

Implementing an Infantile Spasms Guideline and Electronic Medical Record Order Set for Inpatient Healthcare Providers

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Introduction

- Infantile spasms (IS) is a severe epilepsy diagnosis and infants presenting with IS are an especially vulnerable population.
- Misdiagnosis and inaccurate treatment of IS is potentially tragic, with unsuccessful treatment associated with devastating neurodevelopmental delay and continued epilepsy.
- Subsequently, there has been a significant focus on promoting adherence to evidence based evaluation and treatment guidelines aimed at healthcare providers treating patients with infantile spasms.

Objectives

The objective of this QI project was to:

1. Implement a guideline and electronic medical record order set for inpatient neurology providers caring for patients with infantile spasms (clinical intervention).
2. To determine provider knowledge of the evaluation and treatment of these patients prior to and after a provider meeting reviewing the new guideline (educational intervention).
3. To determine provider adherence to the guidelines using an audit tool.

Methods

- A pre-post test design using an investigator generated pre-post test was used to determine the effect of the educational intervention on provider knowledge.
- A retrospective chart review was completed to evaluate provider adherence to the new guideline and EMR order set with use of an investigator produced audit tool titled the "Infantile Spasms Bundle Tool" on 16 patients prior to and after the clinical intervention.

Setting

- Neurology inpatient floor comprising of a 34 inpatient beds at an urban childrens hospital.

Sampling

- **Educational Intervention:** Convenience sample of inpatient healthcare providers.
- **Clinical Intervention:** Data from 16 patients meeting inclusion criteria before and after clinical guideline implementation from 08/01/2018 to 03/01/2019.

Outcome	Pre-Intervention		Post Intervention		p-value ^b
	Mean	SD	Mean	SD	
Total Score ^a	7.33	3.59	10.96	0.99	.000
Questions 1-3: Presentation & Diagnosis ^a	8.67	2.20	11.52	1.05	.000
Questions 4-6: Evaluation ^a	6.04	3.37	10.2	0.89	.000
Questions 7-9: Treatment ^a	8.2	2.52	11.52	0.97	.000
Questions 10-12: Monitoring ^a	6.72	2.79	10.56	2.34	.000

Note: ^aMean difference in all pre-post test scores were analyzed using paired-t test. ^bRaw score from 12 question investigator generated questionnaire. ^cStatistical significance when p <0.05.

Statistical Analysis

- A paired t-test (alpha=0.05) was used to evaluate change in provider knowledge after educational intervention.
- A retrospective chart review was completed on the 16 patients prior to and after the clinical intervention, and an independent t-test was used to evaluate provider adherence to the guideline.
- All analyses performed using SPSS.

Results

Educational Intervention

- Questionnaire scores increased after the educational intervention with a lower pre-test raw score (mean ± SD: 7.33 ± 3.595) as compared to higher post-test raw score (mean ± SD: 10.96 ± .999, p=0.001).
- Participant scores were also evaluated by question topics including presentation and clinical diagnosis, evaluation, treatment, and monitoring. Questionnaire scores were statistically increased after the educational intervention in all topic categories.

Clinical Intervention

- There was a statistically significant increase in provider adherence to the implemented guideline as evidenced by the Infantile Spasms Bundle Tool audit scores of 16 patients prior to and after the intervention.
- Mean percentage completion pre-intervention: 65.3%
- Mean percentage completion post-intervention: 98%, (p-value: 0.025).

Summary

- These findings suggest that after the educational intervention, inpatient healthcare providers were significantly more knowledgeable on evidence based medical care of patients with infantile spasms.
- After the the clinical intervention when the infantile spasms guideline and EMR order set was available for provider use, provider adherence to the guideline increased.

Question	Pre Intervention Bundle Raw Score Mean (out of 16)	Post Intervention Bundle Raw Score Mean (out of 16)	p value ^b
1. Were all infantile spasms imaging tests ordered for this patient?	7	7	NS ^c
2. Were all infantile spasms metabolic tests ordered for this patient?	2.66	6.51	0.012
3. Was there a medication dosing schedule listed on this patient's discharge instructions?	3.01	7	0.000
4. Were all infantile spasms genetic tests ordered for this patient?	6.58	7	NS ^c
5. Was this patient treated with an FDA approved medication for the treatment of infantile spasms?	2.66	6.51	0.000
6. Was a video electroencephalogram completed for this patient?	6.58	7	NS ^c
7. Was there an appointment scheduled for this patient for a repeat video electroencephalogram within 14-21 days post treatment?	3.50	7	0.000
Total Adherence Score Mean (out of 16)	4.57	6.86	0.025
Total Adherence Score (Percentage)	65.3	98	

Note: ^aMean difference in all pre-post clinical intervention scores were analyzed using independent samples -t test. ^bMean score derived from 16 patients meeting inclusion criteria. ^cStatistical significance when p <0.05. ^dNot Significant

Conclusions

- This QI project demonstrated guideline implementation for inpatient healthcare providers on the treatment of infantile spasms may be useful in providing evidence based care to a larger percentage of patients with time sensitive diagnoses.
- The educational intervention with an in-person meeting was successful in increasing inpatient healthcare provider knowledge on a newly implemented guideline on the evidence based treatment of patients with infantile spasms.
- Adherence to the newly established guideline also increased as evidenced through auditing charts with the Infantile Spasms Bundle Tool. Adherence to the newly established guideline may also be related to the educational intervention, but also due to the available EMR order set tool.



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