OBJECTIVE
To determine a rate difference of post-operative bleeding between white and non-white children undergoing adenotonsillectomy (T&A). The results may provide parents with more information regarding the possibility of postoperative bleeding based on patient’s ethnicity.

INTRODUCTION
Tonsillectomy with or without adenoidectomy is one of the most common pediatric surgical procedures performed with most indications for surgery being sleep disordered breathing/OSA and chronic tonsillitis. Post-operative hemorrhage is a noteworthy complication given its morbidity and potential mortality. Many studies have evaluated various parameters including age, sex, indication for surgery, NSAID use, history of peritonsillar abscess, and surgical techniques in relation to post-tonsillectomy bleeding. Studies have shown racial/ethnic and socioeconomic disparities are seen in the diagnosis and treatment children with otitis media (OM) and sleep disordered breathing (SDB). No study, to date, has been performed specifically to evaluate ethnic disparity in post-tonsillectomy hemorrhage between whites and non-whites.

METHODS
A retrospective chart review of patients between the ages of 2-18 years undergoing T&A was performed at a single tertiary care center between March 2009 and September 2013. A total of 1054 patients who underwent tonsillectomy (T), T&A, or T&A and myringotomy with tube insertion were selected. Known coagulopathic patients were excluded. Cohorts were either whites or non-whites. Amongst the non-white cohort information was collected for Hispanic, African American and Asian American ethnicities. Indications and techniques of surgery were also noted.

RESULTS
As a cohort, white children did not bleed more compared to non-whites (Chi-square p=0.2500). Amongst the non-white cohort, when each ethnic group was compared separately to white children, only Asian children bled more (OR=6.54, 95% CI 1.55-27.69, p=0.0166). Age (> 6 years) and sex (males-females) was associated with a higher rate of bleeding; (OR=2.109, 95% CI 1.17-3.81, p=0.0133) and (OR=1.997, 95% CI 1.12-3.56, p<0.0187) respectively. Surgical technique (p=0.3093) or indication of surgery (p=0.2911) did not significantly impact bleed rates.

DISCUSSION
The likelihood of post-operative hemorrhage is independently affected by ethnic factors such as Asian decent, having an age greater than 6 years, and male sex. A possible reason for the observed results in Asians is a factor XII deficiency (Hageman Factor). This clotting factor is found to be lower in Asian populations compared to any other ethnic group. Patients with factor XII deficiency are typically asymptomatic, and abnormal bleeding after trauma or major surgery is extremely rare. Typically, it is an incidental diagnosis on routine coagulation studies with labs showing an abnormally prolonged aPTT and subsequently low levels of factor XII.

Coagulation factor deficiencies have been found in patients who experienced recurrent post-tonsillectomy hemorrhage, including a patient who had a factor XII deficiency. The current recommendation from the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) is to reserve pre-operative coagulation studies for patients with a suggestive family history, history of bleeding disorders or liver disease, or if the patient is taking oral anti-coagulants.

CONCLUSIONS
The results of our study may help guide parental expectations after T&A surgery, especially in children of Asian descent and possibly warrant pre-operative lab work given their higher incidence of factor XII deficiency. Given the small number of Asian children who undergo go tonsillectomy at our institution, it should not be cost-prohibitive.

REFERENCES