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How Many Emergency Department Visits Could be Managed at Urgent Care Centers and Retail Clinics?

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Abstract

Due to access barriers, Americans seek a significant amount of non-emergent care in emergency departments, with long waits to be seen. Retail clinics and urgent care centers have emerged as alternative sites to the emergency department. We estimate that between 13.7 and 27.1 percent of all emergency department visits could be treated at one of these alternative sites with a potential cost savings of approximately \$4.4 billion annually. The primary conditions that could be treated at these sites include minor acute illnesses, strains, and fractures. There is some evidence that patients can appropriately self-triage to these alternative sites.

Due to long wait times for appointments, limited after-hours care at physicians' offices, and other access barriers,(1–3) Americans seek a significant amount of non-emergent care at emergency departments (EDs). Patients who present for problems that can be treated elsewhere constitute a significant fraction of ED visits.(4) Such patients may have lengthy waits in the ED,(5,6) which can lead to both inconvenience and patients choosing to leave without treatment. While some studies find a small marginal cost of treating non-emergent conditions in the ED, others report that charges for non-emergent conditions are significantly higher in the ED than in other settings, which can increase patients' out-of-pocket costs and creating added strain on national health care spending(7–10).

Over the last decade, the number of retail clinics (RCs) and urgent care centers (UCCs) has increased, and these sites can serve as alternatives for non-emergent care.(11–13) RCs are located in retail stores, are typically staffed by nurse practitioners, and treat a limited range of health conditions, such as pharyngitis and conjunctivitis.(12) An estimated 29 percent of the U.S. population lives within a 10-minute drive of an RC, although such clinics are less likely to be located in minority and low-income neighborhoods.(14,15)

UCCs are most typically freestanding physicians' offices with extended hours, onsite x-rays and laboratory testing, and an expanded treatment range, including care for fractures and lacerations.(13) There is limited evidence that care at these alternative sites costs less and is of comparable quality to that provided in the ED. (7,8,16)

RCs, UCCs, and EDs share several relevant characteristics. They provide walk-in care focused on acute conditions and acute exacerbations of chronic conditions.(13) Nurse practitioners and physician assistants are the primary providers in RCs, and are also

providers in UCCs, though to a lesser extent.(12,13) Many EDs utilize nurse practitioners and physician assistants in their ‘fast track’ areas to provide care for minor conditions, and approximately half of UCCs employ emergency medicine trained physicians.(17) The demographic mix of patients is similar at RCs and EDs.(11) However, EDs are never closed, see significantly higher-acuity patients, and under federal law, must provide a medical exam to all patients regardless of ability to pay.

As a result, it is reasonable to investigate the extent to which these sites can substitute for one another. For any given patient, the possibility of safely substituting RC or UCC care for an ED depends on the severity of the condition, the equipment and level of provider training required to care for the patient, and the patient’s ability to self-triage to the most appropriate site.

To date, however, there have been no detailed examinations of the overlap between care provided at the three care sites and the extent to which UCCs and RCs can potentially substitute for EDs in the provision of non-emergent acute care. In this paper, we address this question, comparing patient demographics, medical conditions treated, and medications prescribed at each site.

METHODS

Data

RC data include 1.2 million visits to eight RC companies between inception of operations and summer 2008, omitting those visits for which we lacked final diagnosis (n=150,631). The dataset did not include drugs prescribed. Detailed information is available elsewhere.(7)

UCC data come from visits between July 1 and December 31, 2007 to centers in 35 states using the same UCC-specific electronic medical record. Data were abstracted for a random sample of 1,263 visits, including demographic characteristics, primary diagnosis, prescribed medications, and whether the patient was referred to another provider. These data are not representative of visits to all UCCs, but, to our knowledge, are the largest, most representative sample to date. The abstraction was funded by the Journal of Urgent Care Medicine.

ED visit data come from the 2006 National Hospital Ambulatory Medical Care Survey (NHAMCS), providing a nationally representative sample; additional details are available from the National Center for Health Statistics (<http://www.cdc.gov/nchs/ahcd.htm>).(18) We excluded visits for patients who were subsequently admitted to the hospital as being de facto inappropriate for care at an RC or UCC. Our analysis included the remaining 31,197 visits, representing an estimated 104 million visits nationally.

Classification of diagnosis codes and prescribed drugs

To compare diagnoses across settings, we aggregated primary or first-listed ICD-9 codes into groups that are similar or require similar equipment for treatment.(7) We similarly defined categories for drugs prescribed in UCCs and EDs, first grouping drugs using the Multum therapeutic classification system (<http://www.multum.com/Lexicon.htm>) and then into larger categories. We identified the most frequently prescribed drugs and show data for categories that represent more than 0.5 percent of the drugs prescribed in UCCs.

Emergency department visits that may be treatable elsewhere

To identify commonly-treated conditions, we included diagnoses seen at more than two percent of RC and UCC visits. We used an algorithm developed by Billings et al. to identify

visits that could be treated in a primary care setting or are non-emergent, categories for which we assumed care could be provided outside the ED.(19,20) The algorithm does not classify trauma-related diagnoses, for which we estimated the impact of assuming either 25 or 50 percent could be treated at UCCs. For each condition commonly treated at an RC or UCC, we applied the algorithm to determine the proportion of ED visits that could likely be treated in each of these settings, and summed across all conditions.

Analyses

The patient visit was the unit of analysis. For NHAMCS data, we corrected for the complex sampling design. We used a Z-approximation with a Bonferroni correction for multiple comparisons to compare across sites; differences discussed in the text are statistically significant at $p < 0.05$ or better. The online appendix includes more detailed methodological information.

RESULTS

Patient and Visit Characteristics

Exhibit 1 shows the patient and visit characteristics for all three sites of care. At all three care sites, most visits are by females, and more than two in five visits are for adults ages 18 to 44. Adults ages 65 and older account for a larger fraction of visits to EDs than to RCs, and children under age two are more frequently seen in EDs than in both RCs and UCCs.

Approximately 17 percent of visits to EDs were made by patients who were uninsured, compared with approximately 26 percent of visits to RCs. Patients were referred to an ED or a physician's office at 2.3 percent of RC visits, similar to the 2.2 percent of UCC visits resulting in referral to the ED.

Conditions Treated at Retail Clinics and Urgent Care Centers

The most common diagnoses at RCs are for upper respiratory infections (60.6%), urinary tract infections (3.7%), preventive care (21.6%), and other minor conditions such as allergies, bug bites and rashes, and conjunctivitis (9.5%) (see Exhibit 2). These four major groups of diagnoses account for more than 95 percent of all RC visits.

UCCs see a wider scope of conditions than RCs. While upper respiratory infections are still quite common among their patient population, such diagnoses constitute a smaller proportion of all visits compared to RCs (33.3 vs. 60.6 percent). Beyond the conditions typically seen at RCs, UCCs also see a significant proportion of visits related to musculoskeletal conditions (21.5 percent) such as strains, fractures, and joint and muscle pain. Dermatological conditions, such as burns and lacerations, are also commonly seen in UCCs (9.7 percent). Both UCCs and EDs have considerably fewer visits for preventive services than RCs (0.0 percent and 3.8 percent vs. 21.6 percent, respectively). The nine major groups of conditions shown in Table 2 account for 91 percent of all UCC visits.

Prescription Medications

More than two in five prescriptions (41.5 percent) written at UCCs are for antimicrobials, including antibiotics, with approximately one in five (18.9) additional prescriptions written for central nervous system agents, most commonly including pain medications (see Exhibit 3). These proportions are approximately reversed in the ED, where 16.3 percent of medications administered or prescribed are for antimicrobials and 44.2 percent are for central nervous system agents (the large majority of which – 38.8 percent of all medications – are for analgesics). Similar proportions of respiratory agents are used in the two settings

(12.1 percent in UCCs and 9.2 percent in EDs), and other medications are used in smaller proportions. Prescription data was not available in our retail clinics data.

Emergency Department Visits that Could be Treated at Retail Clinics or Urgent Care Centers

Exhibit 2 also shows the conditions commonly treated at RCs and UCCs – diagnoses that constitute two percent or more of all visits in each setting. Per the Billings algorithm, the large majority of visits for these conditions could be clinically managed outside the ED (range 66.7–95.7 percent). In keeping with the Billings algorithm’s identification of non-emergent and primary care treatable conditions, only 9.7 percent of ED visits for chronic obstructive pulmonary disease and asthma – typically more serious conditions - could be seen outside of the ED (data not shown).

We estimate that 13.7 percent of all ED visits could be seen in an RC – that is, 13.7 percent of ED visits are for conditions commonly seen at RCs and per the Billings algorithm could be managed outside the ED. Restricting our calculation to ED visits that occurred only during hours when RCs and UCCs are typically open (9am–9pm Monday-Friday; 9am–5pm Saturday; 10am–5pm Sunday), we estimate that 7.9 percent of all ED visits can be seen at a RC. Further, we estimate that an additional 13.4 percent of ED visits could be seen at a UCC (8.9 percent when hours are restricted). Overall, a total of 27.1 percent of all ED visits could be managed at a RC or UCC (16.8 percent when hours are restricted).

These estimates assume that 50 percent of ED visits for trauma-related conditions that are commonly seen in UCCs (strains, fractures, contusions, and lacerations) could be treated there. Lowering this assumption to 25 percent results in an estimate of 13.7 percent of all ED visits being potentially treatable elsewhere during hours that RCs and UCCs are typically open.

DISCUSSION

We identify a significant fraction of ED visits for non-emergent conditions that could be cared for in UCCs or RCs. Patients may go to an ED for these conditions because of difficulty obtaining accessible, affordable, convenient care for these conditions elsewhere. (1–3) We estimate that between 13.7 and 27.1 percent of all ED visits could potentially be seen at RCs or UCCs.

Diverting these patients could potentially decrease their waiting time to be seen by a clinician, since many experience extended periods in ED waiting rooms. There are also potential savings associated with the use of RCs and UCCs. Prior studies have estimated RC and UCC costs at \$279-\$460 and \$228-\$414 less than ED costs, respectively, for similar cases.(7,8) Assuming the smallest of each of these savings and that 16.8 percent (our mid-point estimate) of the 104 million non-admitted ED visits in 2006 could be seen in one of these alternative settings, the potential savings to the health care system would be approximately \$4.4 billion annually, or 0.2 percent of national health care spending.

Our study has a number of limitations. While our ED data are nationally representative, our RC and UCC data come from limited sets of providers. No data were available regarding the proportion of trauma-related diagnoses that could appropriately be treated outside the ED; while we tested a range of assumptions to address this concern, it is only partly mitigated in our estimates. Our analysis also cannot account for the distance between the EDs at which patients sought non-emergent care and any available UCCs or RCs, which could have significant impact on their accessibility. Finally, our savings estimate is predicated three assumptions. The first is that all eligible patients would shift to alternative sites for non-

emergent care, finding them accessible, affordable, and willing to provide care to them regardless of insurance status. Second, we assume that RCs and UCCs would be capable of providing care to a greatly increased number of patients. Since neither assumption is likely fully valid, our estimate represents an upper bound on potential savings. Countering this, our estimates also make the third assumption that we capture the full range of services that could be provided at RCs and UCCs in our definition of commonly-seen conditions. This is likely untrue, especially given recent expansions in scope of care at RCs (21), potentially biasing our estimates downward.

The goal of this work was to estimate the fraction of ED visits that could be seen elsewhere. There are a number of caveats to be considered should policymakers seek to encourage patient use of alternative sites.

First, policy levers to discourage non-emergent ED use may be problematic. While increased copayments can decrease ED use,(22) their spread has not deterred long-term increases in ED utilization. Another approach is to refer patients to an alternative site after they are triaged. One study found that 52 percent of eligible patients accepted a deferred appointment with a primary care physician,(23) but this requires the patient to make an additional visit after being seen in the ED, and most EDs will only make a decision to refer elsewhere after evaluation by a physician. Refusing ED services to patients with non-emergent conditions raises ethical concerns,(24) and some fraction of patients denied care may have urgent needs.(25)

Second, there are outstanding concerns about diverting patients away from EDs. Though one study found comparable quality across the three settings,(7) more research is needed to ensure that equivalent quality is provided at RCs and UCCs. In addition, more rigorous assessments of patients' ability to appropriately self-triage to the best site are needed. We found that both RCs and UCCs refer less than three percent of patients to other sites, and that the oldest and youngest patients – who are likely to need the most complex services and for whom acute illnesses are most likely to be serious – are more common among ED patients than in the other two settings. These findings indicate that patients are currently self-triaging in a manner that appropriately ensures safety, bringing the most complex and urgent conditions to the ED. However, self-triage might be problematic if larger numbers of patients use alternative sites. In addition, simply expanding the number of alternative sites or promoting their use will not ensure that patients will transfer their care.

Third, there are limitations to realizing any savings estimates. If greater availability of alternative sites induces new demand for care, some or all savings could be offset. Similarly, any increase in reimbursement to RCs or UCCs will decrease savings. Finally, one driver of higher ED costs is that care for life-threatening conditions is expensive. If these costs are spread over a smaller number of total ED visits, per-visit ED costs will rise, decreasing aggregate societal savings.

A continued increase in the number of ED visits for non-emergent causes is likely unsustainable in our current health care system. At the same time, there are calls for health system improvement that focus on increasing quality and patient-centeredness while holding organizations accountable for the cost and outcomes of care they provide. It is unclear what role might exist for alternative sites such as RCs and UCCs in such a framework.

In an ideal world, patients would seek care for non-emergent conditions at their primary care office. While new initiatives such as medical home demonstrations and accountable care organizations (26,27) encourage primary care and seek to improve access, this seems unlikely to provide a widespread solution in the near term. Increasingly, acute care is provided outside of the primary care setting. Both the shortage of primary care physicians

and the increased number of people likely to seek primary care as insurance coverage is expanded under the Affordable Care Act will likely contribute to worsening primary care access. Recent experience in Massachusetts indicates that such expansions are not likely to lead to a drop in low-acuity ED visits,(28) indicating a need to further investigate alternatives for providing non-emergent care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

NOTES

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Exhibit 1

Characteristics of Visits and Patients Seen in Retail Clinics

	Retail Clinic Visits % (std err)	Urgent Care Center Visits % (std err)	Emergency Department Visits % (std err)
Gender			
Male	37.3 (0.04)	44.8 (1.39)	45.4 (0.47)
Female	62.7 (0.04)	55.2 (1.39)	54.6 (0.47)
Age			
Under 2	0.2 (0.00)	1.5 (0.34)	5.9 (0.27)
2–5	6.6 (0.02)	4.5 (0.58)	6.1 (0.25)
6–17	21.0 (0.04)	12.4 (0.93)	12.3 (0.35)
18–44	43.5 (0.05)	49.8 (1.41)	45.0 (0.59)
45–64	21.5 (0.04)	23.1 (1.19)	20.0 (0.38)
65 or over	7.2 (0.02)	8.7 (0.79)	10.8 (0.30)
Insurance^a			
Yes	73.8 (0.04)	--	--
No	26.2 (0.04)	--	--
Type			
Private	--	--	34.4 (0.93)
Medicare	--	--	11.0 (0.37)
Medicaid	--	--	26.2 (1.00)
Self-pay	--	--	17.1 (0.74)
Other	--	--	11.3 (0.85)
Refer to other location^b	2.3 (0.01)	2.2 (0.42)	--
N (unweighted)	1.2 million	1,263	31,197

^aInsurance data are not available for urgent care centers. Retail clinic data do not detail type of insurance.

^bRetail clinic data include information on referrals to emergency departments and to physicians' offices without distinguishing between these two sites; urgent care center data include information on referrals to emergency departments. Not applicable to emergency department visits.

Exhibit 2

Diagnoses Treated at Retail Clinics, Urgent Care Centers, and Emergency Departments

Condition	Retail Clinic Visits	Urgent Care Center Visits	Emergency Department Visits	Percent of all emergency department visits that do not require emergency department care ^d
	% (std err)	% (std err)	% (std err)	
Upper respiratory infections	60.6 (0.05)	33.3 (1.34)	9.8 (0.32)	
Rhinosinusitis, laryngitis	26.1 (0.04)	18.7 (1.11)	5.0 (0.22)	81.1
Pharyngitis	22.2 (0.04)	8.1 (0.77)	2.3 (0.14)	93.9
Ear infections	12.3 (0.03)	6.5 (0.70)	2.5 (0.13)	95.7
Musculoskeletal conditions	0.1 (0.00)	21.5 (1.17)	19.4 (0.37)	
Strain and fractures	0.0 (0.00)	14.5 (1.00)	8.9 (0.25)	50.0 ^d
Back pain	0.0 (0.00)	0.5 (0.20)	2.8 (0.16)	
Joint and muscle pain, knee dislocation, bursitis	0.0 (0.00)	3.0 (0.49)	2.7 (0.17)	87.5
Contusion	0.0 (0.00)	3.6 (0.53)	5.0 (0.20)	50.0 ^d
Dermatological conditions	0.7 (0.01)	9.7 (0.84)	7.8 (0.26)	
Cellulitis or abscess	0.6 (0.01)	5.1 (0.63)	2.5 (0.14)	66.7
Burns	0.1 (0.00)	0.6 (0.21)	0.4 (0.04)	
Lacerations	0.0 (0.00)	4.0 (0.56)	4.8 (0.19)	50.0 ^d
Symptoms without specific diagnoses	0.1 (0.00)	6.7 (0.71)	11.7 (0.33)	
Abdominal pain	0.0 (0.00)	1.4 (0.33)	4.3 (0.20)	
Headache	0.0 (0.00)	1.5 (0.35)	2.9 (0.15)	
Symptoms that cannot be classified	0.0 (0.00)	3.8 (0.54)	4.6 (0.20)	

Condition	Retail Clinic Visits	Urgent Care Center Visits	Emergency Department Visits	Percent of all emergency department visits that do not require emergency department care ^d
	% (std err)	% (std err)	% (std err)	
Seen in emergency department				
(Common conditions treated at care site are shaded) ^b				
Urinary tract and vaginal infections	3.7 (0.02)	3.6 (0.53)	2.7 (0.12)	
Urinary tract infections	3.7 (0.02)	3.1 (0.49)	2.4 (0.10)	75.6
Vaginal infections	0.0 (0.00)	0.5 (0.20)	0.3 (0.04)	43.7
Chronic illnesses and psychiatric conditions				
Hypertension, diabetes, or lipid disorders	0.0 (0.00)	2.5 (0.44)	1.5 (0.13)	
Anxiety-related conditions	0.0 (0.00)	1.4 (0.33)	0.9 (0.11)	
	0.0 (0.00)	1.1 (0.30)	0.6 (0.07)	
Lower respiratory conditions				
Chronic obstructive pulmonary disease or asthma	0.4 (0.01)	2.0 (0.40)	3.8 (0.19)	
Pneumonia	0.0 (0.00)	1.1 (0.29)	1.6 (0.11)	
	0.0 (0.01)	1.0 (0.28)	2.2 (0.15)	
Other minor conditions				
Allergies	9.5 (0.03)	11.7 (0.92)	4.7 (0.18)	
Bug bites, rashes, or contact dermatitis	2.3 (0.01)	1.5 (0.34)	0.4 (0.05)	91.5
Conjunctivitis	2.1 (0.01)	5.7 (0.66)	2.4 (0.11)	74.8
Constipation	5.1 (0.02)	2.3 (0.42)	0.9 (0.07)	83.3
Eye injuries	0.0 (0.00)	0.5 (0.20)	0.5 (0.06)	55.9
	0.0 (0.00)	1.8 (0.38)	0.6 (0.06)	
Preventive care	21.6 (0.04)	0.0 (0.00)	3.8 (0.21)	
Other conditions	3.5 (0.02)	8.9 (0.81)	34.9 (0.49)	
N	1.1 million	1,235	31,197	--

^aBased on the algorithm from Billings J, Using Administrative Data to Monitor Access, Identify Disparities, and Assess Performance of the Safety Net, In: Billings J, Weinick R, editors, Monitoring the Health Care Safety Net Book III: Tools for Monitoring the Health Care Safety Net, Rockville, MD: Agency for Healthcare Research and Quality; 2003.

^bCommonly-treated conditions were defined as those seen at two percent or more of all visits. Allergies were included in the urgent care center set of commonly-treated conditions as they were commonly seen at retail clinics and therefore could be treated at urgent care centers.

^cBased on the assumption that retail clinics and urgent care centers are open 9 am to 9 pm Monday through Friday; 9 am to 5 pm Saturday; and 10 am to 5 pm Sunday.

^dNot defined in the Billings algorithm. As detailed in the text, we used both 50 percent and 25 percent as estimates.

Exhibit 3

Medications Prescribed at Urgent Care Center and Emergency Department Visits

Therapeutic Class	Prescribed in	
	Urgent Care Centers % (std err)	Emergency Departments % (std err)
	Percent	Percent
Antimicrobials	41.5 (6.2)	16.3 (0.4)
Penicillins	9.5 (4.8)	3.7 (0.1)
Cephalosporins	7.2 (3.2)	3.8 (0.2)
Macrolides	8.6 (5.1)	2.3 (0.1)
Other	16.2 (4.3)	6.6 (0.2)
Central nervous system agents	18.9 (3.7)	44.2 (0.6)
Analgesics, including narcotics	14.0 (3.2)	38.8 (0.5)
Antiemetic and antivertigo agents	0.8 (0.6)	2.5 (0.1)
Muscle relaxants	3.9 (1.7)	2.2 (0.1)
Other	0.1 (0.1)	0.7 (0.1)
Respiratory agents	12.1 (2.7)	9.2 (0.3)
Antihistamines	4.8 (1.9)	4.4 (0.2)
Bronchodilators	2.9 (1.3)	3.0 (0.2)
Upper respiratory combination medications	2.8 (0.8)	1.0 (0.1)
Other	1.5 (0.9)	0.8 (0.1)
Topical agents	10.3 (2.9)	3.7 (0.2)
Steroid creams	2.6 (1.2)	0.8 (0.1)
Ophthalmic agents	1.1 (0.6)	0.8 (0.1)
Other	6.6 (2.6)	2.1 (0.1)
Hormones and glucocorticoids	6.9 (3.6)	3.2 (0.2)
Estrogen, progestin, and oral contraceptives	0.3 (0.2)	0.1 (0.0)
Glucocorticoids	6.4 (3.6)	3.0 (0.2)
Other	0.3 (0.2)	0.2 (0.0)
Cardiovascular agents (e.g. antihypertensives)	2.7 (0.8)	4.1 (0.2)
Gastrointestinal agents (e.g. medications for acid reflux, laxatives)	1.1 (0.4)	5.7 (0.2)
Metabolic agents (e.g. diabetes medications)	0.8 (0.4)	0.8 (0.1)
Antidepressants and anxiolytics	2.5 (0.8)	4.5 (0.2)
Other	3.3 (1.2)	8.3 (0.3)