

## Evaluating Pegaspargase Infusion Reactions

### **Abstract:**

### **Introduction:**

A vital component of ALL treatment includes asparagine depletion therapy. Native *Escherichia coli*-derived L-asparaginase was the first agent that came to market and it showed great success but failed in half-life and frequency of administration. Pegaspargase has since replaced the native product due to its lower immunogenicity potential and less frequency of administration, although the potential for infusion reactions remains a major complication of the medication.

Differentiating between infusion reactions and true, allergy-mediated hypersensitivity reactions remains a major challenging and a major issue for treatment. The aim of this study is to determine if institutional changes at Saint Louis Children's Hospital have had an impact on minimizing infusion reaction incidence, severity and presentation.

### **Methods:**

The study was conducted as a retrospective chart review of patients who received pegaspargase therapy at Saint Louis Children's Hospital and was approved by the Washington University IRB board. The primary objective of the study is to compare the incidence of pegaspargase infusion reactions, before and after the implementation of new administration techniques. Secondary objectives include comparing the severity and presentation of reactions experienced between the groups as well as the result of experiencing reactions.

### **Results:**

19 Patients were enrolled in the Pre-Intervention Group while an additional 18 were enrolled in the Post-Intervention Group. 5 patients in the Pre-Group experienced reactions to pegaspargase while 3 patients had a reaction in the Post-Group (26.3% vs 16.7%). Every patient who experienced a reaction in the Pre-Group was transitioned to Erwinia therapy, while patients in the Post-group also underwent retreatment or desensitization. The average reaction experienced was grade 2 for both groups while the reactions experienced in the Pre-Group were more consistent with infusion reactions while the Post-Group was more typical of true allergic reactions.

### **Conclusion:**

Although not statistically significant in incidence reduction, new methods of administering pegaspargase clinically had the impact of minimizing the rate of infusion reactions as is displayed by reactions more consistent with that of true hypersensitivity reactions.