Healthcare Utilization by Individuals with Criminal Justice Involvement: Results of a National Survey

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Background: Individuals with criminal justice involvement – those arrested, on parole or probation – have increased morbidity and mortality yet barriers to healthcare exist. Community supervision in the form of parole or probation may positively impact need for and access to care, however. We sought to examine the association between recent criminal justice involvement and utilization of hospital and emergency department (ED) services and to estimate associated expenditures.

Methods: We conducted a serial cross-sectional analysis of adult respondents in the 2008-2011 National Survey on Drug Use and Health (N=154,356), a nationally representative survey of the non-institutionalized U.S. civilian population. We created three mutually exclusive categories for self-reported past-year criminal justice involvement: 1) any parole or probation, 2) arrest only without community supervision, or 3) no involvement. Our two dependent variables were self-reported past-year hospital and ED utilization. We dichotomized each dependent variable (any vs. no utilization). We used the chi-square test to examine bivariate associations and multivariable logistic regression to adjust for sociodemographic and clinical characteristics. We then estimated annual expenditures using data from the 2008-2010 Medical Expenditure Panel Survey, a set of large-scale surveys that provides nationally representative cost estimates, adjusting for age, gender and calendar year.

Results: In the United States, 2.5% of adults (N=6212) reported past-year parole or probation and 1.7% (N=4586) reported past-year arrest only. Individuals with any past-year criminal justice involvement (parole, probation or arrest) were more likely to be male (73% vs. 47%), members of minority groups (43% vs. 32%), publicly insured or uninsured (60% vs. 28%) and to report psychiatric (16% vs. 9%) and substance use diagnoses (38% vs. 8%) (P<.0001 for all comparisons). Hospitalization was more common among individuals with past-year parole or probation (12.3%) or arrest only (14.3%) compared to individuals with no past-year criminal justice involvement (10.5%) (P<.0001). Similarly, ED utilization was more common among individuals with past-year parole or probation (39.3%) or arrest only (47.2%) compared to individuals with no past-year criminal justice involvement (26.9%) (P<.0001). After adjustment for sociodemographic and clinical characteristics, past-year hospitalization was more likely for those with past-year parole or probation (odds ratio [OR] 1.33; 95% confidence interval [CI] 1.14-1.54) and past-year arrest only (OR 1.51; 95% CI 1.28-1.78) compared to individuals with no past-year criminal justice involvement. Similarly, past-year ED utilization was more likely among those with past year parole or probation (OR 1.25; 95% CI 1.13-1.38) and past year arrest (OR 1.68; 95% CI 1.50-1.88). Individuals with any past-year criminal justice involvement (parole, probation or arrest) accounted for 4.2% of the U.S adult population but an estimated 7.2% and 8.5% of national hospital and ED expenditures, respectively.

Conclusions: In this nationally representative sample, past-year criminal justice involvement is associated with increased hospital and ED utilization as well as increased expenditures. Individuals with criminal justice involvement are a large, identifiable “high utilizer” group, who may benefit from strategies to decrease need for hospital and ED services.
Major bleeding risk in anticoagulated patients receiving concomitant antiplatelet therapy: a prospective study

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Background: There is strong evidence that patients on both oral anticoagulant and antiplatelet therapy have a higher risk of bleeding than patients on antiplatelet therapy alone. However, there are few data comparing the risk between a combination of oral anticoagulant plus antiplatelet therapy, and oral anticoagulant alone. Current data are limited to retrospective studies or specific populations only. We aimed to prospectively evaluate whether unselected medical patients on oral anticoagulation have an increased risk of bleeding when on concomitant antiplatelet therapy.

Methods: We prospectively studied consecutive adult medical patients who were discharged on oral anticoagulants between 01/2008 and 03/2009 from a Swiss university hospital. The primary outcome was the time to a first major bleeding on oral anticoagulation within 12 months. Major bleeding was defined as a fatal bleeding, a symptomatic bleeding in a critical organ or a bleeding causing a fall in hemoglobin level ≥ 20 g/L or leading to a transfusion ≥ 2 units of packed red cells. Multivariable analyses were performed using the Cox proportional hazards method with the first major bleeding event as the dependent variable and antiplatelet therapy (no one vs. at least one antiplatelet agent) as the independent variable. All important confounders based on a priori knowledge were included in the model: age, target INR at the time of enrollment, total number of medications, history of major bleeding event, and history of myocardial infarction.

Results: Among the 515 included anticoagulated patients, the incidence rate of a first major bleed was 8.2 per 100 patient-years. Overall, 161 patients (31.3%) were on both anticoagulant and antiplatelet therapy, and these patients had a similar incidence rate of major bleeding compared to patients on oral anticoagulation alone (7.6 vs. 8.4 per 100 patient-years, P=0.81). In a multivariate analysis, the association of concomitant antiplatelet therapy with the risk of major bleeding was not statistically significant (hazard ratio [HR] 0.89, 95% confidence interval, 0.37-2.10). Only the number of medications (HR 1.13, 95%CI 1.02-1.25) and a higher target INR (HR 3.67, 95%CI 1.56-8.62) remained significantly associated with major bleeding event.

Conclusions: In this prospective cohort of internal medicine patients, the risk of bleeding in patients receiving a concomitant antiplatelet therapy was similar to patients without antiplatelet therapy, suggesting that the use of antiplatelet therapy in addition to oral anticoagulant in the general population may not be as high as found in previous studies of specific populations.
Gender and Leadership in Cardiopulmonary Resuscitation

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Background: In-hospital cardiopulmonary resuscitation (or a ‘code’) is an emergency requiring a multi-professional team to assemble efficiently and provide coordinated care. Ineffective leadership has been linked to team behaviors that could negatively impact a patient’s likelihood of survival. Current guidelines recommend specific training in teamwork and leadership skills, but do not explicate the specific behaviors that compose these competencies nor the learning methods.

Automatic assumptions about what characteristics leaders will possess and how they will enact leadership are strongly influenced by cultural stereotypes. Research finds little if any difference in the effectiveness of male and female leaders. However, leader stereotypes are tightly aligned with “agentic” behaviors associated with male gender stereotypes (e.g. decisive, independent, authoritative) but not the “communal” behaviors associated with female gender stereotypes (supportive, dependent, weak).

Based on this previous work and because leadership is critically important in CPR, we undertook the present study to explore leadership in CPR. In most teaching hospitals, internal medicine senior residents lead codes. We wanted to explore their experience with leadership in codes: How they learn to lead codes, what behaviors they associate with effective code leadership, how gender or other personal traits influence their experience with leadership.

Methods: We conducted individual, semi-structured interviews from May-July 2012 with 23 internal medicine resident physicians at eight U.S. programs chosen to represent a range of geographic regions. We employed inductive and deductive qualitative analysis of text from the transcribed interviews to identify themes around effective code leadership. A total of 81 specific codes were ultimately organized into three major themes.

Results: Several common themes about leadership emerged across all interviews. Leadership was viewed as a critical to a successful code. Residents described the ideal code leader as a person who has an authoritative presence, speaks with a deep, loud voice, uses clear, direct communication, and appears calm. Both men and women struggled to meet these ideals, but women described modifying their “normal day-to-day” behavior more to accommodate these standards. It created extra internal stress and some women worried they were perceived as “bossy”.

Several women talked about the importance of mentally preparing and “assuming a code persona” before leading. Women felt the institutional imprimatur of the white coat and holding the code pager helped legitimize their power. Some had ritualized behaviors to allow them to suspend their gender expectations to lead codes. Others apologized afterwards for their behavior to mitigate the impact of social reprisals.

Conclusions: Both men and women describe ideal code leadership behaviors similarly. The predominant view is that those characteristics that are more likely to belong to men, which is congruent with implicit assumptions that men are better leaders. While both men and women achieve those ideal behaviors in codes, women report intentionally altering their persona more. Some residents have adopted techniques to help negotiate gender roles. When residents are trained in how to direct codes, acknowledging the impact of gender stereotypes on expected behaviors might help mitigate female residents’ stress from the need to mediate the competing identities of gender and code leader.
Private for-profit opioid treatment programs provide fewer comprehensive services than non-profit and public programs

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**Background:** Skyrocketing rates of opioid addiction in the US have triggered a renewed interest in opioid treatment programs (OTPs). In addition, health reform may result in increased funding for OTPs. This funding could be distributed to private for-profit and private non-profit OTPs, or used for expansion of government-run (public) OTPs. Private for-profit OTPs may increase profits by withholding potentially beneficial services that are not reimbursed by insurance plans. To examine the relationship between ownership and services offered, we compared private for-profit, private non-profit, and public OTPs.

**Methods:** We conducted a cross-sectional analysis of the 2010 National Survey of Substance Abuse Treatment Services, a voluntary nationwide survey of all US drug treatment programs. We examined five services by self-reported OTP ownership, (1) screening for co-occurring infectious diseases (HIV, sexually transmitted infections, and viral hepatitis), (2) provision of mental health care, and ancillary support with (3) social services, (4) employment, and (5) housing. We first conducted bivariate analyses comparing services offered by ownership status; then, we developed multivariable logistic regression models to examine whether differences found were due to differing epidemiologic needs. When examining whether OTPs screened for co-occurring infectious diseases, we adjusted for county-level rates of HIV, sexually transmitted infections, hepatitis C, and treatment admissions for injection drug use. For provision of mental health services, we adjusted for measures of county mental health (mean number of emotionally unhealthy days for adults and percent reporting inadequate social/emotional support) and number of mental health professionals per 100,000 persons. For provision of ancillary support, we adjusted for county-level social (proportion of persons with disabilities, veterans, high school graduates, and single-parent households), economic (proportion unemployed, under the poverty line, receiving public assistance, and receiving food assistance), and housing measures (proportion of persons who moved in the past year, renters spending >35\% of income on rent, and proportion of vacant housing units).

**Results:** Of 1,039 OTPs offering outpatient services, 56.0\% were for-profit, 34.4\% were non-profit, and 9.6\% were public. In logistic regression models, public OTPs were more likely than for-profit OTPs to screen for infectious diseases (OR: 4.0, 95\% CI: 2.5-6.5), provide mental health assessment and treatment (OR: 21.4, 95\% CI: 12.4-36.9), provide assistance with social services (OR: 3.1, 95\% CI: 1.9-5.3), employment (OR: 1.9, 95\% CI: 1.2-2.9), and housing (OR: 2.0, 95\% CI: 1.2-3.4). Non-profit OTPs were also more likely than for-profit OTPs to screen for infectious diseases (OR: 2.1, 95\% CI: 1.5-2.8), provide mental health assessment and treatment (OR: 7.2, 95\% CI: 4.6-11.3), and provide assistance with social services (OR: 2.8, 95\% CI: 2.0-3.8), but not more likely to provide assistance with employment (OR: 0.9, 95\% CI: 0.6-1.2), or housing (OR: 1.2, 95\% CI: 0.9-1.7).

**Conclusions:** For-profit OTPs were less likely to provide comprehensive services than both non-profit and public OTPs. These differences persisted after adjusting for measures of epidemiologic need. Our findings suggest that investment in non-profit and public OTPs may more effectively increase the availability of comprehensive services to opioid-dependent patients.
Sex-based differences in end-of-life care among hospitalized adults in the US

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Background: End-of-life care has emerged as a major health care issue over the past two decades. A growing literature has suggested that sex-based disparities affect patients in a variety of settings. Little is known about gender disparities in inpatient care at the end of life. We sought to test whether differences exist in care provided to male and female patients during their final hospitalizations.

Methods: We reviewed the clinically detailed administrative data of 98,314 patients at least 18 years of age who died while hospitalized in 458 acute care hospitals in the United States during 2011. We modeled sex-based differences in length of stay, code status, intubation, admission to an intensive care unit (ICU), and provision of cardiopulmonary resuscitation (CPR), adjusting for age, race/ethnicity, and medical diagnoses. Multivariable analyses further adjusted for marital status, medical comorbidities, insurance status, and hospital clustering.

Results: Women represented approximately half of the sample (48,509; 49.34%). They were older than men (73.8 vs. 70.6 years of age, p <0.0001) and less likely to be married (27.7% vs. 48.3%, p<0.001). The most common diagnostic-related-groups (APR-DRGs) were the same for both sexes. Among all patients, median length of stay was 4 days (IQR 2,10); 11.6% of subjects were exposed to CPR; 37.6% had a do-not-resuscitate (DNR) order during the admission; 37.5% underwent intubation. Women were less likely than men to receive care in an ICU (OR: 0.83; 95% CI: 0.81, 0.84) and less likely to undergo intubation (OR: 0.80; 95% CI: 0.78, 0.82). Women were more likely to have a DNR order (OR: 1.16; 95% CI: 1.29, 1.89). In multivariable multilevel mixed effects analyses, additionally controlling for marital status, payor type, Elixhauser comorbidities, and hospital-level clustering, the odds of DNR status remained greater for women (OR: 1.10; 95% CI: 1.08, 1.12). Among patients without a DNR order, ICU stay was less common among women (OR: 0.84; 95% CI: 0.81, 0.86). Among patients with only APR-DRG of pulmonary edema/respiratory failure and without DNR, odds of intubation remained lower among women (OR: 0.78; 95% CI: 0.68, 0.90). Women were less frequently exposed to CPR (OR: 0.77; 95% CI: 0.74, 0.80); among patients without a DNR who experienced cardiac arrest, the odds of undergoing CPR remained lower for women (OR: 0.90; 95% CI: 0.83, 0.97). Adjustment for age, race, geographic region, and APR-DRG did not alter these findings.

Conclusions: In this diverse sample of hospitalized patients from across the United States, men received more aggressive care during their terminal hospitalizations than women. This finding was not explained by differences in observable characteristics such as age, race, or marital status. Better understanding of the causes of this sex-based disparity could provide important insights into how to improve hospital-based care at the end of life for all patients.
The Risk of Thiazide-Induced Adverse Effects in Older Adults

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Background: While thiazide diuretics have been shown to be safe in older adults within the context of randomized controlled trials, relatively little is known about the risk of thiazide-induced adverse effects (AEs) among older adults with hypertension in real-world settings. We sought to evaluate the magnitude of the risk of thiazide-induced metabolic AEs in older adults with hypertension and to examine whether age and comorbid burden increase this risk.

Methods: This is an observational cohort study using national data from the Department of Veterans Affairs. Veterans aged 65 years or older with hypertension who were newly prescribed a thiazide diuretic (N=1,163) or were non-users of first-line anti-hypertensive medications (N=21,666) between July and December 2007 were followed for up to 15 months. We performed a propensity score analysis accounting for clustering within medical centers to compare new thiazide users (N=1,041) to nearest matched non-users (N=1,041) on the primary composite outcome of mild AEs and secondary outcomes of severe AEs, emergency department (ED) visits for AEs, and hospitalizations for AEs. Mild AEs were defined as sodium < 135 meq/L, potassium < 3.5 meq/L, or a decrease in estimated GFR by more than 25% from baseline. Severe AEs were sodium < 130 meq/L, potassium < 3.0 meq/L, or a decrease in estimated GFR by more than 50%. We used multivariable logistic regression to analyze age and comorbidity count as predictors of developing AEs among thiazide users.

Results: Among thiazide users, only 49% had follow-up laboratory testing within 3 months after the index date. Compared to matched non-users, new users of thiazide diuretics had an absolute risk increase of 7.1% for at least one mild AE (3.5% for hyponatremia, 3.0% for hypokalemia, and 1.6% were at risk for kidney injury; NNH = 15, p < .001), 1.2% for at least one severe AE (NNH = 87, p = .03), and 1.7% for an ED visit or hospitalization for AEs (NNH = 58, p = .04). Among thiazide users, having 5 or greater comorbidities compared to 1 comorbidity (hypertension) was associated with 2.9 times the odds of developing a mild AE (95% CI, 1.4-5.8). There was no relationship between advancing age and the composite outcome of any mild AE (OR 1.2, 95% CI, 0.9-1.7); however, each 10 years increase in age was associated with 1.5 times the odds of developing mild hyponatremia (95% CI, 1.0-2.2).

Conclusions: Although 1 in 15 elderly patients with hypertension prescribed a thiazide diuretic develop a mild metabolic adverse effect and 1 in 87 patients a severe adverse effect, less than half of the patients have follow-up laboratory monitoring within 3-months. Closer monitoring is warranted after initiation of thiazide diuretics, especially among older adults with multiple chronic conditions.