Published in final edited form as:
Am J Obstet Gynecol. 2013 April ; 208(4): 274.e1–274.e7. doi:10.1016/j.ajog.2012.12.038.

Ectopic Pregnancy Rates in the Medicaid Population

Debra B. STULBERG, MD[1,2,3], **Loretta R. CAIN, PhD**[1], **Ms. Irma DAHLQUIST, BS**[1], and **Diane S. LAUDERDALE, PhD**[4]

[1]Department of Family Medicine, University of Chicago, Chicago, IL

[2]Department of Obstetrics and Gynecology, University of Chicago, Chicago, IL

[3]MacLean Center for Clinical Medical Ethics, University of Chicago, Chicago, IL

[4]Department of Health Studies, University of Chicago, Chicago, IL

Abstract

Objective—The Centers for Disease Control and Prevention last estimated a national ectopic pregnancy rate in 1992, when it was 1.97 percent of all reported pregnancies. Since then rates have been reported among privately insured women and regional healthcare provider populations, ranging from 1.6 to 2.45 percent. This study assessed the rate of ectopic pregnancy among Medicaid beneficiaries (New York, California, and Illinois, 2000–03), a previously unstudied population.

Study Design—We identified Medicaid administrative claims records for inpatient and outpatient encounters with a principal ICD9 diagnosis code for ectopic pregnancy. We calculated the ectopic pregnancy rate among female beneficiaries ages 15–44 as the number of ectopic pregnancies divided by the number of total pregnancies, which included spontaneous abortions, induced abortions, ectopic pregnancies, and all births. We used Poisson regression to assess the risk of ectopic pregnancy by age and race.

Results—Four-year Medicaid ectopic pregnancy rates were 2.38 percent of pregnancies in New York, 2.07 percent in California, and 2.43 percent in Illinois. Risk was higher among Black women compared to whites in all states (RR= 1.26, 95% CI 1.25 – 1.28, $p < 0.0001$), and among older women compared to younger (trend for age, $p < 0.001$).

Conclusion—Medicaid beneficiaries in these three states experienced higher rates of ectopic pregnancy than reported for privately insured women nationwide in the same years. Relying on private insurance databases may underestimate ectopic pregnancy's burden in the United States population. Furthermore, within this low-income population racial disparities exist.

Keywords

ectopic pregnancy; healthcare disparities; Medicaid

Corresponding author and contact information for reprint request: Debra B. Stulberg. Mailing address: 5841 S. Maryland Ave. MC7110, Suite M-156. Chicago, IL 60637. Phone: (773) 834-1356. Fax: (773) 834-9864. stulberg@uchicago.edu.

Disclosure: The authors report no conflict of interest

Presentation: This research was presented as a poster at the 2012 Summit on the Science of Eliminating Health Disparities, National Harbor, MD, December 17-19, 2012

Introduction

Ectopic pregnancy is an important cause of maternal morbidity and mortality in the United States. Defined as implantation of a fertilized egg outside the uterine endometrium, ectopic pregnancy caused an estimated 876 U.S. deaths between 1980 and 2007.[1] In 1992 the Centers for Disease Control and Prevention (CDC) estimated the U.S. ectopic pregnancy rate at 1.97 percent of all pregnancies.[2] Since then, CDC has acknowledged that their surveillance using national health care surveys no longer produces a reliable ectopic pregnancy rate.[3] This is primarily because ectopic pregnancy care has changed to involve multiple health care encounters in different settings: emergency department, outpatient, and inpatient. CDC surveys do not track individual patients through multiple health care visits so they risk over- or under-counting cases. Instead, researchers have moved to using insurance-based databases in which encounters can be linked to calculate ectopic pregnancy rates within their covered populations. Van Den Eeden and colleagues reported a rate within Kaiser Permanente Northern California of 2.07 percent during 1997–2000.[4] Trabert and colleagues reported that among patients at Group Health Cooperative, a health plan serving Washington and Idaho, the rate increased from 1.78 percent in 1993–95, to 2.45 percent in 2005–07.[5] Hoover and colleagues reported a 2002–07 treated ectopic pregnancy rate of 0.64 percent among women in MarketScan, a nationwide administrative database of more than 200 U.S. commercial insurers; looking at all ectopic pregnancy diagnoses, the rate in this population was 1.6 percent.[6]

Prior research gives indirect evidence that ectopic pregnancy may be more prevalent among low-income women than in the general population. For example, CDC surveillance from 1970–89 found higher rates among non-white women compared to whites in all age groups and across all years (rate ratio = 1.4), without controlling for socioeconomic factors.[7] Since non-whites were more likely to be poor compared to whites in the U.S. during this surveillance period, it is impossible to know if the observed racial disparity was attributable – in part or entirely – to socioeconomic factors and access to appropriate health care services. The hypothesis that access to care plays an important role is supported the fact that the racial disparity is even greater for ectopic pregnancy mortality than it is for ectopic pregnancy incidence. From 2003–2007, the ectopic pregnancy mortality ratio (deaths per 100,000 live births) was 6.8 times higher for African-American women compared to whites.[1] Recent studies assessing access to urgent care for ectopic pregnancy[8] and outcomes from ectopic pregnancy hospitalizations[9] confirm that women with Medicaid or no insurance are disproportionately affected. However, no studies have directly examined ectopic pregnancy rates among low-income women. Previous insurance population studies have included few or no Medicaid beneficiaries: Kaiser Permanente Northern California and Group Health Cooperative each estimate that approximately 5% of their population is insured by Medicaid, while the MarketScan database includes private insurance only.

Medicaid, the public insurance program for low-income residents of the U.S., covers 12 percent of all non-elderly women in the United States, and 41 percent of all births.[10] We conducted this study to measure the rate of ectopic pregnancy among Medicaid beneficiaries in three of the largest U.S. states during the years 2000 through 2003, the most recent years for which data were available when this study was initiated. We also aimed to assess whether the racial disparity in ectopic pregnancy rate that has previously been reported for the U.S. population is observed within the Medicaid population.

Materials and Methods

We obtained Medicaid Analytic Extract data files from the Centers for Medicare and Medicaid Services (CMS) under an approved Data Use Agreement. The University of

Chicago Biological Sciences Institutional Review board acknowledged the study as exempt from review, as is typical with studies involving analysis of existing de-identified data. We examined Medicaid claims for all female Medicaid beneficiaries ages 6–64 years of age in New York, California, and Illinois, 2000–03. These states represent 24 percent of births in the U.S.,[11–18] are located in different regions of the country and are each racially and ethnically diverse. These data files include person-level information on Medicaid enrollees and encounter-level information for all Medicaid claims for inpatient hospital care and other therapies such as physician services, radiology, and clinic visits. We limited our analysis to women ages 15–44 to make it comparable to other studies of women of reproductive age.

We identified ectopic pregnancy cases from both inpatient and outpatient claims containing the International Classification of Diseases 9th Revision (ICD9) diagnosis code 633.xx as principal diagnosis. We calculated the ectopic pregnancy rate among beneficiaries ages 15–44 as the number of ectopic pregnancies (by principal diagnosis code) divided by the number of total pregnancies, identified using ICD9 diagnosis codes for all pregnancy-related care and outcomes (Table 1). Encounters with one of these codes in any diagnosis field – principal, secondary or other – were included in the denominator. This strategy was designed to produce the most conservative (lowest) estimate of the ectopic pregnancy rate, since the case definition for the numerator required a principal diagnosis of ectopic pregnancy whereas any possible pregnancy would be captured in the denominator. We conducted exploratory analyses to determine the effect of adjusting the numerator and denominator case definitions by making them broader (by including more diagnosis codes) or narrower (fewer diagnosis codes).

For both the numerator and denominator counts, repeat pregnancy-related encounters within 9 months (270 days) were considered part of the same pregnancy. Repeat pregnancy-related encounters for the same beneficiary after 9 months were treated as a new pregnancy episode and each pregnancy episode (in 9-month groupings of claims) was counted separately. We further conducted exploratory analysis to determine the effect on rate calculations of varying this time definition of a single pregnancy, comparing our 9 month assumption with shorter (6 month) and longer (10 month) assumptions.

We examined ectopic pregnancy rates by race/ethnicity and age group. Age was calculated by subtracting the beginning date of service for the first pregnancy encounter from the beneficiary's date of birth. Race/ethnicity was obtained from the Inpatient and Other Therapy files. The race/ethnicity variable in Medicaid files is coded as: White, Black, Hispanic, Asian, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, or Multiracial. Because the outcome variable was a rate, we used Poisson multivariable regression models to estimate the relative risks for ectopic pregnancy by race/ethnicity and age group within each state.

Results

There were 19,132,067 person-years of enrollment in Medicaid among women ages 15–44 in New York, California, and Illinois combined during the 2000–2003 time period (Table 2), representing 8,452,457 unique individuals. Overall, there were 48,500 unique cases of ectopic pregnancy in this population, and 2,182,042 total pregnancies, for an ectopic pregnancy rate of 2.22 percent (2.22 per 100 reported pregnancies) or 2.54 per 1,000 woman-years. Table 3 presents ectopic pregnancy rates for each state, stratified by race/ethnicity, and age group. The ectopic pregnancy rate is similar among white women in each state: 2.26 percent in New York, 2.29 percent in California and 2.45 percent in Illinois. The ectopic pregnancy rate among Black women is greater than 3 percent in both Illinois and California.

Table 4 presents the multivariable regression models for risk of ectopic pregnancy that include both race/ethnicity and age, separately by state. In all three states the age-adjusted risk of ectopic pregnancy was statistically significantly higher among African-American women and lower among Asian women in comparison to white women. The risk associated with Hispanic and American Indian race/ethnicity varied by state. (The interaction between race/ethnicity and state was significant when tested in a pooled model that included all three states.) In the states where they were identified, Native Hawaiian/Pacific Islander and multiracial women were at lower risk of ectopic pregnancy than white women.

There was a general trend towards higher ectopic pregnancy risk among older women compared to younger in all states (overall age trend $\beta=0.15$, $p<0.001$), though in New York and Illinois the risk peaked in the 35–39 year-old groups and declined slightly among 40–44 year-olds, when compared with the youngest group.

In exploratory analyses designed to test specific elements of our case ascertainment method, we found that broadening or narrowing the definitions of an ectopic pregnancy or any pregnancy diagnosis had little effect on the overall counts. For example, the diagnosis code 761.4 (fetus or newborn affected by maternal ectopic pregnancy) did not add any cases of ectopic pregnancy. In defining total pregnancy, if we removed prenatal care diagnosis codes V22 and V23 we missed a significant number of pregnancies. But when we attempted to broaden the definition by adding procedure codes for birth (72.xx – 75.xx) and abortion procedures (69.01, 69.02, 69.51, 69.52) this did not result in capturing more pregnancies. Removing diagnosis codes for spontaneous (634.xx) or induced (635.xx, 636.xx, 638.xx) abortion had no significant effect on our overall rate calculations.

Similarly, lengthening or shortening the definition of a single episode of pregnancy had minimal effect. For example, in Illinois our method of counting all pregnancy claims within a 270-day period as a single pregnancy resulted in a count of 9,229 ectopic pregnancies. If we shortened this to 180 days (meaning a repeat diagnosis code ≥181 days after the last code would be counted as a second ectopic pregnancy) we would add 59 ectopic pregnancies; if we lengthened it to 300 days we would lose 11 ectopic pregnancies. In the denominator the effect would be greater, since many full-term and near-term pregnancies would be counted twice if two diagnosis codes 6 months apart were considered two different pregnancies. In Illinois, for example, using a 6-month (180-day) cut-off in the numerator and denominator would lower the rate calculation from 2.4 percent to 1.9 percent. We cannot rule out that repeat early pregnancy losses (ectopic or intrauterine) and terminations may be missed in the denominator if the second full episode of care occurred within 9 months. However, given the clinical reasoning that many pregnancies last longer than 6 months while few repeat ectopic pregnancies, miscarriages, and induced abortion episodes of care occur completely within 9 months (as demonstrated by the small change in case counts with these two cut-offs), we opted to use a consistent cut-off of 270 days in the numerator and denominator. Women with repeat (two or more) ectopic pregnancies after 9 months represented only 2.3% of those with any ectopic pregnancy, and the decision to include these in the total count had no effect on the overall rate estimates.

Comment

This analysis of Medicaid claims data found that 2.22 percent of all reported pregnancies among women with Medicaid in California, Illinois, and New York, 2000–03, were ectopic. Women in this population experienced 2.54 ectopic pregnancies per 1,000 person-years. These are higher than the rates reported in other studies for privately insured [6] and provider-specific populations.[4, 5] Within the Medicaid population, African American women faced higher risk of ectopic pregnancy than whites in all states, and Hispanics faced higher risk than non-Hispanic whites in New York but lower risks in Illinois and California. Overall, increasing age was associated with higher risk of ectopic pregnancy, although in two states women aged 40–44 years had a slightly lower relative risk (vs. the youngest group) than those 35–39.

The strength of our approach is that it provides a complete population count of ectopic pregnancy cases among women with Medicaid insurance in the states and years studied. Previous ectopic pregnancy surveillance studies in the United States since 1992 have largely excluded this population. However, our study also has several limitations. First, we only analyzed administrative claims data, with no clinical validation. As a consequence, a proportion of the ectopic pregnancies reported here may be false diagnoses, representing anything from clerical errors in coding, to the use of the diagnosis code when ectopic pregnancy is only one of several possible ("rule out") diagnoses. However, since our denominator captures all pregnancies with an even more permissive definition, we believe the risk of over-counting is at least as high in the denominator as the numerator, thereby decreasing the risk that we are over-estimating the ectopic pregnancy rate. (For example, a single diagnosis code for "spontaneous abortion" was enough to count as a pregnancy case in the denominator.) Although our method captures all pregnancy care covered by Medicaid, we cannot rule out that underreporting of abortion depressed our total pregnancy count.

A second limitation is our inability to determine patients' treatment. The data included patients treated both inpatient and outpatient, surgically and non-surgically. While surgical procedures are well documented, the lack of ICD or CPT code for medical treatment of ectopic pregnancy has been described elsewhere as a challenge for ectopic pregnancy surveillance,[3] and we unfortunately were subject to the same limitation. We reviewed Medicaid prescription drug files, which list pharmacy-dispensed medications by National Drug Code, but found no entries for methotrexate among our identified ectopic pregnancy patients. This is most likely because hospitals, clinics, and offices that treat ectopic pregnancy patients with methotrexate dispense the medication themselves rather than writing the patient a prescription and sending her to a pharmacy; these non-pharmacy-dispensed medications are not included in Medicaid prescription drug files.

A third limitation is the possible exclusion of women within Medicaid who are enrolled in pre-paid managed care programs. Medicaid managed care is growing, and to the extent that these programs paid providers with capitated payments rather than based on service claims submitted, our study risks missing relevant claims. However, many Medicaid managed care enrollees participate in limited programs, such as for the management of behavioral health care, or inpatient care. Pregnancy-related care could still be paid on a fee-for-service basis. Therefore, many managed care beneficiaries excluded from the numerator would also be excluded from the denominator.

Finally, these data represent only three states during the years 2000–2003. While very large in population, these states cannot be said to represent all Medicaid beneficiaries in the United States. At the time this research began, Medicaid data files were not available for more recent years. With more recent Medicaid data now available, future work will be able to examine current trends.

Given variations in data sources and methods used in different studies, it is impossible to make direct comparisons across populations. However, our approach is similar to those used by Hoover et al., who calculated a diagnosed ectopic pregnancy rate of 1.6% among women with private insurance during 2000–07, and Trabert et al. in their reported ectopic pregnancy rates from Group Health Cooperative of 1.94% (1999–2001) and 2.00% (2002–04). The states included in our analysis are not represented in the Group Health Cooperative population studied, so geographic variation may account for some of the observed difference. Higher rates of ectopic pregnancy among Medicaid populations could also be due to lower coverage of abortion compared to private insurance.

In considering possible causes and explanations for high ectopic pregnancy rates among Medicaid beneficiaries compared to privately insured women and among African-Americans compared to whites, it is important to consider underlying risk factors for the condition, as well as factors affecting a person’s progression from risk factor to disease. Patient factors such as behavior and genetics, and health care factors such as access to and quality of care, are likely to interact in complex ways. The two known primary risk factors are smoking and a history of exposure to chlamydia, both of which can cause fallopian tube damage and dysfunction.[19] Specifically, chlamydia that goes untreated is thought to cause more damage to fallopian tubes (through clinically recognized or sub-clinical pelvic inflammatory disease) compared to chlamydial infections that are diagnosed and treated while confined to the cervix. Other known risk factors for ectopic pregnancy include prior ectopic pregnancy, prior tubal surgery, and prior tubal infertility. However, these ought not to be considered primary risk factors for ectopic pregnancy, since they generally occur secondary to underlying fallopian tube impairment. Finally, the use of assisted reproductive treatments (ART) may further increase (beyond the contribution of the underlying infertility) a woman’s risk of ectopic pregnancy because the embryo itself, the transfer process, or the use of multiple embryos may confer added risk.

Smoking rates among women of reproductive age are not reported stratified by income or health insurance, but women with any college education are significantly less likely to smoke than those with less education, suggesting a possible socioeconomic trend. These trends would indicate that smoking may contribute to higher ectopic pregnancy rates among poor women than among the more well-off. Smoking has been identified as an important factor causing higher rates of other poor pregnancy outcomes, such as pre-term birth and intrauterine growth restriction, among women of lower socioeconomic status.[20] However, smoking cannot explain ectopic pregnancy disparities by race or ethnicity. Among women of reproductive age, smoking is most common among white non-Hispanics (24.5 percent), with lower rates among Black non-Hispanics (16.3 percent) and Hispanics (10.5 percent).[21] On the other hand, chlamydia rates are reported to be markedly higher among Black non-Hispanic (rate ratio = 7.8) and Hispanic (rate ratio = 3.1) women compared to white non-Hispanics.[22] These differing chlamydia rates, possibly coupled with a higher risk of delayed treatment and subsequent tubal damage, likely contribute to the population-wide racial disparity in ectopic pregnancy.

The varying effect of Hispanic ethnicity by state that we found is consistent with overall trends in health status within the U.S. Hispanic population. People who identify as Hispanic of Mexican origin generally are in better health than those who identify as Hispanic of Puerto Rican origin.[23] Since the Hispanic populations are predominantly of Mexican origin in California (77 percent) and Illinois (75 percent), while New York’s Hispanic population has a small proportion of people of Mexican origin (9.1 percent) and more of Puerto Rican origin (37 percent), the ectopic pregnancy rates seem to mirror other reported health outcomes.[24]

The ectopic pregnancy trends by age reported here are similar to those in other U.S. populations [4, 6]. The harmful effects of smoking, chlamydia, and other exposures on fallopian tube function are likely to accumulate during a woman’s lifetime, leading to higher risk with age.

Finally, ART is generally inaccessible to women on Medicaid and thus is unlikely to contribute to the higher rate of ectopic pregnancy in this population. The availability of ART to the privately insured patients may mask the extent of the disparity among women not receiving ART.

The findings in this study raise the concern that surveillance methods relying entirely on private insurance databases may under-estimate ectopic pregnancies in the whole U.S. population. Primary prevention efforts, in particular screening to diagnose and treat chlamydia early, as well as smoking cessation campaigns and safer sex education, remain important public health priorities to reduce the risk of ectopic pregnancy and eliminate racial and economic disparities.

Acknowledgments

Financial Support: This work is supported by a career development award to Dr. Stulberg (1 K08 HD060663) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development

We wish to thank Rangesh Kunnavakam (University of Chicago) for technical assistance.

References

1. Creanga AA, Shapiro-Mendoza CK, Bish CL, Zane S, Berg CJ, Callaghan WM. Trends in ectopic pregnancy mortality in the United States: 1980–2007. Obstet Gynecol. 2011; 117(4):837–43. [PubMed: 21422853]
2. Centers for Disease Control and Prevention (CDC). Ectopic pregnancy--United States, 1990–1992. MMWR Morb Mortal Wkly Rep. 1995; 44:46–8. [PubMed: 7823895]
3. Zane SB, Kieke BA Jr, Kendrick JS, Bruce C. Surveillance in a time of changing health care practices: Estimating ectopic pregnancy incidence in the United States. Matern Child Healt J. 2002; 6(4):227–36.
4. Van Den Eeden SK, Shan J, Bruce C, Glasser M. Ectopic pregnancy rate and treatment utilization in a large managed care organization. Obstet Gynecol. 2005; 105:1052–7. [PubMed: 15863544]
5. Trabert B, Holt VL, Yu O, Van Den Eeden SK, Scholes D. Population-based ectopic pregnancy trends, 1993–2007. Am J Prev Med. 2011; 5;40:556–60.
6. Hoover KW, Tao G, Kent CK. Trends in the diagnosis and treatment of ectopic pregnancy in the United States. Obstet Gynecol. 2010 Mar; 115(3):495–502. [PubMed: 20177279]
7. Goldner TE, Lawson HW, Xia Z, Atrash HK. Surveillance for ectopic pregnancy--United States, 1970–1989. Morbidity & Mortality Weekly Report. CDC Surveillance Summaries. 1993; 42(6):73–85. [PubMed: 8139528]
8. Asplin BR, Rhodes KV, Levy H, Lurie N, Crain AL, Carlin BP, et al. Insurance status and access to urgent ambulatory care follow-up appointments. JAMA. 2005; 294(10):1248–54. [PubMed: 16160133]
9. Stulberg DB, Zhang JX, Lindau ST. Socioeconomic disparities in ectopic pregnancy: Predictors of adverse outcomes from Illinois hospital-based care, 2000–2006. Matern Child Health J. 2011; 15(2):234–41. [PubMed: 20177756]
10. Kaiser Family Foundation. [Accessed Oct 5, 2012] Women's health insurance coverage. 2011. Available at: http://www.kff.org/womenshealth/upload/6000-091.pdf
11. Illinois Department of Public Health. [Accessed Oct 5, 2012] Births by county of residence 2000–2009. Available at: http://www.idph.state.il.us/health/bdmd/birth2.htm
12. California Department of Public Health. [Accessed Oct 5, 2012] Population, live births, deaths, maternal deaths, fetal deaths, and infant deaths, California, 1970–2005. Available at: http://www.cdph.ca.gov/data/statistics/Documents/VSC-2005-0101.pdf
13. New York State Department of Health. [Accessed Oct 5, 2012] 2000 vital statistics: live birth summary information by race/ethnicity. Available at: http://www.health.ny.gov/statistics/vital_statistics/2000/table04.htm

14. New York State Department of Health. [Accessed Oct 5, 2012] Vital statistics - 2001 annual report: Resident live birth summary by race/ethnicity. Available at: http://www.health.ny.gov/statistics/vital_statistics/2001/table04.htm
15. New York State Department of Health. [Accessed Oct 5, 2012] Vital statistics - 2002 annual report: resident live birth summary by race/ethnicity. Available at: http://www.health.ny.gov/statistics/vital_statistics/2002/table04.htm
16. New York State Department of Health. [Accessed Oct 5, 2012] Vital statistics - 2003 annual report: resident live birth summary by race/ethnicity. Available at: http://www.health.ny.gov/statistics/vital_statistics/2003/table04.htm
17. Florida Department of Health. [Accessed Oct 5, 2012] Florida vital statistics annual report 2010. Available at: http://www.flpublichealth.com/VSBOOK/pdf/2010/vscomp.pdf
18. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Munson ML. Births: Final data for 2003. Natl Vital Stat Rep. 2005; 54(2):1–116.
19. Bouyer J, Coste J, Shojaei T, Pouly JL, Fernandez H, Gerbaud L, et al. Risk factors for ectopic pregnancy: A comprehensive analysis based on a large case-control, population-based study in France. Am J Epidemiol. 2003; 157(3):185–94. [PubMed: 12543617]
20. Kramer MS, Seguin L, Lydon J, Goulet L. Socio-economic disparities in pregnancy outcome: Why do the poor fare so poorly? Paediatr Perinat Epidemiol. 2000; 14(3):194–210. [PubMed: 10949211]
21. Centers for Disease Control and Prevention (CDC). Smoking prevalence among women of reproductive age--United States, 2006. MMWR Morb Mortal Wkly Rep. 2008; 57(31):849–52. [PubMed: 18685552]
22. Centers for Disease Control and Prevention (CDC). [Accessed Oct 5, 2012] 2010 sexually transmitted disease surveillance: Chlamydia. Available at: http://www.cdc.gov/std/stats10/chlamydia.htm
23. Zsembik BA, Fennell D. Ethnic variation in health and the determinants of health among Latinos. Soc Sci Med. 2005; 61(1):53–63. [PubMed: 15847961]
24. U.S. Census Bureau and Social Explorer. [Accessed Oct 5, 2012] Hipanic or Latino by specific origin. 2000. Available at: http://www.socialexplorer.com.proxy.uchicago.edu/pub/reportdata/htmlresults.aspx?ReportId=R10276586

Table 1

ICD9 Diagnosis Codes For Ectopic Pregnancy and All Pregnancies

Diagnosis	ICD-9 code	Diagnosis field (variable)
Ectopic pregnancy	633.xx	Principal diagnosis
All Pregnancies		
Ectopic, molar, or abortive	63x.xx	Principal, secondary or other diagnosis
Complications of pregnancy	64x.xx	Principal, secondary or other diagnosis
Normal labor & delivery	65x.xx	Principal, secondary or other diagnosis
Complications of labor & delivery	66x.xx	Principal, secondary or other diagnosis
Normal pregnancy	V22.xx	Principal, secondary or other diagnosis
High risk pregnancy	V23.xx	Principal, secondary or other diagnosis
Outcome of delivery	V27.xx	Principal, secondary or other diagnosis
Antenatal screening	V28.xx	Principal, secondary or other diagnosis

Table 2

Person-years of enrollment, women ages 15–44 in Medicaid, New York, California and Illinois 2000–2003

Age group	New York (n=3,644,214) n (%)	California (n=13,686,040) n (%)	Illinois (n= 1,801,813) n (%)
15–19	710,708 (19.5)	2,964,083 (22.2)	415,703 (23.1)
20–24	741,069 (20.4)	321,7602 (24.1)	407,900 (22.6)
25–29	606,778 (16.7)	2,653,940 (19.9)	329,315 (18.3)
30–34	560,527 (15.4)	2,096,293 (15.7)	251,881 (14.0)
35–39	528,670 (14.5)	1,536,423 (11.5)	198,702 (11.0)
40–44	363,716 (10.0)	879,392 (6.6)	116,795 (6.5)
Unknown/Not documented	132,746 (3.6)	338,307 (6.6)	81,517 (4.5)
Race/Ethnicity			
White	1,071,643 (29.4)	2,865,284 (20.9)	640,624 (35.6)
Black	956,814 (26.3)	1,243,927 (9.1)	748,454 (41.5)
American Indian/Alaskan Native	66,635 (1.8)	66,570 (0.5)	3,493 (0.2)
Asian	150,489 (4.1)	593,274 (4.3)	33,517 (1.9)
Hispanic	703,674 (19.1)	8,190,938 (59.9)	341,632 (19.0)
Native Hawaiian/Pacific Islander	0 (0.0)	324,555 (2.4)	0 (0.0)
More than one race	0 (0.0)	0 (0.0)	1,194 (0.1)
Unknown/Not documented	694,959 (19.1)	401,492 (2.9)	32,899 (1.8)

Table 3

Ectopic Pregnancy Rates among Medicaid Beneficiaries, New York, Illinois and California 2000–2003

	No. of Ectopic Pregnancies (A)	No. of Total Pregnancies (B)	Ectopic Pregnancy Rate (A/B) × 100
New York	15,224	638,849	2.38%
Race/Ethnicity			
White	4,738	209,462	2.26%
Black	4,658	182,786	2.55%
Amer-Indian/Alaskan Native	279	23,087	1.21%
Asian	401	33,773	1.19%
Hispanic	3,240	117,437	2.76%
Unknown/Missing	1,908	72,304	2.64%
Age Group			
15–19	1,389	86,449	1.61%
20–24	4,662	205,845	2.26%
25–29	3,888	161,651	2.41%
30–34	2,858	106,077	2.69%
35–39	1,837	59,000	3.11%
40–44	590	19,827	2.98%
California	24,047	1,163,036	2.07%
Race/Ethnicity			
White	4,236	185,034	2.29%
Black	3,194	102,234	3.12%
Amer Indian/Alaskan Native	125	5,355	2.33%
Asian	878	44,162	1.99%
Hispanic	14,487	752,066	1.93%
Native Hawaiian/Pacific Isl	555	26,376	2.10%
Unknown/Missing	572	47,809	1.20%
Age Group			
15–19	2,403	183,790	1.31%
20–24	6,585	373,876	1.76%
25–29	6,364	288,755	2.20%
30–34	4,819	187,434	2.57%
35–39	2,843	97,082	2.93%
40–44	1,033	32,099	3.22%
Illinois	9,229	380,157	2.43%
Race/Ethnicity			
White	2,624	117,489	2.45%
Black	3,786	119,378	3.51%
Amer Indian/Alaskan Native	21	730	3.11%

	No. of Ectopic Pregnancies (A)	No. of Total Pregnancies (B)	Ectopic Pregnancy Rate (A/B) × 100
Asian	156	8,969	1.90%
Hispanic	2,502	120,432	2.29%
Multiracial	15	1,013	1.50%
Unknown/Missing	125	12,146	1.21%
Age Group			
15–19	1,295	67,481	1.92%
20–24	3,295	142,193	2.32%
25–29	2,451	92,039	2.66%
30–34	1,377	49,442	2.79%
35–39	663	22,493	2.95%
40–44	148	6,509	2.27%

Table 4

Multivariable Analysis for Risk of Ectopic Pregnancy by race/ethnicity and age among Medicaid beneficiaries in New York, California, and Illinois, 2000–2003

	New York			California			Illinois		
Race/Ethnicity	**RR**	**CI**	**p-value**	**RR**	**CI**	**p-value**	**RR**	**CI**	**p-value**
White		Reference			Reference			Reference	
Black	1.12	1.1–1.14	<0.0001	1.36	1.34–1.39	<0.0001	1.45	1.42,1.48	<0.0001
Amer Ind/Alask Nat	0.56	0.50–0.56	<0.0001	1.04	0.96–1.12	0.3416	1.27	1.05,1.55	0.0141
Asian	0.49	0.47–0.51	<0.0001	0.79	0.77–0.81	<0.0001	0.73	0.68–.79	<0.0001
Hispanic	1.21	1.19–1.24	<0.0001	0.83	0.82–0.84	<0.0001	0.90	0.88–0.93	<0.0001
Nat Haw/Pacific Isl	-	-	-	0.85	0.82–0.88	<0.0001	-	-	-
Multi-racial	-	-	-	-	-	-	0.68	0.55–0.85	0.0008
Unknown/Missing	1.07	1.05–1.10	<0.0001	0.71	-	-	0.45	0.41–0.49	<0.0001
Age Group									
15–49		Reference			Reference			Reference	
20–24	1.43	1.40–1.48	<0.0001	1.31	1.28–1.33	<0.0001	1.26	1.23–1.30	<0.0001
25–29	1.55	1.51–1.60	<0.0001	1.65	1.62–1.69	<0.0001	1.49	1.45–1.54	<0.0001
30–34	1.74	1.69–1.79	<0.0001	1.93	1.89–1.97	<0.0001	1.59	1.54–1.65	<0.0001
35–39	2.00	1.94–2.06	<0.0001	2.20	2.15–2.25	<0.0001	1.67	1.60–1.75	<0.0001
40–44	1.91	1.83–1.98	<0.0001	2.40	2.32–2.47	<0.0001	1.22	1.13–1.31	<0.0001