive, or even require, medical attention. Most of them do. We have no figure of the number of different patients seen by our profession annually, but there is no question that the results of accidents make up a considerable proportion of the entire case load. Particularly outside of the large cities, the well trained young surgeon probably obtains 50 per cent of his practice, in the first few years at least, from accident cases.

A large number of deaths from accident do not occur immediately at the site of accident but hours, days, or weeks later in a hospital. Knowledge of the proper methods of caring for the injured person has been increased and improved markedly during two world wars. Men were saved more or less routinely in the Korean War whose lives would have been

TABLE 2

CAUSES OF DEATH AMONG CHILDREN AGED 1 TO 14*

Total Deaths—1951

Accidents.....	10,950
Cancer.....	3,270
Pneumonia.....	3,027
Congenital Malformations.....	2,177
Tuberculosis.....	1,075
Gastritis, Enteritis and Colitis.....	874
Poliomyelitis.....	769
Nephritis.....	765
Rheumatic Fever.....	553
Meningitis (Nonmeningococcal).....	540

*National Office of Vital Statistics.

lost from injuries of similar severity occurring in civilian life in many instances in this present year. It is estimated that a quarter of a million persons are added each year to the number of permanently disabled, although accident is not the cause of permanent disability in all of these instances.

The purpose of this presentation is to discuss what may be done for the nonlethal results of this fashionable killer and to what extent this is being carried out at the present time. It includes first-aid care by the layman, medical school instruction, emergency room treatment by interns and residents, recognition of the serious and multiple injury case, continuing postgraduate teaching. Lives can be saved which are lost unnecessarily, the period of hospital and off-the-job morbidity can be markedly shortened, the number and extent of permanent disabilities, with loss of or change in job, can be materially diminished, if we will all make use of present-day knowledge in our own communities.

FIRST AID IS IMPORTANT

"Some² of the deaths and some of the permanent disability may be prevented by prompt, efficient first aid. The morbidity may be diminished considerably by the same means. The initial care at the site of accident has always been, is, and always will be, rendered usually by lay persons. With nearly ten million accidents a year we cannot expect a physician to be present where they occur, or to arrive before something is done, in the majority of instances. Many times this initial care will be the deciding factor between life and death, between permanent and temporary disability, between prolonged hospital care and loss of time and no disability. Many times treatment given by a physician at office or hospital cannot undo the lack of care, or

TABLE 3
TOTAL ACCIDENTAL INJURIES, 1953*

Motor Vehicle.....	1,250,000
Public Nonwork Non-Motor-Vehicle.....	2,000,000
Industry.....	2,000,000
Home.....	4,350,000
	<u>9,600,000</u>

*From *Accident Facts*, 1954 edition, published by National Safety Council.

the improper rendering of it, at the site of accident. As physicians we should know the most approved methods of first aid, not only because we might occasionally be called on to render it ourselves, but largely because we should be able to direct the methods of lay training in proper channels.

DOCTORS MUST CO-OPERATE

"There has been no organized effort to train the medical profession in first aid. The medical schools which give any instruction in this subject are a rare exception. The result is that the average medical student on receiving his degree knows less about it than a first-class Boy Scout. If he takes an internship in a hospital with an ambulance service, if he becomes an industrial, mine, railroad or police surgeon; he may become interested. But in most instances these activities are soon shunted to the side line and his interest wanes. The rank and file of the profession consider the subject outside their field or are not aware of its extent and importance. The prime movers in first-aid instruction have therefore come from the lay public, aided by an occasional physician. Improved forms of treatment are adopted by the medical profession, but may not be incorporated in first-aid books for years, because the profession did not know how to place them before a layman practically. In other instances first-aid workers have devised improved methods which have not been adopted generally by the medical profession, because of lack of close contact with the work. Much is to be gained in the care of the injured by closer co-operation between these two groups to their mutual advantage."

I wrote this 18 years ago. I regret to state that, in spite of another world war, the introduction of the atomic bomb, and all too frequent major civilian disasters, there has been little improvement in the relations between the general medical profession and first-aid groups since that time.

IS THE PATIENT BREATHING?

At the scene of any accident the first consideration should be whether the injured person is

breathing and, if so, has an open airway. Two or three minutes deprivation of oxygen to the lungs seem to be the absolute limit before permanent damage to brain tissue occurs, even if life is maintained. The arm lift back pressure method of artificial respiration should be common knowledge to every man, woman and child. Partial obstruction to the airway by blood or mucus in the nasopharynx or larynx must be relieved immediately by posture et cetera or a few minutes of anoxemia of heart or brain may mean mortality or permanent disability.

We can do nothing further except on a live patient, so active respiration with an open airway comes first. Attention is devoted next to shock and hemorrhage. Methods of combating shock at the site of accident are easily learned and carried out. Much time is spent by first aiders in memorizing "pressure points" to stop hemorrhage. They are practically useless. Almost every external hemorrhage can be stopped by pressure on the bleeding site—finger or hand if this is all that is available, sterile gauze and pressure bandage being much preferred. A tourniquet should never be used on an extremity as a first-aid procedure, or before reaching the operating room, unless absolutely indicated. There have probably been more deaths resulting from improper or unnecessary applications of tourniquets than from failure to apply them. The most common error is application tight enough to shut off return of some venous blood but loose enough to allow entrance of arterial blood into the part. Blood loss is increased thereby and I have seen death result. All that is required to stop such bleeding is to remove the tourniquet. The second common error is application of the tourniquet too tightly for too long a period with resulting gangrene. Therefore when a tourniquet has to be used it should be applied as low on the limb, close to the wound, as possible. The least length of limb will then be lost from gangrene.

Having attended to anoxemia, shock and hemorrhage as best and promptly as we can, wounds and fractures are considered next. No antiseptic of any character should be used on wounds by either layman or doctor. If running water is available, the wound may be rubbed with a bar of toilet soap and flushed. Whether or not it is possible to do this, the cleanest piece of cloth ready at hand, sterile gauze preferred, should cover the wound and be held in place by a compression bandage.

SPLINT FRACTURES

"Splint 'em where they lie" is properly the first principle in the treatment of fractures. The great life and limb saving value of traction splints in transporting the injured has been recognized for almost 40 years, i.e. since the middle of World War I. At the instant a bone is broken nature tries to protect the part from more injury. If there is any displacement, the muscles shorten, and the fragments ride by one another, resulting in the only possible natural splinting. Such splinting is fairly effective while the part is at rest, but it does not offer sufficient protection when the patient is moved. At the time of the original injury, or as a result of overriding of the fragments, the surrounding soft parts are damaged as well as the bone. The soft parts concerned are periosteum, muscle, blood vessels, nerves, connective tissue, and fat. In transporting without effective splinting, the fragments are likely to be moved about, often causing irreparable damage to the soft parts. Not only may large blood vessels or nerves be torn but such motion causes pain, with its resultant increase in shock. Moreover, in open fractures, motion of the fragments adds the risk of spreading infection through tissues not exposed to infection at the time of the original trauma.

A bone may be broken in an accident and no displacement of the fragments occur. If a person is allowed to bear weight on such an injured leg or to be moved without proper splinting, displacement of bone fragments may occur, and any of the unfortunate results mentioned above may follow. Not infrequently a closed fracture will become open, making the result as to life, limb, and permanent disability much more serious than if the fracture had remained closed.

All of these occurrences can be prevented if sufficient pull is applied to the part to overcome the muscular contraction and thus preserve the original length of the bone. This is simple if applied immediately after injury before the muscles have had an opportunity to become fixed in spasm. Early reduction is easy and the length of disability in such cases is decreased. This means that immobilization of fractures will and should be accomplished usually by lay persons as the only ones present where the fracture occurs. This includes the application of traction fixation by Thomas-type or improvised traction splints for every suspected fracture of the

lower extremity from pelvis through ankle. The indication is the same no matter whether the fracture is closed or open, with or without the bone protruding.

If the mechanism of injury is such that a fracture of the spine might have been produced, transport as a fracture, even though no objective signs are made out in a cursory examination. Death or permanent disability results more commonly from improper transportation of fracture of the spine, sometimes unrecognized, than from any other injury. If a fracture of the spine might be present and the victim is unconscious, handle him as though his neck were broken. In patients with possible fractures of the dorsal or lumbar regions, the underlying principle of moderate hyperextension should be observed in any moving. Transportation should be carried out face downward on a rigid support.

TRANSPORTATION OF INJURED

All of the above factors in first-aid care concern also the personnel of all ambulances. Morticians are responsible for most of the ambulances in this country, with the remainder in charge of police and fire departments, industry, volunteers and hospitals in about that order. Whether effective, life-saving, first-aid care and transportation are rendered depends largely on how much responsibility is accepted by the public, particularly the medical profession, to demand them in each local community. Moving the injured patient and transporting him in a manner by which no further damage will be done is the important consideration. If speed of the ambulance only is the first requirement, the border line case will usually be lost anyway. We must make it legal without question for morticians to render adequate first-aid care.

For the past five years the Subcommittee on Transportation of the American College of Surgeons' Committee on Trauma has carried on an investigation of the efficiency of transportation of the injured in this country. This was under the chairmanship early of Dr. Roscoe C. Webb of Minneapolis and later of Dr. George J. Curry of Flint, Michigan. A questionnaire of 17 major items formed the basis of the survey. Twenty-five cities with populations from 100,000 to eight million were included, with a total population of 25,299,000. Thirty-six smaller cities and towns of from 2,000 to 70,000 were also covered to a total of 706,000. The combined total represents about one-sixth of the entire population. The reports came from 29 states—north, east, south, west and central. Five

large cities with a total population of 3,761,000 were considered excellent and eight with 7,073,000 people fair to poor. That is by population covered 15 per cent were excellent and 28 per cent fair to poor. The remainder were between, or good. Among the smaller cities it was considered that 25 per cent of the population was covered excellently and 28 per cent fair to poor.

We believe that city ordinances are necessary regarding personnel qualifications of drivers and attendants and the required equipment on ambulances. Drivers and attendants should have a Red Cross first-aid certificate or some signed card showing equal recent training. Full-ring or half-ring lower extremity traction splints should be carried and applied at the site of injury. Proper boards should be carried for safe transport of possible spine injuries. Oxygen ready for use should be part of regular equipment.

The questionnaire was answered by surgeons. We were most interested in the replies to the last question, "Do you believe that, if you sustained a serious accident in your own city, you would be transported to the hospital in a way conducive to your promptest recovery?" Many answered no.

In general, transportation of the injured seemed somewhat better in the smaller communities than in most of the large cities.

LOOK FOR HIDDEN INJURIES

All of the above advice regarding anoxemia, shock, hemorrhage, early care of wounds and immobilization of fractures is equally applicable to the patient seen first in the doctor's office or the emergency room of a hospital. Suppose a person's trunk has been caught between the rear end of a truck and a wall, or by a rock fall in a tunnel. He is dazed but not in too bad shape. Ribs may have been broken puncturing pleura and lung, intercostal vessels may be bleeding internally, anything may have happened within or surrounding the abdominal cavity, including spinal injury. There may be little sign of anything definite when first seen, but the mechanism of injury has been such that it would seem that severe injury should have resulted. Handle him as if this is the case until all severe injuries can be ruled out following various tests made at a time when he is able to stand them. Protect the patient from all further trauma until possible injuries have been disproved, rather than consider that he is fortunate not to have been hurt more seriously.

If not in shock, the patient probably will be in a

short time. Do not wait for the blood pressure to fall before instituting shock treatment as this is a sign that shock is already far advanced. Give morphine to relieve pain, except in brain injuries; give enough to relieve it and give it for pain only. If he is cold, warm him up and keep him warm, but this does not mean piling on hot water bags and blankets until he is bathed in sweat and losing precious fluid. He needs a transfusion. Obtain the blood and crossmatching at the earliest moment, but have plasma expanders running in the meantime. This will help prevent or relieve shock, and no time will be wasted getting a needle into a vein when the blood is ready. Remember whole blood is the fluid really needed in traumatic shock, except possibly from burns, whether there has been evidence of loss of blood or not. Administration of too much fluid can be as dangerous as too little. Frequent laboratory checking is needed to furnish the right amount. Preventing further loss of the patient's own blood is nearly as important as replacing the blood drained out already.

FIRST THINGS MUST COME FIRST

After treatment of shock and hemorrhage, and accompanying it as far as possible, comes the physical examination. It must be gentle and without undue exposure in order not to increase shock. Which are the immediately important fractures? Is there a possible abdominal or chest injury? With signs of possible abdominal injury we must consider the solid organs, liver and spleen, the hollow viscera with possible perforation, the blood vessels, e.g. mesenteric, the retroperitoneal organs—kidney, adrenals, retroperitoneal hematoma, spine and spinal cord, perforation of the diaphragm et cetera. We must decide at the first possible moment whether any operative procedure is indicated; which part of the body will be approached first when the condition improves sufficiently to do anything; whether no marked improvement can be expected in the general condition until some intervention has been accomplished, even if the person dies in the attempt. These decisions may need to be changed as the condition changes, but we must constantly keep in mind doing first things first.

X-ray examination is often carried to a ridiculous extent. What films do you absolutely need to determine what you will do to the patient first when possible and what will prevent further injury in the

meantime? Too many early x-rays of the skull are taken. Unless the patient is co-operative enough to keep his head quiet, these should be postponed unless one believes it is absolutely necessary to determine the presence of an open depressed fracture or a fracture at a site which could readily produce an injury to the middle meningeal artery. Otherwise no operative intervention on the skull is going to be instituted early anyway and x-rays for the record may better be done later.

The presence of fractured ribs proved by x-ray will usually make little difference in early operative treatment. There may have to be treatment for pain on breathing, for tamponade of the lungs with blood, for paradoxical respiration or tension pneumothorax, but time and effort spent on x-ray of the chest offer little in the early care of the extensively injured that cannot be learned equally well or better by the physical examination. Anesthetizing the proper intercostal nerves may often change the picture entirely in a patient suffering severe chest pain.

EMERGENCY ROOM IS WEAKEST LINK

In the emergency room in your hospital who examines an injured person first? May it be the most junior intern, who has never seen a traumatic case before, or an indifferently trained foreign physician with language difficulty? Have you prepared and posted a directive which will give these junior men an idea of what instances require the immediate notification of a surgical resident? In the middle of the night will this be a resident who has been instructed how to recognize the signs of intra-abdominal injury, for instance, and to call a member of the attending staff now and not wait until tomorrow morning? Will the attending notified be at the most junior level or a senior man with experience? Can you decide over the telephone from the description given that this patient needs an immediate urological consultation rather than observation by you? Do you know from personal inspection what goes on in your emergency room in the middle of the night or do you stay away due to a subconscious fear of what you might see?

There is little doubt in my mind that the weakest link in the chain of hospital care in most hospitals in this country is the emergency room attention to the injured. Suppose that you were injured in an automobile accident in your city tonight; that you

were rendered unconscious and that your identity was not recognized; that you were brought to the emergency room in your own hospital, still unconscious and unidentified, with multiple injuries including possible abdominal trauma. Do you believe that your intern and resident staff has been so trained that you would be handled in a way which would probably save your life? If your answer is no or questionable, how can you expect adequate handling in some other town where the same sort of accident might happen to you? How long is it since you have had a medical board survey of your emergency room?

TRAUMA AND THE MEDICAL SCHOOL

For many years past the growth of medical knowledge has made it impossible for the medical schools to train students in more than basic fundamentals in most fields. Any intimate knowledge of the problems of various specialties has to be left chiefly to the graduate period. That is why the year's internship has become practically country-wide, and residencies in medicine, surgery and the other specialties have been increasing in length. None of us would argue that the recent graduate of medical school has been trained so that he is prepared to treat in the most effective manner the ordinary accidental wound, the common fractures, to say nothing of the severely injured person or the multiple injury case.

Traumatic surgery should not be a specialty in medical school, with a chair, since it cuts across all fields in the same way cancer does. No one can know all fields as related to traumatic surgery, but someone needs to direct the teaching of the subject and make certain that all departments introduce the student to it. I hope that some day the medical schools will have co-ordinators for the teaching of traumatic surgery, much as now exist in most medical schools in the field of cancer. The latter are supported by the U.S. Public Health Service.

Today in many undergraduate departments mention of the traumatic phase in any specialty is a hit or miss proposition according to the interest of the professor planning the course or the instructors carrying it out. It is not a question of more time being allotted to trauma. We will all grant that the problems introduced by trauma should be mentioned in each specialty. Whatever time is given to them should be spent conscientiously on instilling principles of basic continuing value, not on the gadget, for instance, that the instructor is particularly interested in.



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At present, however, we have no right to expect the first year intern or the junior resident to know how to treat practically the simplest case of injury. Yet one of his early assignments will probably be the emergency room. Here he frequently has to work out his own salvation. He may come to depend on a charge nurse or . . . an orderly with long service, but you are more likely, if he is conscientious, to find him thumbing a book in the hospital library in the middle of the night to try to find the details of how to reduce and immobilize a Colles' fracture. Of course he can call the resident but in many instances he soon learns that this interferes with the orderly carrying on of the heavy operating program of interval cases the following day and his call for help is not always graciously received.

PATIENT'S FIRST IMPRESSIONS

Many hospitals do not usually receive emergency ambulance patients and in these the emergency room is still less well organized for the best care of the injured, who arrives by taxicab or walking. Further, this department is of great importance to the hospital from the public relations viewpoint. As has been well stated by Lindquist,³ "Good emergency care = good public relations." Any type of person may sustain an injury and come to the emergency room. The first impression made on him as to promptness, organization, human kindness and effective treatment may well remain his

lasting impression of that particular institution for the rest of his life. Trained men are needed here at least equally as much as we need a good second assistant in the operating room while a patient is under anesthesia. The most finely equipped emergency department does not mean much to the injured person if the doctor and nurse have little skill and experience. In addition all personnel in the emergency department at all hours must develop team work which will not break down under stress.

If a person is brought in on a stretcher he should be placed on an examining table from which he does not need to be moved until he is placed on the operating table or in his hospital bed. Nothing can be worse for the patient already in shock or in impending shock than being moved, however carefully or carelessly, from examining table to stretcher to x-ray table to stretcher to examining table to stretcher to operating table or ward bed. At a reasonable cost tables are available which are substantial for small operating procedures, light enough to be moved readily, convenient for an x-ray machine, and fitted with standards for intravenous fluids.

X-ray and laboratory service must be available around the clock and obtainable promptly. An emergency ward should be set up in the same area where the serious case can be attended for 24 hours if required before his condition reaches a stage where an indicated procedure can be performed or where he will be safe with ordinary floor nursing. Competent, sympathetic clerical assistance is also required to obtain correct data, personal and concerning the accident, since legal aspect may arise in any case.

WHO SHOULD BE RESPONSIBLE?

All of this requires co-ordinated team work and an experienced field captain, no matter who the coach on the sidelines may be. Who is the captain at three in the morning in your hospital emergency room? I am coming to believe that a member of the attending surgical staff, not on duty inside the hospital for that period, should probably be in general charge of the emergency department. A resident with experience should be in immediate command. This should be a full-time position with an emergency service of any size, with more professional personnel as required. In many situations a resident will gain more in diagnostic acute-

ness, surgical judgment and even in technical procedures which will be of value to him later in practice, than he does in much of his ward and operating room experience. Emergency room lacks the glamor of the operating room, but is really the "school of hard knocks." The toll of deaths from accident is by no means all at the site of their occurrence. I have been unable to find any estimate of the proportion occurring immediately and later. But you and I know that many die after arrival in the hospital building. The weakest spot in the whole system of care of accidents is in that uncertain period of time between arrival in the institution and definitive care in the operating room or bed. We must accept more responsibility for what goes on in this twilight period, sometimes lasting several hours, if we hope to diminish the shocking death rate from our fashionable killer.

Many hospital residencies do not include training in the surgery of trauma. Some hospitals do not accept accident cases either brought by ambulance or walking into an emergency room. In many hospitals an x-ray diagnosis of fracture before admission automatically admits a patient to the orthopedic service, and the general surgical resident does not rotate through this service. This same resident will usually have to treat injuries on entering private practice and, in fact, make considerable of his living from them. He has a diploma of satisfactory accomplishment from your hospital on his office wall. You should see to it that this piece of paper means more than his ability to perform a competent subtotal gastrectomy, which he will do rarely, if at all, in his first few years out. Without your insistence, whether he enjoys it or not, that there shall be a requirement for him to be at least exposed to trauma for three to six months of his residency, you are placing him as a private practitioner of surgery in the same unfortunate position regarding the patient as was the intern we mentioned above who has to search out the method of treatment in a library book.

Questions are always asked in the field of trauma in all examinations of the American Board of Surgery. This will continue to be true. It has been notorious for years that the applicants make their poorest record in the clinical field in attempting to discuss a traumatic problem. They can be grounded in this field only during their hospital residency. We are not playing fair with injured patients if we

fail to make experience in diagnosis and treatment of accidents available to all surgical residents.

In caring for severely injured patients one person needs to be in general charge. This should be an experienced general surgeon. Suppose there is a fracture of the pelvis with possible intra-abdominal injury admitted to the orthopedic service because of positive x-ray finding. The fracture per se will not kill the patient, but a ruptured bladder or ileum may well do so. I know no reason why the orthopedist cannot see the case in consultation on the surgical ward, with much greater safety to the patient, than having the urologist or general surgeon called to the orthopedic ward at some time. In some institutions even cases with fractured ribs automatically go to the orthopedic wards. Can you agree that this is the place to treat a rapidly developing tension pneumothorax? In fractures of the lumbar vertebrae we see ruptures of the jejunum and kidney. Many of these patients after 24 or 48 hours with vertebral fracture will show only marked abdominal rigidity from retroperitoneal hematoma. What can the general surgeon judge about them if seen in consultation first on the second day? Where fractures are sent automatically to the orthopedic service I believe this policy should be limited to fractures of the extremities only and, further, where the injury has been such that there is no likelihood of a multiple injury involving also head or trunk. Other cases should go to general surgery for the acute period at least. This includes all fractures of the pelvis and lumbar spine.

Much remains to be done in postgraduate education. Many of our young surgeons seek help as soon as they find that the public asks them to treat injuries about as frequently as all other conditions combined. The program of every general surgical meeting should include one or more papers on trauma. One meeting a year of all county and similar medical societies should be devoted to the problems of injury. More university sponsored postgraduate courses in this field are required. The Regional Committees of the Committee on Trauma of the American College of Surgeons have accomplished considerable in this respect, but many parts of the country have not been affected, as yet. Your personal enthusiastic support is needed.

The 9,600,000 persons injured in 1953 might have died as a result of their injuries. Of the 95,000 accidental deaths all were not necessary if known methods of treatment had been skillfully and promptly applied in order of importance. To accomplish this more attention is required to ob-

tain more widespread trained first-aid care by laymen, introduction to the basic principles of treatment of the injured in all clinical departments of our medical schools, a thorough overhauling of the present concept of the importance of the emergency room in hospital care, adequate teaching in this field of all interns and residents as a professional responsibility in all hospitals, proper triage planning so that the multiple injury case will receive treatment for first things first, continued professional education to the end of a useful life. We must take seriously the education of interns and residents in trauma since the life you save thereby

may be your own. In the future, as in the past, the surgery of trauma will always be with us.

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