

Adherence to Prophylactic Anticonvulsants Guidelines for Newly Diagnosed Brain Tumor Patients: A Quality Improvement Study



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Background & Aims

- Seizures are common initial symptoms among patients with brain neoplasm.
 - The average continuation of prophylactic AEDs is 12 months after a craniotomy at the project site, which significantly deviates from the evidence to prescribe prophylactic anticonvulsants for up to one week after surgery.
- A quality improvement project was implemented to improve adherence to evidence-based prophylactic AED guidelines for newly diagnosed seizure-naïve brain tumor patients. The aims were to:
- determine if the intervention improves adherence rate
 - determine the impact on provider knowledge and attitude
 - Determine if the prescribing rate of unnecessary prophylactic anticonvulsant would decrease

Methods

Design: Quasi-experimental, double pre-test and post-test intervention
Setting: 300-bed Neuro-Oncology outpatient clinic in the West Coast
Sample: All providers in the program; newly diagnosed seizure-naïve brain tumor patients perioperative started on prophylactic anticonvulsants
Measures:

- Guideline Adherence Rate:** #newly diagnosed patients not on seizure prophylaxis and weaned off prophylaxis if started before craniotomy vs total # of newly diagnosed patients post craniotomy
- AED Prescription Rate:** # prescribed prophylactic AEDs per patient vs, the total # of patients
- Provider Survey:** 14-item questionnaire on knowledge and attitudes about seizure prophylaxis, very unlikely (1) to very likely (5)

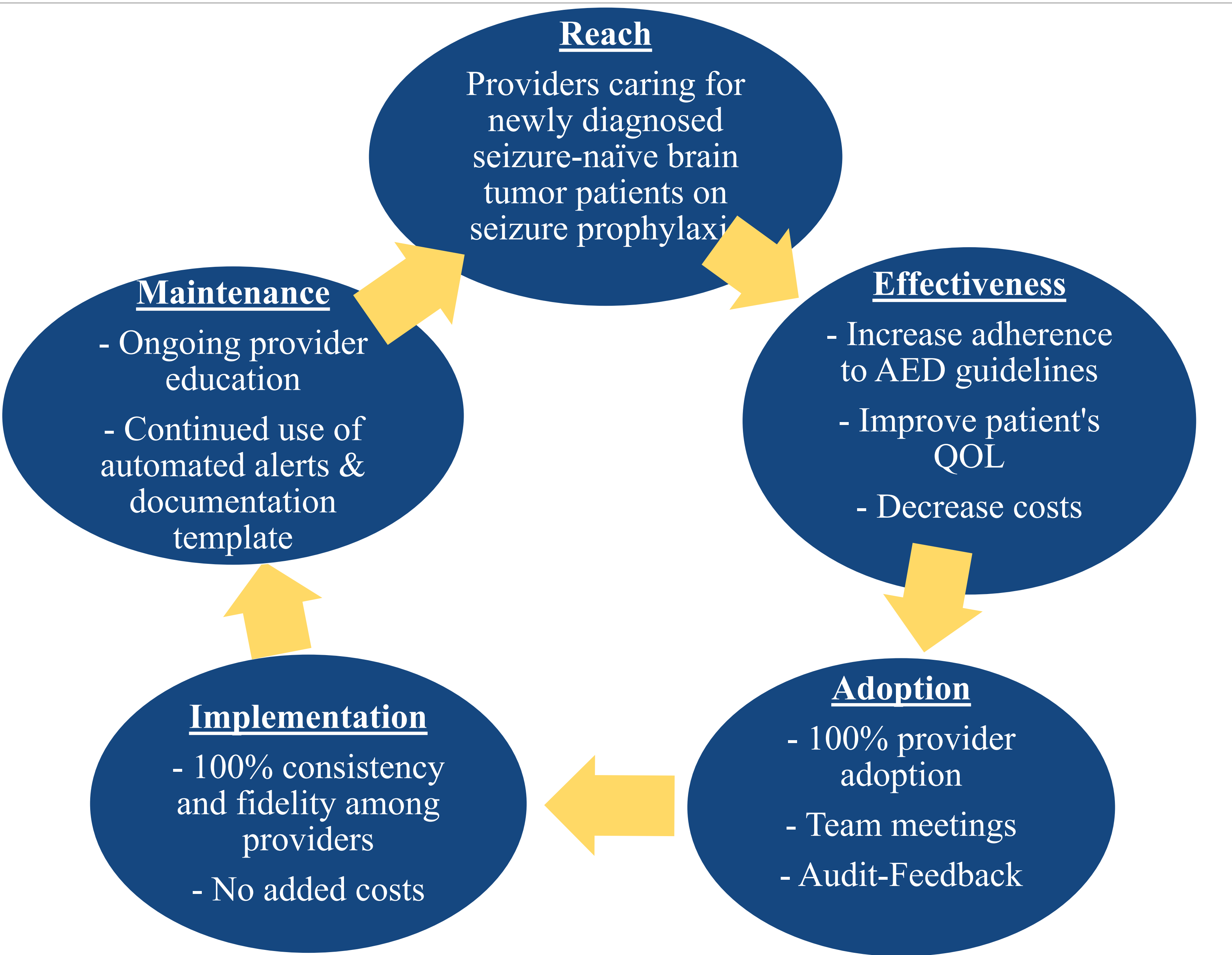
Analyses: Descriptive statistics, Wilcoxon signed-rank, Chi-square

Participants

There was a total of 4 all female neuro-oncology provider participants with a median of 6.5 years of experiences (IQR = 4.75).
 A total of 15 patients, 53.3% females, average age of 58 years old, 80% were diagnosed with primary brain tumors, and 20% were diagnosed with metastatic brain tumors.

Intervention

Using the RE-AIM translational framework, a multi-phase intervention consisting of provider education sessions, provider alerts, documentation templates, and a weekly audit and feedback was implemented.



Aim 1 Results: Guideline Adherence

- Four-month pre-intervention baseline adherence rate from 5/1/2020 to 08/31/2020 was 16% and the previous one-year baseline adherence rate from 09/01/2019-12/31/2019 was 28%.

Table 1. Guideline Adherence Results for Aim 1

Period	Total patients	# of Patients Not on Seizure Prophylaxis (%)	# Patients on Seizure Prophylaxis (%)	Fisher's exact p-value
Comparison of one-year pre-implementation to post-implementation period				
Pre-implementation	18	5 (27.8%)	13 (72.2%)	Ref
Post-Implementation	15	14 (93.3%)	1 (6.7%)	0.0002*
Comparison of four months pre-implementation to post-implementation period				
Pre-implementation	19	3 (15.8%)	16 (84.2%)	Ref
Post-Implementation	15	14 (93.3%)	1 (6.7%)	<0.001*

Aim 2 Results: Provider Knowledge

- Providers changed their knowledge in the desired directions, however none of the changes were statistically significant.

Table 2. Provider Knowledge and Attitudes Results for Aim 2.

Statement	Mdn Pre	Mdn Post	Mdn Δ
	1. Likelihood to prescribe AEDs	2.0	1.5
2. Likelihood of the other providers to prescribe AEDs	3.0	1.5	-1.5
3. Unnecessary prophylactic AEDs use contributes to cognitive impairment and jeopardizes quality of life.	3.5	4	0.5
4. Over prescribing prophylactic anticonvulsant is national and global issue.	3.5	3.5	0
5. The extent you feel prophylactic anticonvulsant is under or overused.	5.5	7	1.5

Aim 3 Results: AED Prescription Rates

AED Prescription rates decreased by 2.2% when compared to the four-months pre-implementation rates and decreased by 2.6% when compared to the one-year pre-intervention rates. None of these decreases were statistically significant.

Conclusion

- The intervention may offset barriers to adoption of prophylactic AED guidelines in a neuro-oncology program and decrease prophylactic anticonvulsant prescribing rates.
- Following the AAN, SNO, and ASCO guidelines may help clinicians avoid the potential side effects of anticonvulsant-induced cognitive, behavioral, and psychiatric issues that can impair the patient's quality of life.

References

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