

Unreimbursed Emergency Department
Costs Incurred by Hispanic Workers and
Their Dependents in Central Kentucky

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Summary

Health care costs in the United States are a concern to policy makers, healthcare providers, and the population using medical services. Because fewer individuals have health insurance, as costs continue to rise, so have the levels of charity care provided through the Emergency Departments at many hospitals. Hispanics are a growing population thought to be receiving an increasing portion of this care. The Hispanic population in Kentucky has seen a significant increase in recent years, in large part because of the demand for agricultural workers. It has been established that a sizeable part of the Hispanic migrant worker community is not in the country legally. Very little data is available for assessing the amount and cost of care provided to this specific group in most states, including Kentucky.

This study seeks to add to that knowledge base by determining the total and proportionate costs of medical care provided to uninsured Hispanics in the Central Kentucky region. Emergency department admissions data for Clark Regional Medical Center was collected for 2004. Information pertaining to insurance status, race, diagnosis, charges, payments, contractual adjustments and gender was obtained and analyzed with descriptive statistics and regression analysis to determine the factors most associated with nonpayment and the extent of nonpayment of charges for treatment in the emergency department.

A probit regression to determine the characteristics associated with incomplete payment of charges. Hispanic ethnicity, having private or no insurance, and having a primary diagnosis of a mental disorder were statistically significant. A linear regression to determine the characteristics associated with the amount of the bill unpaid demonstrated no significance of any ethnic group, but multiple diagnostic code groups, having no insurance, and having private insurance were associated with an increase in the amount of the bill that remained unpaid. Being female decreased the amount of the bill unpaid.

This study provides some description of the Hispanic population seeking medical care through the emergency department in Clark County, including common diagnoses. This information may be used to improve outreach to the uninsured Hispanic population. The analysis does not justify the initiation of new procedures to participate in new Federal funding programs to reimburse hospitals for care provided to undocumented immigrants in emergency departments.

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Problem Statement

Kentucky agriculture has long relied on hired seasonal workers for the production and harvesting of crops. The demographics of farm workers have changed in the past decades from primarily family members, or local or migrant American labor, to Hispanic workers. In 1999 it was estimated that over two-thirds of the statewide 80,000 hired crop workers were foreign-born; 94% of those came from Mexico, with most of the remainder from Central America or the Caribbean.(USDA, 2002)

The Bluegrass Farmworker Health Center (BFHC) is an organization providing primary healthcare to seasonal and migrant farmworkers in an eight-county region in Central Kentucky. This region includes the Central Kentucky counties of Madison, Fayette, Garrard, Jessamine, Woodford, Bourbon, Clark and Scott. A recent survey of workers by BFHC revealed that each worker has an average of two dependents living in the same household.(Brown, 2005)

A baseline determination of the type of medical care and the amount of unreimbursed medical care is needed to help establish the need for services and funding of medical care to this classically underserved subpopulation. As part of Medicare reform in 2003, \$1 billion was set aside over five years to help compensate hospitals that treat illegal immigrants in their emergency departments (ED).(Tieman, 2004) As these Federal monies have become available to hospitals, it is the hospitals with documentation of immigration status that may receive reimbursement, and thereby improve their ability to provide charity services. In addition, this information on ED patients' immigration

status will aid those organizations, such as the BFHC, who are working to provide more cost-effective medical services to the Hispanic population. Results from this study may aid BFHC in determining the needs of, and the locations for, medical service provision best suited to their clients. Therefore, this study sought to establish the current level of the costs of providing medical care to the uninsured Hispanic population in Central Kentucky. Data was used to characterize the Hispanic population seeking health care in the ED, including diagnosis. Finally, this study provides insight into factors associated with nonpayment of hospital emergency department charges.

Literature Review

According to the 2002 Census of Agriculture, 18,797 farmworkers were needed to produce the amount of agricultural goods reported on the 7,100 farms in the BFHC eight county service region (USDA, 2002; Baker, 1996). The Immigration and Naturalization Service (INS) estimated in 2000 that Kentucky had approximately 15,000 illegal immigrants residing in the state; in contrast, only 2,700 guestworker (H2A) visas were granted to nonresident laborers to work in Kentucky agriculture in 2003 (INS, 2003). The US Census estimates that the Kentucky Hispanic population increased from 60,000 people in 2000 to at least 71,000 in 2004 (US Census, 2005). Of these workers, as is typical for temporary farm workers, few are provided with any health insurance benefit. The National Center for Farmworker Health reports only 5% of migrant and seasonal farmworkers are covered by employer provided health insurance (NCFH, 2006). Most states do not require workers' compensation coverage for agricultural workers; only eleven states mandate workers' compensation coverage for all employees (CNN, 2005).

Immigrants as a group are less likely to be insured than are native citizens; in contrast to the 14% of U.S. population without insurance, 33% of immigrants are uninsured; both because they often do not qualify for public programs and because they often work lower-paying jobs without health benefits (Fronstin, 2005).

Patients without medical insurance who cannot afford to visit a physician's office may seek care in the emergency department, where they know they cannot be turned away until they are assessed and stabilized. In the U.S. in 1993, 90.3 million Emergency Department (ED) visits were reported; in 2002, there were 113.9 million, an increase of 26% (McCraig, 2005). In contrast, the number of operating EDs declined about 15% in that time period. The remaining EDs are seeing more patients as a result both of population increases and a decrease in availability of alternate services such as low-cost clinics. Of these patient visits to the ED, only 12% resulted in admission of the patient to the hospital or holding for observation (McCraig, 2004). The National Hospital Ambulatory Medical Care Survey reports 29% of patient complaints were triaged as semiurgent or nonurgent (McCraig, 2004). These patients would be more efficiently treated in a primary care or Urgent Care setting, at a lower cost (Merritt, 2000; Rotarium, 2002).

Attempts have been made to refer patients with non-emergent complaints to primary providers, with modest reduction in ED utilization (McCraig, 2004). A number of studies have examined the reasons for patients' use of the emergency department for nonurgent or routine medical care (Guttman, 2003, Sarver, 2002; Slesinger, 1992). Several factors account for ED utilization by the uninsured population, including the knowledge that the ED is required to triage and stabilize patients, lack of knowledge of

alternative treatment facilities, inconvenient hours of clinic or private physician office operation, lack of transportation, and language barriers (Brown, 2005, Schur, 1996, Slesinger, 1992).

These problems have been acknowledged in other studies, and the dilemma of maintaining a viable ED network while providing appropriate and timely care is a concern to many organizations. According to the Task Force on Healthcare and the Uninsured, “In addition to its obvious role for the care of critically ill and injured patients, the ED consistently provides 24-hour access to insured and working populations who face barriers for unscheduled care in other settings. Inadequate funding for the uninsured and underinsured, fragmented health care delivery systems, hospital closures, skilled labor shortages, and overcrowding threaten the ability of EDs to provide high quality care for all Americans, not just the disadvantaged” (Cetta, 2000). In 2003, it was estimated that \$34.5 billion worth of uncompensated care was provided in total. Of this, \$20.8 billion was provided by hospitals. Emergency department physicians lost an additional \$4.2 billion in income because of nonpayment by uninsured patients (ACEP, 2006; Hadley, 2003). National estimates of ED uncompensated care are not reported in the literature. One study of border states estimated the losses for care to undocumented immigrants in their states’ EDs were \$190 million, or 25% of the charity care provided through the emergency department. (MGT, 2002)

Hispanics in the United States have traditionally utilized fewer healthcare services than the non-Hispanic population, but the proportion of care used continues to grow with this population. (Baker, 1996; Rotarium, 2002; Schur, 1996) A recent study disputes the assertion some make that the growth of the illegal Hispanic population is

disproportionately taxing the resources of emergency departments. (Mohanty, 2005) This study found that immigrants, because of a lower incidence of seeking medical care compared to citizens, actually subsidize the healthcare of native citizens. Immigrants, both insured and uninsured, used only half as many health care dollars as did U.S.-born individuals. Only for immigrant children was there a significant increase in the use of the emergency department for care: these children spent three times as much for ED care as did native children. Uninsured immigrants receive the same proportion of emergency department care as the insured, but less primary health care from clinics and physicians (Mohanty, 2005). This data included estimated bad debt and charity care in public but not private facilities.

The type and total cost of medical care for uninsured Hispanics in the Central Kentucky region is unknown, but is expected to be substantial as the population grows. An informal telephone survey of the emergency departments in the eight-county area in May 2005 revealed that none of the hospitals currently track the amount of care to Hispanics, the type of care or the reimbursement rate of this population. There is but a single report of a Kentucky hospital collecting information on the care of Hispanic patients. Jewish Hospital in Shelbyville began tracking this information in 2003, and found that they provided \$390,000 in charity care to Hispanics, including both inpatient and ED care (Olsen, 2004). Overall, Jewish Hospital realized \$5.6 million in unpaid charges for 2003. They reported that although Hispanics account for less than 10% of the patients seen in the ED, Hispanics accounted for nearly one-quarter of the charity care provided through the emergency department that year (Olsen, 2004).

Research Strategy

Sample

The population of interest for this study is all Hispanic migrant workers in the Central Kentucky area. For the purpose of this study, Central Kentucky is defined as the counties served by the Bluegrass Farmworker Health Center, consisting of Madison, Fayette, Garrard, Jessamine, Woodford, Bourbon, Clark and Scott. Of these counties, Garrard and Jessamine do not have a hospital. The population accessible to this study was the patients treated at the ED at Clark Regional Medical Center in Clark County. Only those patients treated and released from the ED were studied; patients who required admission for treatment were excluded. Patients requiring admission would have more serious diagnoses and seeking care through the ED would be considered urgent.

The IRB provided exemption status approval, as the information of interest in this study is not protected under HIPAA. All emergency department records from January through December of 2004 were examined. A list consisting of all patients who were treated and not admitted to the hospital from the ED during this time was drawn from the data collected by the billing department. Examining the records of all patients seen permits comparisons to assess the diagnoses treated across the groups.

Measures

Measurements include a determination of the number of uninsured Hispanics utilizing the ED for care not requiring either observation or admission to the hospital. A list of all uninsured patients was obtained from Billing Services. Computerized records were accessed to determine racial and ethnic data, charges, and payments. Data collected for each patient included total billed charges, total collections, contractual adjustments,

gender and diagnosis according to ICD9 code, the categorization used by the National Hospital Ambulatory Medical Care Survey (see Appendix 1). Contractual adjustments are discounts negotiated or mandated by public and private insurers, cash payment discount amounts, and funds received from the disproportionate share program, which funds care to certain low-income groups. ICD9 codes are diagnosis codes used by private and government insurance agencies to categorize a patient. Although multiple ICD9 codes may be used for a patient, in this study only the code for the primary diagnosis was used in the analysis.

Design

This retrospective nonexperimental study was designed to ascertain how various patient characteristics including race, gender, health status, and insurance status impact the probability of incomplete payment for ED services. Additional analysis was done to examine the effect of patient characteristics and diagnoses on the amount of the charges not paid to the hospital.

Procedures

Descriptive statistics were used to characterize the study group. A probit model was utilized to determine the characteristics of patients who did not pay their bill in full. This model assumes that the propensity to not pay is given by the probit index function:

$$\text{Nonpayment}^* = \beta_0 + \beta_1 \text{ins} + \beta_2 \text{eth} + \beta_3 \text{health} + \beta_4 \text{gender} + \varepsilon$$

Where ins = insurance status, eth = ethnicity, health = diagnosis category. The binary outcome variable for whether the patient does or does not pay the bill in full is:

$$\text{nonpayment}^* = \begin{cases} 1 & \text{if Nonpayment}^* > 0 \\ 0 & \text{if Nonpayment}^* \leq 0 \end{cases}$$

Analysis also included OLS regression to examine the relationship between the data categories collected and the amount of charges unpaid. This was done only for the patients who did not pay their bills in full, to ascertain the characteristics that determine the extent of nonpayment. This model is expressed as:

$$\text{Nonpayment}^* = \beta_0 + \beta_1 \text{ins} + \beta_2 \text{eth} + \beta_3 \text{health} + \beta_4 \text{gender} + \varepsilon$$

Results

Data was collected on all emergency department patients treated and released from Clark Regional Medical Center in 2004. Patients admitted to the hospital were excluded as their conditions were not treatable in an ambulatory setting.

The ethnicity of the emergency department patients is described in Table 1. The majority of the patients are white. Only 1.1% of the patients were Hispanic. This number is consistent with the Hispanic population estimate of Clark County in 2004, reported by the Kentucky Data Center to be 449 persons of a total population of 34,408, or 1.3% (KSDC, 2005).

Table 1: Ethnicity of the Emergency Department Patients
N = 20,538

| Ethnicity | Sample Percentage |
|------------------|--------------------------|
| Hispanic | 1.1% |
| African American | 5.0% |
| White | 93.3% |
| Other Races | 0.6% |

Table 2 shows the remaining descriptive statistics of the emergency department patients. Just over one-third had private insurance, 44% had public insurance, and 22% were uninsured. The percentages by diagnosis are given for the entire sample and separately for the Hispanic uninsured and all-other uninsured.

Hispanic uninsured were much more likely to be male. They did not differ markedly in diagnosis from the rest of the sample, although they were more likely to be seen for diseases of the skin, and less likely to be seen for musculoskeletal problems.

Table 2 : Sample Demographics: All, Hispanic and Other Uninsured

| Variable | Sample (%) n = 20,538 | Other Uninsured n = 4,359 | Hispanic Uninsured n = 105 |
|--|--------------------------|------------------------------|-------------------------------|
| Male | 54.0 | 50.8 | 77.0 |
| Female | 46.0 | 49.2 | 23.0 |
| Public Insurance | 44.4 | - | - |
| Private Insurance | 34.5 | - | - |
| No Insurance | 21.8 | 100 | 100.0 |
| Infections | 3.1 | 2.5 | 4.8 |
| Endocrine and Metabolic Diseases | 1.0 | 0.8 | 1.0 |
| Mental Disorders | 1.8 | 2.8 | 1.0 |
| Diseases of the Nervous System/Senses | 6.6 | 5.9 | 9.5 |
| Diseases of the Circulatory System | 2.6 | 1.4 | 1.9 |
| Respiratory Diseases | 9.8 | 8.8 | 11.4 |
| Diseases of the Digestive System | 5.6 | 9.2 | 8.6 |
| Diseases of the Genitourinary System | 5.6 | 7.9 | 8.6 |
| Pregnancy-related Disorders | 0.7 | 0.4 | 0.0 |
| Diseases of the Skin | 3.0 | 4.4 | 13.2 |
| Musculoskeletal Diseases | 10.2 | 12.6 | 4.7 |
| Symptoms, Signs and Ill-Defined Conditions | 20.4 | 18.6 | 16.2 |
| Fractures | 3.8 | 2.9 | 4.8 |
| Dislocations | 0.4 | 0.4 | 0.0 |
| Sprains | 5.6 | 6.1 | 2.9 |
| Intracranial Injuries | 0.1 | 0.1 | 0.0 |
| Open Wounds | 6.7 | 4.3 | 3.8 |
| Superficial Wounds | 1.7 | 0.9 | 1.0 |
| Contusions/Crush Injuries | 5.2 | 4.6 | 0.0 |
| Foreign Bodies | 0.4 | 0.2 | 0.0 |
| Burns | 0.6 | 0.6 | 1.0 |
| Trauma Complications | 2.1 | 1.7 | 1.9 |
| Poisonings/Toxicities | 0.9 | 1.0 | 0.0 |
| Supplementary Classifications | 2.1 | 1.8 | 3.8 |
| Did not pay entire bill | 30.0 | 40.9 | 46.7 |
| Mean Amount Unpaid - full sample | \$104 | NA | NA |
| Mean Amount Unpaid - nonpayers | \$347 | \$273 | \$263 |

The results of the probit model of non-payment are presented in Table 3. The model was designed to determine the characteristics of the patients who do not pay their

full bill compared to those who do. This model includes coefficients and marginal effects for the covariates insurance, race, gender and diagnosis. Significant variables affecting the probability of non-payment included Hispanic ethnicity, private and no insurance (compared to public insurance), and primary diagnosis of a mental disorder.

Table 3: Probit Regression with Dependent Variable Amount of Bill Unpaid

(*=significant at the 5% confidence interval level)

| Variable | Coefficient | Standard Error | P – Value | Marginal Effect |
|--|-------------|----------------|-----------|-----------------|
| Hispanic | 0.199 | 0.084 | 0.018* | 0.071 |
| Female | 0.002 | 0.198 | 0.926 | 0.001 |
| No Insurance | 0.829 | 0.026 | <0.001* | 0.304 |
| Private Insurance | 0.892 | 0.023 | <0.001* | 0.315 |
| African American | -0.017 | 0.044 | 0.709 | -0.006 |
| Other Race | 0.110 | 0.134 | 0.414 | 0.038 |
| Infections | 0.333 | 0.243 | 0.171 | 0.121 |
| Endocrine and Metabolic Diseases | 0.322 | 0.258 | 0.211 | 0.117 |
| Mental Disorders | 0.517 | 0.247 | 0.036* | 0.093 |
| Diseases of the Nervous System/Senses | 0.441 | 0.240 | 0.067 | 0.194 |
| Diseases of the Circulatory System | 0.230 | 0.245 | 0.222 | 0.162 |
| Respiratory Diseases | 0.333 | 0.239 | 0.164 | 0.108 |
| Diseases of the Digestive System | 0.235 | 0.241 | 0.328 | 0.120 |
| Diseases of the Genitourinary System | 0.337 | 0.241 | 0.162 | 0.084 |
| Pregnancy-related Disorders | 0.184 | 0.264 | 0.486 | 0.122 |
| Diseases of the Skin | 0.307 | 0.244 | 0.208 | 0.065 |
| Musculoskeletal Diseases | 0.304 | 0.239 | 0.204 | 0.111 |
| Symptoms, Signs and Ill-Defined Conditions | 0.275 | 0.238 | 0.248 | 0.109 |
| Fractures | 0.070 | 0.243 | 0.772 | 0.097 |
| Dislocations | 0.260 | 0.283 | 0.358 | 0.040 |
| Sprains | 0.145 | 0.241 | 0.546 | 0.094 |
| Intracranial Injuries | 0.049 | 0.354 | 0.890 | 0.017 |
| Open Wounds | 0.165 | 0.241 | 0.494 | 0.058 |
| Superficial Wounds | 0.0.19 | 0.250 | 0.940 | 0.006 |
| Contusions/Crush Injuries | 0.221 | 0.241 | 0.359 | 0.078 |
| Foreign Bodies | 0.237 | 0.280 | 0.397 | 0.085 |
| Burns | -0.087 | 0.280 | 0.754 | -0.029 |
| Trauma Complications | 0.333 | 0.246 | 0.175 | 0.122 |
| Poisonings/Toxicities | 0.331 | 0.256 | 0.197 | 0.121 |
| Surgical and Medical Complications | 0.302 | 0.292 | 0.301 | 0.110 |
| Supplementary Classifications | 0.144 | 0.248 | 0.561 | 0.051 |
| Constant | -1.340 | 0.238 | <0.001 | - |
| Number of Observations | 20530 | | | |
| Log Likelihood | -11545.103 | | | |
| Pseudo R2 | 0.079 | | | |

The marginal effect of a particular variable is the percentage point change in the probability of nonpayment due to that variable, relative to the baseline probability of nonpayment. For this sample, the probability of not paying the full bill was 28%. In the case of Hispanic ethnicity, patients are 7.1 percentage points more likely to not pay their full bill. This represents a 24% ($0.071/0.3$) increase in the baseline probability of not paying in full, with white patients the comparator group. African Americans and those of other ethnicities were no less likely to not pay their full bills than were white patients. Lesser effects are found for the patients with no insurance and with private insurance. Uninsured and privately insured patients are respectively 30 and 31 percentage points more likely to not pay than the overall group of patients who did not pay in full. This is a 100% ($30/30$) increase in overall probability of not paying for the full group. Those with mental disorders have a 3% increase in baseline probability of not paying in full.

A linear regression was run on the group of patients not paying their full bill, to determine the characteristics influencing the extent of nonpayment. The results are shown in Table 4. The mean amount unpaid for the 6,156 patients who did not pay in full was \$347. Although Hispanic ethnicity was associated with an increased likelihood of not paying in full, it was not associated with a significant increase in the amount of the bill unpaid. Multiple other characteristics were associated with an increase in the amount remaining unpaid. The coefficient gives the increase in dollar amount left unpaid associated with that characteristic. The greatest effect was noted with patients with intracranial injuries. All else being equal, having an intracranial injury increased the amount of the bill not paid by \$1,237. Dislocations were associated with an increase in the unpaid amount by \$661. The third greatest effect was seen in patients without

insurance; this group was associated with \$521 increase in the amount of the bill unpaid. Only being female was associated with a reduction in the amount of the bill not paid. All else being equal, females paid \$32 more of their charges.

Table 4: Characteristics Influencing the Amount of Non-payment
(*=significant at 5% confidence level)

| Variable | Coefficient | Standard Error | P-value |
|--|-------------|----------------|---------|
| Hispanic | 8.38 | 46.15 | 0.86 |
| Female | -32.73 | 14.55 | 0.03* |
| No Insurance | 521.06 | 19.90 | <0.001* |
| Private Insurance | 101.94 | 13.84 | <0.001* |
| African American | 47.14 | 36.56 | 0.20 |
| Other Race | 2.31 | 71.23 | 0.97 |
| Infections | 156.11 | 50.21 | 0.00* |
| Endocrine and Metabolic Diseases | 112.13 | 50.28 | 0.03* |
| Mental Disorders | 495.87 | 85.89 | <0.001* |
| Diseases of the Nervous System/Senses | 83.73 | 46.10 | 0.07 |
| Diseases of the Circulatory System | 213.43 | 57.79 | <0.001* |
| Respiratory Diseases | 84.29 | 43.63 | 0.05* |
| Diseases of the Digestive System | 129.74 | 50.01 | 0.01* |
| Diseases of the Genitourinary System | 394.62 | 56.83 | <0.001* |
| Pregnancy-related Disorders | 233.78 | 77.52 | <0.001* |
| Diseases of the Skin | 93.25 | 46.53 | 0.05* |
| Musculoskeletal Diseases | 116.09 | 44.64 | 0.01* |
| Symptoms, Signs and Ill-Defined Conditions | 311.29 | 45.88 | <0.001* |
| Fractures | 444.04 | 72.55 | <0.001* |
| Dislocations | 661.98 | 137.74 | <0.001* |
| Sprains | 197.83 | 47.28 | <0.001* |
| Intracranial Injuries | 1,237.41 | 465.62 | 0.01* |
| Open Wounds | 295.96 | 58.49 | <0.001* |
| Superficial Wounds | 220.37 | 69.31 | <0.001* |
| Contusions/Crush Injuries | 291.26 | 54.70 | <0.001* |
| Foreign Bodies | 107.73 | 60.32 | 0.07 |
| Burns | 224.10 | 111.67 | 0.05* |
| Trauma Complications | 385.98 | 76.97 | <0.001* |
| Poisonings/Toxicities | 371.39 | 102.85 | <0.001* |
| Surgical and Medical Complications | 73.79 | 50.07 | 0.14 |
| Supplementary Classifications | 86.62 | 58.75 | 0.14 |
| Constant | -70.99 | 44.63 | 0.11 |
| Number of Observations | 6,156.00 | | |
| R2 | 0.16 | | |

Conclusions

The purpose of this research was to establish the current level of cost of providing medical care to the uninsured Hispanic population in Central Kentucky. Of the nearly \$2.14 million in emergency department charges that Clark County Regional Medical Center was unable to collect, uninsured Hispanics were responsible for only 1.3% of that amount (\$27,600). Although Kentucky has had considerable growth in its Hispanic population, including undocumented aliens, this growth does not appear to be a drain on the ability of Clark Regional Medical Center to provide medical care through its emergency department. A larger problem is the total number of uninsured, whose \$1.2 million in unpaid charges represent over half the amount lost through charity care in the emergency department. This reflects what Mohanty reports in the literature. Hispanic immigrants do represent a growing population in the state, and since they are more likely to be uninsured, there is the potential that continued increases in the population will utilize a disproportionate share of health care resources.

Recommendations

Based on the expenses unpaid by the uninsured Hispanic population in 2004, implementation of procedures to participate in the new Federal program is unlikely to increase reimbursement enough to significantly exceed the administrative costs to the hospital.

Efforts to provide primary care to Hispanic and other uninsured groups should concentrate on the diagnoses most frequently seen that do not require an emergent level of care: infections and parasitic diseases, skin disorders, and signs and symptoms of ill-defined conditions (such as viral infections).

As the Hispanic population in Kentucky continues to grow, hospitals in Kentucky may see an increase in the uninsured Hispanic population that could increase revenue losses. Continued monitoring of the ethnic makeup and insurance status of the patients treated would help catch such problems early so the hospital may be proactive in exploring other reimbursement sources.

Limitations

Twenty-three (0.5%) of the uninsured patients seen in the ED in 2004 at Clark Regional Medical Center did not have race coded. Additionally, consistency of coding is unknown. If the patient does not indicate race, assigning racial/ethnic information is could introduce error into the study. Other errors in this study include utilization of the US Census data and Kentucky Data Center estimates, as these may over or underestimate some subgroups of the population, including the temporary and/or illegal workers studied in this project. As occupational data is not routinely collected on patients, it was possible only to determine the care provided to uninsured Hispanics in general. The immigration and residency status of the patients is unknown; the information collected must be extrapolated to the estimated Hispanic illegal immigrant population and their dependents.

This type of study is generally strong in internal validity. Since data for all ED patients was obtained, selection is not affected. Multiple other patient characteristics that might contribute to non-payment were not assessed, including socioeconomic factors. It is unknown how similar the populations seen in the EDs of the other hospitals in the eight county region are to the patients seen at Clark Regional Medical Center. Results of the study are hospital-specific, and comparisons to other Kentucky counties or in counties of

other states with similar agricultural production levels and utilization of Hispanic workers would be useful.

Suggestions for Further Study

Suggestions for further study include a prospective study to ascertain immigration status of insured and uninsured Hispanic and non-Hispanic patients in the ED. A study such as this one conducted at other hospitals in the Central Kentucky region would be useful to compare data and increase the pool of information available to other hospitals and care centers.

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Appendix I

Emergency Department Primary Diagnosis Categories (ICD9 Codes)

| | |
|--|---------|
| Infectious and parasitic diseases | 001-139 |
| Neoplasms | 140-239 |
| Endocrine, nutritional, metabolic diseases, and immunity disorders | 240-279 |
| Mental disorders | 290-319 |
| Diseases of the nervous system and sense organs | 320-389 |
| Diseases of the circulatory system | 390-459 |
| Diseases of the respiratory system | 460-519 |
| Diseases of the digestive system | 520-579 |
| Diseases of the genitourinary system | 580-629 |
| Pregnancy-related disorders | 630-679 |
| Diseases of the skin and subcutaneous tissue | 680-709 |
| Diseases of the Musculoskeletal and connective tissue | 710-739 |
| Symptoms, signs, and ill-defined conditions | 780-799 |
| Injury and poisoning | 800-999 |
| Fractures | 800-829 |
| Dislocations | 830-839 |
| Sprains | 840-848 |
| Intracranial | 850-854 |
| Open wounds | 870-897 |
| Superficial | 910-919 |
| Contusions and crush injuries | 920-929 |
| Foreign bodies | 930-939 |
| Burns | 940-949 |
| Trauma complications and unspecified injuries | 958-959 |
| Poisoning and toxic effects | 960-995 |
| Surgical and medical complications | 996-999 |
| Supplementary classification | V01-V82 |
| Other Diagnoses or unknown | |