Selection of abstracts from Baylor Scott & White Health Central Texas Scholars Day

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ABSTRACT

Baylor Scott & White Health Central Texas displayed the diversity and growth of scholarly pursuits during Scholars Day on May 3, 2019. Residents and fellows, medical students, nurses, and research staff were among those showcasing their scholarly activity in areas such as medical innovation, clinical vignettes, research, and quality improvement. A selection committee chose 32 abstracts—12 select podium, 20 rapid fire. In addition, 60 abstracts were included as electronic poster presentations. Residency and fellowship program directors nominated presentations for the Excellence Awards. The scholarship committee chose four to receive travel awards to support the presentation of each project at a national meeting. Excellence Awards were granted to Jasson Abraham, MD, Jerry Fan, MD, Veronica Lozano, MD, and Chhaya Patel, MD. A selection of abstracts is presented here.

KEYWORDS Research abstracts; residency; scholarships

Interhospital transfer mortality for STEMI patients: A retrospective look at a tertiary transfer facility in Central Texas

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Acute myocardial infarctions are a significant cause of morbidity and mortality in the USA. At the same time, interhospital transfers are becoming the norm. The National Cardiovascular Data Registry and the Acute Coronary Treatment and Intervention Outcomes Network provide metrics for ST-segment elevation myocardial infarctions (STEMI). We accessed both databases to evaluate patient mortality and create a patient risk factor model for predicting mortality. Data for STEMI patients presenting at or transferring to Baylor Scott & White Medical Center–Temple from January 1, 2012, to December 31, 2017, were extracted from the National Cardiovascular Data Registry and the Acute Coronary Treatment and Intervention Outcomes Network and analyzed using SAS 9.4. Of 268 patients, 27% ($n = 72$) were transferred from surrounding hospitals, which

is comparable to 28% to 45% nationally. Despite a significant number of patient deaths ($n = 7$, 9% transferred patients; $n = 12$, 6% nontransferred patients), a significant difference in mortality between the groups was not identified. Among the extracted data variables, only low-density lipoprotein and purinergic signaling receptor Y₁₂ (P2Y₁₂) inhibitors were predictors of mortality with an almost perfect C-statistic (0.981). Unless contraindicated, P2Y₁₂ inhibitors are routine after percutaneous coronary intervention and seemingly impact mortality significantly. P2Y₁₂ inhibitors and low-density lipoprotein are likely good predictors of mortality due to their effect on coronary artery disease.

Advance care planning in the resident clinic: From education to completion

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Little is known about either how practitioners discuss advance care planning (ACP) during clinical encounters or

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what interventions increase ACP discussion and advanced directive (AD) completion. Our primary goal was to evaluate whether educational and clinic process improvement interventions increased AD completion. We also elicited barriers that internal medicine residents face when discussing ACP with patients. Eligible patients had established care with a current internal medicine resident at Baylor Scott & White Medical Center–Temple as of October 2017. We surveyed residents about barriers to AD completion, implemented educational and process improvement interventions, and determined pre- and postintervention AD completion rates. Although 94% of residents believed that it was important, only 25% had helped a patient establish an AD during a clinic visit. The biggest barriers were lack of time and knowledge of resources. Postintervention AD completion rates improved by 47% to 5.3%. Although patients prefer completing ADs with their primary care physicians' guidance, these discussions too often occur in the inpatient setting, when patients may be unable to fully participate or are receiving care not in line with their wishes. In our study, educational and process improvement interventions increased in-clinic AD completion rates. However, the postintervention rate remained below the national average, indicating that continued improvement is needed.

Pharmaceutical care services provided by academic pharmacy teams

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Our objective was to demonstrate the potential of a universal documentation language to categorize interventions made by the academic pharmacy team. Retrospective data of clinical interventions at Baylor Scott & White Medical Center–Temple were collected from electronic medical records. Eligible interventions were made by the Texas A&M academic pharmacy team from July 1, 2018, to December 10, 2018. Interventions were classified into four drug therapy needs that were further classified into seven drug therapy problems: indication (unnecessary drug therapy, needs additional therapy); efficacy (ineffective drug, dosage too low); safety (adverse drug reaction, dosage too high); and convenience (nonadherence/noncompliance). Eligible interventions totaled 698. The academic pharmacy team most frequently intervened on the drug therapy need of indication (29%), followed by convenience (28%), safety (25%), and efficacy (18%). The drug therapy problem most frequently intervened on was nonadherence/noncompliance (28%), followed by unnecessary drug therapy (18%) and dosage too high (15%). We demonstrated that a consistent documentation language allowed for a capture of intervention categories. Pharmacists play a large role in identifying drug therapy problems in all four drug therapy needs rather than one predominant area. Future studies are needed on the correlation of financial impact to categorized interventions.

Identifying preoperative risk factors associated with prolonged mechanical ventilation in elective surgical patients

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Prolonged mechanical ventilation (PMV) is associated with a severe increase in morbidity and mortality. We hypothesized that the National Surgical Quality Improvement Program (NSQIP) preoperative risk calculator can identify elective patients at high risk for PMV. A single-center retrospective cohort-matched analysis (2015–2018 NSQIP data) compared elective surgical PMV patients with control-matched patients for age, sex, and procedure. A post hoc NSQIP calculator profile was generated using preoperative NSQIP data. Chart review determined ventilator time, 30-day outcomes, and all-cause mortality through December 2018. We identified 145 elective PMV patients (median ventilator time 148 hours, interquartile range 89–310). Preoperative NSQIP risk percentages were significantly increased for serious complications, any complication (includes PMV risk), predicted length of stay, and rehabilitation discharge ($P < 0.01$). PMV calculator inputs were worse for functional status, American Society of Anesthesiologists classification, ventilator dependence, diabetes, and chronic obstructive pulmonary disease ($P < 0.05$). Thirty-day PMV postoperative outcomes were worse for sepsis, pneumonia, reoperation, mortality, rehabilitation discharge, and length of stay ($P < 0.01$), with higher all-cause mortality rates (39% vs 20%) during a shorter time (median 43 vs 208 days, $P < 0.01$). Elective PMV patients have higher preoperative risk scores and mortality rates. Improving preoperative risk stratification by refining identification of contributory comorbidities is warranted. High-risk patients may benefit from prehabilitation.

Obesity and autologous breast reconstruction

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Pedicled myocutaneous latissimus dorsi (LD) breast reconstruction is often limited by the volume it can achieve. As a means to preclude implant placement, immediate fat grafting has been described in LD reconstructions. The aim of this study was to investigate complication rates in obese patients (body mass index ≥ 30 kg/m²) undergoing LD reconstruction with immediate fat grafting vs free tissue transfer. Sixteen obese patients underwent LD breast reconstruction with immediate fat grafting, and 66 patients underwent free tissue transfer breast reconstruction. Free tissue transfer reconstructions lasted an average of 140 minutes longer than LD reconstructions ($P = 0.019$). Furthermore, patients undergoing free tissue transfer stayed an average of 2 days longer in the hospital postoperatively ($P < 0.001$). Although each group

experienced a similar number of minor complications, the free tissue transfer group experienced 30% more major medical and surgical complications ($P=0.031$). Finally, patients undergoing free tissue transfer required 16.5% more return trips to the operating room ($P=0.048$). This study suggests favorable complication rates, operative time, length of hospital stay, and number of return trips to the operating room in patients with obesity undergoing LD breast reconstruction with immediate fat grafting.

Validation of the EAST-IST within subspecialty fellowship programs

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Ensuring that a candidate aligns with a graduate medical education program's expectations has become increasingly difficult. A standardized objective tool weighs the components of the US Electronic Residency Application System application and the attributes displayed during the interview. Although the Electronic Residency Application System Application Scoring Tool–Interview Scoring Tool (EAST-IST) was previously validated in a multicenter study within pulmonary critical care fellowships, this study aimed to validate EAST-IST across five internal medicine subspecialty fellowship programs (pulmonary and critical care, gastroenterology, nephrology, infectious disease, and hematology/oncology) at a single center. Reviewers from each fellowship program completed a categorized score card, rating each category by importance. These categories were compared between fellowships. For each candidate, a standardized score was calculated to form an experimental rank list that was compared against the program's official rank list using Spearman's rank correlation. A significant correlation between the EAST-IST score and official rank-order list existed for gastroenterology ($P=0.019$) and pulmonary/critical care ($P\leq 0.0001$). The tool had lower sensitivity for smaller fellowships. This study provided further evidence for the EAST-IST as a standardized tool that can decrease bias, foster standardization, and provide an objective rank-order list to be used as a framework for the final rank list.

Evaluation of cardiovascular outcomes among patients with type 2 diabetes newly initiated on sodium-glucose cotransporter-2 inhibitors, glucagon-like peptide-1 receptor agonists, and other antidiabetic medications

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This retrospective cohort study compared cardiovascular outcomes of patients with type 2 diabetes who were newly initiated on sodium-glucose cotransporter-2 inhibitors (SGLT-

2is), glucagon-like peptide-1 receptor agonists (GLP-1RAs), or other antidiabetic medications (oADMs). A total of 9477 patients aged ≥ 18 years with type 2 diabetes and ≥ 1 SGLT-2i, GLP-1RA, or oADM prescription claim from April 2013 through December 2018 were included and divided into three propensity score-matched cohorts: SGLT-2i vs oADM, GLP-1RA vs oADM, and SGLT-2i vs GLP-1RA. Primary outcomes were hospitalizations for heart failure and a composite endpoint of myocardial infarction, stroke, unstable angina, and coronary revascularization. Cox regression models were used to evaluate cardiovascular outcome risk. Compared with oADMs, SGLT-2is were associated with a significantly lower risk of the composite endpoint (hazard ratio [HR] = 0.69; confidence interval [CI], 0.52–0.92) and hospitalizations for heart failure (HR = 0.66; CI, 0.47–0.93); GLP-1RAs were associated with a significantly lower risk of the composite endpoint (HR = 0.70; CI, 0.52–0.94) but not hospitalizations for heart failure (HR = 0.79; CI, 0.57–1.08). When comparing SGLT-2is vs GLP-1RAs, there were no significant differences in the risk of the composite endpoint (HR = 1.03; CI, 0.72–1.43) or hospitalizations for heart failure (HR = 0.88; CI, 0.60–1.29). This study provides real-world evidence for patients, payers, and providers to consider novel antidiabetic agents with cardiovascular benefits vs oADMs, regardless of cardiovascular disease status.

Percutaneous fasciotomies vs traditional keystone flap: Evaluating tension in complex wound closure

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The keystone flap is a popular reconstructive option for closing cutaneous defects. However, we propose a limited skin incision technique that uses percutaneous fasciotomies. Fresh cadavers were used to compare closure techniques in traditional keystone flaps vs percutaneous fasciotomies. Twenty-four bilateral large wound defects were created in six anatomical locations: anterior leg, lateral thigh, buttocks, lower back, upper back, and brachium. Keystone flaps were on the right, and percutaneous fasciotomies were on the left. If wound closure could not be achieved by fasciotomy alone, additional incisional release was performed incrementally until closure was obtained. Closure tension was measured using a PESOLA (10 N, 25 N) tensiometer. Statistical analysis was completed using Wilcoxon signed rank test. Lower tension closures were achieved through release of the posterior fascia in the traditional keystone flap compared with the percutaneous fasciotomy technique ($P<0.001$). When compared with the traditional keystone flap, percutaneous fasciotomy displayed higher tensions in closure. However, this technique showed the ability to close defects in certain locations of the body without excessive

tension and should be an option in soft tissue reconstruction.

Improving transitional care management at Baylor Scott & White Round Rock clinic

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Recent literature associates discharge follow-up and transitional care management (TCM) with fewer readmissions, lower costs, and decreased mortality. A retrospective chart review of Baylor Scott & White Round Rock (BSWRR) clinic patients who were discharged from BSWRR hospital over a 3-month period ($n=102$) showed that the rate of TCM was 29.4% and that the TCM conversion rate for eligible encounters was 45.5%. Further analysis of these patients identified predictors of poor follow-up, including longer length of stay (3.57 vs 2.55 days, $P=0.015$), higher number of admission problems (3.72 vs 3.11, $P=0.042$), and less frequent home discharge (35.3% vs 81.8%, $P<0.00001$). Based on these results, primary care physicians at BSWRR clinic were trained on how to conduct and document TCM more effectively. After an additional 3-month review of BSWRR clinic patients discharged from BSWRR hospital ($n=142$), this data-driven intervention increased the rate of TCM to 50.0% ($P=0.0015$), improved the TCM conversion rate for eligible encounters to 86.6% ($P<0.000001$), and demonstrated a statistically insignificant decrease in readmission rate from 14.3% to 10.7%. This project identified that “sicker” patients with higher comorbidity, longer length of stay, and non-home disposition struggle with follow-up. Additionally, provider training is a simple but essential step in executing effective TCM.

Incidence of urethral complications when using 26F vs 28F resectoscope sheaths in holmium laser enucleation of the prostate

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Long-term complications of holmium laser enucleation of the prostate (HoLEP) for benign prostatic hyperplasia include urethral strictures (US) and bladder neck contracture (BNC). No studies have demonstrated a relationship between resectoscope sheath (RS) size and these complications. Our objective was to determine US and BNC rates between patients undergoing HoLEP with 26F vs 28F RSs. This retrospective chart review included patients undergoing HoLEP from August 1, 2015, to June 30, 2018. Patients with prior US or BNC were excluded. Primary endpoints were postoperative US or BNC. Secondary endpoints were postoperative catheterization time, voiding trial success, and stress urinary incontinence (SUI). Of 502 patients, 163 had HoLEP with a 26F (group A) and 339 with a 28F RS (group B). Postoperatively, 3 (A) and 12 (B) patients had US

($P=0.41$) and 0 (A) and 8 (B) had BNC ($P=0.0585$). Mean catheterization time was 1.66 (A) and 1.84 days (B; $P=0.97$), and 14 (A) and 33 (B) patients failed the voiding trial ($P=0.68$). At 6 weeks, 3 to 6 months, and 1 year, 54 vs 118 ($P=0.71$), 9 vs 10 ($P=0.157$), and 1 vs 22 ($P=0.003$) group A and B patients, respectively, experienced SUI. Although RS size was not statistically significant for US, BNC, or short-term SUI, use of 28F RS showed statistical significance for long-term SUI (>1 year).

The relationship between PD-L1 expression and MMR/MSI status and their prognostic roles in small intestinal adenocarcinoma

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To assess a possible pathway for treatment of small intestinal adenocarcinoma, we investigated programmed death ligand 1 (PD-L1) expression and its correlation with microsatellite instability-high (MSI-H) or deficient mismatch repair protein (dMMR) status and its prognostic role in small intestinal adenocarcinoma. Cases of small intestinal adenocarcinoma resected from 2003 to 2018 were retrospectively reviewed for clinical staging and patient demographic data. Immunohistochemical staining for PD-L1 and dMMR and polymerase chain reaction study for MSI were performed. PD-L1 immunostain was considered positive with membranous staining in 1% or more tumor cells. Among 18 identified cases, the median age of patients was 66 years, and 61% were women. Clinical stage ranged from IIA to IV. None received neoadjuvant therapy. Weak to moderate PD-L1 expression occurred in 2 (11%) cases (clinical stages IIA and IIIB) with 2% to 5% of tumor cell staining. The remaining cases ($n=16$, 89%) were negative for PD-L1 expression. dMMR/MSI-H was not identified. Slightly increased PD-L1 expression in approximately 10% of small intestinal adenocarcinoma does not demonstrate a correlation between either PD-L1 expression and clinical staging or PD-L1 expression and dMMR/MSI-H status. PD-L1 status may not have a prognostic role, and programmed death ligand 1 pathway blockade may not be an effective treatment for small intestinal adenocarcinoma.

Rates of completion of Medical Orders for Life-Sustaining Treatment form and patient characteristics at a tertiary academic hospital in 2017

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The Medical Orders for Life-Sustaining Treatment (MOST) form is an advanced care planning tool that details patient treatment preferences and provides end-of-life care directives to health care providers. Patterns of completion, use, and impact on patient outcomes at our facility since adoption of the MOST form in 2015 remain unknown. Electronic

medical records were queried for patients aged 60 years or older who had an established primary care provider at Baylor Scott & White Medical Center–Temple where they also had at least one admission in 2017. Patients were followed for 1 year or until date of death. Of 3377 patients, 523 (15.5%) had a completed MOST form within a year of follow-up. Of patients with a completed MOST form, 41.4% were widowed, 61.4% were female, 93.1% were non-Hispanic, 90.8% were Caucasian, and 97.7% were English speakers with a median age of 81. In a regression analysis, age, marital status, and “other” race were predictors of MOST completion. MOST forms were completed in the inpatient setting

52.6% of the time and by a female provider 67.7% of the time. Rates of completion of MOST forms remain low. Further research on their effect on patient outcomes and barriers to documentation is needed.

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