15 The Efficacy of Skeletal Muscle Relaxants in Emergency Department Patients With Low Back Pain

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Study Objectives: Low back pain (LBP) causes 2.6 million visits to US emergency departments (ED) annually. These patients are often treated with skeletal muscle relaxants. The goal of this study was to determine the most efficacious skeletal muscle relaxant and whether medication efficacy was associated with age, sex, or baseline severity.

Methods: This was a planned analysis of data from four randomized placebo controlled studies of patients with acute, nontraumatic, nonradicular LBP conducted in the same setting. In all four studies, patients were enrolled during an ED visit and followed up by telephone 1 week later. The primary outcome was improvement in the Roland-Morris Disability Questionnaire (RMDQ) between ED discharge and the 1-week follow-up. The RMDQ is a 24-item questionnaire commonly used to measure LBP and related functional impairment on which 0 indicates no functional impairment and 24 indicates maximum impairment. A 5-point improvement on this scale is generally considered a clinically significant improvement. The analysis of the primary outcome consisted of comparisons of the change in RMDQ between baseline and 1 week follow-up among 8 groups: 1) placebo, 2) baclofen, 3) metaxalone, 4) tizanidine, 5) diazepam, 6) orphenadrine, 7) methocarbamol and 8) cyclobenzaprine. All patients were also treated with an NSAID. We performed an ANOVA to determine the statistical relevance of the between group differences. To determine the association of age, sex, and baseline severity with the primary outcome, we conducted a linear regression model, in which the relative improvement in RMDQ ((baseline RMDQ - RMDQ 1 week)/baseline RMDQ) was the dependent variable and medication, age, sex, and baseline RMDQ were the independent variables.

Results: A total of 889 patients were enrolled. Of these, 858 (96.5%) provided one-week outcome data. The mean improvement in RMDQ for each group was: 1) placebo: 10.5 (95% CI: 9.5-11.5), 2) baclofen: 10.6 (95% CI: 8.6-12.7), 3) metaxalone: 10.1 (95% CI: 8-12.3), 4) tizanidine: 11.2 (95% CI: 9.2-13.2), 5) diazepam: 11.2 (95% CI: 9-13.2), 6) orphenadrine: 9.5 (95% CI: 7.4-11.5), 7) methocarbamol: 8.1 (95% CI: 6.1-10.1), 8) cyclobenzaprine: 10.1 (95% CI: 9.6-10.8). The between-group differences achieved neither clinical nor statistical significance. Results were similar regardless of age and sex. Baseline RMDQ was associated with clinical improvement with a β coefficient of 0.10 (p=0.03), indicating that more severely impaired patients were more likely to improve.

Conclusion: Among ED patients with LBP who are treated with an NSAID, SMRs do not improve outcomes more than placebo. Neither age nor sex impacts these results. Worse baseline impairment was associated with greater improvement at one week follow-up.

16 Adverse Interaction Medications Administered to Warfarin-Anticoagulated Patients in the Emergency Department

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Study Objectives: As there are a large number of patients anticoagulated with warfarin who present to emergency departments (ED) for various medical complaints, there is an innate increased risk of numerous adverse drug-drug interactions (ADDI). This study sought to identify the rate at which potentially adversely interacting medications were administered to warfarin-anticoagulated patients during a given ED visit.

Methods: This was a multi-center retrospective chart review of the all adult visits to two EDs in San Diego County over a 48-month time period. All warfarin-anticoagulated adults administered any of the top 33 potentially adversely interacting medications during their ED visit were included. Descriptive statistics of demographic and clinical characteristics including the number of patients administered more than one interacting medication in the ED and the number of patients with a subsequent follow-up visit within the next 14 days are reported.

Results: In the study period, 2,587 warfarin-anticoagulated patients had 6,322 ED visits. Of those visits, 1,385 (21.9%) resulted in the administration of one of the top 33 potentially adversely interacting medications. Of those visits where one of the top 33 adversely interacting medications was administered, 119 (8.6%) had subsequent ED return visit within 14 days. The most commonly administered medications in the ED

included aspirin (12.9%), ciprofloxacin (9.9%), trimethoprim/sulfamethoxazole (8.7%), ibuprofen (7.6%) and prednisone (7.6%). Of those given ciprofloxacin, trimethoprim/sulfamethoxazole and prednisone, 78%, 70% and 71% were sent home with a prescription with the same medication, respectively.

Conclusion: Warfarin-anticoagulated patients presenting to the ED are at increased risk of being administered or prescribed a potentially adversely interacting drug. Best practice alerts (BPA) may be a useful tool in mitigating this risk for the described patient population but further studies characterizing the extent of the risk or severity of adverse prescription reactions are needed while addressing the risk of BPA fatigue.

17 A Randomized Study of Greater Occipital Nerve Block With Bupivacaine versus Intravenous Metoclopramide for Acute Migraine

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Study Objectives: Greater occipital nerve blocks (GONB) are used increasingly to treat acute migraine. We conducted a randomized controlled trial to determine whether GONB was as effective as intravenous metoclopramide for acute migraine.

Methods: This was a double-dummy, non-inferiority study conducted in two emergency departments (ED). Patients with acute migraine of moderate or severe intensity were randomized to receive bilateral GONB with each side administered bupivacaine 0.5%, 3mL, or metoclopramide 10mg IV, the putative standard of care. The primary outcome was improvement in pain on a 0-10 scale between time 0 and one hour later. To reject the null hypothesis that metoclopramide would be more efficacious in relieving pain, we required that the lower limit of the 95% CI for the difference in pain improvement between those randomized to GONB versus those randomized to metoclopramide be greater than -1.3, a validated minimum clinically important difference. Secondary outcomes included sustained headache relief, defined as achieving and maintaining for 48 hours a headache level of mild or none, and use of rescue medication in the ED.

Results: Over a 2.5 year study period, 1358 patients were screened for participation and 99 were randomized, 51 to GONB and 48 to metoclopramide. Baseline characteristics were comparable between the groups. Patients who received the GONB reported mean improvement of 5.0 (95% CI: 4.1, 5.8) while those who received metoclopramide reported a larger mean improvement of 6.1 (95% CI: 5.2, 6.9). The 95% CI for the between group difference of -1.1 was -2.3, 0.1. Sustained headache relief was reported by 11/51 (22%) GONB and 18/47 (38%) metoclopramide patients (95% CI for rounded difference of 17%: -1, 35%). Of the 51 GONB patients, 17 (33%) required rescue medication in the ED versus 8/48 (17%) metoclopramide patients (95% CI for rounded difference of 17%: 0, 33%). An adverse event was reported by 16/51 (31%) GONB patients and 18/48 (38%) metoclopramide patients (95% CI for (rounded) difference of 6%: -13, 25%).

Conclusion: GONB with bupivacaine was not as efficacious as IV metoclopramide for the first-line treatment of acute migraine in the ED.

18 Withdrawn

19 Factors Associated with County-Level SARS-CoV-2 Testing Volume in Nine States

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Study Objectives: Rigorous SARS-CoV-2 testing is an important public health measure as it leads not only to early identification and prevention of transmission, but also to optimization of emergency care and resource allocation. Yet, the US has experienced a significant burden of illness, with reports suggesting a disproportionate amount falling on racial/ethnic minorities. Despite the public health importance, little is known about the discrepancies in the testing rate by region and race/ethnicity. In this context, we investigated the differences in and factors associated with per capita testing volumes.

Methods: This is an analysis of population-based data of nine racially/ethnically and geographically diverse states (AL, AZ, DE, FL, IN, NV, OR, TN, TX). We analyzed county-level testing data reported by state health departments and sociodemographic data reported by the U.S. Census Bureau. All data are as of June 7, 2020. The outcome was the number of SARS-CoV-2 testing (PCR and/or serology) per 1,000 individuals at the county-level. To identify factors associated with outcome,

Table. Characteristics of Nine U.S. States

State	Number of Counties, n	Tests Per 1,000, Median (IQR)	Deaths Per 1,000, Median (IQR)	Household Income ($), mean (SD)	Non-Hispanic White (%), Median (IQR)	Non-Hispanic Black (%), Median (IQR)	Hispanic (%), Median (IQR)
Alabama	67	41 (35-54)	0.08 (0.02-0.21)	57,311 (11,084)	69.0 (53.4-80.5)	22.7 (11.1-42.6)	2.5 (1.6-3.9)
Arizona	15	46 (30-58)	0.07 (0.00-0.20)	62,191 (10,742)	54.1 (44.3-57.5)	1.2 (0.7-2.7)	29.9 (15.3-36.2)
Delaware	3	54 (51-78)	0.36 (0.34-0.48)	82,986 (9,856)	62.2 (60.2-68.6)	24.3 (18.3-24.4)	9.1 (8.1-9.4)
Florida	67	47 (41-55)	0.06 (0.03-0.13)	67,593 (14,754)	72.0 (60.2-77.3)	11.0 (8.2-17.7)	9.4 (5.7-19.1)
Indiana	92	31 (24-39)	0.12 (0.03-0.35)	67,588 (11,353)	93.5 (88.0-95.5)	1.0 (0.5-2.9)	2.9 (1.7-4.8)
Nevada	17	38 (19-63)	0.00 (0.00-0.05)	71,692 (13,030)	72.2 (65.6-79.1)	1.7 (0.6-2.5)	16.6 (12.5-24.2)
Oregon	36	30 (25-35)	0.00 (0.00-0.03)	67,558 (12,403)	84.6 (76.7-87.6)	0.6 (0.4-0.9)	8.6 (6.4-14.2)
Tennessee	95	46 (36-59)	0.00 (0.00-0.04)	60,840 (12,869)	90.1 (84.6-93.4)	3.4 (1.4-8.2)	2.6 (1.9-4.3)
Texas	254	15 (9-25)	0.00 (0.00-0.05)	68,689 (14,324)	58.8 (41.9-73.1)	3.6 (0.9-8.9)	26.6 (18.1-50.2)

we fit a multivariable Poisson regression model including states, county-level death rate, mean household income, and proportion of major races/ethnicities.

Results: We examined data from 646 counties from nine states. The median rate of SARS-CoV-2 testing per 1,000 individuals differed widely, ranging from 15 in Texas to 54 in Delaware (Table). The multivariable model identified factors significantly associated with the rate of testing—state, death rate per 1,000, % non-Hispanic white, % non-Hispanic black, and % Hispanic (all $P<0.05$). For example, compared to Texas, higher testing rates were observed in Delaware (rate ratio [RR], 2.47) and Tennessee (RR, 2.92). In contrast, the magnitude of race/ethnicity-outcome association was smaller—eg, RR of 0.96 per 10% increase in non-Hispanic black and 0.85 per 10% increase in Hispanic demographics.

Conclusions: There were significant between-state differences in the SARS-CoV-2 testing rate. Counties with a higher proportion of race/ethnicity minorities had significantly lower testing rates while their magnitude of association was relatively small. Our findings should facilitate further investigations into the reasons for discrepancies, which will, in turn, optimize prevention and treatment strategies against this public health emergency.

20 Screening for Substance Use in the Pediatric Emergency Department: Lowering Thresholds to Enhance Reach

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Study Objectives: Substance use is common among adolescents, with 80% of 12th graders reporting alcohol use and 21% reporting marijuana use. Adolescent Screening, Brief Intervention, and Referral to Treatment (SBIRT) utilizes the CRAFFT Screening tool to risk stratify substance use among adolescent patients. While the CRAFFT was initially validated for identifying a substance use disorder (SUD) in adolescent patients in an ambulatory setting, a study of CRAFFT in an emergency department (ED) setting found that a lower score was indicative of problematic use over a three-year follow up period. Our objective was adapt the CRAFFT tool to identify and address any substance use among adolescents in the ED, not just high-risk substance use.

Methods: A team-based adolescent SBIRT program was implemented in a Pediatric ED in January 2018. The CRAFFT screening tool was programmed into the electronic health record (EHR) for patients ages 12-17, and was completed at each visit by either the patient's primary nurse, physician, and/or advanced clinical provider. ED Team Members follow up with patients who screen positive, to provide brief interventions and referrals to treatment, as indicated by screening score and patient/family interest. A "Positive" CRAFFT is a score of 2+, which correlates to two "Yes" responses on Part B. A "Positive CRAFFT" has a sensitivity of 76% and specificity of 94% for identifying any substance problem according to DSM-IV criteria. For clinical workflow, we consider "Positive" if there is any "Yes" response in Part A, as opposed to standard practice of two "Yes" responses in Part B.

Results: From January 2018 to October 2019, 8,694 of 24,057 (36.1%) patients ages 12-17 were screened using the CRAFFT. 1,260 (14.4%) of patients screened responded "Yes" to at least one question in Part A. Of those, Part B questions were asked of 1,066 (84.6%) patients and 334 (26.5%) had at least two "Yes" responses. The substance use most frequently reported was marijuana (9% in 2018, 11% in 2019) followed by alcohol (8% in 2018, 7% in 2019). Based on the clinical protocol and patient identification, 377 brief interventions and 29 referrals to treatment were provided. Brief interventions and referrals were provided by both physicians and social workers, including at least 12 different individual health care professionals.

Conclusion: Utilizing a lower threshold for a "positive" screen identified four times (1,260 vs. 334) as many patients with moderate to high risk substance use for a further conversation with the clinical team, especially given that Part B were not asked of all patients with a "Yes" in Part A. One limitation is that the version of the CRAFFT programmed into the EHR does not specifically ask about vaping and may not have been sensitive enough to capture adolescent patients who are vaping THC or other substances. Next steps include updating to the CRAFFT version 2.1+N to better identify and address vaping, expand the program to the adolescent populations in 16 additional EDs, and expand the program to pediatric ambulatory practices.

21 Monitoring the Incidence of COVID-19 Using Syndromic Surveillance of Emergency Department Visits

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Study Objectives: COVID-19 was initially detected in Wuhan, China, and has since spread throughout the world. In the United States, Washington State was the first state affected but by March 2020, New York and New Jersey were the two states with the greatest number of cases. We had previously instituted an ongoing syndromic surveillance system (SSS) in 35 hospitals in New York and New Jersey. Our goal was to investigate whether monitoring the respiratory emergency department (ED) visits by syndromic surveillance could be used to follow the incidence of COVID-19 in our area.

Methods: This was a retrospective cohort of consecutive ED visits. It took place at 35 hospitals within 200 miles of New York City from January 1, 2019 through May 15, 2020.Protocol: We identified respiratory visits using a "RESP" syndrome filter for patients' chief complaints developed for the New York State Department of Public Health. We used the CUSUM28 Statistic to identify a "signal" day. We defined a "signal" day as the day when "RESP" daily visits exceeded the 28-day moving average plus 3 times the 28-day moving average standard deviation. We also plotted the percent of total ED visits that were "RESP" visits.

Results: The database contained 2,302,432 total ED visits of which 305,512 were "RESP" visits. The first signal day in 2020 occurred on March 10. The twenty-eight day moving average of "RESP" visits on March 10 and the number of "RESP" visits on March 10 were 658 and 953, respectively. The peak number of