

TELEPHONE TRIAGE OF EMERGENCY PATIENTS

BY A NURSE

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GRANTS TO Debra Cason

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

Can a nurse accurately triage emergency patients from non-emergency through a telephone interview?

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CHAPTER 1

INTRODUCTION

Abuse of Emergency Medical Services is undisputedly a problem. Since 1954 visits to hospital emergency rooms in the United States have increased 380%, significantly disproportionate to population increases, number of hospital admissions, and clinic visits (Canizaro, 1971; Gibson, 1973). Coinciding with this increase in emergency department visits is the increase in the number of nonemergency patients--up to 70% in some facilities.

Training and upgrading of Emergency Medical Technicians and sophisticated prehospital care came into being with the enactment of the Federal Emergency Medical Services System Act of 1973. As public education and acceptance of the idea of Mobile Intensive Care Units (MICUs) increased, abuse of prehospital services became apparent. Approximately half of all patients summoning an MICU could safely be transported by a nonemergency vehicle and could wait several hours for medical intervention (Diamond, 1977). MICUs manned by well-trained paramedics are designed to care for those emergency patients who need these special services. More effective

utilization of MICUs and improved patient care could be realized if nonemergency patients would go to the hospital by private car or other nonemergency means.

One of the measures taken by hospitals to deal with the large number of patients in the emergency department was triage, the sorting, initial evaluation, and selected referral of all emergency patients (Weinerman & Edwards, 1964). Triage has enabled emergency departments to meet several objectives: (a) to expedite care of emergency patients, (b) to ensure that patient priorities are established, (c) to utilize personnel and facilities more effectively, and (d) to refer patients not requiring emergency facilities, and (e) to dispose information about other community agencies (Warner, 1978).

Unfortunately it is difficult for triage to play a similar role in the prehospital environment because patients are not in one geographical location. A type of triage is being done in many Emergency Medical Services Systems by the paramedics in the field once they reach the scene. Their assessment of the patient determines if the patient needs the special services of an MICU. This type of triage in the field is a necessity in order to prevent the need for twice as many expensively equipped MICUs and specially trained personnel.

However, while an MICU is responding to a nonemergency call, a patient with a true emergency must await the services of a second MICU dispatched from a further distance. To increase the effective use of MICUs, triage might be done at an even earlier point in the system, at the time of the initial call.

Statement of the Problem

The problem of this study was to determine with what degree of accuracy a registered nurse with special skills can differentiate various categories of emergency patients from nonemergency patients through a telephone interview.

Statement of the Purposes

The purposes of this study were to:

1. Classify type of injury or illness according to written record of telephone interview with the caller.
2. Compare nurse's assessment of the emergency nature of the call with that obtained by MICU paramedics on the scene.
3. Determine the accuracy of the nurse's assessments of emergency patients made from the telephone interview record.

4. Compare the accuracy of nurse's assessments of the different categories of injury or illness.

Background and Significance

The modern concept of triage was first developed by the military medical officers on the battlefields of World War II. The wounded were assessed according to the severity of the injury and designated to a specific area to receive that type of patient (Warner, 1978). On the battlefield, casualties were categorized into five classes as follows: (a) dead or will die, (b) life threatened--immediate, (c) urgent--one to two hours, (d) delayed--non-critical--ambulatory, and (e) no injury (Gazzaniga, 1979).

Triage was developed for the improvement of patient care when a large volume of wounded needed medical attention at the same time. Priorities were set by the triage system and the patients needing immediate intervention were able to receive that care. Personnel and facilities were best utilized by triage (Weinerman & Edwards, 1964).

Triage in the Emergency Department

After World War II, emergency room visits in general hospitals began to increase in number. This increase in

emergency room visits in the United States has risen to more than 50 million in the past year (Cohen, Freiden & Samuels, 1977). In order to cope with the large increase in emergency room visits, the concept of triage was adapted to the hospital setting. Patients were sorted into categories of priorities in order to expedite patient care, to ensure that patient priorities were established, and to improve utilization of personnel and facilities (Warner, 1978). Triage was introduced into the hospital setting as early as 1963 (Nelson, 1978). Although the goals of triage were the same, different emergency departments chose different ways of applying the concept of triage to their individual needs.

Triage may be done internally, inside the treatment area, or externally in the registration and admitting area. Triage may be done according to priority or according to a specific medical specialty area such as pediatrics, major medicine and minor surgery (Nelson, 1978).

Designation of triage officer also varies from one emergency setting to another. Physicians have been utilized in some settings where the patient may be referred to an outpatient clinic or private physician after only a brief history and physical examination.

Lay persons have also been utilized to triage patients to medical areas. A list of chief complaints corresponding to the appropriate medical area may aid lay people in their triaging (Costello, 1967). Nurses have successfully been utilized at triage with an accuracy rate reported as high as 98% (Jones & Shires, 1969). Many authors have recognized and reported triage as a role to which nurses are easily adapted.

Abuse of Emergency Medical Services

The Emergency Medical Services System Act of 1973 provided for a systematic approach to all phases of emergency medical care, both hospital and prehospital. These systems across the nation are plagued by a common problem of abuse of the prehospital services. System administrators, medical personnel, and paramedics are becoming increasingly concerned that the delivery of high quality care to patients who need prehospital emergency services will be damaged or destroyed by this abuse. In a review of 2,152 paramedic runs in Los Angeles County, 1,199 or 56% of the runs were for minor complaints and required no or minimal medical intervention such as minor bandaging. Only 20-25% of these

runs were on seriously ill patients (Diamond, Schofferman & Elliott, 1977).

Mobile Intensive Care Units are frequently dispatched on nonemergencies such as athlete's foot, colds, twisted ankles, and minor lacerations. In one case, a reported unconscious person was sent an MICU. When the paramedics reached the address, they found a 15 year old girl with a toothache in good condition. Meanwhile a patient suffered a cardiac arrest only five blocks from the MICU's station. It took an additional MICU from a station further away 10 minutes to arrive at the scene of the cardiac arrest (Roberts, 1979).

Medical intervention within 4 to 5 minutes is mandatory for a patient who has suffered a cardiac arrest. The sooner that basic and advanced life support are initiated, the better the patient's chance of survival. In the trauma victim, stabilization and replacement of blood loss by administration of intravenous fluid therapy are important as soon as possible to reduce morbidity and mortality (Eisenberg, Bergner, & Hollstrom, 1979).

Why are prehospital services being abused? Abuse of Emergency Medical Services Systems is caused by many of the same social and technological changes that have

caused the abuse of the emergency room (Scalice, 1978). The abuse mainly occurs from high-density, low socioeconomic areas of the big cities, coming from a population segment who frequently turns to a public agency when they are in any kind of trouble (Scalice, 1978). In many cities, nonemergency transportation to medical facilities is not available to indigents. Many people are uneducated concerning the purpose of MICUs. Others become impatient while waiting for a private ambulance or cannot afford a taxi. Some patients call an MICU because an ambulance is the only type of transportation available that private insurance or Medicaid will cover (Smock & Thall, 1977).

Prehospital services are limited in alternatives for solving the abuse problem. Adding additional MICUs is expensive since one unit costs over \$20,000 and contains over \$22,000 worth of medical equipment for paramedic use. Paramedic training costs, manpower to operate the vehicle, and vehicle maintenance add significantly to the total cost (Roberts, 1979). Alternate methods of transportation to indigents is an important factor in eliminating the abuse; however, motivation to do so is necessary in local city and county governments. Public education regarding proper use of MICUs seems

appropriate; however, several systems which have engaged in aggressive public awareness campaigns find that the campaign creates an increase in calls (Dallas Fire Department, 1978; Scalice, 1978).

Telephone triage can be a solution to the abuse problem and is being utilized in various forms. A report of the investigation of 23 major cities' Emergency Medical Services dispatching reveals several types of screening procedures (Dallas Fire Department, 1978). The only system using nurses to screen calls is in New York City where they have used telephone triage for several years. System administrators in New York believe this screening is a necessity for proper utilization of MICUs. Non-essential runs have been cut by 20% (Scalice, 1978). Although they have no documented proof that patients denied an MICU were indeed not an emergency, the fact that no lawsuits have been initiated may be an indication of the accuracy of triage (Scalice, 1978).

In a major city on the West coast, nonmedically trained dispatchers screen approximately 30% of the calls at their own discretion, but the many lawsuits filed against the Fire Department probably testify to the inaccuracy of the screening method (Roberts, 1979). Other Emergency Medical Services across the country use

Emergency Medical Technician (EMT) dispatchers who screen a minimal number of calls and also triage according to the type of manpower help the MICU will need such as police or firemen to assist in cardiopulmonary resuscitation. Some cities screen no calls (Dallas Fire Department, 1978).

Telephone Interviewing in Nursing

In many areas of nursing, telephone interviewing plays an important role. In physicians' offices, many people call for medical advice about a particular problem and are triaged to the appropriate facility. Emergency room nurses are also frequently called upon to decipher patients' complaints over the telephone. Poison control centers utilize nurses to evaluate and sometimes treat poisonings and overdoses through telephone interviews (Veltri & Temple, 1976). Followup care is frequently carried out effectively by public health nurses via telephone, as well as by clinic and office nurses. Mental health crisis situations are often handled over the telephone, and determinations are made as to seriousness and appropriate disposition. In each of these situations, the nurse must take a careful history, evaluate the patient--his reliability, his resources, his level

of understanding--and triage him to the appropriate place where his problem can best be attended. The ability to triage emergency patients from nonemergency patients through a telephone interview would allow for effective utilization of equipment and manpower and provide better care for emergency patients. Although nurses have been used for telephone triage, there have been no studies to determine the accuracy of the triage. A study of this nature should be made in order to determine the appropriateness of this use of a registered nurse.

Hypotheses

For the purpose of this study, the following hypotheses were identified:

1. A registered nurse with special skills cannot accurately differentiate various categories of emergency patients from nonemergency patients through a telephone interview.
2. A registered nurse with special skills cannot accurately differentiate cardiovascular emergency patients from nonemergency cardiovascular patients through a telephone interview.
3. A registered nurse with special skills cannot accurately differentiate obstetrical and gynecological

emergency patients from nonemergency obstetrical and gynecological patients through a telephone interview.

4. A registered nurse with special skills cannot accurately differentiate gastrointestinal emergency patients from nonemergency gastrointestinal patients through a telephone interview.

5. A registered nurse with special skills cannot accurately differentiate neuro-psychiatric emergency patients from nonemergency neuro-psychiatric patients through a telephone interview.

6. A registered nurse with special skills cannot accurately differentiate trauma emergency patients from nonemergency trauma patients through a telephone interview.

7. A registered nurse with special skills cannot accurately differentiate miscellaneous categories of emergency patients from miscellaneous categories of non-emergency patients through a telephone interview.

Definition of Terms

For the purpose of this study, the following definitions of terms were made:

1. Emergency patients--those patients who need immediate medical intervention from paramedics in Mobile

Intensive Care Units or "Code 3" (lights and sirens) transportation to a hospital.

2. Medical intervention--measures of basic or advanced life support including airway maintenance, cardiopulmonary resuscitation, control of bleeding, splinting, oxygen administration, intravenous fluid therapy, electrocardiograph monitoring, defibrillation, emergency medication, or emergency childbirth.

3. Nonemergency patients--those patients who need to see a physician but can safely wait 2 to 3 hours and can be driven in an automobile or private ambulance to a hospital before necessary intervention.

4. Triage--the sorting, initial evaluation, and selected referral of emergency patients.

5. Paramedics--those state-certified paramedical health providers trained in advanced life support, patient assessment skills, emergency medical intervention, or prehospital care.

6. Emergency Medical Technicians--those state-certified paramedical health providers who are trained in basic life support including vital signs, bandaging and splinting, cardiopulmonary resuscitation, and mechanical aids to ventilation.

7. Registered nurse--a state-licensed professional nurse with special skills in prehospital emergency medicine, triage, and telephone interviewing.

Limitations

The limitations of this study were that no attempt was made by the investigator to control the variables of:

1. Education level, socioeconomic status, sex, or race of the caller or patient as obtained from the interview form.

2. Accuracy of information about the patient given by the caller to the nurse as obtained from the interview form.

3. Accuracy of information obtained on patient forms as recorded by paramedics on the scene.

Delimitations

For the purpose of this study, the following delimitations were made:

1. Interview forms were available only from telephone interviews with callers to the Fire Department who caused the dispatcher to question the emergency nature of the call.

2. Interview forms were available only from telephone interviews with callers to the Fire Department who

either were the individuals requesting emergency service or had personally seen the person for whom emergency service was being requested.

Assumptions

The following assumption was made for this study: Triage is an efficient and effective method of management of emergency patients which provides for better patient care.

Summary

This study was done to determine with what degree of accuracy a registered nurse can differentiate categories of emergency patients from nonemergency patients through a telephone interview. Accurate triage by telephone could possibly be a solution in alleviating the abuse problem of prehospital Emergency Medical Services and consequently improve patient care.

Chapter 1 has described the problem and purposes of the study, as well as the background and significance of triage. Chapter 2, the Review of Literature, consists of discussion about the beginnings of triage, hospital emergency room triage, a brief overview of the recent investigations involving triage, and the nurse's role. Chapter 3 contains the procedure for the

collection of data, methodology of the study, and a discussion of the treatment of data obtained. Chapter 4 consists of the results obtained from the study, as well as an interpretation of the findings. Chapter 5 concludes with a summary of the results, the conclusions that can be drawn from the investigation, the resulting implications for nursing care and recommendations for future investigations of this problem.

CHAPTER 2

REVIEW OF THE LITERATURE

Increasing numbers of health professionals are looking at solutions to the problem of misuse of Emergency Medical Services in the prehospital setting. Some health professionals propose nurse triage at the time of the initial call for services of a Mobile Intensive Care Unit. It is the purpose of this chapter to discuss the use of triage, prehospital Emergency Medical Services misuse, related investigational literature, and the nurse's role in triage.

The History of Triage

The first battlefield evacuation and triage were devised during the Napoleonic Wars by Baron Dominique Larrey. During World War I, the importance of triage was not immediately recognized. The sorting of patients in the battlefield was a complex and continuous procedure. From battlefield triage, wounded were taken to battalion aid stations to be evaluated again. Those who needed more than first aid were sent on to clearing stations further away from the combat front. Others who

responded to first aid were immediately returned to their combat duties. In the clearing station, the decision was made as to what casualties should go to the field hospital. Reevaluation after resuscitation in the field hospital often showed that the patient who was originally nontransportable had become transportable and could safely be evacuated further to the rear of combat (Burford, 1963).

Although it was seemingly desirable to treat all casualties as soon as possible and therefore as close to the combat area as possible, it was actually impractical and harmful. When the census of a field hospital exceeded 40-50 patients, these men could not be cared for efficiently. Additionally, when a casualty capable of being evacuated from a field hospital was not transported, he occupied space and utilized time and attention of medical personnel which might be desperately needed by another more severely wounded casualty who could not withstand transportation (Burford, 1963).

Through the experience of World War I and on analysis of 80 deaths which had occurred in Fifth Army evacuation hospitals in January 1944, medical officials believed that mortality could be reduced by careful

triage. Triage principles were delineated and educational programs were initiated (Burford, 1963).

Triage in World War II was organized and efficient. Being a function of great importance, triage could be properly carried out only by experienced medical officers (Burford, 1963). Patients were categorized on the battlefield and again at aid stations into five areas as follows: (a) dead or will die, (b) life threatened--immediate, (c) urgent--one to two hours, (d) delayed--noncritical, and (e) no injury (Gazzaniga, 1979).

Hospital Emergency Department Abuse

Several articles in the early 1970s pointed out the remarkable increase in emergency department visits. Canizaro (1971) compared American Hospital Association statistics for the years 1958 to 1969. During this 11 year period with a 32.3 million increase in the United States population, Canizaro cited a 7 million increase in hospital admissions. Total outpatient visits including clinic and emergency visits increased by over 41 million. Hospital admissions and clinic visits increased approximately 30% whereas emergency visits increased 121.7%. Canizaro also stated in his article that part of this increase in emergency room visits

should ideally be realized as an increase in clinic visits since nonemergent problems in the emergency room average 50%. He concluded that part of the emergency department explosion was due to the increase in the number of patients with nonemergent conditions. He stated that

The public now views the emergency service as a community medical center for the treatment of a variety of medical and surgical problems, expecting prompt, courteous attention at any time of the day or night. (Canizaro, 1971, p. 544)

Gibson (1973) reported that from 1954 to 1973, hospital utilization rose as follows: number of hospitals--14%; number of hospital beds--56%; number of admissions--60%; inpatient days--41%; visits to the emergency departments--380%. Additionally, he indicated that no less than one-half to two-thirds of emergency room patients do not represent clinical emergencies. He reported

In terms of patients treated and resources consumed, the major current activity of urban hospital emergency departments is not rendering emergency care to the injured but rather providing routine primary health care to large segments of the population unwilling or unable to go elsewhere. Its major present role is as the last refuge to take care of the failings elsewhere in the health care system. (Gibson, 1973, p. 60)

Canizaro (1971) defined true emergencies as those conditions which will have an adverse affect on the patients' health if not treated within a few hours. The American Hospital Association makes a distinction between an emergency and a true emergency:

An emergency is any condition that--in the opinion of the patient, his family, or whoever assumes the responsibility of bringing the patient to the hospital--requires immediate medical attention. This condition continues until a determination has been made by a health care professional that the patient's life or well-being is not threatened.

A true emergency is any condition clinically determined to require immediate medical care. Such conditions range from those requiring extensive immediate care and admission to the hospital to those that are diagnostic problems and may or may not require admission after workup and observation. (American Hospital Association, 1972)

More recently Cohen, Freiden, and Samuels (1977) stated that 10% of all emergency room visits are true emergencies and that one-half to two-thirds are non-urgent in nature. The proper use of emergency rooms seems to be violated by "particularly non-white, poor, poorly educated, and urban populations" (Cohen et al., 1977, p. 255).

The reason for this disproportionate increase in emergency department visits seems to be attributable to several medical and sociological factors (Weinerman & Edwards, 1964). Medically physicians have become less

available as medicine becomes more specialized, more highly structured, and less personal (Weinerman & Edwards, 1964). This increase in specialization and lack of general or family practitioners has left the patient to be his own triage officer (Gibson, 1973). Advances in medical science have enabled physicians to diagnose and treat patients more optimally in a hospital setting when there are technological and human resources (Gibson, 1973). Sociologically, the mobility of the population has left substantial numbers of patients without a family physician (Canizaro, 1971). Additionally the concentration of low income groups in large metropolitan inner-cities who are without financial and physical access to private medical care contributes to this increase in emergency room visits. Also a factor is the fact that health insurance pays for more emergency room visits that otherwise would not be covered in a physician's office (Weinerman & Edwards, 1964).

Solutions to Emergency Department Abuse

As well as identifying causes of the increase in and abuse of emergency rooms, the literature presented discussions on possible solutions. Canizaro (1971) cited several possibilities--community education,

reorganization and expansion of existing facilities, and the provision of alternate sources of medical care such as satellite neighborhood health centers, and comprehensive care clinics. Along with the stated changes, a triage system should be designed to screen out patients with nonemergent problems and channel them into a separate area of the emergency department (Canizaro, 1971).

Weinerman and Edwards (1964) also pointed out various responses by hospitals to the abuse problem. One response stated was the "non-response of greater waiting room congestion and more intense staff harassment" (Weinerman & Edwards, 1964, p. 56). Expansion of existing emergency facilities in many hospitals demonstrates the acceptance of the seeming inevitability of the increasing load. Other hospitals have attempted to restrict emergency care only to those with acute injuries. Weinerman and Edwards (1964) stated that of all possible alternatives, triage is designed to take advantage of all the other approaches.

Gibson (1973) advocated taking advantage of the emergency department as a health system entry point. He stated that emergency departments compare very favorably with such alternative delivery sites as private practice and nonhospital ambulatory clinics in the following criteria: financial accessibility, geographical

accessibility, temporal accessibility, probability of comprehensive care, probability of continuous care, and professional and technological competence. Gibson (1973) proposed that in order to enable a hospital emergency department to organize in such a way as to become a primary health care center, triage should be implemented.

Emergency Department Triage

The objectives of triage are: (a) to expedite care of emergency patients, (b) to ensure that patient priorities are established, (c) to utilize personnel and facilities more effectively, and (d) to refer patients not requiring emergency facilities and desiring information about other community agencies (Warner, 1978). Additionally, an effective triage system can promote patient and family rapport and decrease patient delays by initiating diagnostic procedures (Nelson, 1973).

Weinerman and Edwards (1964) stated that triage

Seeks to define and limit the role of the emergency station; to protect the system of prompt service for those with urgent needs, to avoid the development of a large, undifferentiated, one-quick-visit-only dispensary for those seeking regular medical care; to assist all patients in obtaining the kind of service appropriate to their particular needs; and to make optimum use of all resources in the rest of the community.
(p. 56)

The adaptations of triage since the concept's first battlefield development have taken various approaches. Canizaro (1971; Nelson, 1978) described a system at Parkland Memorial Hospital in Dallas where nurses are triage officers. Incoming patients are assigned to geographically separate medical treatment areas as follows: major medicine, minor medicine, surgery, pediatrics, obstetrics and gynecology, and psychiatry. In this system, triage is done externally, outside the treatment area.

Rosen, Segal, Coppleson, and Fauman (1974) discuss triage in which patients are assigned to one of three categories as follows: (a) true emergency--life or limb threatening, must be seen within minutes to two hours of arrival, (b) urgent--must be treated within 8 hours of arrival, and (c) nonemergent or ambulatory clinic. Although physicians were initially utilized as triage officers, the impracticality became evident as well as the fact that physicians do not do a very good job. "They quickly become bored and are impossible to convince of the necessity of acquiring vital signs on all patients" (Rosen et al., 1974, p. 38).

Nurses were utilized and found to be effective at the University of Chicago Hospital, but a shortage of nurses prompted the system administrators to hire a group of ex-military corpsmen for the task. "Indirect evidence suggests that not only is patient management more efficient but patient safety is increased by such a system" (Rosen et al., 1974, p. 63).

Slay and Riskin in 1976 described the emergency room of Brooks Army Medical Center in Fort Sam Houston. The uniqueness of the system is the triage officers who are basic medical corpsmen with little or no previous medical experience who sort patients by means of algorithms (medical protocols). Slay and Riskin stated that this uniformity of triage and lack of the use of "internal logic" are advantageous in triage. They believed that their system eliminates the experience factor which they described as being potentially fallible. The system also eliminated other subjective factors which may affect a patient's disposition (Slay & Riskin, 1976).

Other hospitals have found different ways to implement triage based on their individual needs. Bronx Municipal Hospital Center Emergency Room uses seven triage classifications which range from life threatening

problem to chronic and minor complaints that receive routine clinic referrals as available (Albin, Wassertheil-Smoller, Jacobson, & Bell, 1975). At Grace-New Haven Community Hospital Emergency Room, members of the resident staff from the departments of medicine, surgery, and pediatrics are assigned on rotation as triage officers. A separate physical area is utilized (Weinerman & Edwards, 1964).

Evaluation of Triage

Evaluations of triage have been reported in the literature. Canizaro in 1971 stated that nurses at Parkland Memorial Hospital in Dallas assigned patients to the incorrect medical area less than 5% of the time. When this happened, the physician who saw the patient redirected the patient to the proper area. Weinerman and Edwards (1964) viewed physician triage at Grace-New Haven Community Hospital as a program that has improved the quality and convenience of service to patients as well as improving community relations. Rosen and associates (1976) revealed that less than 1% of their patients underwent secondary triage at the University of Chicago Hospitals. As seems to be true everywhere, a relatively high rate of false positive

errors in identifying true emergencies are acceptable in order to reduce any chance of false negative error. That is, when in doubt, triage to a higher priority.

In 1975, Albin and associates published their 1972-1973 study evaluating the function of the nurse triage system at the Bronx Municipal Hospital Center. Their study revealed that 80% of the patients were accurately triaged by priority, 17% were uptriaged (patient's condition was put in a higher priority when it could have been a lesser priority), and 3% were mistriaged (patient's condition required more urgency than the nurses' assessments indicated). Of the mistriaged patients, one-third had chief complaints of abdominal pain. Additionally, nurses surveyed in the study rated abdominal pain as the most difficult presenting symptom to triage.

In discussing reasons for triage error, Albin et al. (1975) addressed two major questions: (a) do patients describe the same complaints and symptoms to the nurse and to the doctor? and (b) does the nurse listen carefully to what the patient has to say without prejudging? The investigators discovered that 84% of the time patients described the same complaints and symptoms to the triage nurse and the examining

physician. Five percent of the time different complaints and symptoms were presented and 11% of the time insufficient information was obtained to make a determination on the subject. The investigators stated also that "the figures do not suggest that poor nurse-patient communication is a critical cause for triage error" (Albin et al., 1975, p. 1066).

Millis, Webster, Wofsy, Harding, and D'Acuti (1976) reported on nurse triage effectiveness at San Francisco General Hospital. The study included 11,329 patients, 4,150 (36.7%) of whom were triaged to a "Walk-in service" clinic-type facility. Of the 4,150 patients, 77 (1.86%) were admitted to the hospital and were thus considered to represent erroneous triage. Of the 77 mistriaged patients, most had some type of infection--upper or lower respiratory, pelvic, hepatic, soft tissue, or venereal. Six of the 77 mistriaged patients were considered to have emergent diseases for which therapy should have been initiated within minutes to hours. These cases were as follows: malignant hypertension in two, pulmonary edema, crescendo angina, a spontaneous incomplete abortion, and a drug overdose. Four of the mistriaged patients were elective admissions. The 67

remaining could have waited several hours for treatment without danger.

Mills and his associates (1976) also cited reasons for mistriage, categorizing mistriages into one of two groups--missed correct diagnosis of organ system, or underestimated severity of illness. In 33 cases the nurses misdetermined the patient's organ system involved or missed the diagnosis. Over half of these were patients with obscure diagnoses, some of which had previously been overlooked by physicians. In four cases the patient gave a history to the nurse that was totally at variance with that subsequently given to the physician. Inadequate history taken by the nurse caused at least four mistriages.

In 42 cases, the severity of the presenting illness was underestimated. The investigators stated that in 21 of the cases severity of illness could not have easily been predicted by the nurse. Seventeen instances of preventable mistriage occurred. The authors also stated that "the triage history can never be completely reliable, because it is obtained without privacy or lengthy questioning" (Mills et al., 1976, p. 881).

Prehospital Emergency Medical Services

The Emergency Medical Services System Act of 1973 provided for a systematic approach to all phases of emergency medical care, both hospital and prehospital. Over the next 3 years, the federal government through the Department of Health, Education and Welfare spent over \$165 million in improving emergency medical services around the country, matched by over \$150 million from local communities (McDermott, 1974). These funds were used to assist system planners and providers in establishing regional emergency medical services programs including the following 15 components: (a) manpower provision, (b) training of personnel, (c) communications, (d) transportation, (e) facilities, (f) critical care units, (g) use of public safety agencies, (h) consumer participation, (i) accessibility to care, (j) transfer of patients, (k) standard medical record keeping, (l) consumer information and education, (m) independent review and evaluation, (n) disaster linkage, and (o) mutual aid agreements (Gazzaniga, 1979).

As systems were developed and improved, victims of cardiac arrest and other life threatening emergencies lived to tell their stories (Carden, 1979). In some places, mortality rates decreased (Sherman, 1979). One

study concluded that properly trained paramedics can perform as effectively as physicians in a mobile emergency care system (Lewis, Stang, Fulkerson, Sampson, Scoles, & Warren, 1979).

The effectiveness of prehospital emergency medical services has been hampered by abuse and misuse of the services (Scalice, 1978). System administrators, medical personnel, and paramedics have become increasingly concerned that the delivery of high quality care to emergency patients will be damaged or destroyed by this abuse (Scalice, 1978).

In a study conducted in Baltimore by Gibson (1977), 1,787 cases were reviewed. Of these, 563 (31%) did not need an emergency ambulance. In another study in Pittsburgh, 84.3% of 862 cases were classified as non-urgent, demonstrating again the misuse of prehospital emergency medical services (Cronin, Benson, & Rogers, 1975). A survey of major cities demonstrated that

Cases actually justifying the use of an ambulance comprise fewer than half of the calls, and those requiring definitive care by a paramedic comprise from 30% down to 3% according to unofficial estimates. (Scalice, 1978, p. 53)

A 1978 study in Dallas revealed that 52% of the calls received there result in no transportation of an

emergency patient to a hospital (Dallas Fire Department, 1978). A further breakdown of the 52% is as follows: malicious false alarms--12.99%, no sick or injured person at the scene--5.69%, Fire Department refusal of transportation or patient refusal of transportation--28.11%, patient already left the scene--1.36%, disregarded in route to scene by other Fire Department personnel or by police--3.19% (Dallas Fire Department, 1978).

Why are prehospital services being abused? Abuse of prehospital emergency medical services is caused by many of the same social and technological changes that have caused the abuse of the emergency room (Scalice, 1978). Additionally, in many cities, nonemergency transportation to medical facilities are not available to indigents (Scalice, 1978). In an unpublished report to the Dallas Fire Department, emergency medical services consultant Walraven (1978) stated the following:

In my investigation I found that no one in Dallas offers a non-emergency transport service. Neither the city nor the county has accepted responsibility for this vital public service. The private sector will not provide coverage because the prime offenders are at low socio-economic levels, and thus unlikely to pay. As a result, people with medical complaints of a nonemergent nature have no alternative but to call the Fire Department. (p. 4)

An interesting point regarding provision for nonemergency indigent transportation is the fact that Texas State Law requires counties to provide transportation to the public hospital (Dallas Fire Department, 1978). Article 4438 of Texas Health Boards and Laws states:

If there is a regular established public hospital in the county, the commissioners court shall provide for sending the indigent sick of the county to such hospital.

Another cause for the abuse can be attributed to deliberate misrepresentation because of the caller's desire to ride in an ambulance for the thrill of it (Scalice, 1978). The prompt response of an emergency ambulance adds to the convenience of transportation to a clinic appointment or for hospital admission in cases where nonemergency transportation would be more appropriate (Scalice, 1978).

Lack of public education regarding proper use for MICUs is another factor contributing to prehospital services abuse (Scalice, 1978). Also, some patients summon an MICU because an ambulance is the only type of transportation available that private insurance or Medicaid will cover (Smock, 1977).

The effects of inappropriate use of emergency ambulances are widespread (Dallas Fire Department, 1978).

The most significant ramification is increased response time of an MICU to the emergency event. Response time is the time lapse between the dispatch of a unit and the unit's arrival on the scene. Diamond, Schofferman, and Elliott (1979) stated that prompt paramedic response, establishing an intravenous line, and defibrillation have prevented death in many seriously ill patients. Cobb, Alvarez, and Copass (1976) demonstrated that the sooner resuscitation can be initiated following cardiac arrest, the more likely the patient is to survive. Eisenberg, Bergner, and Hallstrom (1979) stated that "unless paramedic units can achieve an average response time of less than eight minutes they are not likely to be too successful" (p. 1907). The American Heart Association has documented that basic life support, cardio-pulmonary resuscitation, must be initiated within 4 to 6 minutes or brain death will occur (American Heart Association, 1978).

Average response time increased in the Dallas Fire Department from 4 minutes 32 seconds in 1974 to 5 minutes 37 seconds in 1978, despite the fact that two new MICUs were put in service during the period. During the same time period, nonemergency calls climbed from

42% to 52% as total calls went from 60,000 to 100,000 (Dallas Fire Department, 1978).

Another consequence of the inappropriate use of MICUs is an unnecessary strain in manpower and equipment. Manpower needs increase for dispatching and for paramedics manning MICUs. As vehicles increase their mileage, maintenance time increases along with maintenance manpower costs, repair costs, fuel costs, and necessary back-up equipment. Additionally, increased undue hazard to the public and Fire Department personnel result from an increase in emergency vehicles traveling Code 3 (Dallas Fire Department, 1978).

The cost of emergency medical services must be cost-effective in order to continue to receive public funds.

Certainly a well-equipped and staffed ambulance is expensive transportation. Public support of a system necessarily has its limits with so many other needed institutions vying for public monies from a society beginning to rebel against ever increasing taxation. (Scalice, 1978, p. 53)

Lanese, in a 1978 article stated

It is highly unlikely that any community will have sufficient resources to dispatch aid for every request. With limited resources inevitably there will be times when choices must be made. (p. 88)

In Dallas in 1978, over 600,000 miles were driven while providing aid to those who requested it. Each

MICU costs over \$20,000 and has over \$22,000 worth of medical equipment for paramedic use. A paramedic earns approximately \$15,500 per year, adding to the total cost of the use of an MICU (Roberts, 1979).

An additional effect of nonemergency calls by an emergency vehicle is the contribution to "burn-out" of paramedical personnel. The term "burn-out" has been used to describe the emotional fatigue which is the result of the high stress of the job (Roberts, 1979). A paramedic who deals with an uninformed public regarding proper use of MICUs becomes increasingly emotionally fatigued (Roberts, 1979). The emotional fatigue could possibly lower the quality of patient care.

Triage at the Dispatch Level as a Possible Solution

Triage at the time of the initial call is one solution suggested to the problem of inappropriate use of MICUs (Dallas Fire Department, 1978). Diamond et al. (1977) after a study concerning "Factors in Successful Resuscitation by Paramedics" stated that possibly the high percentage of cases not requiring paramedic intervention warrants the creation of a triage system. In recommendations of the International Symposium regarding MICU and Advanced Emergency Care Delivery Systems in

1973, the Scientific Committee stated that in order to facilitate proper screening of incoming calls, the initial contact should be with someone who is trained both in communication techniques and emergency medical care (Frey, Ahnefeld, Nagel, Poulson, & Safar, 1973). Gibson (1977) discussed inappropriate ambulance use stating that

The proportion of all ambulance patients who do not need care do so for only one reason, the ambulance dispatcher inappropriately accepted the request for an ambulance. (p. 390)

To alleviate this problem, the Department of Health, Education, and Welfare program guidelines under the Emergency Medical Service Systems Act call for the use of nurse screeners at central ambulance dispatch points (Emergency Medical Services System: Program Guidelines, 1973).

In 1973 in New York City, Emergency Medical Services officials decided to add triage nurses to the dispatching team to help determine by talking with the caller if there was a medical emergency requiring an ambulance. A 20% cut in nonessential runs by MICUs has been reported.

There is no documented proof that the calls in which no ambulance was sent were indeed non-emergency cases. No lawsuits have been initiated to indicate anything contrary to this conclusion and no case has ever come to general attention to hint of neglect of a legitimate emergency. In a city as "lawsuit happy" as New York, this speaks

well for the program so far. (Scalice, 1978, p. 55)

Nurses in New York City handle only those calls which are questionable emergencies in the mind of the dispatchers. The nurse will discuss symptoms with the caller, try to envision the scene, and decide if it is possible for that patient to be safely transported without an emergency ambulance. No caller is ever told that the patient does not need medical attention. However, they are told that the patient does not need an emergency ambulance and that the emergency ambulances are kept open for someone with a life-threatening emergency (Scalice, 1978).

Baird, supervisor of the triage nurses, stated that callers seem more comfortable about their problems having a nurse speaking to them. Diagnoses are not given and medications are not prescribed. Nurses often stay on the line until paramedics arrive, providing information for administration of first aid to the caller (Scalice, 1978).

Griggs, Barringer, Klauk and Slome (1977) attempted to test the hypothesis that physicians would improve the efficiency and safety of ambulance dispatching by accurately assessing the level or urgency of calls. A

panel of physicians reviewed taped interviews of 76 calls for MICUs and classified them according to degree of severity. The cases were followed up at the hospital and another panel of physicians classified according to degree of severity from the patients' charts. The study did not support the hypothesis. Physicians do not seem to be able to screen calls for emergency medical services any more appropriately than the dispatchers. Also pointed out in the study was the fact that physicians might have done better than dispatchers if they had interviewed the callers themselves.

Some Emergency Medical Services experts discourage attempting triage without seeing the patient. One such author believed that "as long as an emergency exists in the mind of the caller, it must be treated as such until trained personnel can arrive and properly evaluate it" (Jelenko & Frey, 1976, p. 192). Walraven (1978) stated that without a viable nonemergency transport system, it will do no good to try screening out calls. Some system administrators feel that attempting to screen calls will cause legal problems and that they have a moral obligation to send an ambulance (Scalice, 1978).

Telephone Interviewing in Nursing

In many areas of nursing, telephone interviewing plays an important role. Office nurses, particularly in pediatrics, receive a large number of calls requesting advice (Goodman & Perrin, 1978). Emergency room nurses are also frequently called upon to decipher patient's complaints over the telephone (Bergen, 1968). Poison control centers utilize nurses as well as nonprofessionals to evaluate and sometimes treat poisonings and overdoses through telephone interviews (Veltri, 1976). Followup care is frequently carried out effectively by public health nurses via telephone, as well as by clinic and office nurses (Murphy & Dineen, 1975). Mental health crisis situations are often handled over the telephone and determinations must be made as to their seriousness and disposition. Telephone interviews with patients undergoing psychotherapy allow patients an outlet for frustration, anger, anxiety, and other distressful states (Chiles, 1974). In each area the nurse must take a careful history, evaluate the patient--his reliability, his resources, his level of understanding--and triage him to the place where his problem can best be handled.

Murphy and Dineen (1975) reported "Nursing by Telephone" at the Harvard Community Health Plan, a health maintenance organization serving 36,000 members in Boston and the surrounding area. A full time position of telephone triage nurse was established to handle medical advice and to triage patients to either an emergency room, clinic or instruct them in home care. Eventually the use of the telephone was incorporated into ongoing patient care and nurses in each area of the ambulatory health care center handled calls which number approximately 150 per day.

Murphy and Dineen (1975) identified advantages and disadvantages of telephone nursing. They feel that the telephone saves time and money for both the patient and the health care agency. Also, unnecessary visits can be avoided and necessary visits appropriately scheduled. When patients know they will speak to a nurse, they call with questions they might not otherwise ask. The major disadvantage they stated, is the inability to see the patient, his appearance and his reactions to instructions. Therefore, interviewing skills must be sharp. After a short time, nurses become sensitive to what is and what is not being said. "Good related clinical experience, self-confidence, sharp interviewing skills,

and a good telephone voice increase the nurse's success on the telephone" (Murphy & Dineen, 1975, p. 1139).

How effective are nurses at triaging by telephone? A 1978 study by Goodman and Perrin evaluated the pediatric nurse practitioners in the role of handling evening medical advice telephone calls for physicians. The telephone interviews of the nurse practitioners were compared with those of the pediatricians. Telephone encounters were scored for relevance and completeness of the history, correctness and completeness of the disposition, efficiency, critical items of history and disposition, skill of interviewing, level of caller's satisfaction, and length of calls. The nurse practitioners were significantly more complete and relevant in their history taking and more complete and correct in their disposition than pediatricians. Also, nurses were judged to be significantly warmer, to be more open for questions, and to terminate calls more appropriately. The caller was left feeling more satisfied after talking to the nurse than with the pediatrician.

Paraprofessionals have also been utilized to triage by telephone with variable results. Katz, Pozen, and Mushlin (1978) conducted a study evaluating the effectiveness of pediatric health assistants who were trained

to evaluate and triage medical problems presented by parents via telephone. The health assistants utilize a series of decision guidelines to aid in their triage and in home management of problems. Of the patients who were instructed on home care and not advised to come in for an appointment, 21% subsequently initiated a visit. Of those patients, only 5% had illnesses which required specific treatments. This 5% reflects mistriage.

It appeared that these may have been initially triaged for home care because minor symptoms were reported early in the problem episode (e.g., otitis media developing within a few days of the report of mild cold symptoms), although an error in pediatric health assistant judgment cannot be excluded. (Katz et al., 1978, p. 35)

This study also pointed out that marginally trained personnel advise, appoint, and refer according to their own guidelines which can potentially generate unnecessary office and emergency room visits or even delay essential care.

Lamb (1978) undertook a study to determine if para-professionals using protocols improve pediatric telephone service in the emergency room. The study concluded that protocols can prove useful not only in permitting physicians to delegate responsibility but for routine use

in large volume pediatric programs and as a training tool. Most calls were of a nonemergency nature.

Lanese (1978) investigated in detail the dialogues between the callers and the Emergency Medical Services dispatchers in order to develop guidelines for the training of dispatchers. Dispatchers in the city studied have the option to dispatch a MICU with paramedics, an Emergency Medical Service squad with emergency medical technicians, or not to dispatch aid. Two expert panels were convened, one consisting of seven Emergency Medical Service dispatchers and the other consisting of six emergency physicians. The typewritten transcripts of the dialogues were reviewed by each group.

Both groups graded the dispatchers' ability to obtain information regarding the location of the emergency event as unquestionably high. Clarification of the nature of the emergency problem was rated considerably lower, and was considered deficient in approximately one-third of all interviews. The physician panel tended to rate the information obtained regarding the emergency medical problems lower than did the dispatch panel. Lanese (1978) stated that the physicians, drawing their criteria from a broader medical context, felt that more information could and should have been obtained. The

physicians indicated that more information should have been elicited regarding the emergency problem, so that the dispatchers could give the appropriate advice. Both groups found interviews that resulted in "no-send" to be troublesome. Frequent types of patients being denied services were psychiatric patients, patients with chronic debilitating illnesses, and those with apparent need for transportation that did not meet the criteria of "emergency." The "no-send" cases that were rated highest involved the dispatcher taking considerable pains to discover the nature of the problem, to explain policies of the Emergency Medical Services system, and to give the caller advice regarding alternative courses of action (Lanese, 1978).

Nurses Role

Nurses must be aware of and accept their responsibility for the quality of emergency services to the patient, not only in the hospital, but also in the pre-hospital environment (Fincke, 1978). The role of assessing patient needs and setting patient care priorities belongs to the nurse (Findeiss, 1974). Making quick decisions, screening patients, and dealing appropriately with people under stress are proven necessary

qualities for emergency nurses (Creighten, 1978). Nurses are the "mainstays" of emergency care, providing continuity and coordinating services of the hospital, community, public health department, social services and other agencies (Fincke, 1978). Nurses' acceptance of their role in telephone triage of emergency patients helps achieve a significant and unarguable goal: the best possible health care for every patient, in or out of a hospital.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The present ex post facto investigation conforms to Isaac and Michael's (1976) definition of a descriptive study: the purpose of a descriptive study is "to describe systematically the facts and characteristics of a given population or area of interest, factually and accurately" (p. 18). This study was done to determine with what degree of accuracy a registered nurse can differentiate different categories of emergency patients from nonemergency patients through a telephone interview. The description of the setting, the derived sample, the procedure for data collection, the tool used for collection of data, and the method for analysis of data will be included in this chapter.

Setting

The study was conducted in the Communication Center of the City Fire Department in a large city located in the southwestern United States. Requests for MICUs through this office number 52,800 per year or approximately 145 per day. Police and fire dispatching is

located in the same central area, and all three services utilize one emergency number. The system used is called Computer Assisted Dispatch (CAD) which has the effectiveness of a manual type system, but operates at computer speed. Total dispatch time is approximately 54 seconds under the CAD system. There are 10 fire and Emergency Medical Services dispatchers on duty at all times.

For a trial period the department used a registered nurse with special skills to make further assessments on emergency calls. Calls for emergency service of which the dispatcher was unsure were referred to the registered nurse who had special training in triage. The nurse interviewed the callers and obtained additional information. The assessment interview was conducted according to a standardized procedure and recorded on an interview form on which the nurse indicated a judgment regarding the emergency status of the call. MICU service was dispatched for each call and records kept by the paramedics identifying the patients' actual status.

Population and Selection of Sample

The defined population for this study was the interview forms filled out by the nurse after interviews with all persons who call the emergency number to

request an MICU on the specified days for collection of data. The derived sample consisted of 120 records of interviews filled out by a registered nurse with special skills. The total 120 nurse interview forms obtained from the Fire Department's feasibility evaluation were used in the present study. Sampling method in the original study was convenience method. Interviews were conducted over a 5 week period of time. Each day of the week was utilized, but interviews were primarily conducted from 6:00 p.m. to midnight.

The criteria for selection of sample included that the nurse interview form be used only if (a) the caller has seen the patient, and (b) the patient was a questionable emergency in the mind of the Fire Department dispatcher.

Method of Data Collection

This was an ex post facto study. Information was collected in the original study by a municipal Fire Department in order to determine the feasibility of interviewing callers and providing first aid advice over the telephone. This study was concerned with reviewing Fire Department interview forms to determine the accuracy of triage by a registered nurse over the telephone.

Permission was obtained prior to the collection of data from the Fire Department to use nurse interview forms, taped interviews, and MICU patient forms. Data was collected by case number and no record of names was used.

Nurse interview forms (Appendix A) were reviewed to assure that stated criteria were met. Nurse interview forms included the following information: incident number, chief complaint, history taken, and if the registered nurse deemed the patient to be an emergency. One hundred and twenty nurse interview forms were used and categorized into one of six types of injury or illness as follows: (a) cardiovascular, (b) obstetrical or gynecological, (c) gastrointestinal, (d) neuro-psychiatric, (e) trauma, and (f) miscellaneous.

Data obtained from the nurse interview form and categorization of injury or illness were recorded on the Triage Evaluation Form (Appendix B). Follow-up information was obtained from the MICU patient forms (Appendix C) which included the following: demographic information, vital signs, chief complaint, location, type and severity of illness, aid provided by paramedics, if any, if the patient was transported by MICU, and response code to hospital. Information from this form was also

recorded on the Data Collection Sheet. Those patients who received medical intervention by the paramedics or required code 3 transportation were considered emergency patients. All others were considered nonemergency patients.

Tool

The instrument used for the collection of data was designed by the investigator to meet the stated purposes. The Triage Evaluation Form (Appendix B) is divided into two main sections: information obtained from the nurse interview form kept by the Fire Department dispatch center, and information obtained from the patient form kept by the Fire Department Emergency Medical Services division. Information from the nurse interview form included case number of the call, chief complaint, history taken from the caller, whether or not the registered nurse deemed the patient an emergency or nonemergency, and what category of injury or illness the patient was. Information obtained from the MICU patient form included demographic data, chief complaint, vital signs, other history and physical assessment data, aid provided by paramedics, if the patient was transported by MICU, response code to hospital, and if the triage was correct.

Analysis of Data

The data were analyzed by the chi-square test and Binomial test to determine the accuracy of triage of the total forms. For the purposes of this study, levels of statistical significance less than 95% ($p < .05$) were considered statistically significant. Percentages of correct and incorrect triages were reported. Correct triages were broken down into two categories as follows: (a) emergency assessment--emergency patient, and (b) nonemergency assessment--nonemergency patient. Incorrect triages were broken down into two categories as follows: (a) nonemergency assessment--emergency patient, and (b) emergency assessment--nonemergency patient. Demographic data were reported by percentages or by mean.

Conclusion

The ex post facto study was done to determine with what degree of accuracy a registered nurse can differentiate different categories of emergency patients from nonemergency patients. This chapter has presented a description of the setting, derived sample, procedure for data collection, tool used for collection of data, and the method for analysis of data.

CHAPTER 4

ANALYSIS OF DATA

In this chapter the data concerning demographic characteristics of the various categories of patients is presented. In addition, a comparison analysis of the correct and incorrect triages is given, followed with a discussion of the tested hypotheses. The chapter concludes with a summary of the findings of the study.

Description of the Sample

The sample consisted of nurse interview forms from 120 patients. Nurse interview forms used in the study were those from patients that were (a) a questionable emergency in the mind of the dispatcher, and (b) seen by the caller. Nurse interview forms were the total 120 forms completed in a previous study by the cooperating Fire Department determining the capability of interviewing callers on the telephone and providing first aid advice. The data from the forms were categorized into six areas of type of injury or illness of the patient: (a) cardiovascular, (b) neuro-psychiatric, (c) gastrointestinal, (d) obstetrical and gynecological, (e) traumatic, or (f) miscellaneous.

Eight nurse interview forms were from callers requesting aid for persons assessed as having a cardiovascular complaint. Chief complaints included chest pain, "heart fluttering," and dyspnea or weakness in a patient with heart disease. Eighteen nurse interview forms were from callers requesting aid for persons assessed as having neuro-psychiatric complaints. Chief complaints from these patients included dizziness, fainting, "talking out of his head," "acting strange," and possible strokes. Ten callers were requesting services for patients with a gastrointestinal chief complaint including complaints of abdominal pain, vomiting, and rectal bleeding. Nine callers were requesting aid for patients categorized as obstetrical or gynecological in nature. These chief complaints included labor, vaginal bleeding, and possible spontaneous abortions. Forty-seven nurse interview forms were from patients who had been traumatically injured in some manner, either having fallen, been assaulted, or in a motor vehicle accident. Twenty-eight forms were of miscellaneous problems including chief complaints of seizure, diabetes problems, overdoses, children with fever, kidney pains, or hyperventilation.

The total data reflected calls for aid for 55 males and 53 females and 12 patients for whom the sex was undeterminable by the investigator since the MICU patient information form filled out by paramedics was blank regarding sex. The cardiovascular group of patients contained five males and three females. The neuro-psychiatric group contained nine males, eight females, and one undetermined. Seven men and three women were in the gastrointestinal illness category and nine females comprised the obstetrical and gynecological group. The group with traumatic injuries contained 23 males, 18 females, and six patients of undetermined sex. The miscellaneous group contained 11 males, 12 females, and five undeterminables (Table 1).

The total sample included patients with the following ethnic breakdown: Blacks--67 (55.8%), Anglos--33 (27.5%), Latin Americans--8 (6.6%), and unclassified--12. Ethnic classification by illness category showed 50% Blacks and 50% Anglos in the cardiovascular category. The neuro-psychiatric category included eight Blacks, seven Anglos, two Latin Americans, and one patient of undetermined ethnic origin. Seven Blacks were in the gastrointestinal category, along with one Anglo and two Latin Americans. The obstetrical and gynecological

Table 1

Number and Percent of Patients Classified
by Sex and Category of Injury
or Illness

Category	Male	Female	Undetermined	Total
Cardiovascular	5 (64%)	3 (36%)	0 (0%)	8 (6.6%)
Neuro- psychiatric	9 (50%)	8 (44%)	1 (6%)	18 (15%)
Gastro- intestinal	7 (70%)	3 (30%)	0 (0%)	10 (8.4%)
Obstetrical- Gynecological	0 (0%)	9 (100%)	0 (0%)	9 (7.5%)
Traumatic	23 (49%)	18 (38%)	6 (13%)	47 (39%)
Miscellaneous	11 (39%)	12 (43%)	5 (18%)	28 (23.5%)
Total	55 (46%)	53 (44%)	12 (10%)	120 (100%)

group contained eight (88%) Blacks and one (12%) Latin American. The group of traumatically injured patients contained 29 Blacks, 10 Anglos, two Latin Americans, and six patients of undetermined ethnic origin. In the miscellaneous group, an equal number of Blacks and Anglos were found (11 each), with one Latin American and five undeterminables (Table 2).

Data regarding patient age is reported in Table 3. Patient ages ranged from two to 86 years. A large

Table 2
Number and Percent of Patients Classified
By Ethnicity and Category

	Black	Anglo	Latin American	Undetermined	Total
Cardiovascular	4 (50%)	4 (50%)	0 (0%)	0 (0%)	8
Neuro-psychiatric	8 (44%)	7 (39%)	2 (11%)	1 (6%)	18
Gastrointestinal	7 (70%)	1 (10%)	2 (20%)	0 (0%)	10
Obstetrical- Gynecological	8 (89%)	0 (0%)	1 (11%)	0 (0%)	9
Traumatic	29 (62%)	10 (21%)	2 (4%)	6 (13%)	47
Miscellaneous	11 (39%)	11 (39%)	1 (4%)	5 (18%)	28
Total	67 (57%)	33 (26%)	8 (7%)	12 (10%)	120

Table 3

Number of Frequency and Percent of
Patients Classified by Age

Age in years	Frequency of occurrence
0- 5	5 (4%)
6-10	1 (0.8%)
11-15	6 (5.3%)
16-20	18 (15%)
21-25	16 (13%)
26-30	12 (10%)
31-35	4 (3.3%)
36-40	6 (5.3%)
41-45	6 (5.3%)
46-50	4 (3.3%)
51-55	5 (4%)
56-60	4 (3.3%)
61-65	3 (2.5%)
66-70	3 (2.5%)
71-75	3 (2.5%)
76-80	1 (0.8%)
81-85	0 (0%)
86-90	1 (0.8%)
Undetermined	22 (18.3%)
Total	120

cluster of ages was found between 16 and 30 years. In the cardiovascular group, the mean age was found to be 47 years. The neuro-psychiatric group had a mean age of 41 years, and the mean age of the gastrointestinal category of illness was 42 years. The obstetrical and gynecological group's mean age was 20 years. Traumatically injured patients had a mean age of 27 years and the miscellaneous category of patients had a mean age of 29.

There were 75 (62.5%) patients categorized as non-emergency (Table 4). This number is within the range that other studies cite as nonemergency patient calls. Scalice (1978) stated that fewer than half the calls for an emergency ambulance are justifiable emergencies. Other studies show from 31% to 84% of nonemergency patients requesting an MICU (Cronin et al., 1975; Dallas Fire Department, 1978; Gibson, 1977).

The data obtained showed nonemergency patients numbering 43 (57%) Blacks, 16 (21%) Anglos, 5 (6.7%) Latin Americans and 11 undeterminables. Blacks comprised 55.8% of the total sample. Anglos made up 27.5% of the total patients and Latin Americans comprised 6.7%. Undeterminables totaled 10% of the total patients (Table 4).

Table 4

Number and Percent of Emergency and
Nonemergency Patients
by Ethnicity

	Black	Anglo	Latin American	Undetermined	Total
Emergency	24 (53.3%)	17 (37.8%)	3 (6.7%)	1 (2.2%)	45 (37.5%)
Nonemergency	43 (57%)	16 (21.3%)	5 (6.7%)	11 (14%)	75 (62.5%)
Total	67 (55.8%)	33 (27.5%)	8 (6.7%)	12 (10%)	120

The data from the forms in which the patients were found to be emergency patients totaled 45 (37.5%) of the total sample of forms (Table 4). Blacks in this group numbered 24 (53.3%) of the total emergencies. Anglos numbered 17 (35.5%), Latin Americans, 3 (6.7%) and undetermined, 1 (2.2%). An equal number of males and females (22) were categorized as emergencies with one of undetermined sex.

The cardiovascular patient group contained eight emergency patients and three nonemergency patients. In the neuro-psychiatric category there were 11 emergency patients and 7 nonemergency patients. The gastrointestinal category of illness contained three emergencies and seven nonemergencies. In the obstetrical and gynecological group, eight emergency patients and seven nonemergency patients were identified. In the traumatically injured group of patients, 10 were found to be emergencies and 37 were found to be nonemergencies. The group of miscellaneous type of injuries or illnesses contained 8 emergencies and 20 nonemergencies (Table 5).

The demographic variables are summarized as follows: (a) all categories of injury or illness had a similar number of males and females with the exception of the obstetrical and gynecological group; this group also

Table 5

Number and Percent of Emergency and
Nonemergency Patients Classified
By Category of Injury
or Illness

Category	Emergency	Nonemergency	Total
Cardiovascular	5 (62.5%)	3 (37.5%)	8
Neuro-psychiatric	11 (61%)	7 (39%)	18
Gastrointestinal	3 (30%)	7 (70%)	10
Obstetrical- Gynecological	8 (89%)	1 (11%)	9
Traumatic	10 (21%)	37 (79%)	47
Miscellaneous	8 (29%)	20 (71%)	28
Total	45 (37.5%)	75 (62.5%)	120 (100%)

had a lower mean age, (b) the trauma, obstetrical and gynecological, and gastrointestinal groups contained a larger percentage of non-whites, (c) the cardiovascular, gastrointestinal and neuro-psychiatric groups had a greater mean age, and (d) nonemergency patients numbered 75 (62.5%) and emergency patients numbered 45 (37.5%).

Statistical Analysis of
the Hypotheses

Seven hypotheses were tested in this investigation, one concerned with the total data from 120 patients and six from each of the six categories of injury or illness. The null hypothesis was accepted in only one hypothesis and rejected in all others.

The first hypothesis was as follows: A registered nurse with special skills cannot accurately differentiate various categories of emergency patients from nonemergency patients through a telephone interview. The total number of correct triages was 92 (76.6%). The total number of incorrect triages was 28 (23.3%). The number of patients which the nurse correctly triaged as being emergencies numbered 44 (36.6%). This number reflects no change in normal dispatching procedures as those patients would normally be considered emergencies. The number of patients correctly triaged as nonemergencies numbered 48 (40%). This number reflects successful triage at the time of the initial call and is the potential number of MICU runs to be screened. Twenty-seven (22.5%) of the incorrect triages were deemed emergencies by the nurse but were found to be nonemergencies by the paramedics on the scene. This number reflects the

expected "false positives" in order to be cautious when a clear nonemergency does not exist. One patient was assessed by the triage nurse to be a nonemergency and was found by the paramedics to be an emergency. This described degree of accuracy of triage was found to be statistically significant ($p < .001$) using the chi square test. The null hypothesis was rejected.

The cardiovascular group of patients numbered eight with six (75%) correct triages and two (25%) incorrect triages. Of the six accurate triages, five were emergency patients and one was a nonemergency patient. In both instances of incorrect triage, the nurse deemed the patient an emergency when the paramedics found the patient a nonemergency. Because of small sample sizes and small cell sizes, the chi square test was inappropriate and the Binomial test was used. Telephone triage of the cardiovascular group was found to be statistically insignificant ($p = .25$). The hypothesis that a registered nurse with special skills cannot accurately differentiate cardiopulmonary emergency patients from nonemergency cardiopulmonary patients through a telephone interview was accepted.

The neuro-psychiatric category of illness revealed 11 (61%) correct triages and 7 (39%) incorrect triages.

Ten patients correctly assessed were emergencies and one was a nonemergency. Of the seven incorrectly triaged patients, six were assessed by the nurse to be emergencies but were not. One patient was judged to be a non-emergency although paramedics found the patient to be an emergency. The Binomial test was utilized for this hypothesis. Telephone triage of neuro-psychiatric patients was found to be statistically significant ($p = .047$). The hypothesis that a registered nurse with special skills cannot accurately differentiate neuro-psychiatric emergency patients from nonemergency neuro-psychiatric patients through a telephone interview was rejected.

The gastrointestinal disorder group contained 10 patients, 6 (60%) which were correctly triaged and 4 (40%) which were inaccurately triaged. Of the accurate triages, three were emergencies and three were non-emergencies. All four of the incorrect triages were errors on a cautious side--the nurse assessed the patient as an emergency and paramedics assessed the patient as a non-emergency. Again, the Binomial test was used due to the small sample and cell size. The accuracy of telephone triage was found to be statistically insignificant ($p = .067$). The hypothesis that a registered nurse

with special skills cannot accurately differentiate gastrointestinal emergency patients from nonemergency gastrointestinal patients through a telephone interview was accepted.

All nine (100%) obstetrical and gynecological patients were correctly triaged. Eight of these patients were emergency patients and one was not. Because cell sizes were zero in cells A and D, no statistical test was appropriate. Due to the 100% accuracy, the following hypothesis was rejected: a registered nurse with special skills cannot accurately differentiate obstetrical and gynecological emergency patients from nonemergency obstetrical and gynecological patients through a telephone interview.

The traumatically injured category of patients numbered 47; 39 (84%) were correct triages and 8 (16%) were incorrect triages. Of the 39 correct triages, 10 were emergency patients and 29 were nonemergency patients. All incorrect triages were assessed as emergencies and found to be nonemergencies. The Binomial test was used due to small sample and small cell size. The accuracy of telephone triage of traumatically injured patients was found to be statistically significant ($p = .004$). The following hypothesis was rejected: A registered

nurse with special skills cannot accurately differentiate traumatically injured emergency patients from nonemergency traumatically injured patients through a telephone interview.

Twenty-eight patients comprised the miscellaneous category of patients, 21 (75%) correct triages and 7 (25%) incorrect triages. Eight of the correct triages were emergency cases and 13 were nonemergencies. Of the seven incorrect triages, all were cases in which the nurse deemed the patient an emergency and paramedics found the patient to be a nonemergency. The chi square test could not be used due to the small sample and small cell size. Accuracy of telephone triage of miscellaneous category of patients was found to be statistically significant ($p = .008$) by the Binomial test. The following hypothesis was rejected: A registered nurse with special skills cannot accurately differentiate miscellaneous emergency patients from nonemergency miscellaneous patients through a telephone interview.

The number and percent of correct triages by category of injury or illness are shown in Table 6 and the number and percent of incorrect triages by category of injury or illness are depicted in Table 7. Total sample size, percent of correctly assessed patients, and p

Table 6

Number and Percent of Correct Triage by
Category of Injury or Illness

Category	Nurse-Emergency Actual-Emergency	Nurse-Nonemergency Actual-Nonemergency	Total
Cardiovascular	5 (63%)	1 (12%)	6 (75%)
Neuro-psychiatric	10 (56%)	1 (5.5%)	11 (61%)
Gastrointestinal	3 (30%)	3 (30%)	6 (60%)
Obstetrical- Gynecological	8 (89%)	1 (11%)	9 (100%)
Traumatic	10 (21%)	29 (62%)	39 (83%)
Miscellaneous	8 (29%)	13 (46%)	21 (75%)
Total	44 (36.6%)	48 (40%)	92 (76.6%)

Table 7
Number and Percent of Incorrect Triage by
Category of Injury or Illness

Category	Nurse-Emergency Actual-Nonemergency	Nurse-Nonemergency Actual-Emergency	Total
Cardiovascular	2 (25%)	0 (0%)	2 (25%)
Neuro-psychiatric	6 (33%)	1 (5.5%)	7 (39%)
Gastrointestinal	4 (40%)	0 (0%)	4 (40%)
Obstetrical- Gynecological	0 (0%)	0 (0%)	1 (1%)
Traumatic	8 (17%)	0 (0%)	8 (17%)
Miscellaneous	7 (25%)	0 (0%)	7 (25%)
Total	27 (22.5%)	1 (.5%)	*28 (23%)

70

*This percentage reflects the percentage of incorrect triages from the total sample of 120.

value by category of injury or illness are set out in Table 8.

Table 8

Total Sample Size, Percent of Correctly Assessed Patients, and p Value by Category of Injury or Illness

Category	Total Sample Size	Percent Correctly Assessed	<u>p</u> value
Cardiovascular	8	75%	<u>p</u> = .25
Neuro-psychiatric	18	61%	<u>p</u> = .047
Gastrointestinal	10	60%	<u>p</u> = .067
Obstetrical-Gynecological	9	100%	*
Traumatic	47	84%	<u>p</u> = .004
Miscellaneous	28	75%	<u>p</u> = .008
Total	120	76.6%	<u>p</u> = .001

*No appropriate test, incorrect cell sizes = 0

Findings of the Study

One hundred twenty nurse interview forms and MICU patient forms were utilized to determine with what degree of accuracy a registered nurse with special skills could differentiate various categories of emergency patients

from nonemergency patients through a telephone interview. The nurse accurately assessed 92 (76.6%) patients and incorrectly assessed 28 (23.3%) patients. In the cardiovascular category, six were correct and two incorrect. The neuro-psychiatric group revealed 11 correct and 7 incorrect triages. The gastrointestinal category contained six correct and four incorrect triages. Nine (100%) correct decisions were in the obstetrical and gynecological group and the trauma category contained 39 correct and 8 incorrect triages. In the miscellaneous group, the nurse correctly assessed 21 patients and incorrectly assessed 7 patients.

The total number of correct triages was found to be statistically significant ($p < .001$) using chi square test. The most frequently seen types of injury or illness were traumatically injured and miscellaneous. Of the six categories, obstetrical and gynecological had the highest percentage of correct triage at 100%. The gastrointestinal group had the lowest percentage of accurate triages at 60%.

The forms that reflected nonemergency patients were of a higher percentage than those patients which were emergencies. Nonemergency patients numbered 75 (62.5%) and emergency patients numbered 45 (37.5%).

Demographic variables showed little differences among the various categories of injury or illness except in the following areas: (a) the obstetrical and gynecological group had all females and a young mean age, (b) the gastrointestinal group of patients contained a larger percentage of non-whites and had a higher mean age, and (c) the cardiovascular and neuro-psychiatric categories had a higher mean age than the total sample.

In this chapter the data concerning demographic characteristics of the various categories of patients was presented. In addition, a comparison analysis of the correct and incorrect triages was given, followed with a discussion of the tested hypotheses. The chapter concluded with a summary of the findings of the study.

CHAPTER 5

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

In this chapter a summary of the investigation is presented. In addition, the conclusions of the study are described followed by a discussion of implications. The chapter concludes with recommendations for further study.

Summary

This study was conducted to determine with what degree of accuracy a registered nurse with special skills can triage emergency patients from nonemergency patients through a telephone interview. Emergency patients were defined as those patients needing paramedic intervention or code 3 transportation to a hospital in an MICU. Nurse interview forms were synthesized with MICU patient forms to determine the accuracy of triage.

One hundred twenty nurse interview forms and MICU patient forms were included in the study. Patient data included on the forms were categorized according to type of injury or illness: cardiovascular, neuro-psychiatric, gastrointestinal, obstetrical and gynecological, traumatic, and miscellaneous. The nurse's assessment of the

emergency nature of the call was compared with that obtained by MICU paramedics on the scene. The accuracy of the nurse's assessments were compared for each category of injury or illness.

The primary hypothesis for this investigation was: A registered nurse with special skills cannot accurately differentiate various categories of emergency patients from nonemergency patients through a telephone interview. The nurse accurately assessed 92 (76.7%) patients and incorrectly assessed 28 (23.3%) patients. This degree of accuracy was found to be statistically significant ($p < .001$) using chi square test and the null hypothesis was rejected.

An additional six hypotheses were stated regarding accurately differentiating the different categories of emergency patients through a telephone interview. Of the eight cardiovascular patients six (75%) were correctly triaged and two (25%) were not. The null hypothesis regarding cardiovascular patients was accepted since p value was equal to .25 by the Binomial test.

In the neuro-psychiatric category there were 18 patients, 11 (61%) correct triage and 7 (39%) incorrect triages. The null hypothesis was rejected for the

neuro-psychiatric group of patients since the p value was equal to .047 by the Binomial test.

There were 10 patients in the gastrointestinal group. Six (60%) were accurately assessed and four (40%) were not. The null hypothesis was accepted for the gastrointestinal group of patients due to the fact that the p value was equal to .067 by the Binomial test.

All nine (100%) obstetrical and gynecological patients were correctly triaged. The null hypothesis was rejected concerning this category of patients since accuracy was 100%.

Of the 47 traumatically injured patients, 39 (84%) were correctly triaged and 8 (16%) were not. The null hypothesis was rejected concerning the triage of trauma patients since the p value was equal to .004 by the Binomial test.

Data from 28 patients comprise the miscellaneous category. In this group 21 (75%) were accurate assessments and 7 (25%) were inaccurate assessments. The null hypothesis was rejected regarding the miscellaneous category of illness due to the fact that the p value was equal to .004 by the Binomial test.

Patients in the obstetrical and gynecological category were most accurately triaged at 100%. It is

possible that the high percentage of emergency patients in this category (89%) reduced the percentage of "false positives." There were no patients that were assessed to be emergencies that were nonemergencies. Other categories of injury or illness showed from 17% to 40% inaccurate assessments in emergency status.

More calls were assessed to have nonemergency status than those patients who were emergencies. Non-emergency calls numbered 75 (62.5%) and emergency calls numbered 45 (37.5%).

Demographic variables showed little difference among the various categories of injury or illness except in the following areas: (a) the obstetrical and gynecological group contained all females and had a younger mean age, (b) the gastrointestinal group of patients contained a larger percentage of non-whites and had a higher mean age, (c) the cardiovascular and neuro-psychiatric categories had a higher mean age than the total mean age. Regarding the higher mean age of the cardiovascular, neuro-psychiatric and gastrointestinal categories, it is probable that the nature of the illness tends to be associated with an older patient.

Conclusions

According to the findings and within the limitations of this study, several conclusions may be made. First, a registered nurse with special skills can accurately triage emergency patients from nonemergency patients through a telephone interview. This is consistent with the report of Scalice (1978) who described a system in New York where specially trained registered nurses successfully screen 20% of the total calls requesting ambulances.

Secondly, in this study a large number (62.5%) of requests for Emergency Medical Services Mobile Intensive Care Units are for nonemergency patients. Other studies have revealed similar abuse of the service. Diamond et al. (1977) reported that 56% of the paramedic emergency runs in Los Angeles County were for minor complaints. Gibson (1977) reported that 31% of the ambulance calls in Baltimore were nonemergency in nature. In Pittsburgh, 84.3% of their cases were classified as non-urgent (Cronin et al., 1975).

A third conclusion is that present dispatching procedures of MICUs may contribute to inefficient use of MICUs. Forty percent of the patients were correctly identified by the registered nurse as nonemergencies. Gibson (1977) stated that ambulance dispatchers

inappropriately accept requests for ambulances. Frey et al. (1973) stated that the callers initial contact should be with someone who is trained both in communication techniques and emergency medical care in order to facilitate proper screening of calls.

The fourth conclusion is that due to the potentially lethal nature of cardiovascular problems, a nurse may inaccurately triage (or uptriage) this category of patients. The nurse may be reluctant to deny emergency ambulance service to any caller if he or she even slightly suspects the caller may be having a cardiovascular problem. No reports of similar conclusions or contrary findings were found in the literature.

Implications

Implications of this investigation will be directed to Emergency Medical Services administrators and nursing practice.

Emergency Medical Services administrators should be aware of the possibility of inefficient dispatching of emergency calls. Call screening by a qualified nurse should be considered as an effective assessment of MICU need. Since errors will occur and some emergency

patients will not receive an MICU, a backup system of non-emergency transportation should be dispatched.

Practicing nurses should be aware of the potential benefit in the use of the telephone for evaluation of patients. Nurses with special skills in their area of nursing practice as well as assessment and interviewing skills can develop expertise in telephone assessments. Nurses that utilize the telephone in their nursing practice should be particularly careful in their evaluations of cardiovascular patients without a physical exam.

Recommendations

The recommendations for further research relative to this investigation are as follows:

1. Further study should be undertaken employing the same investigative design, but increasing the number of patients to obtain additional supportive data.

2. Further study should be done using the same design for evaluation of other medically trained personnel such as paramedics and emergency medical technicians.

3. Further study should be done to investigate the interview between the nurse and the caller to ascertain possible factors contributing to incorrect triage.

APPENDIX A

NURSE INTERVIEW FORM

Information from interview:

Date _____ Incident Number _____ Time _____

Chief complaint _____
_____Additional history taken _____

Category of injury or illness _____

Emergency patient _____ Nonemergency patient _____

APPENDIX B

TRIAGE EVALUATION FORM

I. Information from interview:

Date _____ Incident Number _____ Time _____

Chief complaint _____
_____Additional history taken _____

Category of injury or illness _____

Emergency patient _____ Nonemergency patient _____

II. Information from patient form:

Age _____ Race _____ Sex _____

Chief complaint _____

Vital signs: B/P _____ Pulse _____ Respirations _____

Other information obtained _____
_____Aid provided by paramedics _____

Not transported by MICU _____ Transported by MICU _____

Code to hospital _____ False alarm? _____

CORRECT TRIAGE

INCORRECT TRIAGE

APPENDIX C

**FIRE DEPARTMENT
EMERGENCY MEDICAL SERVICES**

PATIENT FORM

FALSE OR
NO TRANSPORT 1 2 3 4 5 6

☐ Dry ☐ Rain ☐ Snow ☐ Ice ☐ Fog
WEATHER CONDITIONS

INCIDENT NUMBER _____

OF
PATIENT'S _____

Police # _____ Date _____ Time _____ Charge _____
☐ On Scene ☐ Requested Doctor's Name _____ ☐ On Scene ☐ Requested
 Location _____ Hospital _____
 Patient Name _____ Birthdate _____ M _____ F _____ Race _____ Wt _____
 Street _____ City & State _____ Zip _____
 Responsible Adult _____ Relationship _____ Phone _____
 Drivers License # _____ Medicare # _____ Medicaid # _____
 Employer _____ Soc. Sec. # _____
 Paramedic _____ No _____ MICU # _____ Shift _____
 Paramedic/Driver _____ No _____ Responded From _____
 Vital Signs: B P _____ / _____ Pulse _____ Resp _____ Allergies _____

SEVERITY	TYPE OF INJURY OR ILLNESS	DRUGS	AID PROVIDED BY PARAMEDIC/EMT
Consciousness Con Semi Unc	1 <input type="checkbox"/> Agg. Assault	A <input type="checkbox"/> Sodium Bicarb	A <input type="checkbox"/> EKG
Bleeding Non Min Mod Sev	2 <input type="checkbox"/> Alcohol	B <input type="checkbox"/> Lidocaine 1%	B <input type="checkbox"/> Telemetry
Pain Non Min Mod Sev	3 <input type="checkbox"/> Asthma	C <input type="checkbox"/> Lidocaine 4%	C <input type="checkbox"/> IV
<input type="checkbox"/> DOS <input type="checkbox"/> DOA	4 <input type="checkbox"/> Auto Accident	D <input type="checkbox"/> Atropine	D <input type="checkbox"/> Drugs
	5 <input type="checkbox"/> Bite/Sting	E <input type="checkbox"/> Isuprel	E <input type="checkbox"/> Defib-Suc
	6 <input type="checkbox"/> Burn	F <input type="checkbox"/> Levophed	F <input type="checkbox"/> Defib-Unsuc
	7 <input type="checkbox"/> Convulsions	G <input type="checkbox"/> Epinephrine	G <input type="checkbox"/> Esoph-Airway
	8 <input type="checkbox"/> Cuts/Bruises	H <input type="checkbox"/> Calcium Chl	H <input type="checkbox"/> Intubated
	9 <input type="checkbox"/> Diabetic	I <input type="checkbox"/> Benadryl	I <input type="checkbox"/> Oxygen
	10 <input type="checkbox"/> Drowning	J <input type="checkbox"/> Valium	J <input type="checkbox"/> CPR-Suc
	11 <input type="checkbox"/> Drug Reaction	K <input type="checkbox"/> Dextrose 50%	K <input type="checkbox"/> CPR-Unsuc
	12 <input type="checkbox"/> Dyspnea	L <input type="checkbox"/> Nitrobox	L <input type="checkbox"/> Cont. Bleed
	13 <input type="checkbox"/> Electrocutation	M <input type="checkbox"/> Narcan	M <input type="checkbox"/> Bandaging
	14 <input type="checkbox"/> Emer. Trans	N <input type="checkbox"/> Alcanine	N <input type="checkbox"/> Spinting
	15 <input type="checkbox"/> Emphysema	O <input type="checkbox"/> Ipecac	O <input type="checkbox"/> Spine Board
	16 <input type="checkbox"/> Fainted	P <input type="checkbox"/> Burn Spray	P <input type="checkbox"/> Anti-Shock
	17 <input type="checkbox"/> Female Comp	IV	Q <input type="checkbox"/> OB-Live Br
	18 <input type="checkbox"/> Flu	1 <input type="checkbox"/> Ringers Lac	R <input type="checkbox"/> OB-Still Br
	19 <input type="checkbox"/> Fracture	2 <input type="checkbox"/> D5W	S <input type="checkbox"/> Rotating TK
	20 <input type="checkbox"/> GI Complaint	RESPONSE CODE TO HOSPITAL	T <input type="checkbox"/> Trans. Only
	21 <input type="checkbox"/> Gunshot	<input type="checkbox"/> 1	U <input type="checkbox"/> None
	22 <input type="checkbox"/> Heart	<input type="checkbox"/> 3	V <input type="checkbox"/> Other
	23 <input type="checkbox"/> Hypervent		W <input type="checkbox"/> CPR Citizen
	24 <input type="checkbox"/> Hypoglycemia		X <input type="checkbox"/> CPR Thumper
	25 <input type="checkbox"/> Maternity		Y <input type="checkbox"/> MAST Trousers
			Z <input type="checkbox"/> Dextrostix

Chief Complaint _____ Aid Provided By _____
 Remarks _____ Fire Co. # _____
 If Interhospital Transfer, ER Doctor authorizing move _____ Other _____
 I was offered aid by the City _____ Emergency Medical Service. I chose not to accept Emergency Treatment and/or Transportation
 Signature _____ Witness _____

Doctor or R.N. signature below does not approve or disapprove above information

Form 200 Revised APR 79

FRD-0091

Dr. or R.N. _____
 SIGNATURE ACCEPTING PATIENT

WHITE — Hospital, YELLOW — Tax, PINK — File, GOLD — Paramedic

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