Comparative Costs of Urgent Care Services in University-Based Clinical Sites

Barbara Holt Warren, MD, MPH, Sharon Jill Isikoff, MD

Objective: To identify the most cost-effective utilization of resources for urgent care for a managed care Medicaid population at a university medical center. The null hypothesis was that there are no significant differences between the costs and types of services for patients with comparable urgent care problems who are seen in outpatient clinical settings compared with those seen in the central emergency department of a university medical center.

Design: Retrospective case study comparing patient visits and charges for three clinical urgent care locales by diagnosis, severity of illness, age group, time period in which seen, and reason for referral.

Setting: Ambulatory care and hospital emergency department facilities at a university medical center.

Patients: 1096 Medicaid patients who were enrolled in the university physicians' managed care plan.

Main Outcome Measures: Diagnosis-specific comparisons of types of services and charges for patient visits.

Results: There were significantly higher charges for all urgent care diagnoses of patients treated in the emergency department compared with urgent care facilities; these costs were higher in all categories of charges.

Conclusions: A variety of alternatives to use of the full emergency department are more cost-effective in providing urgent care services for Medicaid clients in a managed care setting.

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From the Departments of Internal Medicine (Dr Warren) and Family and Community and Medicine (Drs Warren and Isikoff), College of Medicine, University of Arizona Health Sciences Center, Tucson.

THE PRESSURES of cost containment for present and future health care planning encourage the careful examination of all aspects of health care services to identify the most cost-effective use of resources. Emergency services have grown beyond the traditional confines of care for emergent, life-threatening health problems for a variety of reasons, including lack of access to health care or failure by some population groups to select regular sources of care.[1-12] Urgent or "walk-in" care, on the other hand, has been offered in freestanding urgent care sites and primary care clinics. Some emergency departments (EDs) have responded to a competitive health care market by developing their own separate urgent care units, staffed by ED physicians, nurse-practitioners, or physicians' assistants.[13-18] The relative cost of urgent care services in these various sites of care may or may not differ significantly depending on differences in practice patterns, costs of ancillary services, salaries and fees of providers of care, medicolegal influences on practice patterns, special contractual arrangements, and other variables.[19] The impact of increased use of hospital-based services on health care costs may be significant and is of great interest to planners of managed care, Medicaid, and Medicare programs.[20-38] It is worthwhile to identify predictable differences in types or costs of services delivered for similar conditions and populations in these various sites of care.

This study aimed to identify the most cost-effective practice patterns and utiliza-

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MATERIALS AND METHODS

University Famli-Care is one of 15 capitated, managed health care plans serving Medicaid patients under the Arizona Health Care Cost Containment System. University Famli-Care is a program of University Physicians Inc with the University of Arizona Health Sciences Center, Tucson, and the enrolled patients receive most of their emergency and urgent care services at the University Medical Center Hospital. Urgent care is offered in one of four types of sites: (1) the primary care clinics; (2) an after-hours urgent care clinic (UC), available until 10 PM; (3) an urgent care facility sponsored by the ED, called the fast track (FT), available until midnight; and (4) the ED itself, available 24 hours per day. The FT services are offered by the ED for only a select list of diagnoses, which therefore constitute the diagnoses chosen for this study (**Table 1**). Services are provided by salaried physicians in the UC and in the ED. Experienced, salaried nurse-practitioners provide FT services under supervision of ED physicians. All support services, including laboratory tests, radiology, electrocardiography, respiratory therapy, pharmacy, supplies, and consultations, are provided from the same resources and with the same charges, although subsequent discounts may apply. These discounts are not factored into the data for the present study; ie, the charges reviewed are before discounts.

This was a retrospective case study comparing University Famli-Care patient visits and charges for three clinical urgent care locales (UC, FT, and ED) by diagnosis, severity of illness, age group, time period in which seen, and reason for referral. The study period consisted of two 3-month blocks between May and July 1989 and between November 1989 and January 1990, designed to look for seasonal differences in use of services and frequencies of urgent care diagnoses. Diagnoses were restricted to those that were rated and classified by the ED as urgent rather than emergent. Data from each medical record were collected and coded in one of nine diagnostic groups, including ear infections, upper respiratory tract infections (colds), throat infections, other respiratory conditions, gastrointestinal complaints, urinary tract infections, dermatologic conditions, sprains and strains, and minor superficial injuries. Although this is not a comprehensive list of urgent diagnoses, it is the list that restricts access to the FT facility of the ED and hence limits the number of problems that could be compared. Patient visits were categorized as nonurgent, urgent I, or urgent II (more complicated and severe illness) using predefined and objective criteria that included the screening nurses' ranking of the acuity of patients' illness in the FT or ED or UC, presence of complicating problems, and severity of abnormal vital signs. Discharge dispositions collected for each patient added to the data needed to control for severity of illness (eg, diagnosis at presentation was upper respiratory tract infection, urgent I; diagnosis at discharge was upper respiratory tract infection with pneumonitis, urgent II).

Using computerized billing records, we logged and grouped charges for services in each of five major areas: visit charge (including both provider and facility fees), diagnostic services (laboratory, electrocardiography, blood gas tests, and x-ray charges), technical procedure fees; pharmacy and supply charges; and total charges. Using charges to measure intensity of service, we collected the billing codes by service area and correlated the levels and complexity of care offered, including the extent of the basic examination, the amount of diagnostic testing, the extent of treatment at the delivery site, the number of specialty consultations, the number of procedures at delivery site, and the amount of supplies used.

We compared charges for services among the three urgent or emergent locales of care, controlling for diagnostic group, age group, and severity of illness. Statistical tests for significant differences included analysis of variance for charges and the Pearson χ^2 test for frequency.

tion of resources for urgent care for a managed care population at a university medical center. The null hypothesis was that there are no significant differences between the costs and types of services for patients with comparable urgent health problems who are seen in outpatient clinical settings compared with those seen in the ED of a university medical center or compared with the ED's separate urgent care facility.

RESULTS

There were 1096 urgent care patient visits to the three locales of care during the study period for conditions included in the study's diagnostic groups. This included 509 visits (46.4%) to the UC, 434 visits (39.6%) to the FT, and 153 visits (14%) to the ED. **Figure 1** illustrates the frequency distribution of diagnoses in each of these sites. The mean age of the patients seen was 14.48 years for the UC, 5.81 years for the FT, and 13.97 years for the ED. The high incidence of otitis media and of upper respiratory tract problems is reflected in the youth of this population. Patients with superficial injuries were more likely to be seen in the ED or FT, and patients with upper respiratory tract and ear infections were far more often seen in the FT or UC. Some seasonal differences in the kinds of health problems presented for urgent care were significant, with a greater incidence during winter months, as would be expected, of upper respiratory tract and ear infections. Twice as many patients were seen for urgent care in the FT and UC sites during the winter months.

Reasons for referral were examined (as a "proxy" measure of availability of care at the primary care or urgent care site). It was demonstrated that 78% of ED and 78% of FT visits were referred outside of regular or urgent care clinic hours, and 12.4% of ED and 14.5% of FT referrals were made because of clinic overflow. By design, UC visits were made 60.3% of the time because of clinic overflow.

Table 1. Emergency Department Urgent Care Diagnoses

Diagnostic Group	Designation
Ear infections	Ear
Upper respiratory tract infections	URI
Pharyngeal infections	Thrt
Respiratory infections	Resp
Gastrointestinal disorders	GI
Urinary tract infections	UTI
Skin conditions	Derm
Minor musculoskeletal injuries	Sprain
Minor injuries	Inj

The average charge for urgent care services in all locales was $67.87; average charges by site were $169.65 in the ED, $54.47 in the FT, and $47.69 in the UC. The difference between average charges for the UC and ED was $122; there was a $115 difference between the FT and ED. Analysis of the variance in charges between clinical sites of care and by the components of the total charges, as illustrated in **Figure 2**, reflected a significantly higher ($P<.01$) average charge for ED services ($169.65), consistent for all charge components. ED physicians were more likely ($P<.01$) to charge for more complex levels of care than UC physicians. Professional and facility fees for the FT were fixed at $40.

To control for case mix differences by clinical site, charges were reviewed by diagnostic group (**Figure 3**), by components of the charges (**Figure 4**), and by both diagnostic group and components of the charges (**Table 2**) for each site, again demonstrating consistently and significantly higher ($P<.01$) charges among ED visits for all charge components for each diagnosis. We found that different diagnoses were associated with significant differences in some but not all components of charges. To attempt to identify differences in practice patterns, we tested for differences between sites and by diagnosis in the use of (1) diagnostic support services (laboratory tests, x-rays, respiratory therapy, and electrocardiograms), (2) technical procedures, and (3) consultations. For most diagnoses, significantly higher charge component differences persisted in the ED, with some exceptions. These exceptions included diagnostic procedure charges for throat and urinary tract infections and technical procedure charges for respiratory and urinary tract infections; there were no differences between sites for these charges. Finally, pharmacy and supply charges were significantly higher at the FT for respiratory and urinary tract infections.

To control for severity of illness, we analyzed charges by the three levels of severity. Although urgent II (more severely ill) cases did result in higher charges on average ($P<.01$), the significance level of differences in charges between sites and by diagnosis did not change when those classified as urgent I were tested alone (Figure 4). The urgent II charges could not be tested for most diagnoses because of small numbers; overall, urgent II visits remained significantly more costly for the ED than for other sites. However, there were no significant differences between sites in diagnostic and technical procedure charges for urgent II cases.

Controlling for age group (infants [<1 year], toddlers [1 to 4 years], children [5 to 12 years], teens [13 to 20 years], and adults [≥21 years]) showed that patients who used the FT site were significantly younger; this difference was concentrated among those with ear infections and more severe (urgent II) upper respiratory tract infections. As expected, the age distributions of diagnoses differed at all sites of care, with younger patients experiencing more upper respiratory tract and ear infections and older patients experiencing more sprains and superficial injuries. Patients with ear infections, upper respiratory tract infections, other respiratory conditions, sprains, or minor injuries who were seen in the UC were significantly older. Two factors explained some of these age

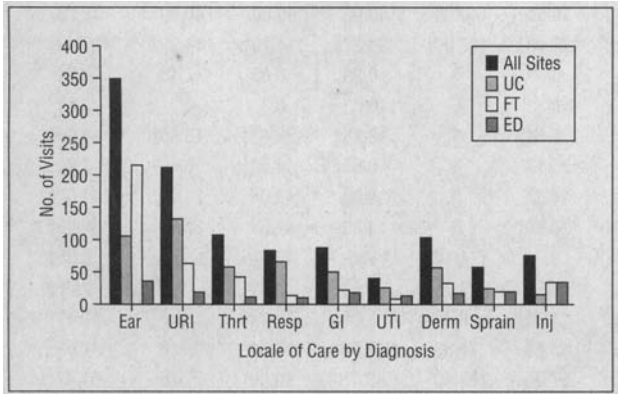

Figure 1. *Frequency of urgent care visits by locale of care and diagnosis at University Famli-Care under the Arizona Health Care Cost Containment System, 1989-1990. UC indicates urgent care clinic; FT, fast track site; ED, emergency department; Ear, ear infection; URI, upper respiratory tract infection; Thrt, pharyngeal infection; Resp, respiratory infection; GI, gastrointestinal disorder; UTI, urinary tract infection; Derm, skin condition; Sprain, minor musculoskeletal injury; and Inj, minor injury.*

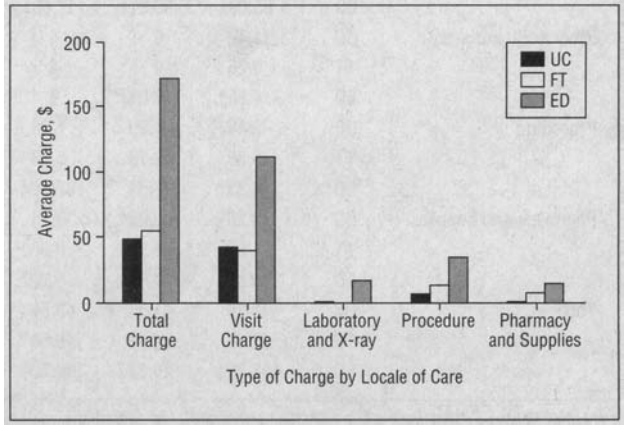

Figure 2. *Average charge for urgent care by charge type and locale of care at University Famli-Care under the Arizona Health Care Cost Containment System, 1989-1990. UC indicates urgent care clinic; FT, fast track site; and ED, emergency department.*

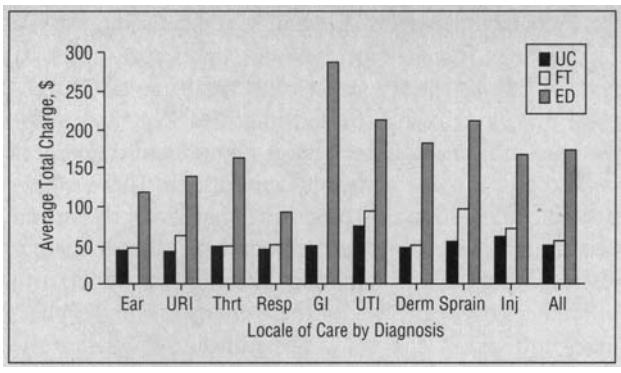

Figure 3. *Average charge for urgent care by locale of care and diagnosis at University Famli-Care under the Arizona Health Care Cost Containment System, 1989-1990. UC indicates urgent care clinic; FT, fast track site; ED, emergency department; Ear, ear infection; URI, upper respiratory tract infection; Thrt, pharyngeal infection; Resp, respiratory infection; GI, gastrointestinal disorder; UTI, urinary tract infection; Derm, skin condition; Sprain, minor musculoskeletal injury; and Inj, minor injury.*

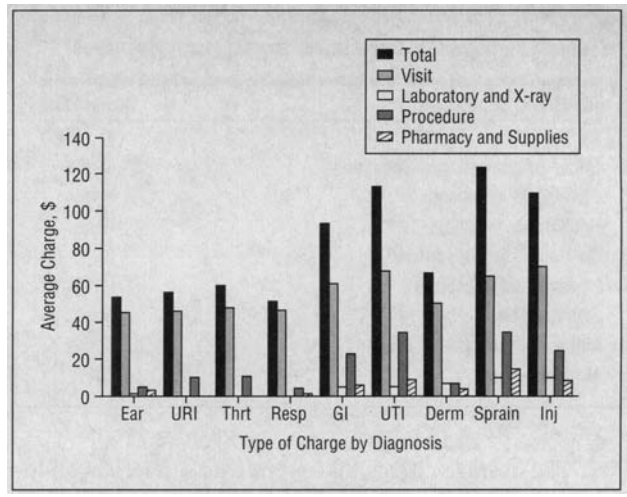

Figure 4. *Average charge for urgent care by type of charge and diagnosis at University Famli-Care under the Arizona Health Care Cost Containment System, 1989-1990. Ear indicates ear infection; URI, upper respiratory tract infection; Thrt, pharyngeal infection; Resp, respiratory infection; GI, gastrointestinal disorder; UTI, urinary tract infection; Derm, skin condition; Sprain, minor musculoskeletal injury; and Inj, minor injury.*

differences: (1) The pediatrics department operates a primary care clinic in the evenings in which they also accommodate urgent problems. (2) The FT was available for longer hours than the UC. There were no significant age differences for other diagnoses, such as throat infections, gastrointestinal problems, urinary tract infections, and dermatology problems.

Analyzing charges for all diagnoses within age groups demonstrated that there were significantly higher average charges for all diagnoses among teens and adults ($P<.01$). However, when controlled for age group, analysis of variance of charges by diagnosis did not decrease the significance of the difference in charges between sites.

COMMENT

Due to differences in overhead costs and ancillary charges by the hospital and levels of compensation of the providers, we expected to find and did find significantly higher

Table 2. Urgent Care Charge Components by Diagnosis and Locale of Care at University Famli-Care Under the Arizona Health Care Cost Containment System, 1989-1990

Type of Charge	Locale*	Charge by Diagnosis,† $									
		Ear	URI	Thrt	Resp	GI	UTI	Derm	Sprain	Inj	All Diagnoses
Visit	UC	43.88	40.23	40.18	40.66	40.65	41.90	40.98	43.13	42.00	41.13
	FT	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
	ED	85.83‡	98.31‡	117.00‡	76.50‡	129.90‡	127.00‡	93.27‡	114.79‡	111.29‡	109.42‡
Laboratory and x-ray	UC	1.42	0	§	0	0	§	0.39	0.63	7.10	0.94
	FT	0.26	0	§	0	0	§	0	0	0	0.21
	ED	4.83‡	3.08‡	§	3.63‡	7.00‡	§	13.18‡	23.43‡	15.95‡	14.85‡
Procedure	UC	2.45	1.29	7.98	§	5.17	§	0.67	4.00‡	0	4.65‡
	FT	3.58	13.15	5.18	§	14.57	§	6.90	42.08	24.96	11.02‡
	ED	8.33‡	17.54	32.50‡	§	27.00‡	§	14.36‡	41.30	32.95‡	32.03‡
Pharmacy and supplies	UC	0.28	0.02‡	0.15	0	0	1.14	0‡	11.04	§	0.95‡
	FT	1.62	1.25	0.95	3.91‡	4.71	26.80‡	1.62	4.31	§	2.76‡
	ED	5.86‡	1.38	5.90‡	1.75‡	11.40‡	8.43	3.82	23.14‡	§	10.49‡
Total	UC	43.88	41.54	48.56	44.62	45.83	71.33	42.14	58.81	59.00	47.69
	FT	45.98	54.48	46.58	51.00	57.05	103.40	48.41	86.69	72.75	54.47
	ED	103.79‡	120.32‡	162.20‡	81.88‡	172.20‡	187.14‡	124.73‡	206.79‡	168.68‡	169.65‡

**UC indicates urgent care clinic; FT, fast track site; and ED, emergency department.*

†Ear indicates ear infection; URI, upper respiratory tract infection; Thrt, pharyngeal infection; Resp, respiratory infection; GI, gastrointestinal disorder; UTI, urinary tract infection; Derm, skin condition; Sprain, minor musculoskeletal injury; and Inj, minor injury.

‡P<.01.

§No difference.

costs for basic visit charges for urgent care services provided by ED physicians. Some would argue that the teaching environment of the university hospital lends itself to potentially greater use of ancillary services. We anticipated and found that many of these differences in use of services were eliminated within the FT setting, in which a fixed facility and provider fee was charged for urgent care services. We might conclude that the midlevel practitioner in the FT is at least as cost-effective as the physician in the outpatient UC setting. Although UC physician salaries are higher than those of nurse-practitioners, this difference could be offset by the higher built-in costs for the FT facility components of the visit charge, because of the FT's association with the ED. Hence, there was no significant difference in visit charges between the UC and FT locales of care. This study was limited by inaccessibility of data on actual operating costs for these areas, and future studies could add to the usefulness of this analysis by providing such information.

The use of ancillary services and consultations differs between emergency physicians and other urgent care providers for a variety of reasons. The ED physician's practice of "defensive" or unnecessarily intensive medicine is suggested in this study by higher use of diagnostic services, higher incidence of procedures in the ED, and higher rates of consultation. We expected similar patterns to appear among nurse-practitioners under the supervision of ED physicians, and to a limited extent this was found for some diagnoses. However, the differences in practice patterns measured by the use of diagnostic support services and consultations were greater between the FT and ED than between the FT and UC. This study did not discern the specific reasons for greater use of ancillary services in the ED. If these differences are due to educational roles in the ED, one could argue that it should be the role and responsibility of attending physicians to enhance the teaching of cost-effectiveness in managing care in the ED.

[Among] urgent care providers . . . ED physician[s have] higher use of diagnostic services, higher incidence of procedures in the ED, and higher rates of consultation

Age differences in the clientele of the different sites of care may be explained in part by the number of infants and toddlers with otitis media and acute pain who are taken to the ED late in the evening by parents who anticipate a rough night if their child is not seen. These children were most frequently directed to the FT. However, age-controlled analyses did not indicate that this was a confounding variable in the present study.

The findings of the present study should help in future planning for urgent care by prediction of urgent care charge differences (or costs to payers for services) in various sites of care, identification of some problematic differences in types of services offered by EDs or urgent care centers, and anticipation of the types and volume of problems to be seen at different times of the year. Finally, the outcome of this study should help institutions to allocate resources for urgent care problems in EDs to the most appropriate and cost-effective alternative locale. Alternatively, EDs may be able to examine the ways in which they allocate resources and personnel to identify more cost-effective ways in which they may offer urgent care services within their facilities.

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Reprint requests to 3443 N Campbell Ave, Tucson, AZ 85719 (Dr Warren).

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