

## Understanding Patient-Centered Factors of Percutaneous Electrical Nerve Field Stimulation (PENFS)

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**Background:** Disorders of gut-brain interaction (DGBI) affect approximately 25% of U.S. children and include conditions like functional dyspepsia and irritable bowel syndrome. Percutaneous Electrical Nerve Field Stimulation (PENFS) like IB-Stim shows promise in reducing pain, nausea, and disability in pediatric DGBI cases. This study explores how patient-level factors like demographics, diagnoses, and orders relate to IB-Stim usage and aims to identify barriers to care and guide patient-centered treatment strategies.

**Methods:** We conducted a retrospective cohort study of 60 patients (8-21 years) who received IB-Stim through the IU Health/Riley Pediatric Gastroenterology department between July 2021 and June 2025. Patient data was extracted from the IU Health Cerner EMR with support from Children's Health Services Research. Collected variables included demographics, diagnoses, medications, insurance type, and other clinical information. We performed a univariate analysis between the demographics (age, gender, income, insurance type), diagnoses, and types of orders. Chi-squared tests were performed between gender and insurance type and the other data elements. T-tests were performed between age and income and those data elements.

**Results:** Descriptive analysis findings show that more females undergo IB-Stim treatment. Patients tend to receive treatment in their mid-teenage years (M=15.8 yrs., SD=2.4, Median=16.2 (14.7-17.8)). Univariate analysis did not show clear patterns on any variations among demographic information and treatment usage.

**Conclusions and Potential Impact:** The lack of variation may occur because all patients received treatment within the same practice. This finding indicates that differences in demographics—such as age, insurance type, and income—do not dictate whether or not a patient is offered IB-Stim treatment at Riley Hospital. Gender and age distribution suggest other factors influence IB-Stim usage. Further research on these patient-centered factors will be conducted in a qualitative study, in which participants will partake in a semi-structured interview and answer questions about their experiences and expectations with IB-Stim.