November 2000

THE COMMONWEALTH FUND

Issue Brief

Emergency Room Use: The New York Story

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The inability of the nation's health care delivery system to assure access to basic primary care services for large segments of the population has meant that hospital emergency departments (EDs) are the providers of first and last resort for millions of Americans. Individuals who cannot afford the cost of an office visit, or who are unwilling to wait for care in overcrowded and understaffed community clinics or hospital outpatient departments, rely on EDs for primary care.[1] But reliance on the ED means patients lack continuity in their health care and use costlier services. Moreover, economic constraints cause many of the uninsured to delay seeking treatment until their medical condition has seriously worsened. Had they received treatment earlier in an ambulatory care setting, the trip to the ED might have been avoided.[2]

Dependence on emergency departments may increase as pressures on traditional safety net providers, including public hospitals and community health centers, become more acute. Rapid implementation of mandatory managed care for most Medicaid beneficiaries has meant lower payment rates and loss of Medicaid market share for many safety net primary care providers, seriously impairing their ability to offset the unreimbursed costs of uninsured patients. At the same time, 42.6 million Americans lack health insurance, a disproportionate number of whom are low-income workers. The uninsured rate may increase even more as the full impact of welfare legislation further reduces Medicaid enrollment levels.

These trends are especially pronounced in New York City. From 1990 and 1998, the proportion of uninsured nonelderly residents grew from 20 percent to 27 percent. The number of those on Medicaid, meanwhile, fell by 12 percent from March 1995 to December 1999—a loss of more than 240,000 beneficiaries.

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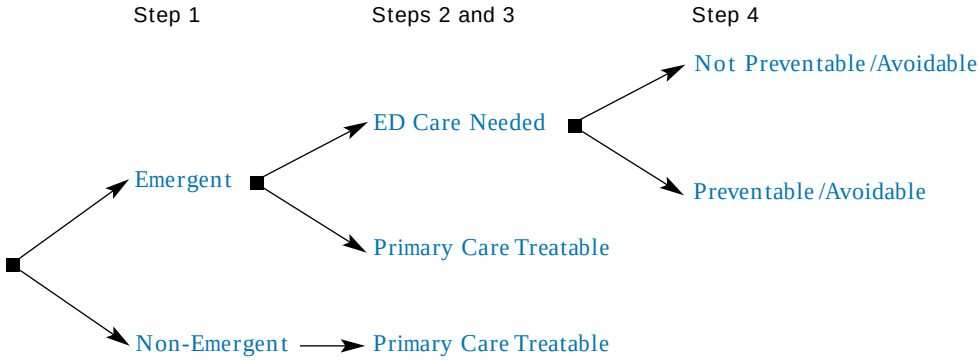
FIGURE 1

ED Classification Process



As more and more Medicaid enrollees are moved into managed care, concern is mounting that health plan premiums and administrative costs are leading to deep revenue cuts for many primary care providers.

In combination, such changes may reduce the availability of primary care services. If uninsured patients who cannot pay for treatment out-of-pocket are turned away by neighborhood clinics facing cost pressures, they will be forced to rely more on emergency departments for routine care. This would likely alter the diagnostic mix of uninsured patients in EDs, with less serious, nonemergent cases representing a greater share of the care provided.

With an accurate gauge of this shift in ED utilization patterns, researchers would have a powerful tool to understand how changes in the health care delivery system are affecting low-income, uninsured patients. Until now, the capacity to monitor ED utilization effectively has been limited by a lack of data and by methodological challenges. Analysts have been able to track overall trends in ED volume but have been unable to gain insight into the characteristics of ED use. For example, do Medicaid-insured patients differ from uninsured patients, and do both of these groups differ from patients with private health coverage? What proportion of ED cases could be treated in a primary care setting? How much emergent ED use is preventable or avoidable with timely and effective primary care?

The Emergency Department Profiling Algorithm

To help answer these questions, researchers from the NYU Center for Health and Public Service Research and the United Hospital Fund of New York developed an ED use profiling algorithm to aid in analysis of computerized administrative data from ED records or payer claims. This research was carried out under a grant from The Commonwealth Fund. The algorithm classifies ED use into four categories:

- Nonemergent
- Emergent/primary care treatable

- Emergent/emergency department care required but preventable/avoidable
- Emergent/emergency department care required, not preventable/avoidable

The algorithm, developed with the advice of a panel of ED physicians, is based on information abstracted from a sample of complete ED records—3,500 cases in 1994 and 2,200 cases in 1999—from six Bronx, New York hospitals. These records captured information on patients' initial complaints and vital signs; patients' age and medical history; procedures performed and resources used in the ED; and the ultimate discharge diagnosis. The classification scheme incorporated in the algorithm involved the following steps:

Step 1: Classification of Cases as "Emergent" or "Nonemergent." Patients in the sample were categorized as either emergent or nonemergent based on whether they required contact with the medical system within 12 hours. This determination was based in turn on information documented in the ED record that could have been obtained from the patient in a telephone interview, including the initial complaint, age and gender, duration of symptoms, temperature, respiratory rate, pulse rate, and comorbidities or health status/conditions (e.g., HIV/AIDS or pregnancy).

Step 2: Determination of Optimal Care Setting for Emergent Cases. At this stage, each emergent case was further classified as either "ED care needed" or "primary care treatable" (care could be safely provided in a non-ED setting). The basis for this determination was, in most cases, the procedures performed and resources used in the ED. No effort was made to assess the appropriateness of the procedures or use of resources. Patients having procedures or using resources not typically available in a non-ED setting, such as a CAT scan or certain lab tests, were classified as "emergent/ED care needed." Patients using no resources or resources typically available in a primary care setting, such as routine blood tests, were classified as "emergent/primary care treatable." The exception was if the initial complaint alone was sufficient to justify ED use, regardless of resources used (e.g., for chest pain, serious injuries, or gastrointestinal obstruction).

Step 3: Mapping of Initial Complaints to ED Discharge Diagnoses. Prior to this stage, classification was based on the patient's initial complaint, the patient's vital signs at triage, and the resources used in the ED. Since this information is usually not available in computerized ED or claims records, the initial complaints in the sample were "mapped" to the ultimate discharge diagnosis to determine what percentage of sample ED discharge diagnoses fell under the categories described in Steps 1 and 2. Some patients discharged with a diagnosis of abdominal pain, for example, may have been classified as "emergent/primary care treatable"

Researchers from the NYU Center for Health and Public Service Research and the United Hospital Fund of New York developed an ED use profiling algorithm to aid in analysis of ED records.

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if they only used resources that are typically available in a primary care setting. Others, however, may have required ED care. A patient who arrived at the ED complaining of chest pain and received treatment for a possible heart attack, only to be discharged with a diagnosis of abdominal pain, would accordingly have been categorized as either "emergent/primary care treatable" or "emergent/ED care needed" based on the percentage of cases with this discharge diagnosis that fell into each category.

Step 4: Classification of "Emergent/ED Care Needed" Cases as "Preventable/Avoidable" or "Not Preventable/Not Avoidable."
All "emergent/ED care needed" cases were further classified according to whether the emergent nature of the condition was potentially preventable or avoidable with timely and effective outpatient care. For example, while acute flare-ups of chronic conditions like asthma or diabetes may be "emergent—ED care needed," such episodes may have been avoided if the patient's condition had been more effectively managed.[3]

The algorithm is not intended as a triage tool or a mechanism to determine whether ED use is appropriate for required reimbursement by a managed care plan. Since few diagnostic categories are clear-cut in all cases, the algorithm assigns cases based on a percentage basis, reflecting this potential uncertainty and variation. Nor was it intended to assess appropriateness of ED utilization. Use of the emergency department for minor conditions may well be rational and appropriate if a patient has no other source of care. Moreover, assessment of urgency by patients can be problematic, and labeling ED use for primary care treatable conditions as inappropriate may misallocate responsibility to the patients themselves.

ED Use in New York City: An Acute Case

Some 6 million computerized emergency department records were obtained from New York hospitals for 1994 and 1998, representing approximately 85 percent of all emergency department use in the city. Analysis of these records indicates overwhelming use of EDs for conditions that are "nonemergent" or "emergent—primary care treatable": in 1998, nearly 75 percent of all cases not admitted to the hospital fell into one of these categories.

The rate of ED use for nonemergent care was high for both children and adults—42 percent (Figure 2 and 3). Another 36 percent of ED visits by children and 32 percent by adults were for emergent care, but these patients could have been treated in a primary care setting. Of ED use by children, only 22 percent actually involved emergency treatment; the same was true for 26 percent of adult use. Much of this emergency care, furthermore, may have been prevented with proper primary care (34% for children, 27% for adults).

Constructing Relative Use Rates

Without a complete sample of all ED records, it is not possible to express the study's findings directly as population-based rates, such as rate of ED use per thousand patients. However, relative rates can be calculated using the "emergent care/not preventable or avoidable" category—which includes cases where primary care access had no influence on the need for ED care and where clinicians agreed on the need for immediate treatment—as a basis for comparison. These are simply the ratio of the number of ED visits falling within the "nonemergent," "emergent/primary care treatable," and "emergent/ED care needed but preventable or avoidable" categories to the number of emergent, non-preventable cases. Relative rates can be examined by insurance status, age, race, and gender to identify differences in utilization patterns and to monitor changes over time.

Heavy Reliance on EDs by Medicaid Beneficiaries and the Uninsured

In 1998, the relative rate of ED use for nonemergent conditions among children with fee-for-service Medicaid coverage was 3.2, compared with 2.2 for patients with private, fee-for-service coverage and 2.8 for

Six million computerized emergency department records were analyzed by this study.

FIGURE 2

Emergency Department Use Profile by Type of ED Visit
Nonadmitted Patients
New York City, 1998
Children to Age 17

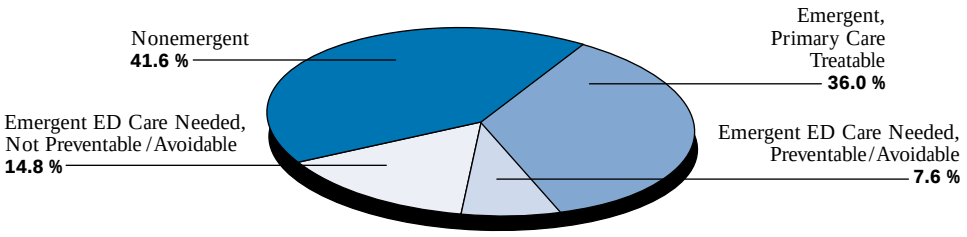
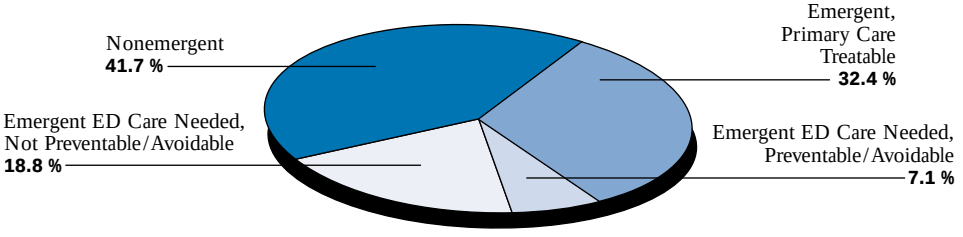


FIGURE 3

Emergency Department Use Profile by Type of ED Visit
Nonadmitted Patients
New York City, 1998
Adults Ages 18-64



Source: Commonwealth Fund-supported analysis of New York City electronic ED records by the NYU Center for Health and Public Service Research and the United Hospital Fund of New York

FIGURE 4

New York City Emergency Department Utilization Patterns by Insurance Status and Age Nonadmitted Patients, 1994 and 1998

Relative Rates*

	Nonemergent	Emergent, Primary Care Treatable	Emergent ED Needed, Preventable/ Avoidable	Emergent ED Needed, Not Preventable or Avoidable
1998				
Children 0–17				
Medicaid FFS	3.16	2.67	0.61	1.00
Medicaid Managed Care	2.92	2.56	0.55	1.00
Commercial/Other	2.18	2.05	0.38	1.00
Commercial Managed Care	1.97	1.94	0.38	1.00
Selfpay	2.79	2.37	0.45	1.00
Adults 18–64				
Medicaid FFS	2.41	1.85	0.57	1.00
Medicaid Managed Care	2.94	2.36	0.56	1.00
Commercial/Other	2.15	1.75	0.20	1.00
Commercial Managed Care	1.94	1.66	0.28	1.00
Selfpay	2.15	1.63	0.33	1.00
Elderly				
Medicare	1.53	1.35	0.34	1.00
1994				
Children 0–17				
Medicaid FFS	3.63	3.05	0.84	1.00
Medicaid Managed Care	3.24	2.79	0.68	1.00
Commercial/Other	2.31	2.11	0.50	1.00
Commercial Managed Care	2.84	2.44	0.54	1.00
Selfpay	3.16	2.62	0.53	1.00
Adults 18–64				
Medicaid FFS	2.55	2.02	0.67	1.00
Medicaid Managed Care	2.75	2.57	0.68	1.00
Commercial/Other	2.07	1.72	0.23	1.00
Commercial Managed Care	2.24	1.90	0.34	1.00
Selfpay	2.18	1.68	0.37	1.00
Elderly				
Medicare	1.48	1.26	0.41	1.00

**Ratio of visits to Emergent, ED Care Needed — Not Preventable/Avoidable Visits*

Source: Commonwealth Fund-supported analysis of New York City electronic ED records by the NYU Center for Health and Public Service Research and the United Hospital Fund of New York

self-pay/uninsured children (Figure 4). Similar patterns were observed among children for emergent/primary care treatable conditions and for conditions requiring ED care that were preventable or avoidable. Fee-for-service Medicaid patients have no economic impediments to ED use, although they often experience substantial barriers to timely and effective primary care. While self-pay/uninsured patients also experience barriers to ambulatory care, ED use is likely to be tempered by the potential out-of-pocket costs associated with an ED visit. For privately insured patients, the lower rate may reflect their better access to ambulatory care and less reliance on the ED for routine care. Even for privately insured patients the rates are quite high.

In general, identical patterns were observed for adult patients, with the highest relative rates seen for Medicaid patients and the lowest rates for privately insured patients. Self-pay/uninsured adult patients had rates comparable to those for patients with private coverage; their more conservative ED use may be dictated by the fact that that they must pay out-of-pocket for the service. The lowest relative rates were observed among the elderly, perhaps a reflection of nearly universal Medicare coverage and a greater likelihood of having a regular physician.

ED Use by Race and Ethnicity

Whites had lower relative rates across all ED utilization and health insurance categories (Figure 5). Black and Hispanic patients, on the other hand, generally had high relative rates for nonemergent and primary care treatable conditions, regardless of insurance status. High use among blacks and Hispanics—even those covered by Medicare—might stem from non-economic barriers to care and differences in care-seeking behavior. Relative rates for Asians were generally lower than rates for blacks and Hispanics, except among Medicaid patients.

ED Use by Gender

Among adult females, relative rates were higher for nonemergent, emergent/primary care treatable, and ED care required but preventable/avoidable conditions (Figure 6). This was true regardless of insurance status. There is no reason to believe males experience fewer barriers to care than females; in fact, many primary care resources are specifically targeted at females and children. Differences in utilization patterns by gender may simply reflect differences in care-seeking behavior and attitudes towards disease and risk. In addition, males may have higher rates of use for emergent care that was not preventable or avoidable, thus distorting their relative rates.[4]

Systemic changes can improve access to primary care and reduce reliance on emergency departments.

FIGURE 5

New York City Emergency Department Utilization Patterns by Insurance Status and Race Nonadmitted Patients, 1998

Relative Rates*

	Nonemergent	Emergent, Primary Care Treatable	Emergent ED Needed, Preventable/ Avoidable	Emergent ED Needed, Not Preventable or Avoidable
Medicaid				
White	1.91	1.54	0.28	1.00
Black	2.84	2.20	0.67	1.00
Hispanic	2.74	2.27	0.61	1.00
Asian	2.98	2.45	0.35	1.00
Other	2.71	2.26	0.40	1.00
SelfPay				
White	1.51	1.28	0.17	1.00
Black	2.51	1.91	0.47	1.00
Hispanic	2.40	1.88	0.37	1.00
Asian	2.14	1.65	0.17	1.00
Other	2.04	1.77	0.21	1.00
Commercial				
White	1.73	1.59	0.14	1.00
Black	2.64	2.10	0.35	1.00
Hispanic	2.28	1.86	0.32	1.00
Asian	2.14	1.74	0.14	1.00
Other	2.11	1.86	0.21	1.00
Medicare—65+				
White	1.22	1.19	0.21	1.00
Black	1.78	1.48	0.50	1.00
Hispanic	1.94	1.54	0.52	1.00
Asian	1.38	1.23	0.19	1.00
Other	1.92	1.58	0.35	1.00

**Ratio of visits to Emergent, ED Care Needed — Not Preventable/Avoidable Visits*

Source: Commonwealth Fund-supported analysis of New York City electronic ED records by the NYU Center for Health and Public Service Research and the United Hospital Fund of New York

FIGURE 6

New York City Emergency Department Utilization Patterns by Insurance Status and Gender
Nonadmitted Patients, 1998
Adults ages 18-64 and Medicare age 65+

Relative Rates*

	Nonemergent	Emergent, Primary Care Treatable	Emergent ED Needed, Preventable/ Avoidable	Emergent ED Needed, Not Preventable or Avoidable
Medicaid				
Female	2.82	2.24	0.61	1.00
Male	1.87	1.33	0.51	1.00
Self Pay				
Female	2.67	2.05	0.40	1.00
Male	1.82	1.37	0.28	1.00
Commercial				
Female	2.54	2.00	0.27	1.00
Male	1.86	1.57	0.15	1.00
Medicare—65+				
Female	1.64	1.40	0.32	1.00
Male	1.35	1.26	0.38	1.00

**Ratio of visits to Emergent, ED Care Needed—Not Preventable/Avoidable Visits*
Source: Commonwealth Fund-supported analysis of New York City electronic ED records by the NYU Center for Health and Public Service Research and the United Hospital Fund of New York

Conclusions

Hospital emergency departments are a pulse point of the health care delivery system. By monitoring use of EDs, it is possible to detect any fraying of the safety net for those vulnerable groups in society that may lack stable connections to the primary care delivery system. This analysis found extraordinarily high rates of use for nonemergent conditions and for care that could otherwise be provided in a primary care setting—even among those with health insurance coverage. This is a clear indication that the primary care delivery system is not functioning well for many New Yorkers.

What Can Be Done? Developing solutions to address these problems will be complicated. An important first step is to make the primary care delivery system more responsive to community residents, by understanding how patients make decisions when they become ill and how they want health care services delivered. Educational strategies informed by patients' preferences are also needed to help people identify warning signs of disease and better manage their chronic conditions. Differences in race, ethnicity, culture, and education among target populations require an approach that is tailored for each group.

Systemic changes can improve access to primary care and reduce reliance on EDs. Reduced waiting times at clinics and doctors' offices, expanded office hours, and enhanced telephone consultation capacity would enable patients to get care that is more timely and appropriate. Such changes would require improvements to infrastructure, reengineered services, and staff training—resources that are hard

to come by during a time of financial constraints, especially for freestanding clinics and private practitioners. Primary care clinics must be better rewarded for providing a lower-cost alternative to ED use and for preventing emergency conditions from developing. Without stronger incentives and higher payment rates, there will be fewer sources of primary care in the future.

Reducing avoidable emergency care use will also necessitate greater coordination among EDs and primary care providers. Primary care physicians, even those associated with hospitals, seldom receive any direct notice from emergency departments regarding their patients' ED use. By working with these physicians, EDs would be able to identify repeat visitors, notify doctors when their patients use the ED for preventable or primary care treatable conditions, link patients without a source of care to a primary care provider, and follow up to make sure the connection is made. Managed care plans can be helpful in this regard, since they have both the data and the economic incentives to find a solution. Coordinating care for uninsured and fee-for-service patients, however, would require more direct involvement by physicians.

Finally, it is important that states and localities facilitate ongoing monitoring of ED use. Several states require hospitals to submit uniform, computerized ED records similar to those required for hospital discharges. For this project, data were voluntarily submitted by area hospitals, several of which would not agree to participate. With the cooperation of all hospitals, however, researchers would be able to track developments and calculate population-based rates. Having complete data would allow more sophisticated analysis, as well as the targeting of geographic areas or population subgroups with the most serious problems.

Notes

[1] See W. Baker, C. Stevens, and R. H. Brook, "Regular Source of Ambulatory Care and Medical Utilization by Patients Presenting to a Public Emergency Department," *Journal of the American Medical Association* 271 (1994):1909–12; A. R. Jacobs, J. W. Gavett, and R. Wersinger, "Emergency Department Utilization in an Urban Community," *Journal of the American Medical Association* 261 (1991):307–312; and J. Billings and N. Teicholz, "Uninsured Patients in the District of Columbia, *Health Affairs* (Winter 1990):158–165.

[2] See G. M. O'Brien et al., "Do Internists and Emergency Physicians Agree on the Appropriateness of Emergency Department Visits?," *Journal of General Internal Medicine* 12 (1997):188–191; G. M. O'Brien et al., " 'Inappropriate' Emergency Room Use: A Comparison of Three Methodologies for Identification," *Academic Emergency Medicine* 3 (1996): 252–257; M. A. Rubin, M. J. Bonnin, "Utilization of the Emergency Department by Patients with Minor Complaints," *Journal of Emergency Medicine* 13 (1995):839–842; J. M. Gill, "Non-Urgent Use of the Emergency Department: Appropriate or Not?," *Annals of Emergency Medicine* 24 (December 1994):953–957; K. Grumbach, D. Keane, and A. Bindman, "Primary Care and Public Emergency Department Overcrowding," *American Journal of Public Health* 83 (1993):372–378; R. I. Haddy, M. E. Schmaler, and R. J. Epting, "Non-Emergency Room Use in Patients with and Without Primary Care Physicians," *Journal of Family Practice* 4 (1987):389–392; B. Habenstreit, "Health Care Patterns of Non-Urgent Patients in an Inner City Emergency Room," *New York State Journal of Medicine* 86 (1986):517–521; M. J. Gifford, J. B. Franaszek, and G. Gibson, "Emergency Physicians' and Patients' Assessments: Urgency of Need for Medical Care," *Annals of Emergency Medicine* 9 (1980): 502–507; and B. W. Wolcott, "What Is an Emergency?," *Journal of American College of Emergency Physicians* 8 (1979):241–243.

[3] The assignment of discharge diagnoses as "preventable/avoidable" was based on the ambulatory care sensitive condition classification scheme previously developed by researchers at NYU and the United Hospital Fund for use in analysis of hospital discharges. See J. Billings et al., "Impact of Socioeconomic Status on Hospital Use in New York City, *Health Affairs* (Spring 1993):162–173; A. Bindman, K. Grumbach, D. Osmond, M. Komaromy, K. Vranizan, N. Lurie, and J. Billings, "Preventable Hospitalizations and Access to Health Care," *Journal of the American Medical Association* 274 (1995): 305–311; and J. Billings, G. Anderson, L. Newman, "Recent Findings on Preventable Hospitalizations, *Health Affairs* 15 (Fall 1996):239–249.

[4] A fuller understanding of male–female differences would require analysis of population-based rates (use rates per 1,000 population in each category); this in turn would require a 100 percent sample of ED records not available for this study.