

symptomatic sequelae. We sought to assess whether fusion extension past the cervicothoracic junction reduces the risk of distal ASD after multilevel fusions ending at C7-T3. **METHODS/STUDY POPULATION:** We retrospectively reviewed all first-time patients undergoing instrumented cervical fusion of at least 2 spinal levels and whose distal level of fusion ranged from C7-T3, at the Johns Hopkins Medical Institutions, from 1999 to 2013. The primary outcome was reoperation for distal ASD. Using multiple logistic regression, ANOVA, and  $\chi^2$  analysis, we determined the odds of ASD due to age, gender, distal level of fusion, surgical approach (anterior, posterior, or combined), smoking status, and race. **RESULTS/ANTICIPATED RESULTS:** Of the 158 patients who met the selection criteria, the mean age was  $58.7 \pm 13.8$  years, and 95 (60.1%) were female. Ten patients (6.3%) underwent reoperation for ASD. Patients whose fusions ended at C7 were significantly more likely to develop ASD and undergo reoperation (70%,  $p=0.007$ ) than those whose fusions ended at T1. There were no differences in age, proximal fusion level, smoking status, BMI, gender, and patient-reported race between the reoperation and non-reoperation groups. Following a multivariable analysis, extending the distal fusion to T1 was again found to be protective against reoperation (OR = 0.07,  $p=0.020$ ). **DISCUSSION/SIGNIFICANCE OF IMPACT:** Our study shows that for multilevel instrumented cervical fusions that terminate within the cervicothoracic junction, fusion distal to the C7 vertebra is associated with decreased odds of reoperation for symptomatic ASD. Therefore, this study provides clinical evidence that may help surgeons determine the optimal distal fusion segment for multilevel fusions ending at C7-T3.

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### Factors associated with urban youth and parent perceptions of the preventability of their emergency department visit for an assault-related injury

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**OBJECTIVES/SPECIFIC AIMS:** To identify factors associated with urban youth and parent perceptions of the preventability (PoP) of the youth's medically attended assault injuries in order to guide future violence prevention strategies. **METHODS/STUDY POPULATION:** Assault-injured youth ( $n=180$ ; ages 10–15; 60% male; 96% African-American) and their parents were recruited from 2 pediatric emergency departments (EDs) in Baltimore and Philadelphia between June 2014 and June 2016. Data on demographics, circumstances of injury, injury severity, and perceptions of the injury were collected from chart review and in-person interviews with youth and parents using previously validated instruments. Within youth and parent groups, we compared those who reported "definitely true" when asked if the event that brought them to the ED could have been prevented to those who reported "maybe true" or "unlikely" using  $\chi^2$  testing. **RESULTS/ANTICIPATED RESULTS:** In total, 68 (37.8%) youth and 123 parents (68.3%) reported that the injury was definitely preventable. Youth who were injured indoors [OR 2.13 (95% CI 1.17, 3.88),  $p=0.013$ ] or considered their injury not serious [OR 4.82 (95% CI 1.78, 13.11),  $p=0.002$ ] were more likely to perceive injury preventability and those who reported being the victim were less likely to perceive injury preventability [OR 0.26 (95% CI 0.01, 0.67),  $p=0.005$ ]. Bullying and use of weapons were not associated with youth PoP. Parents were significantly more likely to perceive preventability when the person/people involved were known by the youth [OR 1.94 (95% CI 1.04, 3.62),  $p=0.037$ ] and when the injury occurred indoors [OR 1.96 (95% CI 1.04, 3.69),  $p=0.038$ ]. Similar to youth, parental report of bullying was not associated with parent PoP. Injury severity, and victim role of their child were also not associated with parent PoP. **DISCUSSION/SIGNIFICANCE OF IMPACT:** A prior violent injury is a major risk factor for future injuries and homicides. Through our work we were able to identify factors associated with youth and parent perception of preventability of injuries in a high risk population. Youth who felt victimized were less likely to perceive their injury as preventable. In addition, parents were more likely to perceive the injury as preventable when their injured child knew those involved in the incident. This work can inform violence prevention strategies and potentially identify opportunities to reduce intentional injuries in urban youth.

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### Artificial urinary sphincter failure: Characterizing the causes of failure and individual device component survival

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**OBJECTIVES/SPECIFIC AIMS:** Stress urinary incontinence (SUI) significantly affects quality of life and occurs in 60% of men after radical prostatectomy, with

5% requiring surgical treatment. The artificial urinary sphincter (AUS) offers these patients excellent control of their post-prostatectomy SUI. The device contains 3 parts: the pump, urethral cuff, and pressure regulating balloon. Despite the effectiveness of AUS, up to 50% of patients require surgical revision after initial placement due to recurring SUI. Thus far, literature is heterogeneous regarding the causes of mechanical AUS failure and appropriate surgical management. Our study aims to characterize the most common reasons of AUS failure requiring surgical revision and the survival of each AUS component. **METHODS/STUDY POPULATION:** We report a series of 48 patients who received AUS placement and/or revision by 1 surgeon from 2010 to 2013. Upon presenting for revision, intraoperatively, the surgeon systematically evaluated the device for failure of the balloon, cuff and pump as well as urethral erosion and atrophy. In patients not requiring revision all device components were presumed functional. We conducted retrospective chart review to collect baseline characteristics, intraoperative findings, and post-operative outcomes. Using Kaplan-Meier estimates, we calculated incidence rates of component failure for the cuff, pump, and balloon. To identify risk factors for AUS failure, Cox regression was performed for univariate and multivariable testing. Multivariable modeling included those variables considered biologically plausible and significant in univariate testing. **RESULTS/ANTICIPATED RESULTS:** In total, 48 patients were studied with median follow up of 4.25 years. All patients received an AMS 800 device with a 61–70 mL balloon filled with 27 cc of isotonic contrast. Cuff sizes ranged from 3.5 to 5.5 cm, with 4.5 cm selected in 33/48 cases (68.8%); 19 of the patients required AUS correction (41.7%). Balloon leak constituted 57.9% (11/19) of failures, followed by cuff failure/urethral atrophy (21.1%), urethral erosion (10.5%), and individual cases of infection and pump failure. Median time to mechanical failure due to balloon leak was 3.67 years (IQR 2.17, 5.33); median time to failure for nonballoon causes was 0.54 years (IQR 0.25, 1.83). Survival of the balloon, cuff, and pump was 100%, 95.7%, and 97.9% at 1 year and 76.9%, 91.0%, and 97.9% at 5 years, respectively. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Our study identifies fluid leakage from the balloon as the most common cause of AUS failure, particularly in patients presenting between 1 and 5 years after initial placement. For such patients, interrogating the balloon first can decrease infection risk and surgical morbidity as it can avoid manipulation of the urethral cuff. Furthermore, simply replacing lost fluid saves cost and allows for immediate reactivation of the AUS device.

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### Change in duration of postoperative antibiotic prophylaxis in esophagectomy patients: Outcomes in a single academic institution

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**OBJECTIVES/SPECIFIC AIMS:** Ivor-Lewis esophagectomy (ILE) is an invasive surgical procedure with a high incidence of postoperative pneumonia. Antibiotic prophylaxis could reduce respiratory infections but increase *Clostridium difficile* and antibiotic resistance. Our institution reduced the duration of piperacillin-tazobactam prophylaxis following ILE from 4 to 1 day or less in January 2015. We evaluated short-term outcomes in ILE patients before and after this institutional change. **METHODS/STUDY POPULATION:** Retrospective cohort study of all ILE patients from 2012 to 2016. We confirmed antibiotic duration directly from nursing medication administration records. The primary outcomes of this study were rates of *C. difficile* and postoperative pneumonia. Secondary outcomes include other infection, length of hospital stay, and readmission within 30 days. We used logistic regression to analyze impact of days of antibiotics and  $\chi^2$  or Fischer exact tests for categorical variables. **RESULTS/ANTICIPATED RESULTS:** Of 104 ILE patients, 40.4% ( $n=42$ ) were after January 2015, 11.5% developed pneumonia and 5.8% developed *C. difficile* colitis. ILE patients received more days of antibiotics before the institutional change compared with after (6.1 vs. 2.9 d,  $p<0.01$ ). For a 1-day increase in antibiotic duration, the odds of acquiring *C. difficile* increased significantly by 1.2 ( $p=0.03$ ). Before compared with after the institutional change, rates of *C. difficile* were 8.1% Versus 2.4% ( $p>0.2$ ), rates of pneumonia were 11.3% Versus 11.9% ( $p>0.2$ ), and length of stay was 10.9 Versus 10.5 days ( $p>0.2$ ), respectively. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Institutional policy can have an impact on patient outcomes. Antibiotic stewardship is associated with reduced rates of inpatient *C. difficile*. Our study suggests reduced antibiotics are not associated with pneumonia, although larger studies are necessary to confirm this finding. Surgeons should consider the benefit of decreased rates of *C. difficile* before administering prolonged antibiotic prophylaxis following esophagectomies.