Neuromuscular Patients are 40% More Likely to Get a Cast Injury
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INTRODUCTION:
Cast injuries can occur during application, throughout immobilization, and during removal, with common morbidities being pressure ulcers and cast saw burns. The incidence rate of cast injuries in generalized and diagnosis specific pediatric populations is not known. The goal of this study is to accurately quantify the rate of incidence of cast injuries at a large pediatric orthopaedic practice and identify potentially modifiable risk factors to guide quality of care improvement.

METHODS:
A retrospective review was performed at our institution between July 2019 and October 2020. Inclusion criteria was all pediatric patients (<21 years old) with an orthopaedic diagnosis that was treated with casting. The child's diagnosis, specific type of cast, and training level of the person applying the cast was recorded. Patient injuries were identified through cast technicians' documentation regarding cast removal. The primary outcome was the incidence of casting injuries from July 2019 through October 2020. Additional outcomes included the association between diagnosis of neuromuscular disease and training level of individual applying the cast with casting injuries. Chi-square tests were used to compare categorical variables and post-hoc comparisons using Bonferroni correction. Injury incidence rates were calculated as number of injuries per 1,000 casts.

RESULTS:
There were 2,239 casts placed on children at this institution between July 2019 and October 2020 and a total of 28 injuries for an incidence rate of 12.5 per 1,000. Of the 28 total injuries reported, there were 5 cast saw burns (2.2 per 1,000) and 23 pressure ulcers (10.3 per 1,000). Incidence of cast injury was not significantly correlated with timing of application during the academic year or training level of the individual applying the cast (p=0.21 and p=0.86). Notably, there was a significantly higher incidence of cast injuries in individuals with a diagnosis of a neuromuscular disorder (37.4 per 1,000) than those without (7.5 per 1,000) (p<0.01).

DISCUSSION AND CONCLUSION:
The incidence of cast injuries is 12.5 per 1,000 children at our Level I Trauma tertiary referral pediatric clinic. Training level of the individual applying the cast or timing during the academic year did not correlate with cast injuries. Patients with neuromuscular disorders are at significantly higher risk for experiencing cast injuries.