Conclusions: Overall, microMend is an acceptable alternative for skin closure in the ED. Nearly all participants and providers rated high levels of satisfaction during application and removal. A majority of participants also had satisfactory cosmetic results at Day 90. Advantages of microMend include ease of use, short application time, low patient-reported pain upon application, and potentially decreased need for local anesthesia. Variability in cosmesis may be dependent on patient, wound, and provider factors. Future studies could evaluate the ability for patients to remove the device at home. Randomized controlled trials are needed to compare microMend to other wound closure methods.

Methods: Children ages 4–16 years old, who presented to a single tertiary-care pediatric emergency department (PED) from 01/2013 to 06/2019 with a forearm fracture requiring reduction were eligible for inclusion in this retrospective cohort study if they underwent Bier block or procedural sedation. Patients with open fractures were excluded. Characteristics of interest included population variables, injury types, and visit timing factors. Procedure-related outcomes included length of stay, pain scores during and after the procedure, procedure success rates, hospitalization rates and unplanned return visits.

Results: 260 children were eligible for inclusion, of whom 177 (68%) underwent Bier Block and 83 (32%) underwent procedural sedation. Children selected for Bier block were more likely to be older (mean 9.5 +/- 3.1 vs. 8.0 +/- 3.4 years, p < 0.001), male (128/177[72%] versus 48/83[58%], p=0.020), have fractures involving the radius only (59/177 [22%] versus 8/83 [9.6%], p=0.048) and arrive during the weekend (65/177[37%] versus 20/83 [24%], p=0.043) compared with children receiving procedural sedation. However, no characteristics were shown to be predictive of procedure selection based upon a binary regression model ( Hosmer-Lemeshow goodness of fit X²=5.069 and p=0.750, Nagelkerke R² = 0.359). In addition, no differences were identified in procedure selection based on based on race, mechanism of injury, pre-procedure pain scores, presence of underlying medical conditions, hour of arrival, comorbid injuries, or fracture morphology. PED length of stay (220.7 +/- 98.0 vs. 304.0 +/- 134.3 min) and time from procedure to disposition (60.8 +/- 31.9 vs. 91.6 +/- 88.4) were shorter for children who underwent Bier block. Pain scores, reduction success rate, hospitalization rate, and unplanned return visits were similar in both groups.

Conclusion: There were differences in the characteristics of children selected for Bier block versus procedural sedation for forearm fracture reduction, but these differences were not predictive of procedure selection. Length of stay was shorter for patients who underwent Bier block, but other procedure-related outcomes were similar.
before, during and after the CDSS implementation among children with minor head trauma across one large system with low baseline CT rates. We compared EDs with and without access to a CDSS tool that incorporated the Pediatric Emergency Care Research Network (PECARN) minor blunt head trauma prediction rules.

Methods: We included children <18 years old presenting to 21 community EDs between 2012-2015 with minor blunt head trauma, defined by a previously validated matrix of ED chief complaints and diagnoses. Seven EDs participated in a non-randomized CDSS intervention trial between 4/2013 and 7/2014 in which enrolling providers received computerized decision support for children with minor blunt head trauma (Glasgow Coma Scale scores of 14-15). This included patient-level risk estimates of clinically important traumatic brain injury (TBI) defined by the PECARN study. Fourteen EDs did not receive the intervention and served as a comparison group. To assess CDSS sustainability and diffusion, we examined CT rates and ED LOS across CDSS and control sites over 3 time periods: pre-intervention (12 months), intervention (15 months) and post-intervention (15 months) using interrupted time series (ITS) analyses. We excluded those with GCS scores <14, a TBI diagnosis in the last year and a CT within 24 hours prior to the ED visit.

Results: There were 50,195 eligible patient ED encounters. The CT rates were as follows: pre-intervention: CDSS EDs 10.7% (95% CI: 10.0-11.3) vs. control 15.5% (95% CI: 14.8-16.2); intervention: CDSS EDs 10.7% (95% CI: 9.9-11.6) vs. control 14.7% (95% CI: 14.1-15.3); post-intervention: CDSS EDs 11.0% (95% CI: 10.5-11.6) vs. control 15.7% (95% CI: 14.9-16.5). The CDSS EDs started with and maintained a significantly lower CT rate compared to control EDs across study time periods. There was significant variation across EDs: CT rates ranged from 7.6-14.1% at CDSS sites and 7.8-21.3% at control sites. In ITS models, we found no significant difference in CT rate changes between the pre-intervention vs. intervention and intervention vs. post-intervention periods. We did not find clinically meaningful changes in ED LOS over the study period.

Conclusion: CT rates for children with minor blunt head trauma were stable in this community ED health system from 2012-2015. Unexpected baseline practice pattern differences at control versus CDSS facilities confounded our CT comparison and suggest that the CDSS sites may have already been close to a safe CT “floor” rate prior to CDSS implementation.