The Future of Emergency Medicine

American College of Emergency Physicians®

The Future of Emergency Medicine

Nancy J. Auer, MD, FACEP, *Editor*

Authored by and prepared under the direction of the
1997-98 Task Force on the Future of Emergency Medicine

Nancy J. Auer, MD, FACEP, *President*
American College of Emergency Physicians
1997-1998

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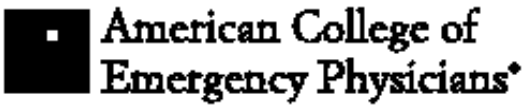

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Introduction

The future of emergency medicine is the central theme of my year as ACEP President. I have explored this theme in articles, visits with key policy makers, strategic planning sessions, programs like ACEP's Leadership and Legislative Issues Conference, and in presentations to residency programs, ACEP chapters, and national and international medical associations.

Predicting the future of emergency medicine is not enough; we must shape that future. As I challenged the ACEP Council in my first speech as President, "Vision without action is opportunity lost." To that end, I established the Task Force on the Future of Emergency Medicine and named to it the chairs of the Academic Affairs, Emergency Medicine Practice, EMS, Public Health and Reimbursement Committees. Their charge was to explore the future of emergency medicine and to provide goals and guideposts for that future. They have documented their vision and recommendations for action in this white paper.

It was a pleasure to work this year with the talented, dedicated emergency physicians who made this publication possible. My sincere thanks go to each member who participated in this project, as well as to ACEP staff, for their commitment.

As the authors of this paper point out, the future holds many challenges for emergency medicine — and countless opportunities. We must constantly refine our vision of the future and joyously embrace the challenges of shaping that future for the benefit of the public, our patients, and our profession.

Nancy J. Auer, MD, FACEP
President
American College of Emergency Physicians
September 1998

Future Direction of Emergency Medicine: Implications for Academics and Resident Training

Academic Affairs Committee

Debra Perina, MD, FACEP, Chair

Francis Counselman, MD, FACEP; Ronald Charles, MD; Suzanne Shepherd, MD, FACEP; Yvette Calderon, MD

Background

Reform is occurring in the American health care system at a more rapid rate than at any time in history. What the final effects on the practice of medicine will be is unknown. Although a source of much speculation and anxiety, the effect on the specialty of emergency medicine is equally unclear. What is clear is that we are on the brink of revolutionary changes in how medicine is practiced and that no area will remain untouched. Emergency medicine offers elements of primary care and specialty services while providing 24-hour access to health care. It is likely that the practice of emergency medicine will be affected in many ways – some of which we cannot fully anticipate. However, we can make some educated projections. Academic emergency medicine likely will be affected in several ways that will result in practice changes with implications for training.

Academic medicine has remained relatively insulated against changes occurring outside the "ivory tower." Until recently, the traditional system of educating residents and medical students had remained virtually unchanged for 50 years. With the advent of managed care and other health care reform changes, academic institutions and physicians now find rapid changes in reimbursement, practice management, available research monies, and graduate medical education funding. With change usually comes opportunity. The challenge is to adapt to the changing environment and anticipate ways to not only survive but prosper. Because one of the most important missions of academic medicine is the education of future physicians, it is vital that their education include exposure to concepts and technology that will affect their practice in this new environment. What follows is a discussion of potential changes academic emergency medicine may experience as well as possible opportunities that may result.

Expanded Scope of Emergency Department Care

The practice of emergency medicine is changing. The paradigm of inpatient care is now shifting to more outpatient settings. The result is that more advanced care is necessary in the outpatient setting and physicians are encountering sicker patients. Problems that would have necessitated admission just a few years ago, such as new-onset atrial fibrillation and pyelonephritis, no longer do. We are already experiencing an increased acuity level of ED patients, many of whom require longer periods of care than the more traditional stabilize-and-admit or "in-and-out" patients. Observation areas and chest pain centers are examples of how EDs have already begun to adapt.

As ours is no longer a 9 am-5 pm society, patients needing care traditionally provided in physician offices or a hospital clinic setting will seek care in the ED due to its 24-hour, seven-days-a-

week availability. It is not cost effective to duplicate clinic or office staffing when such is already present in the ED. Emergency physicians, however, must get used to caring for patients who do not fit the previous paradigm of the emergency patient. For example, transfusion, outpatient IV antibiotics, chemotherapy, and emergency dialysis may become routine in the ED. Pain treatment units and substance abuse treatment centers also may become prevalent as other resources to care for these patients become less available.

Emergency physicians will be called on to provide an increasing amount of what traditionally has been considered primary care in the ED. This is especially true during those periods in which physicians' offices and clinics are closed (ie, after hours, weekends, and holidays). Emergency physicians may find it advantageous to contract with health maintenance organizations to provide these services at a competitive rate. Any price reduction should be more than offset by the increase in the numbers of patients who are being directed away from the ED.

The emergency physician has a unique role in our health care system, providing a combination of primary and specialist care both prehospital and in the hospital. Currently physicians do not provide continual monitoring and supervision of long-term care facilities, with the result that many of these patients must seek care in the ED. Emergency physicians could provide care 24 hours a day in these facilities, resulting in significant health care cost savings and improvement in the quality of care for residents of these facilities. Residents would no longer need to be transported to unfamiliar surroundings at a significant cost, and ready access to meet their health care needs would occur in an efficient and cost-effective manner.

New Technologies

As the population ages more demand for specialized services and critical care can be expected. This will involve the use of specialized equipment and techniques such as dialysis machines and echocardiography not routinely used in the ED. The shift away from inpatient diagnostic workups (lasting several days) to focused outpatient workups (lasting only hours) to evaluate a variety of conditions, including seizures, chest pain, and abdominal pain, will require the emergency physician to become even more knowledgeable in the application and cost-effective use of such new technologies as magnetic resonance imaging, spiral computed tomography, and EEGs.

Telemedicine, now employed in selected settings to allow remote consultation and direction of patient care with real-time video communications likely will become commonplace. EDs, particularly in academic environments, will be at the front line of providing 24-hour consultation to rural and low-volume EDs, referral centers, off-site clinics, and even incarceration centers. It is also conceivable that emergency medical services (EMS) will be connected to EDs with a portable version of telemedicine video, which raises implications for complete on-scene treatment and nontransport without sacrificing the quality of care.

The Future Hospitalist

As care becomes more outpatient focused, private hospital practitioners will spend less total time in the hospital. There likely will be a need for the "hospitalist" whose practice will consist of being the bridge between the hospitalized patient and the private physician. Emergency physicians are used be being this bridge with ED patients and are ideally suited for this role. They will be the facilitators coordinating resources and standardizing patient diagnostic workups and treatments against the outcome data. Although less important in an academic setting than private practice, this role still will be important from an education and service standpoint.

Community Outreach

Emergency physicians must seek to expand their horizons outside the ED into the communities to which they belong by providing more public education, preventive medicine, and information on injury prevention. The provision of certain health screening exams may be of immense benefit to patients and present opportunities for new ED business. With the vision of expanded scope for EMS personnel to provide in-home risk assessments, home health care, and other such services, emergency physicians will be involved from a medical direction standpoint in ongoing care as well.

Patients may have their lacerations sutured at home by EMS personnel and have sutures removed later during a return visit. Basic medical care likely will become more convenient for the patients and may include more home visits overall. This will be accomplished primarily through the use of physician extenders under the control of emergency physicians and physician-authored protocols.

Training Implications

Emergency medicine resident training must include not only diagnostic and procedural skills but training in customer service and business and counseling skills as well. Residents must become comfortable with such technologies as advanced diagnostic imaging, telemedicine, ultrasound (including echocardiography), and serving in the role of consultant. Familiarity with equipment not presently in routine use in the ED, such as EEG, dialysis, and echocardiography, may become necessary due to their increased use in outpatient diagnosis and treatment. Imparting research skills, particularly in outcomes- based research, is extremely important as even those entering private practice will be able to participate and potentially receive funds for this activity.

Efficiency and cost-conscious concepts also must be stressed, as practice profiles will be developed and monitored in the managed care environment. Patient treatment decisions must be based on scientifically valid data and not simply on traditionally accepted but often anecdote-derived diagnostic workups and therapies. Evidence-based decision- making skills should be taught and used, and greater emphasis also should be placed on public health concepts.

Residents should have exposure to working with and supervising physician extenders, who will be more prevalent as part of the patient care team of the future. A closer working relationship with such ancillary services as outpatient planning and social work is also important as many screening and home health needs will be handled in the ED. We must provide appropriate training and experience in critical care to help residents acquire the knowledge and skills necessary to deal with the increased amount of critical care being provided in the ED that previously occurred in an ICU setting.

Research

The traditional mode of deriving research study topics based on the individual researcher's interest will probably change. Fewer funding opportunities will be available and those that are may be tied to outcome-based or health evaluation studies. Presently pharmaceutical companies fund some drug or medical device studies. However, as their profit margins decrease, as most assuredly will occur with managed care companies striving for cost containment, these funds will become scarce. Thus, basic science research may become less prevalent and most research in all specialties centered on patient outcomes. Emergency medicine is uniquely positioned to perform these studies because the ED is a patient-rich environment in which enrollment of a large number of subjects in a short period is relatively easy.

The diversity of patient pathophysiology also uniquely positions emergency medicine to participate with other medical services to achieve outcome investigations from a truly integrated standpoint. Academic emergency medicine must be at the forefront of this research paradigm and should be able to acquire a significant portion of the available funding in this area. Community EDs also may be involved as part of multicenter trials.

Summary

The practice of emergency medicine will change in the future. Challenges lie ahead, but opportunities also exist. Our specialty is uniquely positioned to accept these challenges and perhaps even prosper. It is important to lay the groundwork now by being forward thinking enough to meet the challenges with the vigor and creativity that has always been the trademark of emergency physicians. Academic centers will be heavily affected by changes in the health care system and must be proactive in developing responses to succeed in the new environment. As this discussion points out, there are several areas for which futuristic planning will be of great value. The key to survival will be responsiveness, flexibility, and creative thinking.

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Emergency Medical Services of the Future

Emergency Medical Services Committee

Jon R. Krohmer, MD, FACEP, Chair

Background

There have been significant changes in the practice of both emergency medicine and prehospital care (emergency medical services [EMS]) since the 1966 publication of "Accidental Death and Disability: The Neglected Disease of Modern Society."[1] That publication served as an indictment of the lack of appropriate emergency care, both in the field and in hospital emergency departments, and heralded the growth of out-of-hospital and in-hospital emergency care. It outlined 29 recommendations for improving the country's emergency health care system, 11 of which specifically addressed prehospital care issues.

Over the past 30 years, there have been significant changes in the quality and level of care available for acute illnesses and injuries. We are currently at a stage in which the entire health care system is being reviewed for appropriateness, efficiency, and effectiveness. Out-of-hospital care is certainly one of the arenas undergoing review, the impetus for which is spawned by the government, the health care industry, third-party payers, and the medical community.

As part of this process, in June 1995 the National Highway Traffic Safety Administration and the Maternal and Child Health Bureau of the Health Resources and Services Administration commissioned the development of the "EMS Agenda for the Future." [2-4] A multidisciplinary committee was established to oversee the process and develop the document with input from many stakeholders in EMS, including the American College of Emergency Physicians (ACEP). Through a consensus review process, the document was finalized and published in 1996. Since then, a number of national EMS organizations, including ACEP, have endorsed this document.

The Agenda proposes a vision for EMS in the 21st century and identifies 14 attributes that must be developed further to accomplish that vision (Table). These attributes were developed based on the current practice of EMS and emergency medical care and where the field practice of medical care may be in 20 to 30 years. They reflect many of the influences and initiatives that EMS is currently facing. The reader is referred to the Agenda for in-depth discussions of those specific attributes. This chapter's discussion will focus on several of those attributes with specific recommendations for the College's consideration.

Clinical Care Issues

Improvements in the clinical care provided patients by EMS personnel over the past 30 years have paralleled the improvements in clinical care available in hospital emergency departments. Most areas of the urban and suburban population now have access to advanced life support services. Rural areas are served predominately by limited advanced life support or basic life support. Historically, much

of the care available in EDs has been simply transferred to the field and made available to prehospital patients. Although the concepts and philosophy of that medical care are similar between the field and the ED, the field is a unique setting that provides clinical challenges not found in the more controlled setting of a hospital, clinic, or office. We must continue to investigate, understand, and acknowledge the uniqueness of field care and strive to make the care provided in that setting innovative and appropriate.

As technology changes, we must look very closely at what care is appropriate to provide in the field and in which specific settings it should be provided based on medical resources available to that community. Likewise, we must use available technology appropriately to facilitate field care. Those personnel providing the field care must be educated adequately to provide the level of service available. Currently EMS personnel are trained as "technicians" to identify specific conditions or situations and respond to them based on medical-direction-established protocols. Education will continue to provide those personnel with an increasing knowledge base on which to make evaluations and sound clinical decisions. There must be more well-rounded didactic and clinical education for field providers, at both the initial and ongoing education levels. That education must receive strong support and input from EMS physicians particularly knowledgeable regarding appropriate medical care outside of the hospital.

In addition to providing specific care for isolated medical events, there is a great need for EMS resources to look more closely at illness and injury prevention activities. EMS personnel must receive education in prevention principles that will allow them to then develop appropriate prevention programs based on local need.

Over the years, the level and quality of care provided by field personnel has increased and improved. We believe that this has resulted in better care of patients. There is growing recognition, however, that we must look more closely at the true impact that out-of-hospital services realize in terms of patient outcomes. Historically, outcomes have been viewed as improved mortality (eg, in cardiac arrest or trauma care) or decreased morbidity (eg, less disability). Other outcome measures, such as decreased number or length of hospital admissions, improved patient condition (eg, pain relief), or satisfaction, also must be considered as legitimate outcomes of care. These outcomes must be investigated more fully. Overall system review and analysis must consider these factors as part of the quality improvement (QI) process.

There is a growing interest in the prehospital environment in increasing or "expanding" the scope of patient care activities provided in the out-of-hospital setting. The impetus for this comes from several areas: interest on the part of field personnel in providing patient care services for which the need is not being met; interest from field personnel to grow as health care professionals; interest on the part of the ambulance industry in providing additional services to expand services/activities, use

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Table: EMS Agenda for the Future[2]

Vision: EMS of the future will be community-based health management that is fully integrated with the overall health care system. It will have the ability to identify and modify illness and injury risks, provide acute illness and injury care and follow-up, and contribute to treatment of chronic conditions and community health monitoring. This new entity will be developed from redistribution of existing health care resources and will be integrated with other health care providers and public health and safety agencies. It will improve community health and result in more appropriate use of acute health care resources. EMS will remain the public's emergency medical safety net.

EMS Attributes

- Integration of Health Services
- EMS Research
- Legislation and Regulation
- System Finance
- Human Resources
- Medical Direction
- Education Systems
- Public Education
- Prevention
- Public Access
- Communications Systems
- Clinical Care
- Information Systems
- Evaluation

personnel more effectively, and realize additional revenue; interest on the part of third-party payers in treating patients at home and keeping them out of EDs and hospitals; and recognition that there are many areas of the country (rural, suburban, and urban) in which adequate health care resources are lacking for all who need them. It is unclear which factors are dominant; all play a part in the initiative.

It seems likely that, in the future, EMS personnel will be treating patients and identifying the most appropriate dispositions for those patients. The dispositions may include transport to an ED, but they may also include transport to other types of facilities (eg, freestanding facility, urgent care center, managed care organization clinic, physician office). In some situations, the patient may be treated in the field and not transported but have a referral made for nonemergency follow-up. Factors that must be considered for these options include proper medical supervision of those activities, the level of care provided, and potential reimbursement mechanisms for those services.

There are several components to the concept of "expanded scope" of care. Some issues involve field personnel providing care that has not typically been viewed as a part of their practice. Examples include EMS personnel providing immunization screening and administration, well-baby checks, more in-depth physical screening examinations, and treatment of minor medical conditions. These activities historically have been provided by physicians. Models for some of these programs include the Home Health Care Aid program in Alaska and the Red River, New Mexico project. We must seriously consider identifying who are the most appropriate personnel to provide those services. Certainly, traditional EMS personnel, with additional education, may be appropriate. Other traditional levels of health care provider (eg, nurse, nurse practitioner, physician assistant) may fill this role, or we may need to create another level of provider specific to that role.

In many cases, the EMS system has functioned separately from other components of the health care system, including the ED. As we look at improving the system as a whole, we recognize that there must be much better integration of all components of the system, including EMS. There must be mechanisms for more complete interaction and sharing of information between field providers, hospitals, and primary care organizations. We are currently noting much more sharing of patient-appropriate information among ED staff and patients' primary care organizations. Mechanisms for similar interactions with field personnel must improve. Some of this improvement can occur easily through computers and other communications technologies that are being developed.

The out-of-hospital health care system will continue to function as the country's health care safety net, for emergency and nonemergency situations in which citizens do not have access to their physician or any physician. In addition, the out-of-hospital system is the cornerstone of response to disaster situations and must remain so.

Medical Oversight

The practice of out-of-hospital medicine by EMS personnel is a delegated practice of medicine under the license of the medical director for the system. Emergency physicians are best suited for the role of medical oversight based on their training and experience. Ideally, all medical directors should be emergency physicians with special training in field care and EMS systems. However, we must work to improve this. There are few physicians with specialized training in EMS; most emergency physicians are not interested in EMS as part of their practice, and there are not emergency physicians in all areas of the country in which medical directors are needed. There are many non-emergency physicians serving very capably as medical directors, but they also need additional training and experience.

As field personnel continue to provide traditional emergency field care and as expansion of their activities continues, there will be an even larger need for physicians to dedicate their practice to out-of- hospital activities. Those physicians must be familiar with the resources and capabilities of field personnel, must understand the unique environment in which that care is provided and must be able to apply that understanding in directing care appropriately. Medical oversight also must be provided for initial and continuing education of personnel. This requires special knowledge and skills on the part of the medical director. As there is incorporation of "expanded-scope" activities, the medical director must provide supervision of those activities as well. This will require an expansion of the knowledge base of the EMS medical director and will require the director to use "primary care" consultants on advisory panels in a manner similar to hospital-based emergency physicians, who currently use trauma surgeons, cardiologists, pediatricians, and other specialists in daily practice. The medical director must serve as the focal point for those resources and coordinate

them, and serve as the "EMS physician" resource to the remainder of the medical community.

QI activities must be established to continually review all components of the out-of-hospital health care system. To function effectively, the QI program must interface with the other components of the health care system to allow for necessary information access while maintaining patient confidentiality. Out-of-hospital agencies historically have been prohibited from access to information critical to analysis of outcomes and appropriateness of care. The medical director must establish the focus and direction of the QI program and facilitate its implementation.

As noted, the medical director will require specific education to function effectively in this role; primary emergency medicine training must be supplemented with specific out-of-hospital education and experience. This physician education must be supported and provided by the College. In addition, the College must continue to work closely with other physician and nonphysician organizations whose purpose is to support field care activities to ensure adequate medical oversight of all field activities.

EMS Systems

We must look closely at the current development of out-of-hospital care. The present process may be leading to the development of a three-branched out-of-hospital system: traditional EMS response for emergency and non-emergency situations, transport capabilities for nonemergency situations, and the expanded-scope activities. It is unclear whether the field providers of the future will function in all three capacities or whether there will be specific personnel for each component. The most appropriate model may well vary depending on local conditions and needs. As these models evolve, all three components must continue to be integrated to allow effective and efficient use of resources.

Communications

There are a number of communications issues that must be reviewed. Most of the country's population has access to 911 services, but these services still cover only a minority of the country's geographic area. Not all existing services provide enhanced 911 resources that allow automatic notification of caller number and location. In addition, not all requests for EMS are handled by appropriately trained dispatch personnel. Emergency physicians must be intimately involved in the development, education, and oversight of all medical dispatch activities as they affect patient care.

Additional financial and technological resources must be dedicated to completing the 911 system for the entire country. Advances are being made in providing location and caller information from cellular-accessed notification of events, a void in the current communication system. Mechanisms to more rapidly identify locations of medical events are being investigated and should be supported. Such tools include automatic crash notification with vehicle location devices.

New technological advances offer potential utility to the field environment. Several systems are currently investigating the use of telemedicine resources to facilitate acute and nonacute care provided in the field and to provide a direct link between field personnel and medical direction. This capability may find use in emergency and expanded-scope activities and ties in nicely with other potential uses of telemedicine in the ED setting.

There is also a great need for integration of communications resources among those involved in field care. We must identify mechanisms for greater interface among all public safety agencies. In addition, all health care organizations must work to improve communications and information sharing about their patients and clients. This access to information will allow more appropriate decision making regarding treatment plans and disposition.

Funding

The traditional mechanism of funding EMS services has been through tax-based funding of the agency or fee-for-service, only for the transport of patients. Historically, patients transported by EMS personnel were always transported to EDs. Some of those patients were not experiencing acute medical events requiring ambulance transport, but transport was the only mechanism for reimbursement available to the EMS agency for the assessment and care it provided. This mechanism for reimbursement for field care/activities must be, and is being, reexamined by third-party payers. We must develop a system that allows for reimbursement for the assessment and care provided by field personnel. One mechanism that would allow for this is a capitation system for the EMS agencies as now being proposed by managed care organizations. Other mechanisms will include traditional fee-for-service for assessment and care provided, not necessarily based on the transport component. Governmental tax support may continue. Whatever mechanism is achieved, we must continue to support the out-of-hospital emergency system as a

basic public safety resource and the public's "health safety net."

In addition to the cost of actual services provided, arrangements must be made to financially support the preparedness component of emergency response systems and to support disaster preparedness and response needs.

Research

As mentioned above, much of the development of field care arose from the philosophy of extending care from the ED into the field. There has been little scientific study of the effectiveness of field care provided. EMS systems recently have begun looking at methods of assessing that effectiveness. These methods have focused primarily on outcome analysis using general or difficult-to-define outcomes. The most studied parameter has been cardiac arrest resuscitation, but variables between and among systems and lack of standardized data have made interpretation and comparison of these studies difficult.

We must look closely at the components of care currently provided to validate the efficacy of those treatment interventions. Further advances in field care must be incorporated as much as possible based on scientific support for the efficacy and cost effectiveness of those advances. To accomplish that, a focused national agenda for EMS research must be established. We must be able to establish consistent databases, collect appropriate data, and merge databases from the various components of the health care system. Dedicated funding sources must be identified and provided consistently for those research activities.

Summary

EMS will continue to evolve as factors such as expanded scope of practice and managed care issues provide the catalyst for change. Field personnel will continue to encourage innovations for out-of-hospital medicine. Strong medical oversight by involved and knowledgeable emergency physicians must be in place to help steer this expansion. We also must continue to push for change in EMS funding/reimbursement and research if we are to continue to be a leader in this dynamic field.

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Emergency Medicine's Role in Public Health

Public Health Committee

Thomas D. Kirsch, MD, MPH, FACEP, Co-Chair; Patrick M. O'Brien, MD, FACEP, Co-Chair;

Tracy G. Sanson, MD, FACEP, Subcommittee Chair on the Future of Emergency Medicine;

Kimberly A. Collins, MD; Jon Mark Hirshon, MD, MPH, FACEP; Jonathan Jui, MD, MPH, FACEP; David Slobodkin, MD, MPH, FACEP; Robert G. Hendrickson, MD (EMRA); David T. Williams, DO (EMRA)

Background

The ACEP Public Health Committee offers the following selected strategies for the collaboration of emergency medicine and public health. Public health attempts to prevent health problems by focusing on groups of patients using the techniques of surveillance; the identification of risk factors; and the development, evaluation, and dissemination of interventions. Emergency physicians are often faced with such problems associated with public health as infectious diseases, substance abuse, injury control, and access to medical care.

The shift in population trends, health care attitudes, and alternative therapies will greatly affect public health and emergency medicine interactions. Population trends will have an impact on emergency departments' demographics and their general and public health needs. Census Bureau statistics show that one fifth of all baby boomers will not have children and one fourth will have only one child. Couples without children make up one third of all adults. Projections are that by the year 2005 single adults will account for almost half of the adult population.[1] These shifts in population ages and numbers will affect the ED patient mix and the types of injury and diseases managed. The increase in the numbers of aged without family support systems will affect social services requirements.

This partnership of emergency medicine and public health represents an important challenge and a unique opportunity to improve the quality of our patients' lives and reduce morbidity and premature mortality. The following interventions include changes in the usual structure of the delivery of preventive services in health care and attempts to integrate medical care into the wide range of factors influencing the health of our patients:

- Preventive services
- Health screening
- Immunizations
- Domestic violence
- Reducing alcohol-related harm
- Public health surveillance and acute health problems
- Healthy People 2010

Preventive Services

The delivery of clinical preventive services can reduce premature morbidity and mortality while enhancing overall quality of life. The provision of preventive measures is essential to the health of our society. With over 90 million visits in the United States annually, EDs can play an active role in disease and injury prevention. The elderly, the chronically ill, the poor, and members of ethnic minorities are disproportionately represented in that number.[2,3] EDs also are visited by people who, for a variety of economic and noneconomic reasons, may have little contact with other medical providers.[4,5] Combined with high ED patient volumes, this creates an opportunity to impact many public

health issues. The ED offers a unique site for clinical preventive service delivery.[6] An aging baby boom population will increase the demand for health programs and preventive services as it continues the trend toward promoting a healthy aging process. Emergency physicians will need to recognize the increased use of alternative and complementary health care by the public. "More than one third of the US population uses products such as vitamins and services such as chiropractic and acupuncture on an annual basis."[7] Emergency physicians must be educated about and prepared to manage the effects of these alternative health practices.

The general categories of preventive services are health screening, immunizations, and counseling. Despite the individual and societal importance of these services, such ED constraints as poor reimbursement, high volume, and diverse patient health and personal problems limit their delivery. Immunizations are often the exception to this, both in their ease of administration and available reimbursement from Medicare and Medicaid. Medicare coverage includes a single lifetime pneumococcal vaccination and annual influenza vaccination.

Health Screening

Health screening, such as breast and prostate exams and fecal testing for occult blood, are an important part of all medical care. The provision of screening tests in the ED can be used to attract additional business for EDs desiring it. Certain health screening tests, such as blood pressure measurement, mammography referral, and Pap smears, are cost effective, sensitive, and sought by many patients.[8,9] Some screening tests, such as fecal guiac and urine dipstick testing, are reimbursed by Medicare and Medicaid for their interpretation. Medicare coverage now includes biennial mammography screening and Pap smear screening every 36 months.[10] Screening for syphilis, especially in high-risk patients, is billable and can have a positive public health impact.[11,12] Counseling and education have been shown to increase patient satisfaction.[13] Some screening tests do not have immediately available results, necessitating the development of a system for contacting patients or providing the information to their private physicians.[14]

Rapid advances have been made in diagnostic technologies, especially in the area of genetic tests such as polymerase chain reaction. There may soon be multiple tests available to screen patients for a wide variety of diseases. These tests can be used for screening purposes or to further stratify risks for severe disease during the acute presentation of an illness.

In the future, infectious disease screening in the ED may be facilitated through the incorporation of the electronic "nose" that detects and differentiates the odors of growing bacteria for instant identification of pathogens.[15] EDs will see enhanced medical screening for diseases such as cancer, AIDS, and tuberculosis through the use of the DNA biochip (a gene probe-based system). Technology will allow the detection of chemical compounds that distinguish between a virus, bacteria, or other chemical or geological species in biological samples such as tissue, blood, and other bodily fluids and environmental samples such as air, soil, and water.[16] Cancer screening may be as simple as testing for HCG levels (in nonpregnant females).[17]

Immunizations

Routine immunizations to prevent common infectious diseases usually are not perceived as a function of emergency care. In comparison, individual patients with even a small chance of exposure to tetanus or rabies are immunized in the ED. The different approaches are a combination of tradition and the perceived risks of acquiring a disease. The risks of common infectious disease are much greater. The elderly are at more than a 1000-fold greater risk to die from influenza than from tetanus or rabies. In 1990 there was a nationwide measles epidemic because of low immunization levels, particularly among poor urban children.

Strategies to provide immunizations include routine mass immunization to protect the general populations and targeting of specific high-risk groups, (eg, influenza for people with respiratory disease and diphtheria tetanus for patients with dirty wounds). Childhood immunization programs have had a major impact on the health of the US population by preventing and essentially eliminating certain infectious diseases. In contrast, efforts to develop effective immunization programs for adults have not been as successful. Approximately 500 children in the United States die from vaccine-preventable diseases each year, but more than 50,000 vaccine-preventable deaths occur among adults.[18] Influenza, pneumococcal pneumonia, and hepatitis B account for the majority of adult deaths.[18,19] The influenza and pneumococcal vaccines are single-dose vaccines easily given in the ED. ED immunization is likely to increase immunization rates among special populations that

are difficult to immunize through office-based programs. The marginal cost of minor ED services is low.[20] Incidental immunization during the contact opportunity provided by other medical care greatly decreases the time cost to the patient, increases the rate of vaccination, and prevents unnecessary strains on office and clinic schedules during the short influenza immunization season.[21] Standing orders may make this service an easy addition to ED services, and these added services may be successful in attracting and retaining business to the hospital and the ED.

Medicare, Medicaid, and all regulated insurance plans should reimburse any qualified provider of immunizations, whether the immunization is administered in an office, inpatient, outpatient, or episodic care setting. Preferential reimbursement for immunization services will facilitate practice changes regarding immunization and remove existing financial counterincentives to updating immunizations during all patient encounters. Many states are removing the documentation barrier to ED immunizations by developing immunization registries capable of facilitating communication of immunization status between providers.

Computer linkage of records also will allow screening tests and immunizations to be given at multiple sites. All health care sites will have direct access to patient histories and results. Direct sharing between sites can be accomplished through the Internet, with the use of a portable, computerized medical record ("smart card"), or both. Tests of accessing immunization records via the Internet have already been conducted.

Newer vaccines that make the immunization process much easier are being developed. These include multiple vaccine combinations for less frequent dosing and unique delivery systems such as oral, nasal, respiratory, or grown and delivered in food products.

Domestic Violence

As a subset of all violent injuries, domestic violence is recognized as a significant public health problem affecting primarily women.[22] National and international health organizations, including the Centers for Disease Control and Prevention and the World Health Organization have declared violence prevention a public health priority. Victims of domestic violence present to emergency medicine perhaps more often than any other medical specialty.[23] As such, emergency physicians are afforded a unique opportunity for identification, evaluation, treatment, and referral of domestic violence victims. This gives emergency physicians the opportunity to decrease the morbidity and mortality associated with domestic violence.[22]

To date, most relevant policy has focused upon the development of protocols for screening emergency patients to identify victims of domestic violence. However, for the greatest impact on preventing domestic violence, ED intervention must begin the patient education and therapy process. This will require a three-pronged approach: development of an infrastructure, education, and research.

The development of an infrastructure for the care of victims of domestic violence has been referred to as a "community-coordinated response."[24] In this view, EDs are envisioned as central safe sites that are open 24 hours a day and where multiple assistance resources can converge. If EDs are to function as domestic violence resource centers, they must improve linkages within both the hospital and the external community, including the legal system, third-party payers and the emergency medical services system.

Expanding domestic violence education efforts by emergency physicians represent a second venue for future intervention. The current role of the emergency physician includes the education of patients and other providers. Patients are taught about the escalating nature of domestic violence and resources available to help them cope with their abusive relationships. Emergency physicians also can teach other health care providers to recognize, treat, and refer victims. However, emergency physicians also must reach beyond the clinical realm to inform the public at large through editorials, testimonials, and lobbying efforts. For many public health problems, one important prevention strategy is to increase public awareness about the issue and facilitate nonmedical prevention and intervention programs.

Research is the third venue for the future expansion of the role of emergency medicine in preventing domestic violence. The high volume of victims seeking emergency treatment makes the ED an ideal site to obtain influential epidemiological data. Research efforts also can extend to further elaboration of victims health status, their need for medical care, and outcomes research on the effectiveness of education and referral efforts.

Reduction of Alcohol-related Harm

Alcohol-related harm results from an interaction of social, psychological, and medical problems that must be approached on both societal and personal

levels. Both legislative measures and personal intervention approaches have been successful in reducing alcohol-related harm.

There is convincing evidence that personal medical services aimed at alcohol abuse can be both efficacious and cost effective.[25] Emergency physicians should be particularly aware that ED visits frequently represent a "teachable moment" for alcohol abuse prevention.[26] Brief intervention and patient education requiring small investments of time have been effective in reducing intoxicant use and future medical costs in many settings.[27,28] Active continuing education and involvement in producing treatment guidelines for their own departments may help emergency physicians develop and recognize their own competency in this field.

Emergency physicians also must become involved in societal efforts to reduce alcohol abuse. Changes in such broad social factors as tax assessed on alcohol,[29,30] density of bars,[31] and minimum legal age for alcohol purchases[32,33] have had large effects on alcohol-related harm. Motor vehicle laws that increase the certainty or immediacy of punishment[34,35] raise the driving age, or address night-time driving by teenagers have all been effective.[35,36] True random breath-testing, in which all drivers passing a checkpoint are asked to prove sobriety, has had dramatic effects on drunk driving.[37,39] This may be augmented by administrative license revocation, in which failure to prove sobriety results in immediate limitation of driving privileges,[37] and legislation that blood alcohol levels of 0.08 mg/dL constitute evidence of impairment.[40,41] All of these measures were produced by advocacy resulting in legislation.[42,43] Emergency physicians can be highly effective legislative advocates but must first understand what initiatives are most effective.

Public Health Surveillance and Acute Health Problems

ED patient records are an important public health surveillance data source and an integral part of the electronically linked health information systems vision.[44] "Surveillance, a fundamental public health methodology, provides the conceptual framework for systematically collecting population-based information on the occurrence, outcome, and costs of illnesses and injuries of ED patients."[45] EDs are well positioned to provide data on injuries, emerging infectious diseases, patterns of drug abuse, immunization rates for vaccine-preventable diseases, and the incidence of other acute health problems such as asthma. These data could provide accurate population-based estimates on the incidence and prevalence of injuries and illnesses, helping to identify risk factors, predict trends, and develop interventions. The introduction of well-planned ED data surveillance systems will require the collaboration of public health professionals, clinicians, and public and private sector organizations.

Health information is becoming increasingly important for many purposes, including data systems for public health, health economics, managed care systems, and disease prevention. Much work has already gone into optimizing a database for emergency medicine in the Data Elements for Emergency Departments project (DEEDs). There also has been parallel work by many private companies to develop computerized patient record/data management systems to support the data needs of the ED of the future. These projects are leading to a truly "paperless ED" with the type of detailed management and economic information necessary in the new health care environment.

More accurate disease and injury surveillance could result from implementation of the DEEDs dataset with a new computerized information service system for the ED. ACEP, in collaboration with public health entities, should lead the development and refinement of ED data surveillance systems. ACEP should monitor and provide input to the evolution and dissemination of policies concerning the use of identifiable patient information in the standardization of patient record data elements and code sets and in the establishment of the electronic data sharing networks.

Healthy People 2010

Each decade the federal government oversees the development of national public health objectives that set the agenda for health and public health services for the entire nation for the next ten years.[46] The current version is known as Healthy People 2000. These objectives have significant impact on health agencies at all levels of government, affecting the allocation of research and development funds. Public health goals for the first decade of the 21st century, Healthy People 2010, is now in the initial phase of collaboration.[47] It will influence health leaders in governmental organizations such as the National Institutes for Health and the Centers for Disease Control and Prevention and in national and state funding for all

federal health initiatives. Recognizing the importance of universal access to quality health care and emergency medicine's critical role in this process, the public health community has invited organized emergency medicine to contribute to this document.

ACEP can continue its patient advocacy role by maintaining active representation at Healthy People 2010 meetings, developing contact with key individuals, and reviewing interim 2010 documents as they evolve.

Summary

Public health focuses on population-based surveillance, identification of risk factors, and interventions to improve community health and reduce morbidity and mortality. Emergency physicians frequently evaluate and treat patients with public health problems. These problems include preventable diseases such as pneumonia in the elderly and health screening for syphilis and occult fecal testing. Other common public health problems seen in the ED include victims of domestic violence and alcohol-related injuries. Emergency physicians can participate in surveillance of public health issues by assisting in the development of surveillance systems and by participation in the development of Healthy People 2010 objectives. These objectives set public health goals for the first decade of the 21st century.

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The Industrialization and Corporatization of Emergency Medicine

Emergency Medicine Practice Committee

Stephen J. Groth, MD, FACEP, Chair

Christopher L. Bredeson; Joseph J. Calabro, MD, FACEP;

Randall B. Case, MD, FACEP; W. Wesley Fields, MD, FACEP, ad hoc (Emergency Medicine Group Management Section)

John H. Proctor, MD, FACEP; Leslie S. Zun, MD, FACEP;

Robert J. Schwartz, MD, FACEP, ad hoc (Computer Section)

Overview

The United States health care delivery system continues to undergo a dramatic market-driven evolution at all levels, including physician, hospital, and ancillary medical services. Traditional models of structure and delivery are changing rapidly. Simply stated, the medical profession is witnessing a major paradigm shift from cottage industry to a "big-business" corporate practice model.

In the past, most physician practices were small, independent businesses comprised of one or a few physicians. Due in large part to health care inflation pressures that came to a head in the early 1980s, alternative approaches to medical care delivery surfaced. In addition, major purchasers of health care services (particularly business entities shopping for health benefits for their employees) concluded that they wanted lower cost, "acceptable" quality, and predictable interactions with all health care provider organizations. Hence, the evolution of large-scale physician practice management organizations that attempt to address the foregoing concerns.

Consolidation of physician practices from small independent office settings into large organizations, including publicly held corporations, is one result of this market-driven process. Publicly owned stock corporations are merging physician practices at a dizzying rate.

Between 1983 and 1994, the percentage of employed physicians rose from 24.2 to 42.3. Solo practitioners fell from 40.5% to 29.3%. Self-employed physicians diminished to 28.4%.[1] Emergency medicine practices appear to follow a similar curve.

Ramifications for emergency physicians are puzzling and uncertain. What is certain is that the mode of medical care delivery has changed dramatically. Whether this is good or bad for physicians, payers, and patients is uncertain; the outcome is yet to be determined.

The ongoing industrialization of medicine is a fact of the 1990s. This section will addresses how the consolidation of individual physician practices into physician practice management organizations (PPMOs) impacts the practice of emergency medicine. Background issues that pertain to the corporate practice of medicine, the evolution and development of PPMOs and alternative delivery systems such as integrated delivery systems (IDSs), and how these various developments will affect emergency medical care in general and the individual emergency physician will be reviewed.

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Health Care Corporate Practice Trends and their Impact on Emergency Medicine in the United States

John H. Proctor, MD, FACEP

Background

United States health care is a $1 trillion industry that represents 14% of the US gross domestic product. In recent years, health care cost and delivery have become a paramount issue. After President Bill Clinton's health care reform package failed, economic reform accelerated—primarily through expanded managed care. Proponents of the corporate practice of medicine regard the development of hospital-employed physicians as a natural progression toward integrated health care delivery systems. Physician employees preferentially use the hospital's facilities, ancillary services, and diagnostic equipment.

State legislation banning the corporate practice of medicine originally was intended to prevent the practice of medicine by corporate entities. Such laws generally specify that medicine may be practiced only by professional associations whose membership consists of licensed practitioners. Proponents of such bans believe influences of outside entities compromise health care quality. In the past, virtually all states maintained a ban on the corporate practice of medicine, either through statute or case law. However, only 13 states actively enforce the ban. Conversely, 13 states currently allow hospitals or hospital entities to employ practitioners. The remaining states are somewhere between these two extremes.

The corporate practice of medicine affects physicians, practice management organizations (PMOs), managed care organizations, hospitals and hospital entities, and health care plans. In states that prohibit the corporate practice of medicine, managed care organizations, PMOs, and hospitals may contract with physicians for the provision of services. These organizations cannot employ practitioners explicitly for the provision of patient care. To satisfy the legislative prohibition, physicians may contract with a business entity that provides administrative services, facilities, equipment, and supplies if control of these items is clearly delineated and maintained by the physician. The business entity may not be paid a percentage of profits as a method of reimbursement for administrative services, facilities, supplies, and equipment. The practitioners practice and bill for services rendered as independent contractors. Some hospitals, such as academic or public medical centers, and PMOs may bill and collect professional fees on behalf of practitioners. In such arrangements, the provider receives a stipend or receives fees less billing agent charges. Such arrangements blur the lines between independent contractor and employee.

In the past, the Health Care Financing Administration (HCFA) allowed entities to bill Medicaid/Medicare on behalf of independent contractors under a single provider number. HCFA modified this provision in 1997 to mandate the assignment of individual Medicaid/Medicare provider numbers for each provider. This modification or, as HCFA describes it, enforcement of an existing regulation produces new responsibilities for professional alliances of independent contractor emergency physicians, who must maintain individual bank accounts for Medicare/Medicaid receivables. This potentially raises the costs for independent contractors, who sometimes lack the economies of scale associated with large group practices. Such economies of scale typically reduce the costs of documentation, quality assurance programs, physician recruiting/retention, clerical needs, standardization of practice patterns, and relationships with other physician groups. Furthermore, over the last decade, the Internal Revenue Service has increased its scrutiny of independent contractor physician status.

PMOs and provider-sponsored organizations allow horizontal integration of physicians, thus providing scale economies, income stability, and greater access to managed care/capitated patient populations. Managed care transforms US health care from its traditional professional economic model, wherein the physician controls cost decisions through proprietary information, to a market-based economic model. In this new model, physicians must grapple with issues such as risk-sharing through capitated contracts, relaxation of the corporate practice doctrine's restrictions on nonphysician entities' role in patient care, and challenges to such traditional practice forms as independent contractor status. Governmental agencies such as the IRS and HCFA must respect the rights of all physicians to practice medicine under any contractual agreement promoting both

appropriate access to services and competitive prices.

The Role of Antitrust

The following section on antitrust is based on a presentation by Robert Pitofsky, Chairman of the Federal Trade Commission (FTC). The economic and political pressures to control health care costs and maintain quality encourage the efficiencies produced through collaborative delivery arrangements. Such arrangements involve various combinations of providers, purchasers, and payers. According to Pitofsky, in these circumstances the role of antitrust is "to distinguish innovative responses to market demands from collective resistance to these market forces."[1]

One concern is the potentially unfair advantage of large buyers of services, such as managed care organizations or insurers. These organizations may negotiate unfairly low prices from providers. Inadequate compensation leads to attrition and potentially limits consumer access to adequate care. Antitrust laws may prevent providers from competing fairly against the large buyer groups. The 1997 revisions to the joint FTC/Department of Justice health care guidelines discuss this concern. These guidelines emphasize the providers' ability to organize in a variety of ways without raising antitrust problems. Provider-sponsored networks are an example. Provider networks that produce efficiency-enhancing conduct by groups of competing health care providers may contract directly with employers and other payers. This horizontal integration of providers, such as emergency physician PMOs, is subject to antitrust's "rule of reason," which determines legality by comparing potential procompetitive benefits against likely anticompetitive harms.

Antitrust regulations do not support the creation of countervailing forces by physician groups to neutralize a perceived imbalance in bargaining power exerted by health plans or HMOs. A provider organization's effort to increase reimbursement levels represents such a countervailing force and is per se illegal, as in the Michigan State Medical Society case, 101 FTC 191 (1983). However, antitrust standards allow the collective provision of fee information to purchasers. Fee information assists patients and patient groups in developing reimbursement terms, which is considered procompetitive.

It is arguable that if antitrust law allowed provider groups to acquire enough market power to compete directly with insurers for the business of large buyers, health care consumers would benefit. Provider groups contend that large buyers may sacrifice service quality in order to set unfairly low prices. As a US circuit court judge, Supreme Court Justice Breyer, addressed this issue in Kartell v. Blue Shield, 749 F.2d 922, 930-31 (1st Cir. 1984). In this case, providers attempted to use antitrust laws to challenge cost-containment programs. The court rejected the providers' argument that Blue Cross/Blue Shield plans used market power to produce noncompetitive prices. According to Breyer, the congress that enacted the Sherman Act saw it as a way of protecting consumers against prices that were too high, not too low. The relevant economic considerations may be very different when low prices, rather than high prices, are at issue. These facts suggest that courts should be cautious—reluctant to condemn too speedily—an arrangement that, on its face, appears to bring low-price benefits to the consumer.

Case law also addresses the assertion that large health care plans negatively affect health care service quality. In National Society of Professional Engineers v. United States, 435 US 679 (1978), the Supreme Court decided that antitrust laws reflect a fundamental premise that consumer choice, rather than the collective judgment of sellers, should determine the appropriate mix of price and quality options available in the marketplace. Health care providers and consumers may have divergent views regarding the composition of quality health care. The Supreme Court reaffirmed this opinion in the Indiana Federation of Dentists case, 476 US 447, 462 (1986). The Court supported the FTC decision to halt an effort by dentists to prevent a cost-containment program. The Court rejected an argument that providers have the right to "protect" patients by imposing the providers' will on the market, limiting consumer choice. The Court stated that antitrust laws do not permit a group of providers to "pre-empt the working of the market by deciding for itself that customers do not need that which they demand."

Summary

Antitrust seeks to maintain open and competitive health care markets. The FTC and case law support provider actions that maintain appropriate access to care and competitive pricing. If sellers or buyers of health care improperly collude, exclude efficient providers, or obtain unfair market power, antitrust law applies. In the 1990s, a myriad of health care buyer and seller arrangements emerged that increased the competitive forces on emergency medicine practice. The corporate practice

of medicine, with hospitals acting as employers of emergency physicians, pressures emergency physicians to relinquish independent practice options. Further study of emergency medicine quality, from the perspective of the consumer, is essential.

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Practice Management Organizations: History, Structure, and Applications to the Practice of Emergency Medicine

Christopher L. Bredeson

Background

Emergency medicine physician practice management organizations (EM-PPMOs) have been in existence for many years. Historically, the major reason for their existence was that many hospitals, especially those operating in rural or remote settings, experienced serious difficulties in staffing their emergency departments with qualified emergency physicians. Therefore, the early role of EM-PPMOs was simply to fill out a schedule so that contracting hospitals could fulfill their mandated requirements to have a physician on duty in their EDs 24 hours a day.

Many emergency medicine staffing organizations came to life in the late 1970s, when a market shortage of qualified emergency physicians existed. Due to the dynamics of that time, many of the early emergency medicine staffing organizations were entrepreneurial in nature, ie, the founders of these organizations sensed that there was a serious need and one that needed to be filled quickly. Many of these companies were willing to contract with any physician who possessed an active license to cover EDs on a moonlighting basis, regardless of the physician's training or experience.

In the early 1980s emergency medicine became a recognized medical specialty by the American Board of Medical Specialties. Subsequently, the specialty of emergency medicine has become one of the most popular among graduating medical students. The supply of specialty-trained and board-certified emergency medicine specialists has burgeoned during the past decade. Emergency physician workforce studies have been conducted recently to evaluate supply/demand questions regarding emergency medicine as applied to national staffing models.

The ongoing assessment is that well-trained and highly competent emergency physicians are "state of the art." However, rural and some large city urban areas remain underserved by qualified and credentialed emergency physicians. Hence, there remains a need for emergency physician staffing organizations that are willing to take on the responsibility to staff EDs in rural, inner-city, and other less desirable practice situations.

Perhaps a more important contemporary consideration from the perspective of this paper is that hospitals, as purchasers of emergency physician services, are increasingly pressured to employ or contract with large emergency physician organizations that better meet their overall needs. Most hospitals in the US choose to outsource their emergency physician services, ie, to contract with an outside provider group on an independent contractor basis. Some states prohibit direct physician employment, making contracted emergency physician services mandatory in those states. Nonetheless, most hospitals choose to contract with an independent group/organization to provide those services.

Hospitals may not necessarily be informed or sophisticated purchasers of emergency physician services. Hospitals are interested in several key issues:

1. Are the emergency physicians "adequate" (key descriptor)?
2. Do they keep patient complaints to a minimum?
3. Are they "contract-capable" with all other health plans with which hospitals do business? (ie, will they sign the managed care contracts without a fuss?)
4. Do they have similar and predictable practice patterns (clinical guidelines) and do they follow them?
5. Practice profiles: Are there valid data that reflect individual physician practice patterns? Are outliers dealt with appropriately through education or other action?

These and other considerations provide background information as to why EM-PPMOs have grown dramatically during the past ten years.

In summary, EM-PPMOs were born in the early 1970s to address a relatively simple need: to place a licensed physician in an ED 24 hours a day. As we approach the turn of the century, motivation and reasons for a hospital to contract with an EM-PPMO have evolved radically and include the need to provide complete administrative and practice-related services such as staffing, billing, problem resolution, and procurement of necessary professional liability insurance. Further, the PPMO must prove the ability to coordinate physician

practice patterns that are consistent with sound medical practice and cost-effective approaches to medical care management.

Implications for the Practice of Emergency Medicine

The medical profession in the United States is witnessing a rapid change of practice mode from cottage industry to industrialized model. Emergency physicians will be affected in the same way as other physicians.

Publicly owned and layperson-controlled PPMOs are increasing their presence in the health care delivery market. Market factors have facilitated the evolution of PPMOs, which attempt to apply economy of scale and standardized approaches to the practice of medicine. Health care purchasers (employers) find PPMOs attractive primarily for economic reasons; this factor alone would appear to be the main driver for the industrialization of medicine in the United States.

The impact on emergency physicians is uncertain. Small single-hospital groups may become an anomaly in the near future. Many emergency physicians will likely become employees of some larger entity. The era of independent contractors is likely to end within the next decade. Emergency physicians have historically related to one another and external contracting entities as independent contractors. Aside from IRS pressure, the rationale and basis for remaining an IP will evaporate as PPMOs gain dominance and most emergency physicians are employed by them.

Physicians are frustrated with the loss of control of their destinies but are largely precluded from alternative responses due to antitrust considerations. Unless physicians find or create legal avenues to unite themselves to bargain with PPMOs and other large corporate entities, they will have little power to defend themselves from the ongoing consolidation of medicine into layperson-controlled organizations.

Competent clinicians with additional interest and training in business will be in an excellent position to participate in the industrialization of medicine and emergency medicine. However, if the foregoing hypothesized "industrialization of medicine" scenario plays out, physicians who are strictly clinicians may be subject to the vagaries of labor supply and demand.

Summary

EM-PPMOs have grown via acquisitions and mergers with varied success. However, emergency physicians often experience increased pressure with regard to balancing the needs of the patient, autonomy, control, and decision making with the needs of their emergency medicine group. There also may be increased medical staff peer pressure and positioning when more than one EM-PPMO has a presence in a particular market.

Overall, the outsourcing of services by hospitals continues to be extremely popular. According to *Modern Healthcare's* 1997 contract management survey published in the September 1, 1997, edition, there was a 45% increase in outsourcing from mid 1996 to mid 1997. One of the most commonly outsourced services is emergency medicine.

Integrated Delivery Systems and their Impact on Emergency Medicine

Leslie S. Zun, MD, FACEP

Background

IDSs may be defined as health care organizations that attempt to more closely affiliate the key sub-components of health care delivery into a single organization. The two major participants in IDSs are hospitals and physician groups. A financing or insurance function also may be part of an IDS. No two IDSs are alike. Legal and regulatory considerations, usually at the state level, create significant challenges to the creation of IDSs that function well and efficiently. Most IDSs to date have been hospital centered and controlled.

The impact of IDSs on emergency medicine is a difficult question to analyze. The configuration of the IDS can vary from site to site with little commonality of structure among the systems. The systems may vary in the degree of vertical and horizontal integration, ownership, leadership, organizational structure, etc. Systems may have various integration components, including hospitals, medical groups, nursing homes, home health agencies, primary care clinics, urgent care centers, rehabilitation hospitals, and community foundations. The IDS may be for-profit or not-for-profit and may be hospital, shareholder, or medical group owned. The IDS may be led by physicians, administrators, or some combination of these. The organizational structure may or may not have the physicians in prominent decision-making roles. The impact on emergency medicine will vary from locale to locale.

The following is an overview of an IDS case study whose purpose is to illustrate some of the characteristics, problems, and issues pertaining to IDSs.

Emergency Medicine IDS Case Study

The Sinai System is an example of an inner-city, community teaching hospital that is integrated with a multispecialty physician group. Before the system originated, the hospital had varying arrangements and contracts with multiple physicians.

Five years ago, the emergency physicians were employees of the hospital negotiating with the hospital administrator for salary and benefits. Shortly thereafter, the emergency physicians became part of a multispecialty medical group composed of hospital-based specialties. Two years ago, in anticipation of a significant increase in managed care in the marketplace, an IDS was formed. Each entity in the system, hospital, multispecialty group, community institute, and home health agency has its own board. These boards report to one umbrella board. The hospital has a contractual arrangement with the medical school to provide education to its residents and students. The medical school is a private corporate entity, independent of the Sinai System.

During this formation process, there were a few problems for emergency physicians. A major question was whether the ED should become part of the group with the other hospital-based specialists or remain independent. With little choice in the matter, all the emergency physicians were wrapped into the physician group. The group is currently composed of 170-physicians, including all physicians who have some link with the hospital. The group includes primary care physicians, specialists, surgeons, and all hospital-based physicians.

The system approves of significant sign-offs on all contractual arrangements that involve the physician group, which includes the emergency physicians. The medical group has a contract to provide services to the hospital. The medical group controls the contracts, fees, and services between the physicians and the group as well as the fiscal activities of each department. All the physicians in the medical group, including emergency physicians, have the same contract terms.

Disadvantages

At times, the components of the system have conflicting goals and objectives. The medical group's goal is to generate revenue. The hospital's goal is to provide service to an indigent population. The medical school's goal is to teach medical students and residents. Sometimes the medical group is at odds with both the hospital's goal of service and the medical school's goal of teaching.

Chairpersons in the system have a somewhat confusing reporting matrix. The chair of emergency medicine reports to the president of the medical group for physician issues, vice president of medical affairs for the hospital medical staff issues, vice president of hospital services for ED operations, and

the dean of the medical school for educational issues. This matrix can be confusing when priorities differ and lead to many compromises and negotiations to integrate the differing goals.

The revenue stream from each department is combined into one budget. Some departments are profitable and some, such as emergency medicine, are considered loss leaders. The system negotiates managed care for all components in the system. Some of these contracts are capitated. The medical group decides how to allocate these capitated revenues to the departments. The allocation is divided into all the departments in the group. With an unknown track record of the ED's revenue stream from capitation, the capitation becomes an arbitrary percentage of capitations based on available national norms. As with many inner-city EDs, the revenue generated from the ED does not cover for the expenses in the department. This may become a potential source of contention for the emergency physicians.

Determination of salary and benefits, contract terms, and hiring and firing requirements are determined by the medical group with approval of the system. There are processes and requirements for hiring of new staff at appropriate salaries. These issues are negotiated with the president of the medical group, a physician. The salary for physicians in each department is based on benchmarks with national salary data; the contract terms are consistent for all physicians in the group. Some terms, such as outside work or other restrictive covenants that may apply to emergency medicine, must be negotiated separately.

Advantages

The major advantage to the emergency physician of being part of an IDS is the team approach to the patient. Everyone in the system is oriented toward the patient. There are few issues of physicians trying either to "turf" patients to another provider if they have a poor payment source or to obtain as many patients as possible. The same is true for issues of revenue for each physician or specialty. Therefore, any discussion about billing for certain services, such as ECGs and radiographs, are moot.

No longer does the medical director or chairperson negotiate with the hospital administration for issues of salary and benefits for the emergency physicians. Now, the chair of emergency medicine negotiates with the president of the medical group and the vice president of medical affairs, an arrangement that has reduced the problem of conflicting priorities.

Summary

IDSs are a very heterogeneous group of health care delivery systems that attempt to more closely link hospitals and physician provider groups into integrated organizations. They may or may not include insurer or risk retention functions. The presumed intent is to create "one-stop shopping" for such major purchasers of health care services as corporations and large group purchasers.

Legal and regulatory pressures create significant problems for the development of successful IDSs. Nonetheless, they are a factor in the evolving health care delivery environment, and emergency physicians should be familiar with them and how they work.

IDSs come in many forms, with variations in the degree of vertical and horizontal integration, ownership, leadership, and structure. Disadvantages of integrated systems include conflicting goals and objectives, confusing reporting matrices, profit and loss leader departments, capitation allocations, and operations management issues such as salary and benefits negotiations. A major advantage of integrated systems is the focus on the patient. Additional advantages include a decrease in turf issues for billing and patient evaluation issues. The advantages and disadvantages of an IDS for emergency physicians depend on the types of arrangements and organizational structure of the medical group. If patient care is improved and the long-term viability of the emergency physicians and the system is enhanced, an integrated system may be worthwhile. If another layer of administration is added without an increase in value, such a system is not advantageous.

The Role of Emerging Technologies in the Practice of Emergency Medicine

Randall B. Case, MD, FACEP

Background

Scientific, regulatory, and economic changes surround emergency physicians at an ever-accelerating pace. Dramatic technological advances—especially information systems technology advances – also can be expected to impact the practice of emergency medicine. This paper describes emerging technologies within the current practice environment. It then speculates about what this portends for the future of emergency medicine.

Whether the inferences drawn prove to be accurate when viewed retrospectively is perhaps less important than that we engage in creative thinking today about our future, so we may help shape it.

Emerging Technologies

Computing

The power of information systems continues its breathtaking, exponential growth. It is not farfetched to soon anticipate the arrival of supercomputer power at the bedside. Today, neither hardware nor software tools preclude futuristic applications with the power to transform emergency medicine practice. However, challenges to be overcome include both the lack of a consensus definition of an ED information system (EDIS) product and the organizational dynamics of new technology adoption. While both of these challenges are not insurmountable, neither are they trivial. An integral challenge to system designers trying to create a successful EDIS (indeed, any clinical software product) is the extraordinary level of domain-specific knowledge required. "Converting hunches, perceptions, mental models, beliefs, experiences, and other types of specific knowledge into a form that can be communicated ... in formal and systematic language is a key aspect of successful new product innovation."[1] Not only is the relevant specific knowledge unknown to nonclinician technologists, much of it is obscure, even to clinicians who act upon it every day.

For these and other reasons, the future promise of clinical information systems far exceeds today's reality. Yet, increasing numbers of EDs are implementing various information systems, and the evolutionary process by which these issues will be resolved in the marketplace is already occurring. Specifically, ED systems facilitate patient flow, reduce waiting times, and improve patient throughput. They provide patients with "tailored" information regarding their diagnosis and treatment. They facilitate communication among the staff within the ED, and between the ED and ancillary departments. They provide critical reference resources in a timely fashion.

The reader is left to reflect if the glass is now half empty or half full. In any event, clinical information systems will have a significant impact on the future of emergency medicine; the application of computers within the ED is expanding at an accelerating pace.

Communications

Because teamwork is so integral to how we perform in the ED, there is virtually no specialty in medicine with as high a demand for communication and coordination of care as emergency medicine. A number of emerging technologies facilitate that communication. Parallel with the rise of the personal computer, networking and system interfacing technologies emerged to provide a means by which messages can be passed from one machine to another. Although most commonly used for written communication, computer networks also can transmit images and recorded voice as well. Wireless and cellular technologies now enable us to interact verbally regardless of our physical location within or outside the ED. Because technology now allows us such facile communications, confidentiality concerns will require both technology and process solutions.

The Internet

The Internet is at the intersection of the computing and communications technologies described above. As such, it magnifies the potential power and the specific concerns each of these technologies brings to the fore. Notwithstanding its promise, technological and economic issues do remain before the Internet might become the primary candidate for an information infrastructure for the communication and management of health care information. The issue is less whether these concerns can be resolved but, ultimately, what

alternative technologies might emerge in the meantime.

Imbedded Intelligence

Historically, health care information systems focused primarily on financial concerns. Although clinically focused systems (eg, result reporting) have evolved from early financial systems, they generally are of limited ambition. One of the most fundamental areas for favorably affecting the process of medical care lies in the imbedding of clinical "intelligence" within clinical systems— not for the purpose of replacing clinician thinking, but to represent the above-defined "specific knowledge" within the system, rendering the system intuitive, interactive, and clinically useful. Such truly clinical applications, focused on issues of clinical effectiveness, are still in their infancy. As these clinical systems evolve, the challenge will be to vertically integrate all clinical and financial patient information. This, in turn, will allow the creation of new systems focused not simply on cost alone, but rather on balanced, clinical cost effectiveness. Barriers such as system scope and complexity, expert opinion consensus, and liability exposure must be overcome before such systems succeed. Yet the salutary promise with respect to cost on the one hand and clinical effectiveness on the other gives reason to believe such systems will become more common over time.

Telemedicine

A communication system incorporating real-time audiovisual capability and, in some cases, remote robotic devices constitutes the technological platform for telemedicine. Because of technical and other limitations, telemedicine appears to have the greatest near-term potential in visually oriented specialties, such as radiology and dermatology. At a minimum, it expands the potential geographic reach of a practitioner and thereby raises the possibility of geographically remote consultation. In the short-term, licensure and payment issues remain as obstacles to broader adoption of this technology. Long-term, potentially wrenching change in referral patterns appears to be a more difficult issue—one on which the ultimate success of this technology may rest.

The Current Practice Environment

Emergency Medicine's Role in Health Care Delivery Systems

Emergency medicine's anchor strength has been, and likely will remain, its 24-hour-a-day, 7-day-a-week presence and availability at the bedside. We must continue to be available to attend the obvious emergencies and to determine the true severity and nature of other patients' disorders.

Time-impoverished Culture

As two-worker couples become the demographic norm, an increasing "poverty of time"[2] pervades our culture. People are too busy to get everything done that they need or want to do. As a consequence, grocery stores, gas stations, restaurants, and other businesses, as well as EDs, remain open around the clock to service demand that cannot or is not met during traditional business hours. The American culture values time costs and convenience for this poverty of time.

Time Costs

The full price of a good or service includes more than just the monetary price.[3] Transaction costs are part of the full price and are comprised of the value of the time spent on such activities as searching for information about the purchase, negotiating the purchase, and enforcing any agreements associated with the purchase. Consumers add these costs to the monetary price in conceiving of the full price of a purchase. In a time-impoverished culture, the perceived price of transaction costs is becoming an increasing proportion of a good's or service's full price. Although the ED extracts its own time cost (eg, waiting after triage) a patient likely will "conclude the transaction" (ie, receive a diagnosis and treatment) in far less time than if the patient waited for an appointment with his or her office-based or clinic-based practitioner.

Information Integrators

What does this mean to the future of emergency medicine, and where do the emerging technologies cited above fit into the picture? Much of what we do in the ED already involves integrating information from disparate sources – records, family members, medics, police, nurses, laboratories, images, consultants, primary care physicians, etc. – and generating a coherent diagnostic conclusion as well as appropriate treatment plan. Emerging technologies provide the foundation on which we might extend our reach as "information integrators." The futuristic concept of the ED being the central, controlling hub of the medical delivery system "wheel" depends fundamentally on technology-enabled information flows.

Marginal Services

By virtue of our 24-hour-a-day, 7-day-a-week presence at the bedside, emergency medicine is perfectly positioned to offer marginal services, that is, incremental services that benefit our customers (patients, facilities, payers, and fellow providers). In a time-impoverished culture that highly values timeliness and convenience, the road to a vigorous future is providing a valued service around the clock, especially when no one else is willing or able to provide it. It is left to the readers' creativity to imagine the various medical services that might be appropriate to their particular practice circumstances. Given the emerging technologies discussed, one can easily visualize the ED becoming a remote-site clinical consultative resource or a legitimate managed care "gate-keeping" resource. When the marginal cost of providing such services is small because of underutilized existing capacity during certain periods, marginal services not only can be a valued service to our customers but also a significant contributor to our future as a specialty.

Less Expensive Full-price Site

How is it possible to be paid full monetary price yet be perceived as a less expensive alternative? Because a significant component of the full price is time cost, the answer is reducing transaction costs! We in emergency medicine certainly focus on timeliness of service for clinical reasons (eg, door-to-needle time). It is important, as well, to focus on the nonclinical reasons to deliver timely care: because our patients want it and value it. Information systems already provide some EDs with a tool to manage patient flow in the short run and a wealth of information for planning improved patient throughput in the long run.

Value of Mid-level Providers

Given our tradition of teamwork within the ED, it is not surprising that mid-level providers have found an excellent practice venue in the ED. Now, information technologies are perhaps creating an opportunity to deliver value beyond the ED via our collaboration with remotely located mid-level providers as well.

Summary

Emerging technologies — computers, communication, the Internet, imbedded intelligence, and telemedicine — will have a profound impact on emergency medicine. Technology will help to decrease the time costs of an ED visit for patients by allowing emergency physicians to function as information integrators and to provide less expensive full-price services. It will assist emergency physicians in providing such services by collaborating with mid-level providers at remote geographic locations. Technological achievements will make it possible for emergency physicians to expand their role for the benefit of patients and for the specialty.

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Computers and the Future of Emergency Medicine

Robert J. Schwartz, MD, FACEP, Chair, Computer Section

Background

There are multiple key issues important to the future of emergency medicine when the perspective is computer technology and information systems. These issues include integration, communication services, decision support tools, clinical applications, security issues, and the Internet. The effect of all of these tools is similar; they offer the opportunity to create an environment within the ED of efficiency and electronic assistance that will allow clinicians to participate more fully in clinical decision making and caring for patients. Although they have different approaches, the end results remain similar.

Integration

Integration of information systems in the ED is defined as the ability of the computers in the ED to share information and communicate with computers anywhere in the network. This allows considerable advantage for the distribution of data and the ability of clerical personnel to input data once and verify and confirm on reuse. ED computers can be populated automatically with information from the Admit, Discharge, Transfer (ADT) system and the patient's medical history and can receive communication from around the world, allowing for more efficient use of time and data.

Institution-wide ADT systems, order entry, results reporting, and data sharing allow for a greater likelihood that the data in the multiple computers across an enterprise can be used to create information.

Integration also allows for the computers that run the programs (servers) to be located in an area of the institution accessible to the technical expertise that manages and services them, while allowing for the actual programs (client applications) to be used in the ED itself. It reduces or eliminates the need for the ED to have its own support staff in the event of a computer failure. This eliminates redundancy and provides for more thorough system support and maintenance. Integration also allows us to concentrate on our core functions of patient care.

Communication Services

The development and use of intelligent communication services, which marry the transfer of data with the actual notification and communication process, will relieve the clinician and clerical staff from the tasks of paging, resource scheduling, message creation and transmission, and telephone notification in many respects. Clinicians will be able to identify either the person or the service/specialty they want to contact, send information about the patient with the page, and have the system track and escalate the pages until they are returned. This system will allow the clinician to concentrate on the patient and not spend time repeating the page, looking up directory numbers, and the like.

These tools deliver the ability to create medical call centers that have a significant impact in a managed care environment. Correctly designed, emergency medicine communication services will play a significant leadership role in the further development and refinement of the health care environment, especially if managed care continues to increase its penetration in most US markets.

Decision Support Tools

Software programs that can use rules and reasoning, apply them to data known to the system, and present the user with outcomes, results, or actions to be implemented are known as decision support tools. An example is a program which identifies which penicillin has been ordered, searches its archives for that patient's medical history, and finds a previously documented allergy to penicillin. The system then would alert the clinician of the allergy prior to execution of the order. This type of decision support tool has been shown to reduce morbidity and save money. Applied across the continuum of care, it represents significant potential for consistent, error-free medical care.

These tools have the ability to assist us in delivering consistent and appropriate care across sites and providers. They are also important in developing a consistent and powerful means of applying clinically relevant pathways or guidelines to our practices. Using these tools in our practices is important in the advancement of emergency medicine. An additional side benefit is the vast amount of clinical and policy-related research that is possible.

Clinical Applications

Software applications have been developed that assist in the processes of ED care, including triage assistance, clinical documentation, order entry, results reporting, billing, resource use, and discharge disposition. These software programs, combined with the benefits of integration, communication services, decision support tools, the Internet, and improved hardware for the ED, will create opportunities for information utilization and sharing that will improve efficiency. A key to the successful creation of improved programs is the increased participation of clinical providers in the design and implementation of systems.

Medical Information Security in the Internet Age

The Internet is changing the way we think about data access and security. This is especially true regarding the storage and retrieval of health care information in light of the explosive growth of clinical and administrative transactions done electronically. The growth in medical electronic data interchange requires robust new solutions for defining and protecting confidential information to the exacting satisfaction of patients and practitioners alike. Data security, once the exclusive realm of computer network administrators and security managers, has quickly become the shared responsibility of anyone who collects, reports, publishes, or otherwise controls access to such information. Our profession must contend with increased scrutiny of its management of data privacy and confidentiality.

However, for all the advantages that such an extensive, well-established network promises, it is still a public information highway. As such, it must be made safe enough to allow highly secure and private data transmission to occur with confidence. The creation of a private pipeline through the Internet has been termed the Virtual Private Network or VPN. There are a number of security concerns that must be addressed when developing a VPN. Two such paramount concerns are authentication and encryption. Authentication is the process of ensuring that an entity, typically a person, is who it claims to be. Encryption is the process of scrambling data using a technique that can be reversed only by the intended receiver. This prevents unauthorized viewing of intercepted messages.

Over the past few years, banks, brokerage houses, and related businesses have developed World Wide Web-based programs for personal desktop computers using powerful authentication and encryption protocols, in particular digital certificates and Secure Socket Layer technology. In addition, secure electronic mail messages are now possible using a protocol known as Secure Multipurpose Internet Mail Extensions. These recent innovations make it virtually impossible to forge another's identity or violate message privacy and integrity during transport over Internet protocol-based networks. Policies requiring the use of these communication standards by the message sender and receiver are now being recognized as essential for medical data security.

Until recently users have had little reason to worry about confidential data access or the security issues confronting a resource owner. However, information management experts, pending legislation, and common sense suggest that better methods of confirming user identity must be implemented on both ends of the transaction to safely access electronic medical data. The obvious shortcomings of the log-on/password approach have prompted a search for more secure and efficient methods of authentication. With this in mind, the information technology industry is supporting and businesses are implementing digital certificates to facilitate user authentication on the Internet. These certificates are short digital documents stored in one's computer or on a smart card. They are provided by a trusted third party (called the Certificate Authority) and give assurances of a person's identity. When used in conjunction with challenge-response data communication protocols and cryptographic technology such as the Public Key Infrastructure, one can replace the inadequate ID/password-PIN system with a far superior user authentication process. With this approach, the user needs only one log-on routine involving one digital certificate, virtually eliminating the need for multiple log-on procedures.

Users have a personal interest and responsibility to protect their private keys and to control the use of their digital certificates. Giving away ones private key is equivalent to handing someone the keys to your car along with your ATM card and PIN! There are multiple options for protecting private keys that give users the flexibility to implement the key protection that makes sense for their local environment. E-mail software and browsers, for example, implement protection schemes that restrict access to the private key installed on a workstation. One of the simplest protections is to apply an indeterminate length pass-phrase that is easy to remember but difficult to reproduce. Physical security, particularly of office equipment, portable

workstations, and building access can be critical also. Above all, user education and heightened awareness of the importance of key protection and the consequence of negligence are fundamental.

As consumers, legislators, and regulators insist on increased data security for the electronic transmission of health care information, the Internet offers strong solutions for data encryption and user authentication.

Summary

While computer technology can enhance efficiency and improve clinical decision making in the ED, issues involving integration of information systems and security of medical information storage and retrieval must be considered. Communication systems that allow the clinician to identify and track patient or caller information will create medical call centers that can increase physician efficiency and effectiveness. Clinical software applications, in conjunction with decision support software, will improve the quality of patient care by assisting the physician in documentation, results reporting, billing, resource utilization, and outcome information.

Suggested Readings

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Reimbursement Realities for the Future of Emergency Medicine

Reimbursement Committee

Mason A. Smith, MD, FACEP, Chair

Daniel L. Abbott, MD, FACEP; David A. McKenzie

Background

Gross reimbursement for the physician component of emergency medicine services has been stable or increased at the rate of general inflation for the past five years. Significant regional variation in reimbursement has continued during this same period. Health insurance benefit plans that fit the category of managed care programs have reduced direct reimbursement for emergency physician services covered under their benefit programs. Payers are significantly increasing the patient copayment and mandatory deductible charges associated with the use of covered emergency services. By increasing patient financial responsibility, the payers can be relatively certain that there will be a decrease in the quantity of emergency services that their beneficiaries will use.

Current trends also suggest that payers are returning to chart review as a means to reduce physician payments even when services are accepted as medically necessary. Payer staff members, using their own interpretation of Current Procedural Terminology (CPT) and Health Care Financing Administration (HCFA) guidelines, perform chart review after they receive a copy of the physician's report. Review of this type may cost $50 to $80 per case. Despite the cost, case review has proven to be effective in reducing levels of service and rejecting separately listed diagnostic and therapeutic procedures.

Nationally, individual physician compensation for emergency medical services is expected to remain flat or decrease. This prediction is based on a stable or increasing supply of residency-trained emergency physicians and continued aggressive efforts by payers to reduce low-acuity emergency medical services. Other factors that may influence reimbursement are listed in the next section.

Measuring Reimbursement

Reimbursement trends are complex and are affected by at least six independent factors. It is critically important that ACEP members consider reimbursement per hour of physician time associated with the emergency department and alternative service sites. Factors known to influence reimbursement are listed below.

- Volume of patients treated
- Severity of the average patient treated
- Unit payment per CPT code or level of service, equivalent of the Medicare conversion factor for the Medicare fee schedule
- Payer mix, especially the proportion of uncompensated care
- Productivity of the individual physician measured in Medicare Fee Schedule relative value units per clinical hour

- Hospital subsidy or physician compensation portion that exceeds that generated by fee-for-service collections less billing and administrative costs

Over the last two years, a trend has emerged for physicians to work longer hours and evaluate more patients per clinical hour. These adjustments in work patterns have permitted physician incomes to be stabilized or even increased while the net reimbursement per patient may be declining.

Consensus among experts in emergency medicine billing and administration is that unit reimbursement-specific CPT codes will not increase faster than inflation. Increased review activities, including chart review, are expected to follow the Medicare program's lead. For the next five years, emergency physicians should expect that reimbursement will be level while costs associated with coding and billing will increase much faster than in previous years.

To compensate for lower unit revenue, emergency physicians still have some opportunity to increase the volume of patients treated per clinical hour. The largest opportunity to increase volume will be in low-volume EDs. With 70% of EDs reporting fewer than 15,000 visits per year, this sector of emergency medicine will have the greatest opportunity for productivity increases.

Emergency physicians will increase the number of clinical hours of coverage they perform in order to maintain or enhance their income. At higher-volume departments, those with more than 20,000 visits per year, physicians may be able to increase their coverage hours enough to off set declines in revenue per patient. This trend will be particularly evident at facilities in which the payer mix is above average and physicians have worked less than average numbers of hours.

Payer mix changes are the most difficult to predict. Uncompensated care continues to be a major factor in the cost of emergency medicine. Expansion of Medicaid coverage and displacement of Medicaid primary care to other sites of service can have a positive effect on average payment per visit while decreasing the total volume of payment. In departments where volume is high enough to allow staffing reductions to maintain physician productivity, physician reimbursement may actually improve. This improvement is due entirely to displacement of low reimbursement Medicaid beneficiaries to office settings.

Hospital enhancement of physician compensation is another factor that will affect future trends. Beginning in 1999, Medicare will introduce prospective payment for hospital outpatient services. Over the next five to ten years this program is expected to curb the growth in hospital outpatient services, at least from a gross revenue perspective. Although there will be hospitals that prosper under the new system, the general trend is likely to be toward lower hospital revenue per ED visit. Disproportionate share payments or other methods to increase payments to rural and low-volume EDs will be required to keep many of the lower-volume departments financially viable. Certainly, hospitals are likely to continue their trend toward reducing or eliminating any supplement-ation of emergency physician income through hospital fees.

Alternative Practice Venues

As emergency physicians consider alternative sources of revenue, each alternative must be viewed in terms of its effect on the core business of treating ED patients. Current reimbursement patterns show that emergency physicians generate approximately 40% more revenue per hour than primary care physicians working in other less stressful sites. Primary care physicians earn less in salary while working the same or longer total hours than emergency physicians practicing in the same multispecialty group. This disparity in earnings per hour is based on the lifestyle concessions and clinical demands of working in an ED.

Simply comparing the salary ranges offered for physicians working in urgent care programs, hospital coverage or industrial medicine clinics points to a lower value per clinical hour. Put in simple terms, working in the ED is likely to continue to generate the best reimbursement per clinical hour of any practice site where emergency physicians might practice.

Emergency physicians may desire to expand their practice scope to find additional revenue sources to maintain current income levels. As a practical observation, none of the alternative practice types are likely to produce equivalent earnings on an hourly basis.

ACEP continues to work on behalf of its membership to promote fair compensation for services provided in the ED. ED groups are actively examining their opportunities to expand their scope of practice to provide patient care in other venues. Some of these potential opportunities are in observation units, home care, long-term care, ambulatory care, and industrial medicine. This chapter explores the reimbursement strategies involved with each of these areas.

Many of these alternative practice choices are referenced in other chapters of this white paper. Changes in technology, managed care-driven referral patterns, and the development of integrated health care networks provide opportunities for emergency medical practice. They also affect reimbursement.

Observation Units

Observation units, sometimes called clinical decision units (and that often include chest pain units), are growing in popularity. Emergency physicians have become actively involved in creation of these units as hospitals and managed care organizations explore alternatives to costly inpatient admission.

Observation services are considered another form of evaluation and management (E/M) service. As such, it is not permissible for individual physicians to bill both the emergency department E/M service and the observation service on the same calendar day. Unrelated physicians can bill separately for observation services. This fact may be important in how emergency physicians structure their involvement in observation services.

Reimbursement rates for observation services are similar to those for office visits and hospital services. As noted above, reimbursement for evaluation and management services provided in other settings is generally 40% lower per hour than emergency medicine services. (This observation assumes that the emergency physician is fully productive). Although unit payment for the highest level of observation services is slightly higher than an ED level five service, charging for observation results in loss of the emergency service charge.

Nearly all observation patients will require more physician time than an average level five patient. This will result in lower physician revenue per clinical hour. Thus, observation services will result in increased gross revenues but will reduce average physician productivity. For low-volume departments, those with fewer than 15,000 visits per year, observation services may enhance reimbursement slightly. Higher-volume departments will find that staffing costs will be increased while revenue remains essentially unchanged.

Observation services can be performed in the ED, either in designated observation beds or in the ED itself. A separate observation unit is not required. New CPT codes introduced in 1998 provide additional reimbursement for physicians when observation services are provided on one calendar day. If the period of services transcends one calendar day and continues into the following day, physicians may bill for the initial day observation services on day one and for discharge from observation on the second day. In both cases, the reimbursement is greater than that provided for ED evaluation and management services at similar levels of acuity.

However, the increased reimbursement for the observation service requires that the physician manage the patient for six to 12 hours and prepare a separate discharge note. Increased reimbursement for providing the prolonged management and preparing the discharge note will be less than the payment for a level three ED visit. Physicians will be reimbursed at a higher rate per hour for performing the evaluation of a sprained ankle than they will for managing another patient for 12 hours in an observation status.

Observation units meet important clinical needs. As a result, emergency physicians often find themselves providing care for patients in the ED over several hours. Observation services codes may help compensate for the time spent with these patients. HCFA has asked CPT to consider a minimum time threshold for the new observation or inpatient services (admission and discharge on the same day). There is currently no minimum time threshold associated with observation service codes, as they describe the services provided on a calendar day. They are intended to capture the services provided on one day, including the ED E/M service.

Hospitals often decide to open a dedicated observation unit within or contiguous to the ED. The emergency physician assumes care for patients in this setting as well as those in the ED. Hospitals must do some careful cost analysis to determine the profitability of an observation unit based on how they are reimbursed for inpatient and outpatient care services. Various diagnosis related group or outpatient prospective payment methodologies will affect the payment for services based on the designated site of service. From an emergency physician perspective, observation services can have a higher reimbursement for patient services provided over six to 23 hours.

Home Care and Long-Term Care

As with observation services, home care is gaining in popularity as the industry looks for alternatives to inpatient treatment. An emergency physician group may decide to provide home health services to patients. Although most home visits are provided by nonphysician medical staff, physician ordered treatment plans and oversight are required. Home visit CPT codes should be used to bill for

these services. This market has been very competitive because it can be quite lucrative. Services provided by an emergency physician group may have an edge, but antitrust and self-referral concerns must be considered carefully.

Emergency physicians should be aware that the value associated with these services is linked to nonphysician services and the provision of supplies. Direct compensation for physician services is lower than for emergency services and generally is associated with inefficiency caused by travel time and scheduling.

As the nation's population ages, long-term care is expected to become more prevalent. Physician involvement is limited primarily to providing initial and periodic exams and oversight services for staff who deliver daily patient care. Because this patient population tends to be almost exclusively Medicare and Medicaid beneficiaries, reimbursement levels by these payers must be analyzed before pursuing this alternative.

Ambulatory Care

Many hospitals are seeking alternatives to the standard ED approach to providing unscheduled physician services for patients with low-acuity illness or injury. Ambulatory care, or urgent care, centers have been envisioned as a method to provide lower-cost services that would appeal to managed care organizations. Emergency physicians have provided clinical staffing and management of these types of facilities.

Although emergency physicians have proven to be effective providers, their compensation costs have been a problem in meeting cost objectives. Emergency physician compensation is based on the requirement to have the skills to evaluate and manage serious illness and injury. By definition, the ambulatory care center does not require a physician with this level of skill. Consequently, the required clinical skill level of the physician or other category of provider is consistent with a primary care office. As noted above, physicians with this level of training generally earn 40% less than emergency physicians working in EDs.

As a result of the lower compensation rate, emergency physicians have turned to working with midlevel providers to provide the majority of direct patient care. Midlevel providers can be hired for salaries below those required for emergency or primary care physicians. Emergency physicians have provided clinical supervision as required by midlevel providers. This combination of emergency physicians and midlevel providers is a potentially successful approach to providing unscheduled care at reasonably competitive prices.

When operated as part of a hospital's health services program, urgent care services may be billed on hospital billing forms. Depending on the organizational structure of the physician group, the hospital may be able to bill separately for overhead and professional services. At the present time, hospitals are reimbursed at much higher rates than offices or freestanding clinics when they bill higher charges. Outpatient payment reform may change the advantage and level the playing field in the next few years. Hospitals still enjoy substantial advantages in payment because their services are usually reimbursed based on charges or costs. Comparable physician services are reimbursed on the basis of a fee schedule. Until hospitals are subject to the same fee schedule limitations for reimbursement, they will enjoy a substantial competitive advantage over physician-owned-and-operated clinics.

Emergency physicians may have an excellent opportunity to participate in the development of urgent care centers even if they do not directly provide clinical services. These opportunities are related to the design, operation, and funding of the center. Administrative skills, clinical reputation with the medical staff, and financial capital are assets that emergency physicians can offer to a hospital considering establishing an urgent care center.

Opportunities for compensation will most likely be in administrative services and as an equity partner with the hospital. Emergency physicians may chose to participate because of the hospital's linkage of the urgent care to the emergency services contract. The hospital may chose to deal with a single physician entity that can staff the ED and provide the support skills to operate the urgent care facility.

Emergency physicians may participate in the clinic operation as direct clinical staff, supervisors of midlevel providers, managers, or investors. During the next five years there may be opportunities for physicians to expand their role in this sector of the medical services market. Development of this market will be influenced strongly by Medicare reimbursement under the prospective payment program slated to begin in 1999.

Industrial Medicine

Industrial medicine services can be divided into three categories: acute injury care management, rehabilitation activities associated with subacute and chronic results of on-the-job injuries, and health

surveillance related to workers' ability to perform the duties associated with their jobs. The management of acute injuries is part of emergency physician training. Other aspects of industrial medicine are not part of the average emergency physician's skill set.

Work-related injuries generally represent 5% to 8% of ED visits. Hospitals generally are better compensated than freestanding physician clinics because of reimbursement limitations associated with physician fee schedules. Hospitals are likely to be reimbursed based on their cost reports or billed charges. This is a mixed blessing for EDs considering the development of industrial medicine programs. It is positive from the perspective that hospitals are well paid for the services they provide. Unfortunately, this is a price-sensitive market. Higher costs associated with hospital services are major obstacles that must be overcome before a program will be successful in adding volume.

Reimbursement for physician services has been fee-for-service-based, usually on a state-mandated fee schedule. Payment rates vary widely by state. In most states, reimbursement for clinical services provided under worker compensation programs is less than commercial payers and higher than Medicaid. Reimbursement per unit of service is likely to remain in the same relative position in the next few years. Managed care concepts are being tested in many states as a means to control the costs associated with medical services. Introduction of managed care cost-saving methods, including discount contracting, prior authorization, and payment review, are likely to have adverse effects on provider reimbursement. Physical therapy, vocational training, and diagnostic services are likely to be much more tightly controlled than they have been under state-operated fee-for-service-programs.

EDs may have new opportunities to enter the market for treatment of industrial injuries if contracting becomes an option. While unit charges for emergency services are not competitive with office or industrial clinic charges for the same service, hospitals and emergency physicians could contract with employers or their managed care plan on a prepaid basis to provide clinical services for a predetermined cost. Emergency physicians would benefit from this type of contract if some of their time were not presently used. Selling unused clinical care capacity in the ED to employers is an opportunity that may grow over the next few years.

Acute industrial injuries are easily integrated into the workflow of EDs. Hospitals and emergency physicians have targeted this source of patients because of the relatively high profitability associated with these injuries. Industrial injuries can provide a favorable introduction of commercially insured patients to the ED. Hospitals have anticipated that the introduction will result in additional visits unrelated to the work injury.

While the medical management of acute injuries is the same in the ED as in an industrial clinic, the administrative practice is markedly different. Industrial medicine also involves many scheduled services that are difficult to integrate into a busy ED. Most EDs have found it essential to arrange special facilities and staff to deal with the follow-up of acute injuries and to provide services unrelated to acute injuries. Drug testing, physical examinations, and injury reevaluation services are difficult to integrate into the flow of an ED.

Contractual arrangements with larger companies often are made to provide care for the work force either as a discounted fee for service or a capitated rate. Careful cost analysis should be completed before entering into this type of arrangement, but in general workers compensation reimbursement rates are competitive and paid reliably.

Future Possibilities

It is difficult to predict exactly what the future holds for emergency medicine reimbursement. There are many forces working on the health care system. Changes in one or more variables can alter the way medicine is practiced. What follows are blue-sky scenarios and how reimbursement might be affected under each.

If the health care industry in the United States was nationalized, we could expect to see physician compensation follow the same patterns as in England or Canada. Depending on the system structure, we could see every physician salaried serving required shifts in certain facilities. If incentives were decreased or removed to offset the inconvenience of ED work, there could be a tremendous decrease in the number of physicians choosing emergency medicine as a specialty. Supply and demand in a government-controlled market is difficult to predict.

If all services become capitated for any given patient population, access to EDs can be affected dramatically. If primary care physicians control the capitation dollars and must pay for ED services out of their pool, ED access will be restricted. If all doctors get paid the same regardless of how many patients they see, there is no incentive to triage patients away from the ED, causing volume

increases. In either event, staffing and facilities must be adjusted appropriately.

We are observing a trend toward increased use of nonphysician providers and much greater use of emergency medical service personnel in situations that previously would have been the purview of the emergency physician. If this trend continues, only the highest acuity patients will be triaged to physicians in the ED. This would mean fewer jobs and decreased reimbursement for the specialty.

We could see an increase in the use of hospitalists. If this trend continues, it could displace the emergency physician in the observation setting and possibly other services. Alternatively, emergency physicians could expand the scope of their practice to include hospitalist duties, thereby creating another alternative practice venue.

Integrated delivery systems seem to be the future for health care. The ED could position itself as the hub for triaging patients to the appropriate site of service. The emergency physician is uniquely positioned to interact with office-based physicians, inpatient services, home health and nursing home patients, observation units, and, of course, emergency medical service and emergency medical situations. The entity that controls the patient flow is typically the one that controls the dollars. This is the scenario emergency medicine should pursue.

Summary

Emergency medicine is a unique specialty that requires a very specialized body of knowledge and skill. Many of these skills are also applicable to other practice settings. Emergency medicine groups can increase the scope of their practice and create new revenue streams by exploring other venues of practice focus. Careful planning and analysis of the reimbursement methods used in these sites can provide additional income for the group.

Suggested Readings

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