Emergency Department Eye Care in Florida

A Study of Principal Payer Sources 2005 Through 2009

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Objective: To describe trends in health insurance coverage for emergency department (ED) eye care in Florida from January 1, 2005, through December 31, 2009.

Methods: The Florida Agency for Health Care Administration ED data sets for ED outpatient visits and ED admissions for eye care were analyzed for type of insurance coverage and stratified according to age younger than 18 years and 18 years or older. Negative binomial regression models were used to measure the percentage of change in payer distribution for each 1-year increase in calendar year.

Results: During the 5-year study period, commercial insurance was the most frequent payer of ED outpatient services (31.1%), followed by self-pay (26.2%) and Medicaid (22.0%). For persons younger than 18 years, Medicaid and self-payment made up 67.7% of principal payers. For outpatient ED visits, the percentage of change in Medicaid increased 5.9% for each calendar year (P < .001) and commercial coverage declined 4.5% (P < .001). The proportion of Florida residents receiving Medicaid during the study period was less than the national average.

Conclusions: A substantial proportion of ED eye care in Florida is reimbursed through Medicaid or is paid for out of pocket. How the Patient Protection and Affordable Care Act of 2010 and the national economic recovery will affect safety-net institutions such as EDs and hospital staff is speculative, but the effect could be substantial.


Public hospitals, community health centers, and public health clinics were traditionally established to care for patients who were uninsured or underinsured.1 Because these facilities are either unavailable or undesirable to many Americans, hospital emergency departments (EDs) provide a substantial amount of medical care to financially vulnerable segments of the population.2-4 Unlike other safety-net institutions, EDs are required by federal law to screen all patients and provide necessary emergency care regardless of the ability to pay.5 Enacted by Congress in 1986 because of the perception that EDs were turning away indigent or uninsured patients, the Emergency Medical Treatment and Labor Act stipulates that the responsibility for patient care must be shared with specialists on the hospital staff. The role that EDs play in providing health care to the large number of uninsured and underinsured Americans may change appreciably with the passage of the Patient Protection and Affordable Care Act (PPACA) in 2010.6 By some estimates, the recently passed US health care reform law will increase health insurance coverage by 34 million people. This will be accomplished, in large part, by expanding eligibility for Medicaid, an already stressed and underfunded system in many states.7,8 Planning for such change in ophthalmology requires knowledge of what role Medicaid currently plays in the delivery of eye care. We report patterns of insurance coverage for persons who used the ED for eye care in Florida from 2005 through 2009 to anticipate the effects that the PPACA and the prolonged economic recession might have on use of EDs.

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Methods

STUDY POPULATION

This study examined the Florida Agency for Health Care Administration (AHCA) ED outpatient data set and hospital inpatient data set for trends in financial coverage from 2005 through 2009. The data sets are in the public domain and contain only deidentified health care information. Limited deidentified ED and inpatient data sets from 2005 through 2009 were obtained from the Florida AHCA on compact disc and downloaded into a database (Microsoft Access; Microsoft Corp, Redmond,
Washington) for analysis. Data on ED and inpatient eye care were identified through *International Classification of Diseases, Ninth Revision, Clinical Modification* codes. Codes were selected to identify ocular and ocular adnexal trauma, as well as disorders of the eye and ocular adnexa unrelated to injury. These codes are listed in Table 1. Only the primary admission diagnostic code for an ED visit was included in the analysis.

The ED outpatient data set does not include patients admitted to the hospital through the ED for further eye care. To identify these patients, we screened the Florida inpatient hospital data set for primary admission diagnoses (Table 1) that originated in the ED. The judgment of what constituted the primary admission diagnosis rested with the physician providing ED care and the admitting physician.

Florida AHCA requires all hospitals and EDs to report patient-level data for the purposes of utilization, disease surveillance, access to care, and cost trends. Failure to comply within specified time frames results in financial penalties. Reportable events, mandated by Florida Statutes (section 408.061) and Florida Administrative Code (chapter 59B-9), include any procedure that involves a valid Current Procedural Terminology code and, in the case of EDs, any visit during which registration occurs and the patient is not admitted for inpatient care. Statewide compliance is high—hospital and ED compliance nears 100% six months after the calendar year (P. Kennedy, chief administrator of data collection, written communication, December 2, 2010). Deidentified limited data sets are available to the public but are not free. The data sets do not include Veterans Health Administration or military hospitals.

### POPULATION ESTIMATES

Estimates of the midyear population of Florida from 2005 through 2009 were based on the 2000 US census and annual growth data provided by the Bureau of Economic and Business Research, Warrington College of Business Administration, University of Florida. The proportion of persons younger than 18 years was estimated from the US Census Bureau and the Bureau of Economic and Business Research.

### OUTCOME MEASURES

The principal payer sources for ED eye care were grouped as follows: commercial insurance carriers, Medicaid, Medicare, workers’ compensation insurance, CHAMPUS (Civilian Health and Medical Program of the Uniformed Services)—Veterans Health Administration, other state or local government programs, and self-pay. The category self-pay is synonymous with uninsured. Visits paid for by charities, Canadian National Health Insurance, and those funded by unknown payers made up a small proportion of payers and were combined as “other payers.” No distinction was made in commercial health maintenance organizations and commercial preferred practice organizations; both were included under *commercial insurance*. Medicare and Medicaid health maintenance organizations were counted as Medicare and Medicaid, respectively.

Annual rates of ED visits and hospital admissions are expressed per 100 000 of the general population. Rates for children (ie, persons younger than 18 years) are listed per 100 000 persons younger than that age. Because no single term adequately describes all age groups younger than 18, we selected children, acknowledging its deficiencies.

### DATA ANALYSIS

To assess trends in payer proportions, we used negative binomial regression. The negative binomial model is a generalization of the Poisson model; unlike the Poisson model, it is less likely to produce the statistical problem of overdispersion. In situations where negative binomial regression models did not converge, a Poisson regression model was used. The outcome variable in each model was the annual number of visits for a particular payer (eg, Medicare, Medicaid). This figure was divided by the total number of visits for each year (ie, all visits combined, regardless of payer) to arrive at a payer distribution proportion, that is, share. The natural logarithm of the total number of visits was used as the offset variable in the negative binomial regression models. Time trends were assessed by treating calendar year as a continuous variable in the negative binomial regression models. The change in payer distribution proportion for each 1-year increase between 2005 and 2009 was calculated by subtracting the null value of 1 from the relative risk and then multiplying the result by 100%. The figure was reported with the P value associated with that relative risk.

Data were analyzed using commercial software (SAS, version 9.2; SAS Institute, Inc, Cary, North Carolina). Temporal associations were quantified and assessed for statistical significance, using the GENMOD procedure.

### RESULTS

From 2005 through 2009, a total of 587 227 ED visits were identified with a primary diagnosis in need of eye care (annual mean, 117 445), of which 12 105 visits (2.1%) resulted in hospital admission. The rate of ED eye care visits was highest in 2005, at 698.5 per 100 000 population, then declined for 4 years, reaching a nadir in 2008, at 593.8 visits per 100 000 population (Table 2). The rate of hospital-admitted eye care through the ED, however, showed a modest trend upward from 12.6 per 100 000 population in 2005 to a high of 14.1 per 100 000 population in 2009 (Table 2). Outpatient ED visits for children showed a decline during this period, and hospital admission rates were marginally lower (Table 2).

Descriptive statistics on principal payers are given separately for outpatient ED visits and for ED hospital-admitted eye care in the remainder of the “Results” section because the medical resources and professional services involved with these services differ substantially. The text highlights the larger payer categories; com-

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**Table 1. Emergency Department Eye Care and Hospital Admission Diagnoses**

<table>
<thead>
<tr>
<th>ICD-9-CM Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>360.0-379.9</td>
<td>Eye and ocular adnexal problems unrelated to injury</td>
</tr>
<tr>
<td>802.6-802.7</td>
<td>Orbital floor fractures (blowout)</td>
</tr>
<tr>
<td>870.0-870.9</td>
<td>Open wounds in ocular adnexa</td>
</tr>
<tr>
<td>971.0-971.9</td>
<td>Open wounds in eyeball</td>
</tr>
<tr>
<td>918.0-918.9</td>
<td>Superficial injury of eye and adnexa</td>
</tr>
<tr>
<td>921.0-921.9</td>
<td>Contusion of eye and adnexa</td>
</tr>
<tr>
<td>930.0-930.9</td>
<td>Foreign body on external eye</td>
</tr>
<tr>
<td>940.0-940.9</td>
<td>Burn confined to eye and adnexa</td>
</tr>
<tr>
<td>950.0-950.9</td>
<td>Injury to optic nerve and pathways</td>
</tr>
<tr>
<td>951.0</td>
<td>Injury to oculomotor nerve</td>
</tr>
</tbody>
</table>

For outpatient ED visits (adults and children), commercial insurance was the single highest payer source (31.1%) during the 5-year study, followed by self-pay (26.2%), Medicaid (22.0%), and Medicare (10.2%) (Table 3). There were statistically significant trends in every major payer category except self-pay (percentage of change, 0.1; P = .85) (Table 3). The annual decline in payer distribution for commercial insurance was 4.5% each year (P < .001); Medicaid showed a 5.9% increase (P < .001). Medicare, which represented less than half the absolute volume of Medicaid, increased 2.5% per year (P < .001).

When looking at payer sources for adults and children admitted to the hospital through the ED, Medicare ranked first (19.6%), followed by commercial insurance (28.5%), Medicaid (16.4%), and self-pay (12.5%) (Table 4). During the 5-year period, Medicaid saw a 5.5% annual increase in payer distribution (P < .001), and commercial insurance and Medicare experienced no statistically significant change (Table 4).

Commercial insurance was the largest payer source for outpatient ED visits for adults (33.1%), followed by self-pay (30.4%), Medicare (14.1%), and Medicaid (9.9%) (Table 3). During the study, Medicaid visits increased 8.7% each calendar year (P < .001) and commercial insurance declined 3.6% each year (P < .001) (Table 1). Medicare in-
increased 3.1% for each year (P < .001), and smaller payer groups also experienced statistically significant trends (eTable 1).

Of 10,030 adults admitted for eye care through the ED from 2005 to 2009, most were covered through Medicare (38.1%), followed by commercial insurance (27.2%), self-pay (13.6%), and Medicaid (8.8%) (eTable 2 and Figure 2). The largest change in a primary payer occurred with Medicaid, whose share increased 13.3% for each calendar year (P < .001); commercial insurance and Medicare remained essentially unchanged (eTable 2).

Persons younger than 18 years accounted for 28.6% of all ED eye care visits (outpatient visits and ED hospital admissions) at a time when their estimated proportion of the general population in Florida was 21.9%.12,13 In terms of outpatient visits for children, the largest payer source was Medicaid (51.8%), followed by commercial insurance (26.4%) and self-pay (15.9%) (eTable 3 and Figure 3). The next largest payer source was other payers (2.9%), which represents a variety of charities and unknown payer groups. The only statistically significant trends were seen in commercial insurance, which declined 6.7% for each calendar year (P < .001), and an increase in Medicaid visits (3.3%; P = .02) and in other payer visits (7.8%; P < .001) (eTable 3).

For the more than 2000 hospital admissions for children, 53.3% were paid for through Medicaid, followed by commercial insurance (34.8%) and self-pay (7.0%) (eTable 4 and Figure 4). Medicaid-reimbursed hospitalizations increased 3.0% for each calendar year (P = .02), and the 4.3% decline in commercial insurance was marginally significant (P = .06) (eTable 4).

During the study, there were significant trends with other small groups, such as workers’ compensation, CHAMPUS and VHA, and other payers. Their effect, in terms of absolute numbers of visits and admissions, was small compared with the major payer groups.

### Comment

The US Department of Health and Human Services has defined high-burden safety-net hospital EDs as institutions where the proportion of payment source is 30% or...
more self-pay or 30% or more Medicaid, or when the combined total is 40% or greater. High-burden safety-net hospitals are more likely to be inadequately compensated for the health care they provide, and the physicians who staff these hospitals are at greater risk of uncompensated work. Because the ED is also an important portal for specialty care for all persons, regardless of their ability to pay, the social and economic implications of delivering this care need to be critically examined.

Because of the large numbers of patients in this study, many 5-year trends showed statistical significance. A substantial proportion of these trends may have been driven by changes occurring from 2008 to 2009, when a large shift in payer distribution took place, possibly related to the national economic downturn. Perhaps more relevant to matters of community and regional health care than many of these 5-year trends, given their fluctuations, is the overall proportion of patients who depend on Medicaid and out-of-pocket financial resources for ED eye care (Figure 5 and Figure 6).

Inasmuch as insurance coverage is a surrogate measure of monetary compensation, our results show that providing ED eye care in Florida is associated with considerable financial risk. According to criteria of the US Department of Health and Human Services, slightly more than 48% of all outpatient ED visits in Florida fall into safety-net categories: Medicaid and self-pay (Table 3). Although the proportion of safety-net care was 28.9% for patients admitted through the ED, this still represented nearly one-third of all hospital-based eye care coming through the ED.

The situation for providing eye care to children, the most vulnerable segment of the population, is worse. The principal payer for 67.7% of all outpatient ED visits for
persons younger than 18 years was Medicaid (51.8%) or self-pay (15.9%) (eTable 3). In terms of absolute encounters, this represented more than 112,000 outpatient visits for eye care in 5 years (eTable 3). In addition, although the proportion of children with Medicaid who are admitted through the ED for ocular and ocular adnexal conditions (53.3%) was about the same as outpatient visits, 11.8% fell into nebulous payer categories for which no consistent reimbursement data are available (eTable 4).

Medicaid falls under Title XIX of the Social Security Act, but its organization and financing are strikingly different from those of Medicare, which was created at the same time in 1965. In Medicaid, states hold the option to define and provide benefits to categorically needy groups, which now number more than 45 million children, disabled persons, and elderly people nationally. Federal funds are provided to states on a cost-sharing basis, but expenditures vary widely across states. Historically, differences in coverage and benefits have been a contentious subject because these differences implied a decreased standard of medical care for welfare recipients, particularly in terms of access to care. In many regions of the country, Medicaid enrollees have difficulty finding primary health care providers because reimbursements are low. In Florida, the distribution of principal payers for outpatient ED eye care visits was remarkably similar to the distribution of principal payers for all outpatient ED visits in medicine, with approximately 3% combined difference between self-pay, Medicaid, and commercial insurance in 2009 (Figure 7). When such a large share of health care is underinsured, there is a concern that this could act as a disincentive for physicians to take ED call. According to a survey conducted at the time of licensure renewal in Florida in 2006, a smaller proportion of ophthalmologists take ED call (46.3%), compared with general surgeons (56.1%) and other surgical specialists (62.1%). The results of that survey, which was completed by 89% of licensure renewal applicants, indicate that a greater load of ED care falls on a smaller proportion of ophthalmologists compared with other specialties; this is a discouraging statistic should the burden of ED eye care increase.

The effect that PPACA will have on safety-net hospitals and EDs is far from clear. The recently passed health care reform law is intended to reduce the number of uninsured patients from approximately 57 million to 23 million; in doing this, it will vastly expand the number of persons enrolled in Medicaid. Enrollment in Medicaid in Florida and nationally from 2004 through 2009.

Figure 7. The distribution of principal payers for outpatient emergency department (ED) visits in 2009. A, Outpatient ED visits for eye care (n=112,770). B, Total ED outpatient visits (n=6,478,091). The combined proportion of visits assigned to Medicaid, commercial insurance, and self-pay varies by just 3%. CHAMPUS indicates Civilian Health and Medical Program of the Uniformed Services; VHA, Veterans Health Administration.
has increased, although the proportional increase in Florida was greater than that of the entire United States (Table 5). This disparity in growth was the result of, in large part, the expansion of Florida Medicaid from 2008 to 2009, which is attributed to the economic recession. Florida, however, has a smaller proportion of its general population enrolled in Medicaid compared with the rest of the nation (Table 5). Given the trends in Medicaid enrollment in Florida and nationally, the ability of the system to accommodate new beneficiaries may be limited unless supplemented with new resources.25

The PPACA will increase Medicaid payments for primary care visits to Medicare levels, but how this may affect reimbursement for specialty care is unknown.24,26 Although federal money will be allocated for the increase in Medicaid expenditures, PPACA may also reduce funds to hospitals that typically serve as safety nets.7 What is apparent is that Medicaid is a critical link to the successful implementation of the newly passed legislation.26 Without an adequately funded and effectively managed Medicaid program and cooperation between federal and state administrative arms, it will be difficult to extend health care coverage to large numbers of uninsured patients.

Given recent media reports27 describing early unin- has care coverage to large numbers of uninsured patients. administrative arms, it will be difficult to extend Medicaid program and cooperation between federal and state

made cuts to Medicaid in 2009 and was among 28 other states planning cuts for future years.4 Emergency department eye care will assume a larger safety-net function if more patients move into categories of Medicaid or self-pay. Already stressed EDs and hospital staff need to be prepared to navigate change brought on by health care reform and the delayed economic recovery without compromising quality of care. Data within this study—although sobering—should be used for strategic planning as the debate on how to best implement PPACA moves forward.

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Table 5. Florida and National Medicaid Enrollment (in Thousands)*

<table>
<thead>
<tr>
<th>Date</th>
<th>Florida Medicaid Enrollment, No. (% of General Population)</th>
<th>Annual Change, %</th>
<th>United States Medicaid Enrollment, No. (% of General Population)</th>
<th>Annual Change, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2004</td>
<td>2091.7 (12.0)</td>
<td>5.23</td>
<td>41111.7 (14.0)</td>
<td>3.24</td>
</tr>
<tr>
<td>June 2005</td>
<td>2201.2 (12.4)</td>
<td>−0.72</td>
<td>42442.0 (14.4)</td>
<td>3.24</td>
</tr>
<tr>
<td>June 2006</td>
<td>2185.3 (12.1)</td>
<td>−5.90</td>
<td>42522.8 (14.2)</td>
<td>−0.57</td>
</tr>
<tr>
<td>June 2007</td>
<td>2055.3 (11.2)</td>
<td>4.69</td>
<td>42278.8 (14.0)</td>
<td>3.02</td>
</tr>
<tr>
<td>June 2008</td>
<td>2151.7 (11.7)</td>
<td>16.32</td>
<td>43557.4 (14.3)</td>
<td>5.46</td>
</tr>
<tr>
<td>June 2009</td>
<td>2502.8 (13.5)</td>
<td>19.65</td>
<td>45936.7 (15.0)</td>
<td>11.74</td>
</tr>
<tr>
<td>Overall</td>
<td>2502.8 (13.5)</td>
<td></td>
<td>45936.7 (15.0)</td>
<td></td>
</tr>
</tbody>
</table>

*Compiled by Health Management Associates for Kaiser Commission of Medicaid and the Uninsured, 2010.25,26

REFERENCES


