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A Longitudinal Study of K Values Changes After Penetrating Keratoplasty (PKP)

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superficialization. Cannulation began 4-weeks post-operatively.

Results: Mean access depth pre-operatively was 10.9mm (8-15mm), immediately post-operative was 7mm (6-9mm), and at 4-weeks was 5.3mm (4-8mm). Thirteen fistulas were successfully accessed following liposuction superficialization. Average usable access length was 12.7cm (10-15cm) following

surgery. All patients discharged home following surgery. There were no post-operative infections or hemorrhage.

Conclusion: Early experience with liposuction for superficialization of deep hemodialysis access is promising. It offers an innovative solution to an ever-growing problem, and the possibility of improved outcomes and quality of life for

patients living with ESRD and obesity. Our experience shows this is a safe and effective superficialization technique to increase patient eligibility, enable successful and early cannulation, while decreasing recovery time.

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Proceedings of the 5th Annual Graduate Medical Education Research Symposium | Poster Presentations — Original Research

Potential Prognostic Determinants for FET::CREB Fusion Positive Intracranial Mesenchymal Tumors

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Mentor: Jie Chen

Program: Neurosurgery

Type: Original Research

Background: Intracranial mesenchymal tumor (IMT) FET::CREB fusion-positive is a newly described tumor type in the 2021 WHO classification of CNS tumors with limited information available.

Methods: A literature review was performed to identify all IMTs with documented FET::CREB fusion. The factors associated with progression-free survival (PFS) and overall survival (OS) were evaluated by

Kaplan-Meier analysis using individual patient data extracted from the search with inclusion of 5 newly described cases.

Results: A literature review identified 62 cases of IMTs and 5 new cases are included for a total of 67 cases. Outcome analysis revealed that GTR was associated with improved progression-free survival (PFS) compared with STR (60 v 12 months, respectively; $p=0.0016$). Additionally, patient age ≥ 14 years demonstrated longer time to progression compared with patient age < 14 years (median 49 vs. 9 months, respectively; $p=0.0334$). However, no difference in PFS was demonstrated based on fusion subtype or tumor location. Furthermore, age < 14

($p=0.0285$), STR ($p=0.0480$), EWSR1-ATF1 fusion partner ($p=0.0243$), and infratentorial tumor location ($p=0.0244$) were associated with worse OS.

Conclusion: IMT is a locally aggressive tumor with a high recurrence rate ($>40\%$). Potential risk factors include subtotal resection, younger age, infratentorial location, and possibly EWSR1::ATF1 fusion. Larger case series are needed to better define prognostic determinants in these tumors.

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Too Much Time on Their Hands? - Evolving Characteristics of Adult Trauma Patients During the COVID-19 Pandemic

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Mentor: Mark Hamill

Program: General Surgery

Type: Original Research

Background: The aim of the study was to investigate the characteristics of non-geriatric adult trauma during the pandemic at an ACS verified level 1 trauma center.

Methods: The trauma database was queried for adult patients (age 19-64) from March 1-October 30, 2020 with control data from March-October of 2017-2019. Patient

variables included demographics, mechanism of injury, injury severity score (ISS), and positive blood alcohol.

Results: Overall adult trauma volumes increased by 16% during the study period. Patients were less likely to be Caucasian (64.7% vs 70.5%, $p<0.001$) and a decrease in blunt trauma (80.7% vs 84.4%, $p=0.008$). Significant differences in ratios of transportation injuries with shifts away from cars (64.2% vs 67.3%) and bicycles (4.0% vs 6.6%) towards motorcycles (7.4% vs 5.5%) and ATVs (7.4% vs 5.5%,

$p=0.019$). Fewer patients were admitted to the ICU (21.4% vs 27.4%, $p<0.001$), those admitted had longer mean length of stays (4.8 vs 4.0 days, $p=0.027$). Less patients required mechanical ventilation (10.9% vs 13.0%, $p=0.05$), those ventilated had longer mean period of ventilation (6.8 vs 4.5 days, $p=0.010$). Patients had significantly higher rates of positive blood alcohol levels (40.0% vs 29.7%, $p<0.001$) (Figure 1).

Conclusion: Adult trauma volumes during the pandemic increased slightly. Patients had similar mortality, but longer ICU stays, longer

duration of ventilation, and had higher rates of positive blood alcohol levels. This suggests an increased need for alcohol assessment and targeted interventions during pandemics or periods of social isolation, and increased emphasis on recreational vehicle safety measures targeted to at-risk populations.

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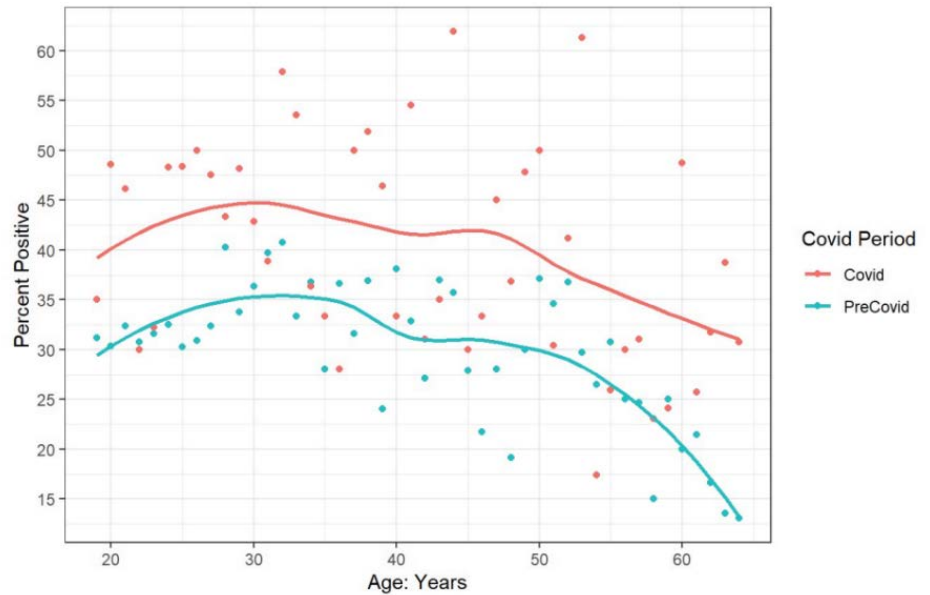


Figure 1: Percent Positive Alcohol Results by Age

A Longitudinal Study of K Values Changes After Penetrating Keratoplasty (PKP)

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Mentor: Brent Timperley

Program: Ophthalmology

Type: Original Research

Background: Approximately 25% of patients who undergo penetrating keratoplasty (PKP) develop cataracts in five years. One key component of intraocular lens (IOL) calculation prior to cataract surgery is the K value, a measure of corneal refractive power. Following PKP, corneal surface configuration changes with time. An unreliable K value preoperatively may cause inaccurate IOL power selection resulting in unwanted refractive changes. However, no studies indicate how K values of eyes with sutures in place change following removal. This study aims to examine the longitudinal K value changes of these eyes.

Methods: Retrospective chart review was performed on 71 subjects who underwent PKP at our institution over the past nine years. The K values were extracted from topography. Inclusion criterion: patients followed with topography for at least ten months following PKP.

Results: Significant variability of K values among patients at each visit interval. K varies most in the first eight months after PKP but stabilizes around 8-10 months for

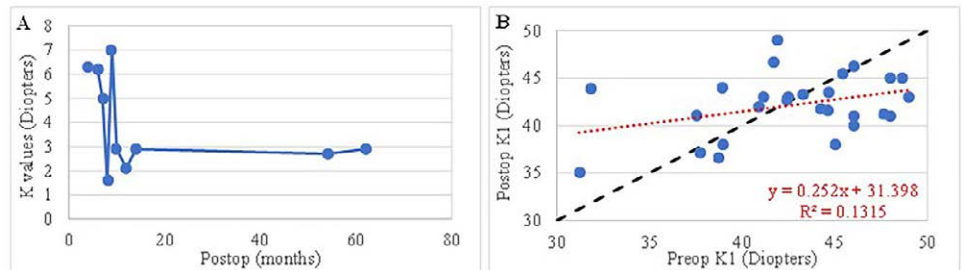


Figure 1: 1A, An example of the change in K values over time. 1B, Postoperative versus preoperative K for the cohort.

most patients (Figure 1A). The preoperative K values do not correlate with the post-op K value even after the cornea surface has been stabilized (Figure 1B, Pearson correlation test, $R^2=0.13$, $p>0.05$).

Conclusion: In post-PKP corneas, the K value is significantly higher and highly variable compared to the normal population. K values appear to be stable by approximately eight months after PKP. Therefore, cataract removal with IOL implantation can be performed as early as eight months after PKP. When doing a combined cataract and PKP surgery, using the preoperative K value to estimate IOL calculation is unreliable.

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Comparing Outcomes of Acute Pancreatitis in United States Military Veterans With and Without Post-Traumatic Stress Disorder

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Mentor: Christine Mitchell

Program: Gastroenterology and Hepatology

Type: Original Research

Background: United States (US) military Veterans (USMV) are disproportionately affected by post-traumatic stress disorder (PTSD), which has been shown to impact clinical outcomes in a myriad of conditions. Recent work has shown an association between anxiety disorders and altered pain experience in acute pancreatitis (AP). We aim to explore the relationship between PTSD and clinical outcomes in USMV with AP.

Methods: In this retrospective analysis, admissions for AP to Veterans Affairs (VA) facilities were selected from 2011 through 2017 and grouped by baseline presence of PTSD. Outcomes included length of stay, opioid and benzodiazepine use, major complications, and one-year mortality. Generalized estimating equation Multivariable

models accounted for correlations within hospitalizations and were used to generate adjusted odds ratios.

Results: The final analysis included 30,144 patients, of whom 5,044 (17%) had PTSD. At baseline, those with PTSD were younger, had better renal function, and were more likely to have substance use disorders. The PTSD group had higher rates of chronic opioid use before and after admission. In adjusted analysis, however, the rate of new chronic opioid use after admission did not significantly differ from patients without PTSD. Thirty-day readmission, major complication, and mortality were similar between groups (Table 1).

Conclusion: In this retrospective study, we did not find an association between PTSD and important clinical outcomes in Veterans with AP. Rates of opioid use were high in both study groups, requiring further study.

<https://doi.org/10.32873/unmc.dc.gmerj.5.1.025>

Table 1: Adjusted outcomes by study group

	aORa and 95% CI
Readmission	1.095 (0.991, 1.209)
New chronic opioid useb	0.933 (0.833, 1.044)
Major complicationc	0.964 (0.876, 1.061)
Mortality at 1 yeard	1.023 (0.904 - 1.158)

^aOdds ratios are shown for PTSD vs no PTSD.

^bExcludes patients using opioids chronically preadmission.

^cDefined as a composite of readmission, respiratory or renal failure, ICU transfer (if not initially admitted to non-ICU), persistent systemic inflammatory response syndrome beyond 24 hours, need for enteral or parenteral nutrition, or need for endoscopic or surgical intervention.

^dMortality calculated cumulatively from time of admission.

Improving Safety Through Accurate and Patient-centered Insulin Discharge Instructions

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Mentor: Elizabeth Miles

Program: Internal Medicine

Type: Original Research

Background: Comprehension of discharge instructions may decrease a patient's readmission rate, emergency department utilization, and increase medication adherence. We aimed to study the use, accuracy, and limitations of our current insulin discharge instructions, and use this data to redesign instructions as part of a larger quality improvement project.

Methods: A survey was sent to Hospital Medicine (HM) providers at a large academic medical center to understand their current use of insulin discharge instructions. Objective data on use of the current instructions was then evaluated by chart review of patients discharged from the HM service over a 3-month period. This data, literature review, qualitative analysis of the Epic

Community Library, and Joint Commission recommendations are being used to re-design our discharge instructions.

Results: Results showed that 45% of providers "only sometimes" filled out insulin discharge instructions or weren't familiar with this template. Reasons for not utilizing the template included provider's unfamiliarity, belief of redundancy, transcription requirements, unclear responsibility and time burden. Most patients discharged on insulin (56%) had no insulin discharge instructions; of those patients receiving instructions, 27% were inaccurate. Complete and accurate insulin instructions and diabetes education consults were the only variables that trended towards significance in reducing 30-day readmission.

Conclusion: Our hospital system demonstrated the need for improvement in providing patients with accurate instructions on insulin regimens at discharge. Our team is redesigning our discharge instructions using

qualitative and quantitative multidisciplinary data with the goal of improving patient care and reducing readmission rates.

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Medical School Elective on Breastfeeding Medicine Successful, Possible Model for Addressing Curriculum Gap

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Mentor: Hannah Christiansen

Program: Family Medicine

Type: Original Research

Background: We examined the impact of a lactation senior elective course on medical student education. Almost all physicians interact with lactating patients, however, there is little education about the topic in medical school. The course objectives were to increase knowledge about lactation and improve physician preparedness to care for lactating patients. **Methods:** A four-hour elective course was developed. Didactics included an interactive quiz game, participatory lecture, and hands-on demonstrations. Participants completed anonymous, linked, pre- and post-participation surveys.

Methods: A four-hour elective course was developed. Didactics included an interactive quiz game, participatory lecture, and hands-on demonstrations. Participants completed anonymous, linked, pre- and post-participation surveys (Figure 1).

Results: We showed a subjective increase in knowledge and comfort with lactation medicine following the course. Feedback from course participants was positive, and we increased the number of course offerings for future academic years due to student demand. Limitations of these findings include a small sample size as well as a self-selecting group with an interest in lactation medicine.

Conclusion: We were successful at providing basic knowledge in lactation medicine and increasing comfort in practicing lactation

medicine. Introducing the topic in the general medical school curriculum would allow more physicians to have exposure to lactation medicine rather than a self-selecting group. This course may be adapted in the future for use by residents, which would allow tailoring specific to that speciality.

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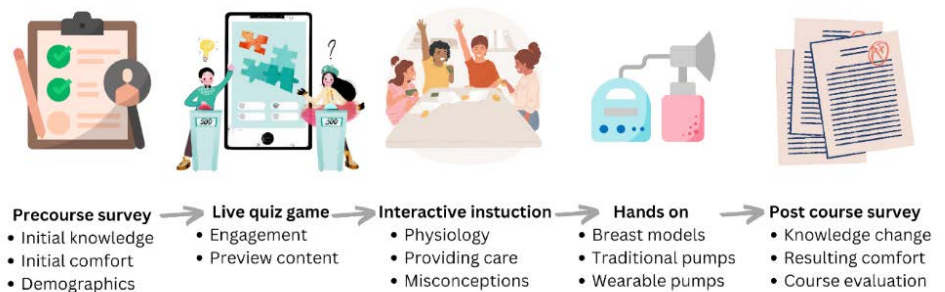


Figure 1. Method of instruction for lactation medicine elective.

Implementation of Standardized Ictal and Post-Ictal Examinations in Epilepsy Monitoring Unit

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Mentor: Shelley Lee

Program: Neurology

Type: Original Research

Background: The ictal and post-ictal examination are essential components of an epilepsy monitoring unit (EMU) admission. Currently, many inconsistencies exist due to non-standardized approaches while evaluating such patients. We will perform a quality improvement study to standardize the ictal and post-ictal assessment in the University of Nebraska Medical Center Epilepsy Monitoring Unit.

Methods: Over two months, we reviewed 20 previous ictal examinations performed by various providers in our EMU using our EMU monitoring software Natus Neuroworks (Natus, Pleasanton, California). The semiology of seizures from patients above 18 years via nursing examinations will be evaluated. We will then hold training sessions for all staff rotating through EMU in which principles of semiology and ictal

ICTAL AND POST-ICTAL ASSESSMENTS CORE PARAMETERS

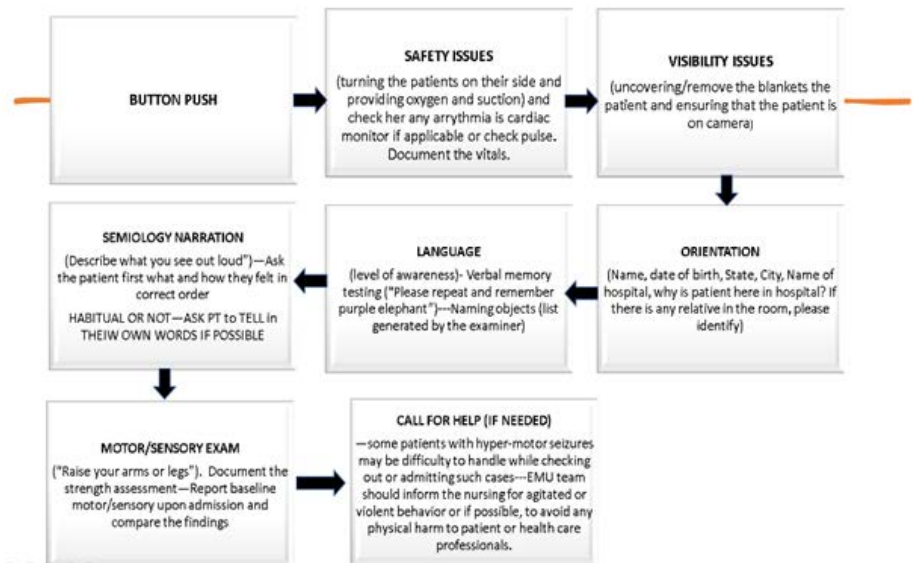


Figure 1: Ictal and Post-Ictal Assessments in Epilepsy Monitoring Units

analysis are reviewed. Nurses will complete a pre- and post-instruction survey to assess their confidence in seizure safety assessment and ictal examination. Twenty additional ictal examination videos will be reviewed after training to objectively measure the completion of exam maneuvers.

Results: No results are currently available, and the study is still ongoing. Based on deficiencies evaluated from previous

assessments, patient safety will remain the top priority, followed by a standardized approach to ictal examinations (Figure 1). We expect subjective confidence of the nursing staff regarding their ictal exam in addition to objective measures to improve.

Conclusion: With the help of this comprehensive quality improvement study, a standardized approach towards ictal and post-ictal evaluation will be implemented.

Structured education will give nursing staff the ability to address safety concerns and perform safety maneuvers to improve the diagnostic yield of EMU admission.

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Provider Knowledge and Utilization of Naloxone Prescriptions from the Emergency Department

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Mentor: Claudia Moore

Program: Emergency Medicine

Type: Original Research

Background: Emergency Department (ED) providers are qualified to recognize those at risk for opioid overdose and prevent future deaths by prescribing Naloxone. Existing research demonstrates prescribing Naloxone can reduce harm, but utilization is low. This study's purpose was to identify barriers to Naloxone prescribing and assess educational methods.

Methods: This was a pre and post survey study design at an academic center and community ED with 64,000 and 31,000 annual visits. Participants included attending

physicians, residents, or advance practice providers (APPs). Pre and post-surveys contained questions regarding Naloxone prescribing and perceived barriers. Between surveys, education was provided regarding Naloxone prescribing including, resident lecture, faculty lecture, or simulation-based education. Post-survey questions also assessed perceived usefulness of the education. McNemar's test compared Naloxone knowledge and prescribing practices. Wilcoxon rank sum test compared median helpfulness of education received and provider type. Fisher's exact test assessed the association between types of education received and prescribing Naloxone.

Results: Pre and post survey results were available for 34 participants, 18 (52.9%) residents, 15 (44.1%) faculty, and 1 (2.9%)

APP. There was a statistically significant difference in awareness of prescribing recommendations pre and post education (55.9% vs. 91.2%, $p=0.0002$). Post survey participants who attended simulation alone or in addition to lecture displayed a significant difference in awareness of prescribing recommendations (82.4% vs. 17.6%, $p=0.0089$). There was no statistically significant difference in providers prescribing Naloxone pre- and post-education ($p=0.32$).

Conclusion: This study demonstrated that targeted education on Naloxone prescribing increased provider awareness. Additionally, simulation-based education increased awareness compared to lectures alone.

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Perceived Barriers of Implementing Battlefield Acupuncture in Civilian Family Medicine Clinics: A Qualitative Study

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Mentor: Stephen Cagle

Program: Family Medicine

Type: Original Research

Background: Battlefield Acupuncture (BFA) is a quick, in-office procedure effective in treating pain. Supplies cost \$5 per procedure with \$100 reimbursement per session. Despite availability in training and implementation in military medicine, BFA is not frequently performed in civilian medical care. We investigated what perceived barriers exist to implementing BFA in civilian practices.

Methods: We performed a qualitative study by interviewing nine faculty physicians of the UNMC Family Medicine Residency program in Omaha, Nebraska. After obtaining

demographic data — including age, gender, race, time in practice, and position in the program — we utilized a 12-question standardized interview protocol, with clarifying follow up questions when needed. Interviews were recorded and transcribed. Transcripts were reviewed by investigators independently looking for common themes. Independent results were then evaluated as a group.

Results: Most common barrier was of patients' ability to pay, as BFA is not usually covered by insurance. Other common barriers included the credentialing/privileging process within a large healthcare system, and lack of patient awareness and physician education on the technique. Time to become trained and the time required to perform the procedure

in clinic was less commonly identified as a barrier.

Conclusion: Pain is universally experienced by patients. BFA has been demonstrated to be safe and cost-effective in reducing acute and chronic pain. Implementing BFA may increase patient satisfaction and quality of life. Solutions to reduce out-of-pocket cost to patients, as well as clarifying the credentialing and privileging processes at individual clinics, are needed to enable physicians to perform this technique.

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