Acute Emergencies and Critical Care of the Geriatric Patient

edited by
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To our wives, Catherine Yoshikawa and Jane Norman, and our families, whose patience and support made this book possible.

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Preface

The demographic shift toward an aging population is occurring now and will extend over the next 40 years in the United States and the rest of the world. Health care problems of older adults will require the primary attention of most physicians. Certainly, among those health problems of aging persons will be diseases, disorders, and injuries that require acute emergency management and critical care in an inpatient setting. This book focuses on the approach to the diagnosis and treatment of the most commonly encountered medical and surgical acute emergencies and life-threatening conditions in elderly persons. In addition, topics such as drug prescribing in critically ill patients and adverse life-threatening drug reactions, elder abuse, ethics, and nursing care of the critically ill elderly are discussed. The chapters were written by clinicians and researchers nationally recognized in their field of expertise.

There are four major sections. Part I emphasizes the principles of geriatric critical care: the geriatric patient in the emergency department, ethical issues in emergency care, drug dosing and life-threatening drug reactions, and nursing care issues of the critically ill elderly. Part II is devoted to surgical emergencies: emergency preoperative evaluation, emergency anesthesia, traumatic injuries, hip fracture, acute abdomen, and acute vascular emergencies. Part III reviews the major medical emergencies: shock, cardiac emergencies, hypertensive crises, acute respiratory failure, acute renal failure, acid-base and electrolyte imbalance, diabetic ketoacidosis and hyperosmolar hyperglycemia, infectious diseases emergencies, gastrointestinal hemorrhage, neurological emergencies, and psychiatric emergencies. Part IV completes the book with special issues related to aging: acute vision impairment or loss, thermoregulatory disorders (hypothermia, hyperthermia), diagnosis and treatment of elder abuse and neglect, and future direction of acute hospital care of the elderly.

Each chapter presents the latest and most up-to-date approach to diagnosing and treating the acutely and critically ill elderly patient. To provide quick access to information, chapters are concisely written and formatted in a consistent style.

Current and other relevant references are provided so that the reader may pursue additional information or refer to the original data or study.

This book is essential reading for health care providers who manage elderly patients, i.e., primary care physicians, geriatricians, emergency physicians, intensivists/hospitalists, surgeons, anesthesiologists, and critical care and emergency nursing staff, as well as pharmacists. The information contained in these chapters will increase the awareness of clinicians and their capacity to more rapidly diagnose acute emergencies and life-threatening conditions, as well as institute life-saving interventions and/or seek appropriate specialty consultations. Ultimately, our goals are to reduce pain and suffering and improve the quality of life of all older people. We hope that this book will contribute to these goals.

We thank Patricia Thompson for typing the manuscripts. We are also grateful to the authors for their willingness to contribute to this book and to Russell Dekker for his belief in and support of this project.

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Relevance of Aging Issues in the Emergency Department

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I. CLINICAL RELEVANCE

A. Epidemiology

1. Demographics

Emergency departments (EDs) throughout the country will be receiving and managing enormous numbers of older patients over the next 30 years. The older adult population is rapidly increasing throughout the world. It is anticipated that the population of people 60 years and older will increase by 60% in developed countries and by almost 160% in less developed regions over the next 30 years (1). In the United States, the current elderly population of 33 million (13%) will nearly double to 65 million (25%) by 2020 (2). More importantly, the most vulnerable elderly population (i.e., those who are 80 years and older) will be disproportionately increasing more rapidly than younger elderly persons.

The increase in life expectancy for both males and females has contributed largely to the expanding elderly population. At the turn of the twentieth century, the average life expectancies for a male and female child at birth were approximately 46 and 48 years, respectively. Within approximately 100 years, the life expectancies at birth have increased nearly 30 years for both genders (72 and 79 years for males and females, respectively) (3). Life expectancy at age 65 years has also improved modestly during this past century—the average male and female at age 65 can expect to live another 15 and 19 years, respectively (3). Women continue to outnumber men in all older age categories. Elderly women are more

likely to be widowed than elderly men, which may have an impact on the use of the ED for health care. Studies have suggested that those who live alone without adequate social support and an immediate source of help (i.e., the single, widowed, or divorced) are more likely to visit the ED (4).

B. Mortality and Morbidity

With a rising number and proportion of the total population being 65 years of age and older, it is not surprising that the elderly account for most deaths in the United States. Table 1 summarizes the total number of deaths in the United States in 1993 by age categories; nearly three-quarters of all deaths occurred in the elderly (5). In contrast, in 1900 only one-quarter of deaths occurred in persons aged 65 and older (6). Many of these deaths will occur outside a health care system; however, a substantial proportion of deaths or near deaths of older patients will occur in the ED.

On the basis of data of causes of death by age groups (Table 2), it is anticipated that the type of emergency services (excluding ED care for routine medical problems) sought by younger patients versus the elderly would be different. Whereas younger adults requiring emergency services are primarily for trauma and surgery, the elderly come to the ED seeking care for medical illnesses that most often require admission to the hospital (7). The most common causes of death in persons 65 and older are found in Table 3 (5). Thus, it is expected that the most serious and life-threatening problems encountered by older patients are often related to cardiac disorders, cancer and its complications, stroke and delirium, pulmonary diseases, infectious diseases, trauma and injuries (e.g., falls), kidney failure and its complications, and diabetic and vascular-related disorders.

Table 1 Number of Deaths By Age Categories in the United States, 1993

Age category (yr)	Total deaths	(% of total)
Under 1	33,466	(1.5)
1–4	7066	(0.3)
5–14	8658	(0.4)
15–24	35,483	(1.6)
25–44	155,683	(6.9)
45–64	373,393	(16.5)
65 and older	1,664,294	(72.8)
TOTAL	2,368,045	(100)

Source: Ref. 5.

Table 2 Top Three Causes of Death by Age Categories in the United States, 1993

Age category (yr)	Causes of death in rank order
1–4	Unintentional injuries
	Congenital anomalies
	Malignant neoplasms
5–14	Unintentional injuries
	Malignant neoplasms
	Homicide and legal intervention
15–24	Unintentional injuries
	Homicide and legal intervention
	Suicide
25–44	Unintentional injuries
	Human immunodeficiency virus infection
	Malignant neoplasms
45–64	Malignant neoplasms
	Diseases of heart
	Cerebrovascular diseases
65 and older	Diseases of heart
	Malignant neoplasms
	Cerebrovascular diseases

Source: Ref. 5.

Table 3 Most Common Causes of Death in Persons Aged 65 and Older in the United States, 1993

Causes	No. of deaths (% of total)	
Diseases of heart	619,755	(37.5)
Malignant neoplasms	371,549	(22.5)
Cerebrovascular diseases	131,551	(7.9)
Chronic obstructive pulmonary disease	86,425	(5.2)
Pneumonia and influenza	73,853	(4.5)
Diabetes mellitus	40,502	(2.4)
Unintentional injuries	27,784	(1.7)
Nephritis, nephrotic syndrome, and nephrosis	19,743	(1.2)
Septicemia	16,846	(1.0)
Atherosclerosis	16,460	(1.0)
Others	249,826	(15.1)
TOTAL	1,654,294	(100)

Source: Ref. 5.

Table 4 Most Common Chronic Conditions in Persons Aged 65 Years and Older by Race in the United States, 1993

Condition	White (%)	Black (%)
Arthritis	48.3	61.4
Hypertension	34.2	40.1
Hearing impairment	32.9	19.0
Heart disease	31.5	21.7
Orthopedic impairment	17.6	23.2
Chronic sinusitis	15.2	20.0
Cataracts	15.2	16.2
Diabetes mellitus	9.8	16.2
Visual impairment	9.7	9.5

Source: Ref. 2.

These are the predominant health problems in elderly patients seen in the ED. (Major discussions of these and other emergency medical problems are reviewed in the remaining sections of this book.)

In addition to diseases leading to death, elderly patients have numerous chronic diseases or disorders that either are exacerbated as acute diseases—many of which can be life threatening—or manifest with secondary complications (e.g., osteoarthritis complicated by septic joint infection or ischemic heart disease seen with pulmonary edema). Thus, older patients may enter the ED with an acute illness or life-threatening condition, which may be related to a more chronic underlying condition. It is imperative that ED physicians be aware of these common chronic conditions (Table 4) because the selection of diagnostic procedures and therapeutic interventions will be greatly influenced by the presence of such underlying problems (2).

II. FACTORS THAT HAVE AN IMPACT ON DIAGNOSIS AND TREATMENT

A. Aging Versus Clinical Disease

With aging, a variety of physiological and anatomical changes occur. It is beyond the scope of this chapter to describe the myriad of age-related changes. However, all clinicians who provide care for the elderly must be aware and knowledgeable of these changes to determine what is disease versus a normal process of aging. Too often, symptoms and signs of a serious disorder are overlooked by both the elderly patient and physician because these complaints are attributed to ''old age'' (e.g., low hemoglobin is not due to aging and requires investigation). Con-

versely, diagnostic and therapeutic interventions may be avoided in circumstances in which clinical findings are consistent with physiological aging rather than active disease (e.g., mild decline in creatinine clearance). Moreover, a clear understanding of the important physiological changes of aging will allow the ED physician to determine drug doses more appropriately (e.g., age-related decline in renal function); avoid drugs that might worsen aging changes (e.g., aminoglycosides affecting renal function and hearing); and limit prescribing medications that have an adverse impact on cognitive function, balance, bowel habits, urination, sleep, taste, vision, and hearing—all of which can be adversely affected by aging.

B. Polypharmacy

With the numerous medical problems associated with aging, it is not surprising that elderly patients are prescribed an inordinate number of drugs. The elderly population receive nearly one-third of all prescription drugs in the United States (8). It is critical that the initial evaluation of an elderly patient in the ED include a complete and thorough inventory of all medications—prescription and over the counter. Not infrequently an initial complaint may be caused by an adverse drug reaction (e.g., delirium or acute confusion) rather than by a pathological disease process. Thus, a drug reaction or side effect should always be considered in the differential diagnosis of an acute change in an older adult. In addition, before drug therapy is initiated, a careful assessment of current medications will minimize unnecessary duplication of drugs with similar actions, avoid drug-drug interactions, and reduce potential adverse drug reactions. (See also Chapter 3.)

C. Presentation of Illness in Elderly Persons

The clinical presentation of illness in elderly persons may be influenced by several factors. Older patients not infrequently underreport symptoms associated with serious illnesses. As stated earlier, many times older persons will attribute certain symptoms to ''old age'' or believe that morbidity and functional incapacities are part of ''growing old'' (9). Consequently, diseases may be in the advanced stage when the patient appears in the ED. In addition, the ED physician may have to be vigilant in eliciting symptoms from the elderly patient to reach a proper differential diagnosis.

Manifestations of serious illnesses may be atypical, attenuated, or absent in elderly patients (9). As examples, fever may be absent in older patients with sepsis (10), acute myocardial infarction may have minimal to no chest pain (see Chapter 12), or hyperthyroidism may not demonstrate typical hyperadrenergic symptoms (''apathetic'' thyrotoxicosis) (11). Thus, it is important for the ED staff not to ignore a seriously ill older patient or dismiss a particular diagnosis

because of the absence of typical symptoms. When subtle or other clinical clues suggest a serious illness despite lack of specific findings, the ED physician must be prepared to perform further diagnostic studies to ensure that a major illness has been excluded.

The presence or accumulation of multiple coexisting chronic disorders may mask or confound the clinical presentation of another acute disorder. As examples, chronic obstructive lung disease may mask an underlying bronchogenic carcinoma; degenerative osteoarthritis of the spine may confound the symptoms of a compression fracture related to multiple myeloma; or a chronic depression may cause a physician to overlook a developing dementia.

D. Functional Status

It is important to realize that for most older persons functional independence is the most important goal in their everyday life. Although the traditional approach of medicine (i.e., making a specific diagnosis to allow specific therapeutic intervention(s) to relieve symptoms and improve health) is appropriate in managing older patients, it is the impact of these diseases on functional capacity that is the critical determinant of the health and well-being of the elderly patient. Even though a disease may have been eliminated or adequately treated, if the older patient's functional capacity continues to remain unimproved, the management of the patient is deemed unsuccessful. Thus, not only should specific symptoms and signs be determined in the evaluation of the elderly sick patient, *but how the functional capacity of the patient has been disturbed by the illness* should be assessed. Often the patient's functional capacity may have deteriorated from a disease long before the illness progresses to an acute emergency. The ultimate therapeutic goal is to restore the older patient's functional status to the premorbid level.

If the patient or family is able to provide an accurate assessment of the patient's function before the acute event, this information should be recorded in the chart. The basic activities of daily living (BADLs) are skills that allow a person to perform functions for self-care: eating, dressing, bathing, toileting, continence, and transferring (some also include ambulation). Disturbances or deterioration of BADLs generally indicate the presence of a major underlying disorder. However, normal or unchanged BADLs do not exclude an active acute problem—BADLs are more specific than sensitive as parameters of function. Intermediate or instrumental activities of daily living (IADLs) assess the persons capacity to maintain an independent household (shopping, driving or using public transportation, using the telephone, meal preparation, housework, laundry, handling finances, and taking medications). Changes in the older person's IADLs may be seen earlier in the course of an acute or subacute illness compared with BADLs. Advanced activities of daily living (AADLs) assess the person's ability to fulfill

roles in the occupation, as a family person, or in the community or society in general (12). AADLs will vary for each person and assessment will have to be individualized.

A screening evaluation of the older patient's cognitive status is also important and can be done by checking for orientation (time, place, person), recall of three items in 1 minute (e.g., select three items, have the patient name these, and then ask the patient to recall all items 1 minute later), serial seven test (subtracting 7 from 100 five times), and attention span (''A'' test: a random calling out of the alphabet is performed interspersed with the letter ''A,'' and the patient is asked to acknowledge whenever the letter ''A'' is noted) (12).

III. THE ACUTELY ILL OR SEVERELY INJURED ELDERLY PATIENT

Elderly patients who arrive in the ED with a severe injury, in a comatose state, in cardiovascular or respiratory compromise, or with other life-threatening conditions should be immediately managed as described in the appropriate chapters in this book. It is beyond the scope of this chapter (and it would be redundant) for the author to review the various diagnostic and therapeutic interventions for the major emergencies involving the elderly. However, it would be useful to highlight and repeat some key points described in this chapter and others throughout this book.

Age alone is not a contraindication for diagnostic and therapeutic interventions. Age is generally one of several factors in determining risks and benefits for a given diagnostic procedure or treatment. Thus, initial evaluation and therapy in the ED should not be determined solely on the basis of a patient's age.

However, if an elderly patient has an advance directive, this document should be reviewed by the ED physician after stabilization of the patient and before further interventions are pursued. In some instances, an advance directive may indicate the withholding of cardiopulmonary resuscitation, intubation, ventilators, or other ''heroic'' measures.

An assessment of the functional status of the patient before the current presenting acute event is important. This will serve as a reference point for the impact of the acute event on the patient, as well as the short-term or chronic success of therapy. If the elderly patient required a support system, it is essential to identify who provided this support and where the patient resides (home, residential care, long-term care facility). Successful discharge planning from the ED (or hospital) will be facilitated

by a clear knowledge of the patient's premorbid functional capacity and existing support system.

A careful survey of all medications taken by the patient should be performed on all elderly patients. Issues of compliance, over-the-counter drugs, and potential adverse drug reactions should be reviewed. If a new drug regimen is to be initiated in the ED, the clinician should avoid drug redundancy (prescribing drugs of similar class and actions), excessive doses, and prolonged administration without monitoring. Be aware that any clinical symptom can be caused by a drug or be due to an adverse drug reaction. Reducing the number of drugs taken by an elderly patient without compromising their care and health on discharge from the ED is a highly desirable outcome and should be a goal of all physicians.

Many elderly patients will be transferred from a long-term care facility to the ED because of an acute change in their status or development of clinical findings of an acute process. The most common reasons nursing home residents are transferred to an ED are fever and infections, congestive heart failure, respiratory distress, injuries, delirium and altered consciousness, and gastrointestinal problems (13,14). Conversely, elderly patients may be brought to the ED by a family member or significant other who can no longer provide care at home and wishes to have the patient admitted to the hospital or long-term care facility.

Psychiatric problems or abnormal behavior in the elderly will often prompt the family or significant other to bring the elder to the ED. It is important that in the initial assessment of the patient potential medical conditions or medications be excluded as cause of the behavior pattern (e.g., acute delirium or confusion caused by pneumonia or by a medication). (See also Chapter 21.)

A multidisciplinary approach to an acutely ill elderly patient will facilitate optimal care and rapid and appropriate disposition. Availability or access to a geriatric nurse specialist, geriatrician, geropsychiatrist, or social worker with skills in gerontology will add immensely to the ED staff's capacity and ability to provide the highest and most appropriate levels of care to elderly patients.

IV. CONCLUSION

The ED physician will most often be the first health provider to encounter the elderly patient who seeks medical care or who needs immediate atteniton to a life-threatening condition or injury. An in-depth understanding and knowledge of the principles of aging, diseases of the elderly, unique features of disease presentation and manifestations in the older patient, and special precautions of

diagnosis and treatment will greatly ensure that elderly patients will receive quality care, as well as services, with dignity and compassion.

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2
Ethics in Emergency Care of Critically Ill Patients

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''The ethics of care, then, both elevates care to a central value in human life and recognizes that care requires a complicated process of judgment. People need to make moral judgments, political judgments, technical judgments, and psychological judgments in their everyday caring activities. Caring, then, is neither simple nor banal; it requires know-how and judgments, and to make such judgments as well as possible becomes the moral task of engaging in care. In general, care judgments require that those involved understand the complexity of the process in which they are enmeshed'' (1).

Ethical issues are pervasive in geriatric medicine, but perhaps nowhere are they seen in such intensity as in the emergency setting, where information and time are often in short supply and the outcomes are potentially dramatic. Ethical standards are useful to physicians as principles to guide decision making for individual patients but also to foster ongoing efforts that enrich systems of care that improve health outcomes for elderly persons.

I. CLINICAL RELEVANCE AND CLINICAL SITUATIONS

A. Goals of Care

Over the past 15 years, a Presidential Commission (2), a series of court rulings, and multiple other writings have contended that decisions about medical treatment should reflect the informed preferences of individual patients and the expected outcomes of alternative treatments. When an ill older patient seeks medical attention and the happy discovery is that cure can be easily achieved with little

risk or burden to the patient, the goal of care is usually simply to cure the patient. What is more frequently the case, however, is that the ill older patient has more than one medical problem, challenging diagnostic dilemmas and treatment choices with significant risks and burdens.

Older patients who seek emergency care do so for a variety of reasons. Like other age groups, older persons seek emergency services when they are acutely ill or injured. In addition to acute illness, older adults may also be brought to the emergency department by caregivers or family members because of functional decline and other complications of chronic progressive illness. A functional decline sometimes signals a major new medical problem, but usually it just heralds the expected progression of chronic disability.

Emergency physicians cannot find time to address problems and concerns beyond the urgent reason for the visit. Admitting these patients to the hospital might allow problems to be identified and addressed comprehensively. Patients who go home from the emergency department, however, are likely to have no comprehensive evaluation and care plan (3). Repeatedly patching up acute problems without having a comprehensive plan of care is virtually certain to yield inadequate and incoherent treatment, marked by vague and conflicting goals of care.

The identification of goals of care is key to the practice of geriatric medicine, but no one can discuss prospects and values when urgent action is needed to stabilize a critically ill elderly patient. Seriously ill elderly patients frequently cannot provide accurate information about medical history or personal values. Despite shortages of information and direction, emergency care providers are expected to make important and immediate decisions about the treatment and disposition of these patients. Under these circumstances, it is certain that errors will occur, and that most will be errors of having tried to restore physiology or to rescue from imminent death. One important question, therefore, is whether care systems can reduce the rate and seriousness of such errors.

Emergency physicians must quickly gather all possible information about the patient's past medical history, current illness, and preferences for care to make the best possible short-term plan for caring for the patient. The irreversibility of forgoing treatment makes it obviously justifiable to treat to stabilize the patient's medical condition while awaiting important information about the patient's past condition and advance directives. Later on, treatment plans can be implemented in accord with better defined goals of care. For example, endotracheal intubation and ventilator support may be used early on to stabilize the medical condition of an acutely ill patient. Later, as the full scope of diagnosis and prognosis becomes clear, the family or surrogate may decide with the health care team that further life-sustaining treatment is not in keeping with the overall goals of the patient. Ventilator support would then be discontinued, and other treatments

would be developed in accord with a recognition that goals of care are properly focused on achieving comfort.

Thus, one strategy for managing the problem of ambiguous information and a shortage of time is to do all one can to rescue the sick person long enough to allow more well-informed decisions. To use this course, the emergency personnel must work in a care system in which they can rely on others (e.g., in the intensive care unit) to be willing to stop life-supporting treatment that proves to be useless or harmful (from the patient's perspective).

A second strategy is to reduce the rate of inadequate information available in the emergency setting. Most elderly persons who are seen for emergency care have been sick. Plans could be made for exacerbations, complications, and life-threatening situations. Those plans could be immediately available to emergency care providers. In La Crosse, Wisconsin, more than eight patients in every 10 who die have written advance directives, usually rather specific and established, on average, a year before death (4). As a result, 98% of decedents had a deliberate forgoing of a life-extending treatment. Emergency care personnel cannot accomplish this on their own, but they should know that having a clear and available plan for an emergency situation is an effective strategy for avoiding having to treat just because the goals of care are ambiguous.

Physicians desire to do what is best for the patient, but defining what is ''best'' requires time, information, and communication with the patient and significant others—elements that may not readily be available in the emergency setting. When the patient is quite elderly or quite ill, the usual landmarks of patient welfare are in doubt. No substitute exists for knowing what the patient and family value and for having plans that reflect those judgments.

B. Provider-Patient Relationship

The ''moral heart'' of medicine is the concern for the welfare of the patient (5). Ill patients depend on their physicians and must perceive them to be trustworthy. Patients usually seek improvements in their health through relationships with physicians; however, for emergency cases, the patient (and family) must trust a health care system. Emergency department physicians must seek to ensure a climate of trust and to quickly engender a collaborative and understanding relationship with their patients. No expectation exists that this relationship will endure into the future, yet it can be quite intense and satisfying.

One threat to perceived trustworthiness is the physician's inability to promise to focus on the specific patient's concerns and challenges. The ability of the physician to devote time and energy to individual patients is influenced by the sum of events occurring in the department. Critically injured persons with as yet unknown diagnoses and prognoses arrive without warning, interrupting the pro-