Trends in Emergency Medicaid Expenditures for Recent and Undocumented Immigrants

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A steady increase in the number of foreign-born adults and children living in the United States has fueled debate about the financial burden new immigrants may place on publicly funded health care, but relatively little is known about the health status and health services use of this population. Undocumented immigrants constitute an increasing proportion of newly arrived individuals, with numbers now estimated to exceed 10 million, or 29% of the total US foreign-born population. This growth is occurring most rapidly in “new-growth” states with previously small immigrant populations, placing an increasing proportion of immigrants in communities that may be less prepared to meet their health care needs.

North Carolina’s total foreign-born population grew by 274% during the 1990s, and included an estimated 300,000 undocumented immigrants by 2004. Despite high employment rates, immigrants face an extraordinary array of barriers to accessing health care including widespread poverty, language and cultural barriers, and lack of health insurance.

Federal law generally excludes undocumented immigrants, as well as legal immigrants who have been in the United States less than 5 years, from Medicaid eligibility, which further impedes access to routine medical care. These individuals can, however, receive Medicaid coverage for emergency medical services (Emergency Medicaid) if they are in a Medicaid-eligible category, such as children, pregnant women, families with dependent children, elderly or disabled individuals, and meet state income and residency requirements. Federal guidelines define emergency services to include:

- Childbirth and complications of pregnancy
- Injuries
- Other acute emergencies
- Severe complications of chronic disease

Context

Undocumented immigrants and legal immigrants who have been in the United States less than 5 years are excluded from Medicaid eligibility, with the exception of limited coverage for emergency conditions (Emergency Medicaid). New immigrant population growth has been rapid in recent years, but little is known about use of health services by this group or the conditions for which Emergency Medicaid coverage has been applied.

Objective

To describe Emergency Medicaid use by recent and undocumented immigrants including patient characteristics, diagnoses, and recent spending trends in North Carolina, a state with a rapidly increasing population of undocumented immigrants.

Design, Setting, and Patients

Descriptive analysis of North Carolina Medicaid administrative data for all claims reimbursed under Emergency Medicaid eligibility criteria 2001 through 2004 in North Carolina, a state with high immigration from Mexico and Latin America. Patients are recent and undocumented immigrants who meet categorical and income criteria for Medicaid coverage, but are excluded from full coverage due to legal status.

Main Outcome Measures

Patient characteristics, hospitalizations, diagnoses, and Medicaid spending for emergency care.

Results

A total of 48,391 individuals received services reimbursed under Emergency Medicaid during the 4-year period of this study. The patient population was 99% undocumented, 93% Hispanic, 95% female, and 89% in the 18- to 40-year age group. Total spending increased by 28% from 2001 through 2004, with more rapid spending increases among elderly (98%) and disabled (82%) patients. In 2004, childbirth and complications of pregnancy accounted for 82% of spending and 91% of hospitalizations. Injury, renal failure, gastrointestinal disease, and cardiovascular conditions were also prevalent.

Conclusions

Childbirth and complications of pregnancy account for the majority of Emergency Medicaid spending for undocumented immigrants in North Carolina. Spending for elderly and disabled patients, however, is increasing at a faster rate. Among nonpregnant immigrants, injuries, other acute emergencies, and severe complications of chronic disease are major contributors to Emergency Medicaid use.
Table 1. Characteristics of the North Carolina Emergency Medicaid Patient Population, 2001 Through 2004 (N=48 391)

<table>
<thead>
<tr>
<th>Age, y*</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>479 (1.0)</td>
</tr>
<tr>
<td>6-17</td>
<td>3404 (7.0)</td>
</tr>
<tr>
<td>18-40</td>
<td>43 275 (89.4)</td>
</tr>
<tr>
<td>41-64</td>
<td>853 (1.8)</td>
</tr>
<tr>
<td>≥65</td>
<td>380 (0.8)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>45 970 (95.0)</td>
</tr>
<tr>
<td>Male</td>
<td>2421 (5.0)</td>
</tr>
<tr>
<td>Medicaid eligibility program†</td>
<td></td>
</tr>
<tr>
<td>Pregnant women</td>
<td>43 399 (89.6)</td>
</tr>
<tr>
<td>Aid to families</td>
<td>2902 (6.0)</td>
</tr>
<tr>
<td>Infants and children</td>
<td>1169 (2.4)</td>
</tr>
<tr>
<td>Disabled</td>
<td>604 (1.3)</td>
</tr>
<tr>
<td>Elderly</td>
<td>377 (0.8)</td>
</tr>
<tr>
<td>Immigration status†</td>
<td></td>
</tr>
<tr>
<td>Undocumented</td>
<td>48 018 (99.2)</td>
</tr>
<tr>
<td>Documented</td>
<td>373 (0.8)</td>
</tr>
<tr>
<td>Race/ethnicity‡</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>23 201 (93.0)</td>
</tr>
<tr>
<td>Black</td>
<td>515 (2.1)</td>
</tr>
<tr>
<td>White</td>
<td>347 (1.4)</td>
</tr>
<tr>
<td>Asian</td>
<td>316 (1.3)</td>
</tr>
<tr>
<td>Native American</td>
<td>35 (0.1)</td>
</tr>
<tr>
<td>Other</td>
<td>546 (2.2)</td>
</tr>
</tbody>
</table>

*Age when earliest service was received.
†First program and status documented from 2001 through 2002 patient population (n = 24 960), the only years for which these data are currently available.
‡Race/ethnicity percentages are based on the 2001 and 2002 administrative data included all 317 090 hospital admissions. Clinical diagnoses are recorded in Medicaid claims using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Clinical Classifications Software (CCS) developed by the Agency for Healthcare Research and Quality was applied to aggregate ICD-9-CM diagnosis codes into a limited number of clinically meaningful categories. These groupings minimize potential for error inherent in the use of administrative claims data, which do not always accurately represent clinical diagnoses. Frequencies and rankings of diagnoses were based on principal, or first-listed, diagnosis. Only 3.9% of claims did not have an ICD-9-CM code and total payments made for these claims represented only 0.4% of total expenditures. Inpatient hospital admissions were determined based on claim type and excluded dental, drug, home

METHODS

Data Source

Data for this study were obtained from the Division of Medical Assistance of the North Carolina Department of Health and Human Services, and analyzed under a data use agreement with The Carolinas Center for Medical Excellence after removal of patient identifiers. The study was approved by the institutional review board of the University of North Carolina School of Medicine. Administrative data included all 317 090 paid Medicaid claims for services received from 2001 through 2004, by undocumented and legal immigrants who were eligible only for Medicaid coverage of emergency care. In North Carolina, Emergency Medicaid coverage is not authorized until after the emergency care has been provided. With the exception of childbirth and ongoing hemodialysis, authorization requires review of the medical record.

Claims data were linked to enrollment files to incorporate sociodemographic characteristics (age, race/ethnicity, and immigration status) that were recorded at the local level during the application process for eligibility determination. Enrollment data also provided the eligibility category under which the patient met Medicaid criteria (pregnant women, children, families with dependent children, elderly, or disabled). These patient characteristics were required fields in enrollment files, so there were no missing data. Income and resource thresholds vary by eligibility category, and are available at http://www.ncdhhs.gov/dma/basicmedelig.pdf. Individuals are assigned the same identification number each time they qualify for Emergency Medicaid coverage, but it is possible that an individual would be represented by more than 1 unique identification number if different identifying information was given.

Analyses

Patient characteristics, program expenditures, and trends in spending by eligibility category were analyzed with basic descriptive statistics using all claims paid from 2001 through 2004. For all 2004 claims, principal diagnostic categories were described by expenditures and by number of hospital admissions. Clinical diagnoses are recorded in Medicaid claims using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Clinical Classifications Software (CCS) developed by the Agency for Healthcare Research and Quality was applied to aggregate ICD-9-CM diagnosis codes into a limited number of clinically meaningful categories. These groupings minimize potential for error inherent in the use of administrative claims data, which do not always accurately represent clinical diagnoses.

Frequencies and rankings of diagnoses were based on principal, or first-listed, diagnosis. Only 3.9% of claims did not have an ICD-9-CM code and total payments made for these claims represented only 0.4% of total expenditures. Inpatient hospital admissions were determined based on claim type and excluded dental, drug, home

The US General Accounting Office has reported that states with high immigration rates have experienced a rapid rise in Emergency Medicaid expenditures in recent years. Information about patient characteristics and services for which Emergency Medicaid funding has been used, however, is absent in the published literature. This study is an analysis of 2001 through 2004 administrative claims data related to the Emergency Medicaid program in North Carolina. Objectives were to describe sociodemographic characteristics of the population served, expenditures including trends over time, and distribution of principal diagnoses by cost and by frequency of hospitalization. Patterns of Emergency Medicaid use by recent and undocumented immigrants should improve knowledge of the health care needs of this population and permit better identification of conditions that are preventable or treatable in the primary care setting, or amenable to other public health interventions. Insights gained could lead to more effective use of available resources and improved health care for this population.
health, hospital outpatient, vendor/ambulance, physician, and skilled nursing facility claims. Analyses were performed using statistical software programs Stata version 8 (Stata Corp, College Station, Tex) and SAS version 9 (SAS Institute Inc, Cary, NC).

RESULTS
Patient Population
A total of 48,391 individuals received Emergency Medicaid coverage between 2001 and 2004, including 3,883 children younger than 18 years and 44,508 adults. Only 16% of these patients received Emergency Medicaid services in more than 1 year; of these, 94% were eligible due to pregnancy. About 3% of patients with multiple claims changed Medicaid eligibility program or immigration status during the 4-year period. TABLE 1 describes the demographic characteristics of patients served. Race and ethnicity percentages were derived from the 2001 and 2002 population, the most recent years for which complete data were available. Age, sex, and immigration status distribution were similar across all 4 years. More than 89% of patients were in the 18- to 40-year age range and 95% were female, with 90% eligible due to pregnancy. More than 99% were undocumented immigrants (rather than legal immigrants within their first 5 years in the United States), and 93% were of Hispanic origin.

Program Spending
Use and spending trends by eligibility category are shown in TABLE 2. North Carolina Emergency Medicaid spending grew from $41.3 million to $52.9 million between 2001 and 2004. This 28% increase was lower than the 35% increase in total North Carolina Medicaid program services spending over this time period, and Emergency Medicaid spending represented less than 1% of total North Carolina Medicaid spending each year. More than 80% of

| Table 2. Emergency Medicaid Use and Spending by Eligibility Category, 2001 Through 2004 |
|---------------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| 2001                                      | 2002                                    | 2003                                    | 2004                                    | % Change                               |
| Pregnant women                             |                                        |                                        |                                        |                                        |
| No. of recipients                          | 11,682                                  | 12,164                                  | 12,946                                  | 14,008                                  | 19.9                                    |
| Spending per recipient, mean (SE), $       | 3,053 (14)                              | 3,155 (13)                              | 3,100 (13)                              | 3,106 (13)                              | 1.7                                     |
| Median expenditure, $                       | 2,961                                   | 3,028                                   | 2,977                                   | 2,993                                   | 1.1                                     |
| Total spending, $                           | 35,667,339                              | 38,137,321                              | 40,136,766                              | 43,515,222                              | 22.0                                    |
| Percent of total Emergency Medicaid spending| 86.4                                    | 85.4                                    | 85.2                                    | 82.2                                    | -4.9                                    |
| Families with dependent children           |                                        |                                        |                                        |                                        |                                        |
| No. of recipients                          | 718                                     | 927                                     | 1,075                                   | 1,360                                   | 89.4                                    |
| Spending per recipient, mean (SE), $       | 3,444 (238)                             | 3,055 (193)                             | 2,733 (143)                             | 3,098 (193)                             | -10.0                                   |
| Median expenditure, $                       | 1,702                                   | 1,724                                   | 1,506                                   | 1,774                                   | 4.3                                     |
| Total spending, $                           | 2,472,813                               | 2,831,671                               | 2,938,386                               | 4,213,289                               | 70.4                                    |
| Percent of total Emergency Medicaid spending| 6.0                                     | 6.3                                     | 6.2                                     | 8.0                                     | 32.8                                    |
| Children                                  |                                        |                                        |                                        |                                        |                                        |
| No. of recipients                          | 235                                     | 308                                     | 352                                     | 372                                     | 58.3                                    |
| Spending per recipient, mean (SE), $       | 3,788 (489)                             | 2,557 (202)                             | 2,145 (162)                             | 2,864 (296)                             | -24.4                                   |
| Median expenditure, $                       | 1,531                                   | 1,441                                   | 1,222                                   | 1,413                                   | -7.7                                    |
| Total spending, $                           | 890,213                                 | 781,318                                 | 755,128                                 | 1,065,279                               | 19.7                                    |
| Percent of total Emergency Medicaid spending| 2.2                                     | 1.7                                     | 1.6                                     | 2.0                                     | -6.7                                    |
| Disabled                                   |                                        |                                        |                                        |                                        |                                        |
| No. of recipients                          | 150                                     | 191                                     | 216                                     | 233                                     | 55.3                                    |
| Spending per recipient, mean (SE), $       | 11,833 (1,139)                          | 11,453 (1,089)                          | 12,264 (982)                            | 13,856 (1,181)                          | 17.1                                    |
| Median expenditure, $                       | 6,566                                   | 5,822                                   | 6,619                                   | 8,050                                   | 22.6                                    |
| Total spending, $                           | 1,774,995                               | 2,187,476                               | 2,648,965                               | 3,228,440                               | 81.9                                    |
| Percent of total Emergency Medicaid spending| 4.3                                     | 4.9                                     | 5.6                                     | 6.1                                     | 41.8                                    |
| Elderly                                    |                                        |                                        |                                        |                                        |                                        |
| No. of recipients                          | 89                                      | 100                                     | 133                                     | 133                                     | 49.4                                    |
| Spending per recipient, mean (SE), $       | 5,248 (706)                             | 7,194 (988)                             | 4,719 (543)                             | 6,940 (871)                             | 32.2                                    |
| Median expenditure, $                       | 3,269                                   | 3,395                                   | 2,994                                   | 3,603                                   | 10.2                                    |
| Total spending, $                           | 467,113                                 | 719,406                                 | 627,615                                 | 923,073                                 | 97.6                                    |
| Percent of total Emergency Medicaid spending| 1.1                                     | 1.6                                     | 1.3                                     | 1.7                                     | 54.0                                    |
| Total                                      |                                        |                                        |                                        |                                        |                                        |
| No. of recipients                          | 12,874                                  | 13,690                                  | 14,722                                  | 16,106                                  | 25.1                                    |
| Total spending, $                           | 41,272,473                              | 44,657,192                              | 47,106,861                              | 52,945,304                              | 28.3                                    |
| Emergency Medicaid spending as percent of total Medicaid services expenditures in corresponding fiscal year* | 0.8                                      | 0.7                                     | 0.7                                     | 0.7                                     |                                        |

Emergency Medicaid spending was under the program eligibility category for pregnant women each year, but growth in spending (2004 compared with 2001) was higher under all other adult eligibility categories. While spending for pregnant women increased by 22% during the 4-year period, spending increased by 20% for children, 70% for families with dependent children, 82% for disabled patients, and 98% for elderly patients. Most of the increase in spending was attributable to growth in the number of nonpregnant patients served, although substantial increases in per patient expenditures were seen among elderly and disabled patients. In 2004, median expenditures were considerably higher for disabled patients ($8050) than for elderly patients ($3603), pregnant women ($2993), families ($1774), or children ($1413).

Principal Diagnoses for Emergency Medicaid Spending

Approximately 82% of Emergency Medicaid spending in 2004 was for childbirth and complications of pregnancy. TABLE 3 shows the distribution of principal diagnostic categories within the remaining 17% of 2004 expenditures. Injury and poisoning accounted for approximately one third of the remaining spending, largely due to intracranial injuries, fractures, and crushing or internal injuries. Prominent principal diagnostic categories were otherwise diseases of the digestive system (representing 16% of spending outside of pregnancy), genitourinary system (12%), circulatory system (11%), and neoplasms (6%). Within these broad categories, the most costly diagnoses were chronic renal failure (8%), appendicitis (6%), and biliary disease (5%).

Principal Reasons for Hospitalization

A total of 14,408 unique hospital admissions were identified in 2004. Childbirth and complications of pregnancy accounted for 91% of these. TABLE 4 shows the most frequent reasons for hospital admission by age group. Excluding pregnancy, injury was the most common reason for admission in all age groups. Other common diagnoses were appendicitis among children (aged 0-17 years) and young adults (aged 18-40 years), and biliary disease, pancreatic disease, and human immunodeficiency virus infection among young adults. Among older adults, acute cerebrovascular and cardiovascular conditions were prominent. Together, acute cerebrovascular disease, congestive heart failure, and acute myocardial infarction accounted for more hospitalizations than did injury in the older age group.

COMMENT

Immigrant health issues are increasingly a focus of national concern due to rapid immigration growth, a rise in proportion of undocumented immigrants among the newly arrived, and the increasing dispersion of immigrants throughout the country. Immigrants represent about 12% of the US population, with noncitizens accounting for 21% of the nation's 46 million uninsured in 2004.11 Although immigrant...
families are at least as likely as native citizen families to have a full-time worker, they are far less likely to receive employer-sponsored health insurance.\textsuperscript{12-16} Federal restrictions to Medicaid eligibility under the Personal Responsibility and Work Reconciliation Act of 1996 further impede access to care, leaving the majority of low-income immigrants without health insurance coverage unless a medical emergency occurs.

The trends in use and expenditures under North Carolina’s Emergency Medicaid program described in this study provide important insights into the health care needs of immigrants in new-growth states, and reveal the limited scope of services for which publicly funded reimbursement is applicable under current federal law. Despite a steady increase in Emergency Medicaid use, the 16,106 patients served by Emergency Medicaid in 2004 represented only 5\% of the total estimated undocumented immigrant population in North Carolina, and Emergency Medicaid remained less than 1\% of the total state Medicaid budget. Emergency Medicaid is primarily filling 3 gaps in the health care needs of this population: childbirth-related costs, emergency care of sudden-onset problems, and emergency care for severe complications of chronic disease. Although men are known to outnumber women among new immigrants, the population served by Emergency Medicaid is overwhelmingly female, Hispanic, and eligible for Emergency Medicaid coverage due to pregnancy status. The largest spending increases, however, are occurring among the elderly and disabled groups, exposing the emergence of a population with which the US health system has relatively little experience—indigent elderly and disabled patients without access to Medicare or Medicaid benefits.

Previous studies have demonstrated the extent to which Hispanic immigrant populations have difficulty accessing appropriate, timely health care. It is estimated that 44\% of legal Mexican immigrants and 77\% of undocumented immigrants lack health insurance.\textsuperscript{13} Most of this difference is explained by lack of access to publicly provided insurance, rather than socio-economic factors and employment status.\textsuperscript{14} Among low-income, non-citizen Hispanic individuals, only 38\% of adults and 32\% of children report having seen a physician in the past year.\textsuperscript{3} Compared with native-born citizens, immigrants have substantially lower per capita health care expenditures\textsuperscript{17} and are less likely to access ambulatory care\textsuperscript{18} and preventive services.\textsuperscript{19-22} Less is specifically known about health care use by undocumented immigrants, although regional studies suggest that they are more likely than legal immigrants to use the emergency department and less likely to use ambulatory care and preventive services.\textsuperscript{4,23,24}

The magnitude of Emergency Medicaid spending for childbirth and pregnancy complications demonstrated in this study, and the fact that children born to patients who qualify for Emergency Medicaid typically receive full Medicaid coverage as US citizens, calls to question the rationale of excluding this population from comprehensive contraceptive and prenatal care coverage. While Hispanic immigrants are known to have favorable birth outcomes in comparison with US-born women,\textsuperscript{25-28} they have much higher pregnancy rates than non-Hispanic individuals, are more likely to initiate prenatal care late or have no prenatal care,\textsuperscript{29} and have higher rates of pregnancy-related risk factors amenable to medical intervention.\textsuperscript{31} North Carolina birth certificate data reveal that 9906 children were born to low-income immigrant women eligible only for Emergency Medicaid coverage in 2004, accounting for 16\% of all Medicaid births and 8\% of all low-birthweight infants receiving Medicaid coverage (data are based on birth certificate records linked to Medicaid files according to

\begin{table}[h]
\centering
\caption{Most Frequent Reasons for Hospitalization by Age Group, 2004}
\begin{tabular}{lccc}
\hline
 & 0-17 y & 18-40 y & $\geq$41 y \\
\hline
No. of admissions & 879 & 13,072 & 457 \\
Childbirth and complications of pregnancy & 614 (69.9) & 12,367 (94.9) & 88 (19.3) \\
Injury & 55 (6.3) & 152 (1.2) & 43 (9.4) \\
Appendicitis & 43 (4.9) & 69 (0.5) & & \\
Newborn care & 29 (3.3) & & & \\
Biliary disease & 10 (1.1) & 112 (0.9) & 15 (3.3) \\
Systemic lupus erythematosus & 7 (0.8) & & & \\
Asthma & 7 (0.8) & & & \\
Intestinal infection & 6 (0.7) & & & \\
Pneumonia & 5 (0.6) & 15 (0.1) & & \\
Fluid/electrolyte disorder & 5 (0.6) & & & \\
Pancreatic disease & 24 (2.2) & 12 (2.6) & & \\
Human immunodeficiency virus infection & 21 (2.2) & & & \\
Hypertension complication & 18 (0.1) & & & \\
Urinary tract infection* & 11 (0.1) & & & \\
Sickle cell disease* & 11 (0.1) & & & \\
Leukemias* & 11 (0.1) & & & \\
Acute cerebrovascular disease & & & 24 (5.3) \\
Congestive heart failure & & & 24 (5.3) \\
Acute myocardial infarction & & & 14 (3.1) \\
Gastrointestinal hemorrhage & & & 11 (2.4) \\
Coronary atherosclerosis & & & 11 (2.4) \\
Secondary malignancy & & & 9 (2.0) \\
\hline
\end{tabular}
\end{table}

*The number of admissions for urinary tract infection, sickle cell disease, and leukemias among patients aged 18 to 40 years was equal; therefore, 11 principal reasons for hospitalization were listed for this age group instead of 10.
EMERGENCY MEDICAID EXPENDITURES FOR RECENT AND UNDOCUMENTED IMMIGRANTS

written communication from J. T. Whitmire, PhD, North Carolina State Center for Health Statistics).

States more experienced with immigrant populations may be more likely to recognize the cost argument for ensuring access to care for this population. In California, for example, a study in 2000 concluded that elimination of public funding for the prenatal care of undocumented immigrants would prove far more costly to taxpayers by substantially increasing low-birth weight, prematurity, and postnatal costs. Only 8 states have taken advantage of a 2002 “unborn child” option under the State Children’s Health Insurance Program, which applies federal matching dollars to prenatal care coverage for undocumented women, while 5 additional states provide state funding for prenatal care regardless of immigration status.7,30

Outside of pregnancy, major injuries accounted for almost one fifth of all hospitalizations and one third of all Emergency Medicaid spending in our study, indicating a dire need for injury prevention interventions that target the new immigrant population. Immigrants, and particularly Hispanic immigrants, account for a disproportionate number of workplace injuries and fatalities in the United States. Motor vehicle injury is the leading cause of death among Hispanic individuals in North Carolina and likely contributes substantially to the high costs of injury observed in this study. State and federal Medicaid agencies have a significant financial stake in confronting these issues and actively partnering with immigrant health advocates, employers, and local, state, and federal organizations concerned with worker and motor vehicle safety. Beyond pregnancy and acute injury, the prominence of chronic renal failure, cerebrovascular disease, and heart disease among Emergency Medicaid diagnoses suggests unmet preventive and primary care need for risk factor identification and management. Emergency Medicaid essentially functions as catastrophic health insurance, which is arguably not an optimal allocation of resources for a population with such limited access to care. Lack of coverage for nonemergency primary and preventive care would be expected to increase rates of avoidable hospitalizations, and lack of coverage for medical care after discharge (such as rehabilitation services, medical equipment, and follow-up outpatient care) and may prolong hospitalizations or result in readmissions for chronic or disabling conditions. It has been shown, for example, that undocumented immigrants initiating dialysis for end-stage renal disease in New York City were far less likely to have received any health care prior to developing end-stage renal disease, presented with more advanced disease, and incurred greater costs than comparison patients.35 Case management of uninsured immigrants with chronic disease appears to be a useful strategy toward addressing both financial and nonfinancial barriers to ongoing care and may be particularly well applied toward management of cardiovascular and renal disease in this population.

The availability of affordable culturally and linguistically appropriate primary care, however, will be a critical determinant of both the effectiveness and cost efficacy of health care for immigrants in new-growth areas.38-40 Proximity to a community health center is an important determinant of access to care for the uninsured, but such centers face increasing financial strain from growing numbers of uninsured patients and insufficient federal support.

On a broader level, North Carolina’s Emergency Medicaid experience illustrates the disparity in health coverage between immigrants and US citizens that has widened greatly since passage of welfare reform legislation in 1996. Evidence suggests that this legislation had a limited effect on Medicaid participation among immigrants, but a major impact by shifting the cost burden of immigrant coverage to the states. Almost half of states have chosen to use state funds to extend Medicaid, the State Children’s Health Insurance Program, or medical assistance programs to legal immigrants during the 5-year ban on eligibility for federal assistance, with 11 of these providing coverage for undocumented children or pregnant women.44 Covered benefits and income thresholds vary widely, however, and such programs are highly vulnerable to the local political climate and availability of funds during state budget crises. New-growth states such as North Carolina are less likely to have state-funded programs in place and lack the safety net infrastructure that is found in areas with more established immigrant communities.2

To the extent that immigrants are not covered by employer-sponsored insurance or state-funded programs, and the extent that primary and preventive care safety net capacity is insufficient to serve the needs of this population, hospitals are left to absorb the costs of care. Uncompensated care costs at US hospitals soared by more than 60%, to $26 billion between 1994 and 2000, although the share of those costs attributable to undocumented immigrants is difficult to estimate.34-36 A 2004 federal provision of $1 billion to directly reimburse hospitals for uncompensated care of undocumented immigrants has had limited impact; less than one third of available funds have been used due to the difficulties associated with providing the required documentation.45 Thus, Emergency Medicaid remains the primary mechanism by which federal and state money alleviates the amount of uncompensated care costs borne by hospitals for this population, benefiting immigrants and citizens alike by helping to keep hospital doors open.

Limitations

Findings from this study shed light on a previously unstudied subject, but it should be understood that they relate only to the use of Medicaid for coverage of emergency medical conditions. Findings do not reflect all patterns of health services use by the immigrant population of North Carolina, or approximate total health care costs in-
EMERGENCY MEDICAID EXPENDITURES FOR RECENT AND UNDOCUMENTED IMMIGRANTS

Author Contributions: Drs DuBard and Massing had full access to all of the data in the study and take full responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: DuBard, Massing.

Acquisition of data: DuBard, Massing.

Analysis and interpretation of data: DuBard, Massing.

Drafting of the manuscript: DuBard, Massing.

Critical revision of the manuscript for important intellectual content: DuBard, Massing. Statistical analysis: DuBard, Massing.

Administrative, technical, or material support: Massing.

Study supervision: Massing.

Financial Disclosures: None reported.

Acknowledgment: We thank Bill Loomis, BBA, Charles DeWar, BBA, and William Lawrence, MD, North Carolina Department of Health and Human Services Division of Medical Assistance, for providing the health status of this population. Emergency Medicaid was developed and is administered by the Division of Medical Assistance, the Fiscal Agent for the Medicaid program.

Race/ethnicity and immigration status were recorded by social services workers throughout the state, and coding accuracy could not be assessed for these measures. Our finding that 99% of Emergency Medicaid recipients were coded as undocumented, therefore, may not reflect true immigration status. Indeed, for the purposes of Emergency Medicaid reimbursement in North Carolina, patients and eligibility workers would have no incentive to provide the additional documentation required to confirm legal immigration status. Policies regarding state funding of health care for immigrants, availability of safety net services, and the diversity of immigrant populations are quite variable across the nation. These findings are most applicable to states experiencing high rates of new immigration from Mexico and Latin America.

CONCLUSION

Medicaid spending for emergency care of recent and undocumented immigrants, although a small proportion of the total Medicaid budget, is increasing rapidly in this new immigrant growth state. Emergency Medicaid is predominantly a program for child- and birth-related care, although use and spending are shifting toward nonpregnant adults, particularly those who are elderly and disabled. Increased access to comprehensive contraceptive and prenatal care, injury prevention initiatives, preventive care, and chronic disease management may make better use of the public health care dollar by improving the health status of this population and alleviating demand for costly emergency care.

REFERENCES


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It is possible that our reading, if so be we read wisely, may save us to a certain extent from some of the serious forms of trouble; or if we get into trouble, as we most certainly shall, may teach us how to come out of it decently.
—Rudyard Kipling (1865-1936)
Administrative, technical, or material support: Kortebein, Ferrando, Lombeida, Evans. 
Financial Disclosures: None reported.

Funding/Support: The work for this research letter was funded by grant PO1AG023591 from the National Institute on Aging (Evans). The studies were conducted in the General Clinical Research Center at the University of Arkansas for Medical Sciences and the University of Texas Medical Branch at Galveston, and funded by grant MO1 RR14288 (University of Arkansas Medical Sciences), and MO1 RR 00073 (University of Texas Medical Branch) from the National Center for Research Resources.

Role of the Sponsor: These organizations had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript.

Acknowledgment: We thank Douglas Paddon-Jones, PhD, Ola Ronsen, MD, PhD, and T. Brock Symons, PhD, of the University of Texas Medical Branch, Galveston, for their significant contributions toward the completion of this study, including data collection and analysis, as well as review of the manuscript. These individuals received compensation.


CORRECTIONS

Incorrect Wording: In the Medical News & Perspectives story entitled “Trials Probe New Agents for Kidney Cancer” published in the July 12, 2006, issue of JAMA (2006;296:155-157), sunitinib was misidentified as a second-line treatment for advanced renal cell carcinoma. On page 155, column 2, the first full sentence should be “The results led to sunitinib’s approval by the US Food and Drug Administration in January for advanced renal cell carcinoma.”

Mislabeled Column Headings in Table 7: In the Original Contribution entitled “Insurance Coverage, Medical Care Use, and Short-term Health Changes Following an Unintentional Injury or the Onset of a Chronic Condition” published in the March 14, 2007, issue of JAMA (2007;297:1073-1084), in Table 7, the column headings for columns 3 and 5 should be “Adjusted Difference, % (if Insured).” The dagger footnote should be “Underlying odds ratios (Table 4) for medical care use/health outcome category significantly different from insured, P<.05.”

Incorrect References Cited: In the Original Contribution entitled “Trends in Emergency Medicaid Expenditures for Recent and Undocumented Immigrants” published in the March 14, 2007, issue of JAMA (2007;297:1085-1092), 3 sentences cited incorrect references. On page 1090, within the Comment section, the second full sentence “In California, for example, a study in 2000 concluded that elimination of public funding for the prenatal care of undocumented immigrants would prove far more costly to taxpayers by substantially increasing low-birth weight, prematurity, and postnatal costs.” should cite reference 32. The third sentence “Only 8 states have taken advantage of a 2002 “unborn child” option under the State Children’s Health Insurance Program, which applies federal matching dollars to prenatal care coverage for undocumented women, while 5 additional states provide state funding for prenatal care regardless of immigration status.” should cite reference 44 instead of 30. The fifth sentence “Immigrants, and particularly Hispanic immigrants, account for a disproportionate number of workplace injuries and fatalities in the United States.” should cite “US Department of Labor. Occupational Safety and Health Administration’s efforts to protect immigrant workers, statement of John L. Henshaw, Assistant Secretary of Labor for Occupational Safety and Health before the Subcommittee on Employment, Safety and Training Committee on Health, Education, Labor and Pensions, United States Senate, February 27, 2002. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=TESTIMONIES&p_id=286. Accessed November 2, 2006,” which is not listed among the article’s references.