Emergency Treatment and Management

by **THOS. FLINT, JR., M.D.**

Director, Division of Industrial Relations
Permanente Medical Group
Oakland and Richmond, California
Chief, Emergency Department
Permanente Medical Group
Kaiser Foundation Hospital
Richmond, California

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FOREWORD

INTO medical offices, clinics, and hospitals there is a constant stream, day and night, of acutely ill and injured persons. There is probably more opportunity to salvage life, limb, and function going unfulfilled among these patients than in any other category of medical practice. There is certainly less study and academic interest devoted to them than to the relatively small numbers of patients with any one of several esoteric diseases.

In emergency situations, the physician is faced with the necessity of making what may be vital decisions quickly with a minimum of laboratory aid, consultation or solemn contemplation. He must institute action, oftentimes in itself drastic or dangerous, based on his judgment alone. For these reasons the information contained in this treatise will be welcomed by all. Those physicians who only occasionally handle emergencies will find it an indispensible guide and those who work commonly among emergency patients will be pleased to find almost every possible contingency covered.

Dr. Flint, in his concise yet comprehensive "Emergency Treatment and Management," has not only contributed greatly to a much neglected aspect of medical care, but has undoubtedly added to the likelihood that the patient, whether he be trundled unceremoniously into the unfamiliar activity of an emergency hospital or seen in the more serene atmosphere of a medical office, will profit from more prompt and effective treatment.

AUGUST LAMONT BARITELL, M.D.
Chief Surgeon
Kaiser Foundation Hospital
Oakland, California

PREFACE

MANY excellent texts are available covering first aid procedures and surgical and medical care in acute conditions. The following pages, however, have a much more limited objective—the presentation of the treatment and management of the patient by the Emergency Physician from first examination until disposition for definitive treatment can be arranged. To borrow a phrase from current labor relations, I have endeavored to outline in a *rapidly available* form "portal-to-portal" care in emergency situations.

The term "Emergency Physician" has been used throughout this book to designate the physician in charge of the patient in the emergency room, department or private office. In large hospitals this physician may be on a full-time basis; in smaller units he may have numerous other duties, or be on part-time emergency call. Too often he is an intern, resident, or general practitioner of very limited experience in the management and treatment of acute conditions. To all of these physicians whose contribution to the welfare of the patient is often overshadowed by a spectacular surgical procedure or a brilliant medical diagnosis, I am dedicating this book, with the hope that the information herein contained may be of some assistance to them in fulfilling their very great, and often unrecognized, responsibilities.

"Emergency Care" is used in this book in the sense of the examination, treatment and disposition of a person who has developed or sustained an unforseen condition which is believed to call for prompt action. Examination may disclose no urgent or pressing need for treatment and reassurance of the patient or his family may be all that is necessary. On the other hand, prompt and proper handling of the case may result in saving a life, preventing a long illness, or preserving maximum function.

In the first section [Topics 1–10] are grouped some important generally applicable miscellaneous medical procedures. Administrative, medicolegal, and clerical principles and procedures which I have found to be of value in the operation of an efficient emergency service are covered in the third sectoin [Topics 115–128]. Since, by the nature of the cases which he is called upon to handle, the physician treating emergencies is especially vulnerable to legal action, the medicolegal aspects have been outlined in considerable detail. The underlying legal principles used as the basis for the medicolegal points involved are widely accepted although minor variations may occur in some localities.

In order to facilitate rapid reference all conditions covered in the second section [Topics 11–114] are listed alphabetically and cross-references are indicated. Although in some instances the most important diagnostic points have been given, I have made no attempt to cover this aspect fully.

The methods of treatment suggested are *not necessarily the only proper therapeutic methods*, but they are based upon several years of experience in the handling of a large volume of emergency cases as well as upon accepted methods of emergency care. The drugs mentioned are those available in any well equipped emergency room or office. The dosages given are for adults unless otherwise specified and should, of course, be modified for infants, children or elderly persons. Whenever the use of Plazmoid is recommended, dextran, PVP (polyvinylpyrrolidone), serum albumin, or any of the other accepted plasma volume expanders can be substituted. If facilities for typing and cross matching are available the use of whole blood transfusions is even more desirable.

No attempt has been made to specify or suggest therapeutic measures after immediate emergency care with the exception of supportive therapy during ambulance transportation and occasional instructions to be carried out at home before receiving hospital or office treatment.

It will be noted that repetition and duplication occur rather frequently, particularly in the section covering *Poisoning, Acute* [Topic 81]. I believe that *for the purpose of quick reference* this repetition will be found to be of value.

The political and social unrest so prevalent throughout the world suggests the possibility that many physicians not familiar with emergency measures may be called upon to treat large numbers of serious civilian casualties. This possibility—remote though it may be—in my opinion justifies the presentation of this summary at this time.

I should like to express my thanks to Dr. E. M. MacKay for his encouragement, constructive criticism and guidance in the preparation of this book. I am also grateful to Dr. Glenn Lubeck for his suggestions on *Cardiac Emergencies* and to Dr. Arthur Michels for the section on *Shock*. The interpretation and clarification of the medicolegal problems by Mr. James French and Mr. C. H. Brandon have been invaluable. Finally, I wish to thank Miss Bernice Turkovich for her very great assistance in the preparation of the manuscript.

THOS. FLINT, JR., M.D.

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GENERAL MEDICAL PRINCIPLES AND PROCEDURES

AND PROCEDURES

GENERAL MEDICAL PRINCIPLES

1 BARBITURATE PRESCRIPTIONS

Barbiturates should not be prescribed in large amounts, nor should prescriptions for more than three or four doses be given for home use. All prescriptions for barbiturates must be in the prescribing physician's handwriting and must give the patient's name and address.

2 BLOOD ALCOHOL TESTS

These tests are recognized as legal evidence in some states. When requested by a law enforcement officer, blood may be drawn for tests for blood alcohol, provided the permission of the patient is obtained in writing *without coercion.* The patient should be told the purpose of the test and the physician should be absolutely sure that the patient is in full possession of his faculties at the time of signature. Special containers, marked for identification, must be used, and no alcohol, or substance containing alcohol, may be used in cleansing the skin. Syringes used in collecting the blood must have been sterilized by a non-alcoholic technique.

3 DEATH CASES

Dead on Arrival cases should be registered in the usual manner, and any information regarding details of accident, cause of death, etc., should be entered on the record. The physician who sees the case must assure himself that life is extinct. The usual tests for death are as follows:

I. Rigor mortis—dependent cyanosis.
II. Absence of pulse beat by palpation.
III. Absence of heart beat by stethoscope.
IV. Absence of breath sounds by stethoscope.
V. Absence of fogging of a mirror held over the face.
VI. Absence of corneal reflex.
VII. Absence of response to painful stimuli.
VIII. A flat base line on electrocardiograph tracings.
IX. Absence of blood pressure by sphygmomanometer. This test is confirmatory only, and is *not* conclusive evidence of death.

If there is any question of life immediate measures should be begun, including artificial respiration by mechanical or manual methods, cardiac and respiratory stimulation, and antishock therapy [Topic 91 (V)]. Manual cardiac massage may be attempted if respiration is suspected in the absence of heart action and if proper equipment is available and if the examining physician is familiar with the technique. In questionable cases, the patient should be observed at frequent intervals and findings recorded in detail until there is *absolutely* no doubt that life is not present. The record should include notes regarding external evidence of injury or trauma, and if possible the suspected cause of death should be given. *Cases in which a spark of life is suspected, and which receive any treatment, should not be classified as "DOA."* The time of death should be indicated on the chart by

the attending physician, together with his impression as to the cause of death.

4 DRUG DOSAGE IN CHILDREN

The following dosage table has been found satisfactory for emergency use:

AGE	COMPARISON WITH ADULT DOSE	AGE	COMPARISON WITH ADULT DOSE
1 month	1/20	3 years	1/5
3 months	1/15	4 years	1/4
6 months	1/10	5–6 years	1/3
9 months	1/9	7–8 years	1/2
1 year	1/7	13–15 years	3/4
2 years	1/6		

Since infants are especially susceptible to the action of narcotics, doses should be reduced slightly below this schedule from 6 months to 2 years.

NO NARCOTICS OF ANY KIND SHOULD BE ADMINISTERED TO ANY INFANT UNDER SIX MONTHS OF AGE.

5 NARCOTIC PRESCRIPTIONS

Narcotic orders must be signed, giving the prescribing physician's federal narcotic number. The minimal amount necessary to obtain the desired effect should be given the patient if home medication is prescribed. Great care should be taken in adjusting the dose to the age in children and elderly persons.

6 RAPE OR CRIMINAL ASSAULT, EXAMINATION FOR

No examination should be done, even if requested by law enforcement officers, without written consent of the patient, or if a minor, of a parent (both if possible) or legal guardian. The examination should be made in the presence of a third person (preferably a nurse), and should cover the following points:

I. Date and time of the alleged exposure.

II. Does the patient state she has *not* previously had intercourse?

III. *Physical examination* (as soon as possible—not more than six hours after alleged act).

A. Development of the genitalia.

B. External signs of trauma.

C. Excess secretion.

D. Abrasions or lacerations of the vaginal canal.

E. Condition of the hymen.

IV. Insertion of a pipette into the posterior fornix with collection of any secretion. This secretion should be examined immediately as a wet preparation, and the presence or absence of motile or non-motile sperm noted. Smears should then be made, labelled for identification, and sent to a laboratory for staining and examination. These stained smears must be kept as a permanent record.

V. Smears and cultures from the cervix should be taken and sent to the laboratory for examination for gonococci.

VI. Blood for serological examination should be taken.

Conclusive evidence of rape or criminal assault must be reported at once to the proper legal authorities.

7 SERUM SENSITIVITY AND DESENSITIZATION

Intradermal (*intracutaneous*) *skin tests must be done* in all cases before tetanus antitoxin or antiserum of any type is given. The injection must be made *into*, and not through, the skin and should not draw blood. If a definitely indurated wheal (with or without pseudopods) is present 20 minutes after intradermal (intracutaneous) injection of 0.1 cc. of a 1:10 dilution, the test should be considered as positive and the following procedure carried out:

Give	0.01 cc. of antitoxin subcutaneously
20 minutes later	0.02 cc. of antitoxin subcutaneously
20 minutes later	0.04 cc. of antitoxin subcutaneously
20 minutes later	0.10 cc. of antitoxin subcutaneously
20 minutes later	0.25 cc. of antitoxin subcutaneously
20 minutes later	0.58 cc. of antitoxin subcutaneously
Total	1.00 cc.

Twenty minutes later 1 cc. of antitoxin may be injected subcutaneously or intramuscularly, accompanied by 1/2 to 1 cc. of 1:1000 solution of epinephrine (Adrenalin) hydrochloride subcutaneously if marked evidence of sensitivity has been present. This amount of antitoxin (3000 units given over about 3 hours) is generally considered adequate for routine prophylaxis. However, if gross contamination is present, after one hour the dose of antitoxin can be doubled every hour for 3 more injections, following which large amounts can be given with safety provided no reaction has occurred. A reaction is characterized by local erythema, urticaria, asthmatic breathing, nausea, vomiting, and/or chills. If a reaction does develop at any time during the procedure outlined above, the last dose should be repeated after a 20-minute wait—*two* reactions make further attempt at administration inadvisable and require immediate hospitalization for further care.

Ophthalmic tests for sensitivity to antisera should not be used in emergency cases since severe reactions with damage to the eye may occur and ac-

curate interpretation of the results requires considerable experience. *Scratch tests* are of no value and should never be used.

8 SOMNIFACIENTS

All persons who have been given narcotics, hypnotics, sedatives, or antihistaminics should be cautioned against driving a motor vehicle during the duration of the effect of the drug.

9 TETANUS IMMUNIZATION

Since the mortality due to tetanus is very high, prophylactic injections should be considered even after thorough cleansing by débridement and irrigation [Topic 66 (*Lacerations*)] in:

1. All puncture wounds, even if minute.
2. All animal, human, or snake bites.
3. All compound fractures.
4. All dirty wounds of any type, especially those contaminated with dirt, dust or soil.
5. All gunshot wounds.
6. Any wound in which an explosive has been a causative factor (dynamite, firecrackers, fireworks, cap pistols, etc.)

All persons who give a history of proper active immunization to tetanus (service or ex-service men, members of reserve units, overseas contractors' employees, children who have been properly supervised by a pediatrician, etc.) should be given a booster injection of tetanus toxoid (1/2 to 1 cc.), since the active immunity due to this procedure is far more effective than the temporary passive protection given by the antitoxin. This probably applies no matter how long previously the patient was properly immunized, but 5 years is often arbitrarily stated as the limit of the protective action. With this arbitrary period in mind, the following principles are applicable whenever the type or the condition of the wound suggests the need for active or passive immunization:

I. Tetanus antitoxin in doses of at least 1500, and preferably 3000 or more units, should be given if:
   A. The patient is in the process of receiving active immunization by the injection of toxoid.
   B. Less than 3 months have elapsed since active immunization by means of injections of toxoid has been completed.
   C. More than 5 years have elapsed since active immunization by means of injections of toxoid.

II. As a general rule, in the period from 3 months to 5 years after active immunization through injections of toxoid, a booster injection of 1/2 to 1 cc. of toxoid will provide satisfactory protection. In grossly contaminated wounds, however, there may be a definite indi-

cation for, and no contraindication to, giving both tetanus antitoxin and tetanus toxoid at the time of original treatment.

10 X-RAYS

Since a relatively large percentage of injury cases—whether industrial or public liability—are potentially medicolegal problems, *x-rays should be taken whenever bony injury is suspected*, provided the positioning necessary will not be harmful to the patient. Negative x-rays have as much medicolegal value as those showing traumatic pathology. The attending physician's interpretation of the films should be checked by a roentgenologist as soon as possible and a signed x-ray report incorporated in the file.

X-rays should be sent with the patient whenever transfer to any hospital is arranged. In case reference to another physician's office is made, the films should be held awaiting the physician's request, except in emergencies (fractures, dislocation, head injuries, etc.), when they should be sent with the patient. In this case, a receipt for the x-rays should be signed by the person to whom they are consigned for transportation, and return of the x-rays requested. X-rays are the property of the physician who orders them—not of the patient.

If fluoroscopic equipment is available it will be found to be of great assistance in the reduction of some fractures and dislocations in the emergency room. An x-ray technician should be present if possible whenever the fluoroscope is used, but *to protect himself and the patient*, any physician using the equipment should observe the following safety factors:

I. NEVER USE MORE THAN FIVE (5) MILLIAMPERES.

II. Never use more than eighty (80) kilovolts (K.V.).

III. Limit exposure time from one (1) to three (3) seconds—not over ten (10) exposures.

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