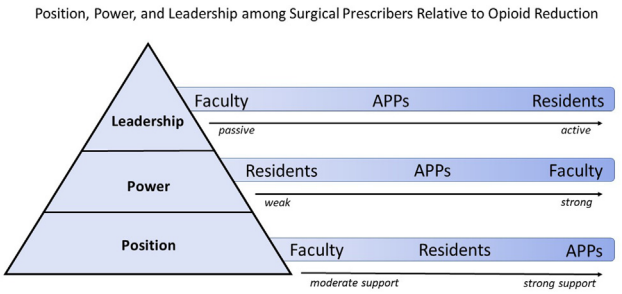

Figure. APP, advanced practice provider.

change prescribing practices through anecdote, sharing of data, or by example (Figure).

CONCLUSIONS: Challenges in achieving opioid reduction for pediatric postoperative patients likely arise from discordance among support, power, and leadership in the surgical hierarchy. Those in power perceive opioid-related risk to the public but not to the patient, yet patient-level change is needed to impact the public. Understanding of cultural nuance is needed when engaging key stakeholders and identifying effective resources.

Enteral Antibiotics Stimulate Small Intestinal Mucosal Growth in Mice

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INTRODUCTION: The intestinal microbiome participates in numerous mucosal processes. Previous work using gnotobiotic mice demonstrated enhanced mucosal growth in the setting of a limited microbiome. We hypothesized that manipulation of the microbiome with enteral antibiotics would alter small intestinal mucosal morphometric and proliferative parameters.

METHODS: C57BL/6J mice were allowed ad libitum access to either an antibiotic solution (ampicillin, ciprofloxacin, metronidazole, vancomycin, meropenem) mixed in artificial sweetener ($n = 6$) or artificial sweetener alone ($n = 4$). After 4 weeks, citrulline levels were measured and segments from the proximal, middle, and distal small intestine were harvested, fixed, sectioned, and stained with hemotoxylin and eosin. Villus height and crypt depth were measured and mucosal surface area was calculated (Figure). Crypt proliferation index was assessed by bromodeoxyuridine immunostaining. Data were analyzed with Student's *t*-test and significance assumed for $p < 0.05$.

RESULTS: Antibiotic-treated mice had significantly taller villi in the proximal, middle, and distal small intestine when compared with control mice ($p < 0.0001$ for all regions). Calculated mucosal surface area was greater for antibiotic-treated mice ($1{,}141.0 \pm 158.1$ cm^2 vs 634.5 ± 93.2 cm^2; $p = 0.03$). Crypts were deeper in the proximal and middle small intestine and crypt proliferation index was greater in the proximal small intestine in antibiotic-

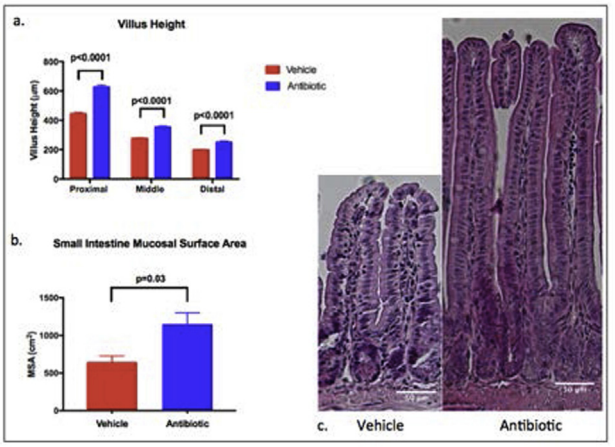

Figure. Comparison of villus height in the proximal, middle, and distal small intestine (a) and mucosal surface area (b) with representative H&E of distal small intestinal mucosa in antibiotic treated and vehicle treated mice (c).

treated mice ($41.2\% \pm 0.9\%$ vs $32.1\% \pm 1.0\%$; $p < 0.0001$). Serum citrulline concentration, a marker of enterocyte mass, was higher in antibiotic-treated mice ($1{,}226 \pm 64$ μM vs 934 ± 142 μM; $p = 0.08$).

CONCLUSIONS: Enteral administration of broad-spectrum antibiotics stimulates enterocyte proliferation and small intestinal mucosal growth in mice. The impact of the microbiome on mucosal growth and homeostasis warrants additional study, as these findings might prove clinically translatable for patients with intestinal failure.

Factors Influencing Recidivism after Major Trauma in Children

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INTRODUCTION: Trauma is the leading cause of mortality in children. Recidivism after major trauma has not been well elucidated in children. This study aims to determine the burden of pediatric trauma recidivism in the US and to identify factors predisposing to it.

METHODS: The 2010 to 2015 National Readmissions Database was queried for children (aged 18 years and younger) with a diagnosis of major traumatic injuries. Patients readmitted for major trauma were identified subsequently. Patients who did not survive their index hospitalization were excluded. Information on mechanism, intent, nature, and injury severity, including Abbreviated Injury Scale and Injury Severity Scores were obtained. Multivariable regression analyses were performed adjusting for demographic, hospital, and injury characteristics.

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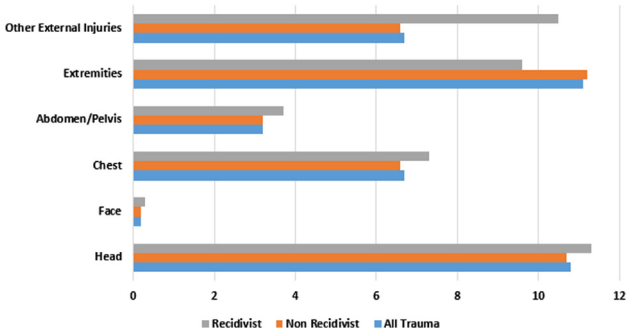

Figure. The frequency of severe injury (AIS≥3) after major trauma in the children (i) overall,(ii) in non-recidivists and (iii) in recidivists.

RESULTS: Of 286,508 records analyzed, pediatric trauma recidivists represented 2.9% of the total population. Median age was 14 years (interquartile range 7 to 17 years) and these were predominantly male (61.0%). Recidivists had a higher proportion of severe (Abbreviated Injury Scale ≥ 3) head injury (11.3) (Figure). A total of 16% were readmitted 2 or more times to the hospital. Of these, 85.6% re-presented to the hospital of their index admission. Recidivists were more likely to be female (odds ratio [OR] 1.12; 95% CI 1.07 to 1.17), have public insurance (OR 1.30; 95% CI 1.25 to 1.37), and belong to lower-income families (OR 1.22; 95% CI 1.15 to 1.31). Recidivism was more common among patients with higher Injury Severity Scores on initial presentation (OR 1.85; 95% CI 1.65 to 2.08) with penetrating injuries (OR 2.12; 95% CI 1.96 to 2.28). Those with a history of leaving against medical advice had an 80% higher likelihood of being readmitted (OR 1.80; 95% CI 1.30 to 2.49).

CONCLUSIONS: Recidivism after major trauma remains a significant public health concern. This study gauges the previously unquantified burden of recidivism among children and factors predisposing to exposure to injurious stimuli. Targeted interventions are required to curtail exposure of children to violence.

Farnesoid-X Receptor Inhibition in Macrophages Decreases Intestinal Epithelial Chemokine Expression

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INTRODUCTION: Farnesoid-X receptor (FXR) is a nuclear bile acid receptor involved in intestinal homeostasis. Our laboratory has shown that FXR knockout (FXRKO) mice are protected from acute intestinal injury vs wild-type (WT) mice. We have also shown that bone marrow-derived macrophages (BMDM) from FXRKO mice express lower levels of some pro-inflammatory cytokines. Chemokines like CXCL1 are a cytokine class that recruits inflammatory cells. We sought to determine if FXRKO BMDM contribute to reduced inflammation and damage by decreasing chemokine expression in intestinal epithelial cells. We hypothesize that media containing cytokines from FXRKO BMDM will decrease chemokine expression in WT enteroids.

METHODS: We generated intestinal epithelial-derived enteroids and BMDM from WT and FXRKO mice. Wild-type enteroids were co-cultured with filtered conditioned media from naïve or activated M1 FXRKO BMDM. Farnesoid-X receptor KO enteroids were co-cultured with media from naïve or M1 WT BMDM. Cytokine expression was quantified by quantitative polymerase chain reaction.

RESULTS: When co-cultured with media from naive FXRKO BMDM, WT enteroids expressed more Cxcl1, while co-culture with media from M1 FXRKO BMDM had the opposite effect. Co-culture with media from naïve or M1 WT BMDM did not affect Cxcl1 expression in FXRKO enteroids. Expression of tumor necrosis factor-α did not change in any condition.

CONCLUSIONS: Inhibiting FXR in macrophages can alleviate inflammation in acute intestinal injury by decreasing cytokine expression. These data suggest that FXR can be a useful target to decrease the inflammatory damage that contributes to intestinal barrier leakage in acute injury states, like necrotizing enterocolitis and inflammatory bowel disease.

Firearm-Related Injury: A Source of Preventable Morbidity and Mortality in the Pediatric Population

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INTRODUCTION: Firearm-related injury is a source of significant morbidity and mortality in the pediatric population. We investigated the location, preventability, and temporal trends of pediatric firearm-related injury.

METHODS: We reviewed patients aged 18 years and younger seen at our institution's Level I pediatric trauma center who sustained a firearm-related injury from January 1, 2008 to December 31, 2017. Demographic, injury-related, and outcomes data were collected. Location was classified as rural if the injury occurred outside the region's central metropolitan county. Injury was classified as potentially preventable if the firearm was not stored securely and was used without permission. Statistical analyses included Wilcoxon rank-sum and chi-square analyses.

RESULTS: A total of 184 children sustained a firearm-related injury, 42.9% in a rural location. Compared with the urban cohort, children injured in a rural setting were younger (age 13 years; interquartile range [IQR] 9 to 15 years vs 14 years; IQR 12 to 16 years; $p = 0.0003$), more frequently of white race (81.0% vs 14.3%; $p < 0.0001$), more frequently injured by accident (70.1% vs 15.3%; $p < 0.0001$) and more frequently injured by rifle or shotgun (24.1% vs 6.67%; $p = 0.001$). Rates of death or disability and lengths of stay did not differ based on location of injury ($p =$