HHS Public Access

Author manuscript

J Emerg Med. Author manuscript; available in PMC 2015 May 14.

Published in final edited form as:

J Emerg Med. 2015 January ; 48(1): 94–100. doi:10.1016/j.jemermed.2014.07.053.

United States Emergency Department Visits Coded for Intimate Partner Violence

Danielle M. Davidov, PHD[*,†], **Hollynn Larrabee, MD**[*,‡], and **Stephen M. Davis, MPA, MSW**[*]

[*]Department of Emergency Medicine, West Virginia University, Morgantown, West Virginia

[†]Department of Social and Behavioral Sciences, West Virginia University, Morgantown, West Virginia

[‡]Department of Medical Education, West Virginia University, Morgantown, West Virginia

Abstract

Background—Limited information exists about medical treatment for victims of intimate partner violence (IPV)

Objective—Our aim was to estimate the number of emergency department (ED) visits and subsequent hospitalizations that were assigned a code specific to IPV and to describe the clinical and sociodemographic features of this population.

Methods—Data from the Nationwide Emergency Department Sample from 2006–2009 were analyzed. Cases with an external cause of injury code of E967.3 (battering by spouse or partner) were abstracted.

Results—From 2006–2009, there were 112,664 visits made to United States EDs with an e-code for battering by a part-ner or spouse. Most patients were female (93 %) with a mean age of 35 years. Patients were significantly more likely to reside in communities with the lowest median income quar-tile and in the Southern United States. Approximately 5% of visits resulted in hospital admission. The mean charge for treat-and-release visits was $1904.69 and $27,068.00 for hospitalizations. Common diagnoses included superficial injuries and contusions, skull/face fractures, and complications of pregnancy. Females were more likely to experience superficial injuries and contusions, and males were more likely to have open wounds of the head, neck, trunk, and extremities.

Conclusions—From 2006 to 2009, there were approximately 28,000 ED visits per year with an e-code specific to IPV. Although a minority, 7% of these visits were made by males, which has not been reported previously. Future prospective research should confirm the unique demographic and geographic features of these visits to guide development of targeted screening and intervention strategies to mitigate IPV and further characterize male IPV visits.

Reprint Address: Danielle M. Davidov, PHD, Departments of Emergency Medicine and Social and Behavioral Sciences, West Virginia University, Morgantown, WV 26505.

Keywords

intimate partner violence; external cause of injury codes (e-codes); Nationwide Emergency Department Sample; NEDS; HCUP; emergency department

Introduction

Each year in the United States (US), nearly 7 million women and 5.6 million men experience rape, physical violence, or stalking by an intimate partner (1). Intimate partner violence (IPV) results in injury for approximately 15% of women and 4% of men—half of which require medical care as a result of IPV (1). The emergency department (ED) is often the first point of care for victims of IPV experiencing acute injuries (2). Up to 14% of female patients treated in the ED are there for IPV-related conditions. In addition, between 5% and 38% of all women seen in the ED report experiencing IPV in the previous year (3).

Although a significant body of literature has emerged examining the prevalence of IPV in health care set-tings, as well as the effectiveness of IPV screening and intervention efforts, limited information exists about the medical treatment that victims of IPV receive (3—9). In addition, aggregate data about specific injuries and costs associated with IPV that can be gleaned from patient medical and billing records are garnered mostly from statewide surveillance systems, which precludes generalizability to the entire US population (10—13). Nationally representative estimates on this topic are dated or focus solely on treat-and-release ED visits (14—17).

Victims of IPV report having more unmet health care needs than nonvictims, despite utilizing the health care system more frequently and having higher medical expenses (3,18—20). In addition, in both ED and inpatient settings, patients seeking care for complaints unrelated to violence will often return for treatment for injuries as a result of IPV at a later date (3,21—24). One study found that women murdered by an intimate partner had an ED visit in the 2 years before their death, and the vast majority had at least one injury-related visit (25). These statistics underline the imperative for identifying patients who may be experiencing violence, yet a debate is still ongoing about the risks and benefits of universal screening for IPV in health care settings. The development of a targeted screening protocol for patients who may be experiencing IPV, but may not disclose to their provider, will not only give a more complete picture of the health care they receive, but can also establish a risk profile that can ultimately aid in appropriate diagnosis and management of these patients.

The objective of this study was to estimate the number of ED visits and subsequent hospitalizations that were as-signed a code specific to IPV in the US from 2006–2009 and to describe the clinical and socio demographic features of this population.

Methods

Study Design

This was a retrospective cohort study utilizing 4 years (2006—2009) of data from the Nationwide Emergency Department Sample (NEDS), Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality (26). The NEDS database uses a stratified, multi-stage sampling technique designed to provide nationally representative estimates of US ED visits for a given year. It is the largest all-payer ED database in the US and contains between 25 and 30 million records from > 950 hospitals per year. A list of data partners that contribute to HCUP can be found at www.hcup-us.ahrq.gov/hcupdatapartners.jsp and the underlying methodology and sampling strategy for the HCUP databases, including the NEDS, can be found at http://www.hcup-us.ahrq.gov/reports/methods/methods_topic.jsp. Because data contained in the NEDS are de-identified, this study does not meet the definition of human subjects research.

Study Population

Each record contained in the NEDS can contain up to four External Cause of Injury codes (e-codes). Cases with an e-code of E967.3 (battering by spouse or partner) were abstracted if the code was present in any of the four fields. This code was originally assigned in 1996 and has not changed over time (27). Although e-codes are underutilized, this particular code has been shown to correctly identify 96% of confirmed cases of IPV (11).

Measurements

The following information was examined for each record: disposition, sex, age, expected payer, median income quartile, geographic region, charges, primary discharge diagnoses, and primary procedures performed. Diagnoses and procedures were grouped using Clinical Classifications Software (CCS) codes. This software collapses nearly 14,000 diagnosis codes and 3700 procedure codes into a smaller number of meaningful categories.

Data Analysis

Data analysis was carried out using SAS (SAS Institute, Inc., Cary, NC)-Callable SUDAAN 10.0 (RTI International., Research Triangle Park, NC) to produce unbiased standard errors and construct 95% confidence intervals around weighted national estimates. To ensure accurate variance estimates, all records were included in the analysis. Final estimates of ED visits were verified through Agency for Healthcare Research and Quality's HCUPnet—an online query system that can provide regional and national estimates for all patients in the HCUP databases, including the NEDS (http://hcupnet.ahrq.gov). Differences were considered statistically significant when the confidence intervals did not overlap. Statistical significance was set to $p < 0.05$ for all analyses. With the exception of charge data, missing data for each variable ranged from 0.02% to 2.99%. Given that total missing data for all variables other than charges did not exceed 5%, no imputations were performed. To account for records with missing charge data, total charges were estimated by taking the product of the number of cases times the average charge as suggested by HCUP (26).

Results

Based on HCUP NEDS estimates, there were a total of 496,195,793 visits made to US EDs from 2006 to 2009, 112,664 of which had an e-code for battering by an intimate partner or spouse in the billing record. The mean annual estimate for the 4-year period was 28,166 visits. The demographic characteristics of the sample, stratified by discharged vs. admitted, are presented in Table 1. Visits were made mostly by female patients (93%). Mean age of the entire sample was 35 years and male patients were significantly older (40.42 years; 95% confidence interval [CI] 39.57—41.27) than female patients (34.74 years [95% CI 34.50-34.97]) presenting with IPV-related injuries. Approximately 5% of visits resulted in admission to the hospital. Patients that were treated and released from the ED were significantly younger than those admitted (34.52 years [95% CI 34.29-34.75] vs. 45.67 years [95% CI 44.63-46.71]). Most patients were self-pay, had private insurance, or used Medicaid as their primary payer, with a small number of patients covered by Medicare or other sources. In addition, patients were significantly more likely to reside in communities with the lowest median income quartile (≤$38,999) (34.21% [95% CI 31.84—36.65]) compared to all other income categories (2nd quartile, 28% [95% CI 26.14-29.94], 3rd quartile, 20.51% [95% CI 19.19-21.90], and 4th quartile, 14.30% [95% CI 12.91-15.81]). Visits were also more likely to occur at EDs in the Southern region of the United States (34.80% [95% CI 31.76-37.96]) compared with the Northeast (19.47% [95% CI 16.75-22.52]), Midwest (25.79% [95% CI 23.09-28.69]), and West (19.94% [95% CI 17.77-22.30]).

Table 2 shows the mean and total charges for visits resulting in discharge from the ED and those that required admission to the hospital. Mean charge for those treated and released was $1904.69 and $27,068.00 for admitted patients. There were no significant differences in mean charges based on sex. During the 4-year period, visits and subsequent admissions for IPV resulted in > $300,000,000 in charges. The most common primary diagnosis for the visits was superficial injury and contusion. Other common primary diagnoses included the following: injuries and conditions due to external causes, sprains and strains, open wounds of head, neck, and trunk, skull and face fractures, and complications of pregnancy (Table 3). Females were significantly more likely to have superficial injuries and contusions (34.15% [95% CI 32.85-35.47] vs. males, 27.51% [95% CI 25.11-30.04] males), as well as sprains and strains (8.07% [95% CI 7.57-8.60] vs. males, 2.90% [95% CI 2.16-3.90]), and males were more likely to have open wounds of the head, neck, or trunk (19.76% [95% CI 17.82-21.85] vs. females, 6.15% [95% CI 5.79-6.53]) and open wounds of extremities (9.92% [95% CI 8.46-11.61] vs. females, 1.68% [95% CI 1.66-2.02]). As can be seen in Table 4, suture of skin and subcutaneous tissue was the most common principal procedure performed on patients. Males were significantly more likely to undergo suture of skin and subcutaneous tissue (43.06% [95% CI 36.99-49.35] vs. females, 17.78% [95% CI 15.23-20.64]), and females were more likely to receive traction, split, and wound care (10.73% [95% CI 8.70-13.8] vs. males, 4.92% [95% CI 2.98-8.02]), as well as diagnostic radiology techniques (14.22% [95% CI 10.49-18.98] vs. males, 4.30% [95% CI 2.04-8.85]) and computed tomography scans (10.95% [95% CI 8.73-13.64] vs. males, 3.05% [95% CI 1.64-5.60]).

Discussion

These findings are consistent with previous research using national probability samples to estimate IPV visits to the ED. Btoush et al. examined ED visits coded for IPV using data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) from 1997 to 2001 (14). The authors found 94% of visits were made my females and the mean age of patients was 35.5 years. The majority of patients lived in metropolitan areas, 38% were uninsured, and 31% had private insurance. Our study replicates these findings with more recent data. However, Btoush et al. reported an estimated 80,000-120,000 IPV-related ED visits annually, while our data estimates are closer to 28,000 visits per year (14). This discrepancy is almost certainly due to the use of different definitions for what is considered an IPV-related visit. The authors of earlier studies have intentionally chosen broader maltreatment codes to identify IPV (eg, adult maltreatment, unspecified; adult physical abuse; adult emotional/psychological abuse; adult sexual abuse), which may characterize abuse perpetrated by individuals other than intimate partners (eg, elder abuse, as-sault by a stranger, abuse between adult siblings, parental abuse toward adult children). We purposely selected only cases with an e-code (E967.3) that specified injuries were the result of violence by an intimate partner. In addition, the previously mentioned underutilization of e-codes may account for the differences between our estimates and those found in previous studies.

Our data corroborate previous studies of IPV-related injuries and treatment. IPV victims present to the ED with multiple complaints and injuries, often with contusions, lacerations, abrasions, and fractures to multiple body sites, especially the head, face, and neck (10,28—32). In their analysis of IPV and non—IPV-related assaults, Yau et al. found that IPV victims were significantly more likely to have head injuries than victims of non-IPV assaults (10). Earlier nationally representative data show the most common diagnoses for IPV-related ED visits to be injury to upper or lower extremities and injuries to the head, neck, and trunk, and that diagnostic/radiologic testing and wound care is often performed during IPV visits (17). A substantial proportion of such diagnoses and procedures were observed in IPV-related visits in the current study as well.

Although most of these findings further validate what is already known about ED visits coded for IPV on a national level, the current study adds several important elements to the literature on this topic, where earlier research was limited. First, the most current nationally representative data on this topic are now more than a decade old and, given the recent focus on IPV screening in health care settings, up-to-date estimates are needed (14,15,17). In addition, earlier studies concentrated solely on ED visits coded for IPV and did not offer specific information (such as principal diagnoses, procedures, and charges) about visits to the ED that resulted in admission. We were able to stratify our results by disposition status and report data on cases that were severe enough to warrant admission to the hospital. Small sample sizes in other studies precluded the ability to provide information about male victims of IPV, but our study provides information about the treatment of IPV perpetrated against male victims. Finally, earlier studies have intentionally cast a wide net with the inclusion of multiple codes that may characterize IPV, making it impossible to discern the perpetrator of the violence. The use of an e-code assigned specifically for IPV (that has a 96% sensitivity

rate) increases the probability that the cases included in this study represent IPV and not violence committed by other groups of perpetrators, although likely under-estimates the true magnitude of the problem.

Limitations

Our study limitations relate to the retrospective nature of the data as well as the realities of conducting research with health care data. Because data were not originally collected for the purposes of this study, we were not able to examine other variables that may have been of interest to the study's purpose. In addition, because NEDS data are deidentified, specific patient-level information about the ED visit or hospitalization that may be present in the medical record that would have provided additional insight into the care provided during the visit or narratives provided by the victims could not be obtained. Other databases that have the potential to produce weighted estimates, such as NHAMCS, can offer more specific patient-level information, such as medication usage and specific types of laboratory and imaging tests ordered. However, the NEDS is the largest all-payer ED database in the US and contains millions more records per year than other similar databases. For example, the 2009 NHAMCS database has 34,942 records vs. 28,861,047 in the 2009 NEDS. The size of the NEDS allows re-searchers to study important and costly conditions, such as IPV, that may not have had large enough unweighted samples sizes in other databases to permit analysis in the past. It is important to note that the NEDS provides estimates on numbers of ED visits as opposed to number of patients, therefore, the same patient can be represented multiple times in the data if they visited the hospital more than once for the same complaint, which could be possible with IPV-related conditions. A final limitation to the current study is the underutilization of e-codes in health care billing data. Because they are not required for reimbursement, hospitals in the US are inconsistent with the use of e-codes, and they appear in < 20% of IPV-related visits (33). Examining more general adult maltreatment and abuse ICD-9-CM codes will result in more cases of IPV, but will also result in inflated estimates of visits related to IPV because the perpetrator cannot be identified using such codes. Although using the E967.3 e-code grants more specificity, we recognize that the annual visit estimates are likely underestimates and the actual estimates of ED visits for IPV could be up to five times higher than the estimates reported in this study.

Conclusions

During the 4-year study period, there were 112,664 visits to US EDs for IPV with an e-code for battering by an intimate partner or spouse. The vast majority were female patients from lower-income communities in metropolitan regions. Visits from self-pay, privately insured, and Medicaid patients were equally represented in the data. Discharge diagnoses included mostly non-life threatening injuries. The cost of these visits totaled > $300 million from 2006–2009–close to $80 million annually. Future prospective research should confirm the unique demographic and geographic features of these visits to guide development of targeted screening and intervention strategies to mitigate IPV, and further characterize male IPV visits.

References

1. Black, MC.; Basile, KC.; Breiding, MJ., et al. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 summary report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; Available at: http://www.cdc.gov/violenceprevention/pdf/nisvs_report2010-a.pdf [Accessed December 9, 2013]
2. Goldberg WG, Tomlanovich MC. Domestic violence victims in the emergency department. JAMA. 1984; 251:3259–64. [PubMed: 6727000]
3. Plichta SB. Interactions between victims of intimate partner violence against women and the health care system policy and practice implications. Trauma Violence Abuse. 2007; 8:226–39. [PubMed: 17545576]
4. Kramer A, Lorenzon D, Mueller G. Prevalence of intimate partner violence and health implications for women using emergency departments and primary care clinics. Women Health Iss. 2004; 14:19–29.
5. MacMillan HL, Wathen CN, Jamieson E, et al. Screening for intimate partner violence in health care settings. JAMA. 2009; 302:493–501. [PubMed: 19654384]
6. Anglin D, Sachs C. Preventive care in the emergency department: screening for domestic violence in the emergency department. Acad Emerg Med. 2003; 10:1118–27. [PubMed: 14525748]
7. Chang JC, Cluss PA, Ranieri L, et al. Health care interventions for intimate partner violence: what women want. Women Health Iss. 2005; 15:21–30.
8. Trautman DE, McCarthy ML, Miller N, Campbell JC, Kelen GD. Intimate partner violence and emergency department screening: computerized screening versus usual care. Ann Emerg Med. 2007; 49:526–34. [PubMed: 17276547]
9. Koziol-McLain J, Garrett N, Fanslow J, et al. A randomized controlled trial of a brief emergency department intimate partner violence screening intervention. Ann Emerg Med. 2010; 56:413–23. [PubMed: 20538369]
10. Yau RK, Stayton CD, Davidson LL. Indicators of intimate partner violence: identification in emergency departments. J Emerg Med. 2013; 45:441–9. [PubMed: 23845524]
11. Schafer SD, Drach LL, Hedberg K, Kohn MA. Using diagnostic codes to screen for intimate partner violence in Oregon emergency departments and hospitals. Public Health Rep. 2008; 123:628–35. [PubMed: 18828418]
12. Biroscak BJ, Smith PK, Roznowski H, Tucker J, Carlson G. Intimate partner violence against women: findings from one state's ED surveillance system. J Emerg Nurs. 2006; 32:12–6. [PubMed: 16439281]
13. Langlois JA, Buechner JS, O'Connor EA, Nacar EQ, Smith GS. Improving the E coding of hospitalizations for injury: do hospital records contain adequate documentation? Am J Public Health. 1995; 85:1261–5. [PubMed: 7661235]
14. Btoush R, Campbell JC, Gebbie KM. Visits coded as intimate partner violence in emergency departments: characteristics of the individuals and the system as reported in a national survey of emergency departments. J Emerg Nurs. 2008; 34:419–27. [PubMed: 18804715]
15. Rudman WJ, Davey D. Identifying domestic violence within inpatient hospital admissions using medical records. Women Health. 2000; 30:1–13. [PubMed: 10983606]
16. Saltzman LE, Mahendra RR, Ikeda RM, Ingram EM. Utility of hospital emergency department data for studying intimate partner violence. J Marriage Fam. 2005; 67:960–70.
17. Btoush R, Campbell JC, Gebbie KM. Care provided in visits coded for intimate partner violence in a national survey of emergency departments. Women Health Iss. 2009; 19:253–62.
18. Wisner CL, Gilmer TP, Saltzman LE, Zink TM. Intimate partner violence against women: do victims cost health plans more? J Fam Pract. 1999; 48:439–43. [PubMed: 10386487]
19. Bergman B, Brismar B. A 5-year follow-up study of 117 battered women. Am J Public Health. 1991; 81:1486–8. [PubMed: 1951810]
20. Cho H, Kim WJ. Intimate partner violence among Asian Americans and their use of mental health services: comparisons with White, Black, and Latino victims. J Immig Minor Health. 2012; 14:809–15.

21. Glass N, Dearwater S, Campbell J. Intimate partner violence screening and intervention: data from eleven Pennsylvania and Cal-ifornia community hospital emergency departments. J Emerg Nurs. 2000; 27:141–9. [PubMed: 11275861]
22. Muelleman RL, Liewer JD. How often do women in the emergency department without intimate violence injuries return with such in-juries? Acad Emerg Med. 1998; 5:982–5. [PubMed: 9862589]
23. Kernic MA, Wolf ME, Holt VL. Rates and relative risk of hospital admission among women in violent intimate partner relationships. Am J Public Health. 2000; 90:1416–20. [PubMed: 10983199]
24. Lipsky S, Holt V, Easterling T, Critchlow CW. Police-reported inti-mate partner violence during pregnancy and the risk of antenatal hospitalization. Matern Child Health J. 2004; 8:55–63. [PubMed: 15198172]
25. Crandall M, Nathens AB, Kernic MA, Holt VL, Rivara FP. Predicting future injury among women in abusive relationships. J Trauma Inj Infect Crit Care. 2004; 56:906–12.
26. Overview of the Nationwide Emergency Department Sample (NEDS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality; Available at: http://www.hcup-us.ahrq.gov/nedsoverview.jsp [Accessed August 9, 2013]
27. Centers for Disease Control and Prevention; National Center for Health Statistics. [Accessed August 9, 2013] Conversion table of new ICD-9-CM Codes. Oct. 2013 Available at: http://www.cdc.gov/nchs/data/icd/ICD-9-CM_FY14_CNVTBL_Final.pdf
28. Abbott J, Johnson R, Koziol-McLain J, Lowenstein SR. Domestic violence against women. Incidence and prevalence in an emergency department population. JAMA. 1995; 273:1763–7. [PubMed: 7769770]
29. Hotch D, Grunfeld AF, Mackay K, Cowan L. An emergency department-based domestic violence intervention program: findings after one year. J Emerg Med. 1996; 14:111–7. [PubMed: 8655931]
30. Halpern LR, Susarla SM, Dodson TB. Injury location and screening questionnaires as markers for intimate partner violence. J Oral Maxillofac Surg. 2005; 63:1255–61. [PubMed: 16122587]
31. Ochs HA, Neuenschwander MC, Dodson TB. Are head, neck and facial injuries markers of domestic violence? J Am Dent Assoc. 1996; 127:757–61. [PubMed: 8708277]
32. Perciaccante VJ, Ochs HA, Dodson TB. Head, neck, and facial injuries as markers of domestic violence in women. J Oral Maxillofac Surg. 1999; 57:760–2. [PubMed: 10416621]
33. Rudman, W. Coding and documentation of domestic violence. San Francisco: Family Violence Prevention Fund; Available at: http://www.futureswithoutviolence.org/userfiles/file/HealthCare/codingpaper.pdf [Accessed December 9, 2013]

Article Summary

1. Why is this topic important?

   Despite frequent utilization of the health care system and higher medical expenses, individuals exposed to intimate partner violence (IPV) report having more unmet health care needs than nonvictims. Little information exists about the medical treatment this population receives.

2. What does this study attempt to show?

   This study estimates the number of emergency department (ED) visits and subsequent hospitalizations that were assigned an e-code specific to intimate partner violence in the United States from 2006 to 2009 and characterizes the clinical and sociodemographic features of this population.

3. What are the key findings?

   From 2006 to 2009, there were 112,664 visits to US EDs were assigned an e-code for battering by an intimate partner. Most patients were female, with a mean age of 35 years. Visits were significantly more likely to be from patients residing in communities with the lowest median income quartile, as well as in the Southern United States. Approximately 5% of visits resulted in admission to the hospital. Females were more likely to experience superficial injuries and contusions, while males were more likely to have open wounds of the head, neck, trunk, and extremities.

4. How is patient care impacted?

   This information extends what is known about medical care provided to individuals who may be experiencing IPV. Future research on this topic has the potential to aid in the development of targeted screening and intervention strategies to mitigate IPV.

Table 1

Demographic Characteristics of Patients with Emergency Department Visits Related to Intimate Partner Violence, 2006–2009

Characteristic	Treated and Released	Admitted to Hospital	Overall
Total, n (%)	103,209(91.61)	5756(5.11)	112,664
Mean age (years)	34.52	45.67*	35.11
Sex, n (%)			
Male	6757 (6.55)	473 (8.22)	7511 (6.67)
Female	96,439 (93.45)	5280(91.78)	105,135(93.32)
Payer, n (%)			
Medicare	5837 (5.66)	1315(22.84)	7315(6.49)
Medicaid	30,351 (29.58)	1716(29.81)	33,168(29.44)
Private insurance	29,336 (28.42)	1214(21.09)	31,692(28.13)
Self-pay	30,824 (29.87)	1049(18.22)	33,141 (29.42)
Other/no charge	6033 (5.85)	454 (7.88)	6683 (5.93)
Urban-rural location,† n (%)			
Metropolitan	71,502 (77.25)	4899(85.12)	89,868 (79.77)*
Non-metropolitan	20,243(19.61)	802(13.92)	21,788(19.34)
Income,‡ n (%)			
1st quartile	35,339 (34.24)	1940(33.71)	38,537 (34.21)*
2nd quartile	29,326(28.41)	1389(24.13)	31,544(28.00)
3rd quartile	21,066(20.41)	1327(23.05)	23,107(20.51)
4th quartile	14,395(13.95)	900(15.64)	16,110(14.30)
Region of hospital, n (%)			
Northeast	20,860 (20.21)	924(16.06)	21,939(19.47)
Midwest	26,910(26.07)	1368(23.76)	29,054 (25.79)
South	34,588(33.51)	2159(37.51)	39,205 (34.80)*
West	20,852 (20.20)	1305(22.67)	22,465(19.94)
Trauma center status, n (%)			
Trauma center	38,513(37.48)	2931 (50.93)	42,883 (38.06)
Nontrauma center	64,697 (62.69)	2825 (49.08)	69,781 (61.94)*

Estimates are weighted numbers of visits. Percentages are column percentages. Numbers may not add to 100% due to missing data.

*Significantly higher ($p < 0.05$) than all other categories.

†Metropolitan = population size of 50,000 to ≥1 million; non-metropolitan = population size of < 50,000.

‡Estimated median household income of residents in the patient's ZIP Code; 1st quartile = ≤ $38,999; 2nd quartile = $39,000-$47,999; 3rd quartile $48,000-$62,999; 4th quartile ≥ $63,000.

Table 2

Mean and Total Charges for Intimate Partner Violence Related Emergency Department Visits

Charges	Treated and Released in ED	Admitted to Hospital*
Charge ($), mean(95% CI)		
Male	1782.51 (1602.19-1962.83)	38,234.74 (27,951.98-48,517.50)
Female	1912.95(1840.64-1985.26)	26,068.92 (23,414.10-28,723.73)
Overall	1904.69(1830.60-1978.77)	27,068.00 (24,349.76-29,786.24)
Total charge ($)		
Male	9,636,249.06	17,893,858.32
Female	152,888,702.90	136,470,796.20
Overall	162,525,293.00	154,395,872.00

CI = confidence interval; ED = emergency department.

* Includes ED and inpatient charges for visits that resulted in admission.

Table 3

Top Ten Primary Diagnoses for Intimate Partner Violence Related Emergency Department Visits by Sex

CCS Category and Description	Females, n (%) [95% CI]	Males, n (%) [95% CI]
Diagnoses		
Superficial injury, contusion	35,887 (34.15) [32.85–35.47]	2066 (27.51) [25.11–30.04]
Other injuries and conditions due to external causes	23,539 (22.40) [20.52–24.39]	1425 (18.98) [16.31–21.96]
Sprains and strains	8481 (8.07) [7.57–8.60]	218 (2.90) [2.16–3.90]
Open wounds of head, neck, and trunk	6465 (6.15) [5.79–6.53]	1484 (19.76) [17.82–21.85]
Skull and face fractures	3604 (3.43) [3.16–3.72]	198 (2.64) [1.96–3.56]
Other complications of pregnancy	3461 (3.29) [2.94–3.69]	—
Intracranial injury	2911 (2.77) [2.50–3.07]	177 (2.35) [1.70–3.24]
Fracture of upper limb	1925 (1.83) [2.94–3.69]	145 (1.93) [1.32–2.83]
Open wounds of extremities	1766 (1.68) [1.66–2.02]	745 (9.92) [8.46–11.61]
Spondylosis, invertebral disc disorders; other back problems	1692 (1.61) [1.40–1.88)	64 (0.85) [0.49–1.49]

CCS = Clinical Classification Software; CI = confidence interval.

Table 4

Top 10 Principal Procedures for Intimate Partner–Violence Related Emergency Department Visits by Sex

CCS Category and Description	Females,* n (95% CI)	Males.† n (95% CI)
Procedures		
Suture of skin and subcutaneous tissue	3213 (17.78) [15.23–20.64]	742 (43.06) [36.99–49.35]
Diagnostic procedures (interview, evaluation, consultation)	3181 (17.60) [14.04–21.82]	225 (13.05) [8.17–20.22]
Other diagnostic radiology and related techniques	2570 (14.22) [10.49–18.98]	74 (4.30) [2.04–8.85]
Computed axial tomography scan	1979 (10.95) [8.73–13.64]	53 (3.05) [1.64–5.60]
Traction, splits, and other wound care	1940 (10.73) [8.70–13.18]	85 (4.92) [2.98–8.02]
Other therapeutic procedures	1553 (8.59) [6.66–11.01]	97 (5.64) [2.96–10.47]
Other non-therapeutic procedures on nose, mouth and pharynx	634 (3.51) [2.75–4.46]	79 (4.59) [2.51–8.26]
Prophylactic vaccinations and inoculations	535 (2.96) [2.20–3.98]	86 (4.98) [3.02–8.09]
Other therapeutic procedures on eyelids, conjunctiva, cornea	437 (2.42) [1.84–3.17]	73 (4.23) [2.57–6.87]
Routine chest x-ray	353 (1.95) [1.36–2.78]	23 (1.33) [0.57–3.09]

CCS = Clinical Classification Software; CI = confidence interval.

*Out of 18,078 visits in which procedures were performed.

†Out of 1724 visits in which procedures were performed.