Acute Management of Seizing Patients – A Quality Improvement Project

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Introduction

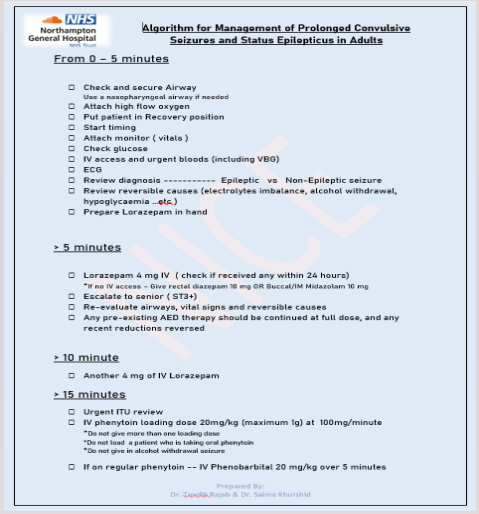
Seizures are a frequent occurrence among hospitalized patients and they were identified in an approximately 3.6 persons of total hospitalization [1]. Data from Northampton General Hospital suggested that 30 patients per week were at risk of having a seizure. Junior doctors working in an emergency-setting with little experience, under the expectation to act in seconds may lead to missing vital steps and making irrational decisions.

Aim

To provide high-quality education for junior doctors in developing a comprehensive and clear approach in managing a seizing patient and bridging any knowledge gaps. In order to provide a more supportive and safe practice in a peri-arrest scenario of a seizure.

Materials and Methods

An assessment tool was produced using NICE guideline[2] by which 24 junior doctors working in acute medicine were assessed to determine their level of knowledge on managing a simulating seizing mannequin. Based on the first cycle result, a bundle on seizure management was approved an introduced in the Trust. A post-intervention assessment was conducted using the same assessment tool. Data was analyzed using Microsoft Excel to compare pre and post intervention improvement in the knowledge of managing a seizure.



Algorithm for Management of Prolonged Convulsive Seizures and Status Epilepticus in Adults

From 0 – 5 minutes

- ☐ Check and secure Airway
  Use a nasopharyngeal airway if needed
- ☐ Attach high flow oxygen
- ☐ Put patient in Recovery position
- ☐ Start timing
- ☐ Attach monitor (vitals)
- ☐ Check glucose
- ☐ IV access and urgent bloods (including VBG)
- ☐ ECG
- ☐ Review diagnosis ---------- Epileptic vs Non-Epileptic seizure
- ☐ Review reversible causes (electrolytes imbalance, alcohol withdrawal, hypoglycaemia ...etc.)
- ☐ Prepare Lorazepam in hand

> 5 minutes

- ☐ Lorazepam 4 mg IV (check if received any within 24 hours)
  *If no IV access – Give rectal diazepam 10 mg OR Buccal/IM Midazolam 10 mg
- ☐ Escalate to senior (ST3+)
- ☐ Re-evaluate airways, vital signs and reversible causes
- ☐ Any pre-existing AED therapy should be continued at full dose, and any recent reductions reversed

> 10 minute

- ☐ Another 4 mg of IV Lorazepam

> 15 minutes

- ☐ Urgent ITU review
- ☐ IV phenytoin loading dose 20mg/kg (maximum 1g) at 100mg/minute
  *Do not give more than one loading dose
  *Do not load a patient who is taking oral phenytoin
  *Do not give in alcohol withdrawal seizure
- ☐ If on regular phenytoin -- IV Phenobarbital 20 mg/kg over 5 minutes

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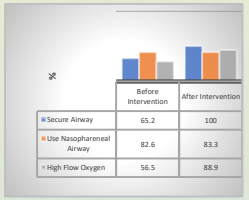
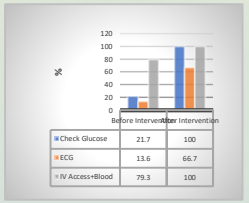
Results

0-5mins

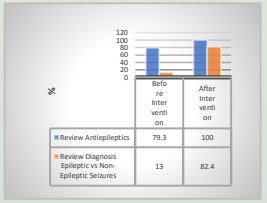


	Before Intervention	After Intervention
Secure Airway	65.2	100
Use Nasopharenseal Airway	82.6	83.3
High Flow Oxygen	56.5	88.9

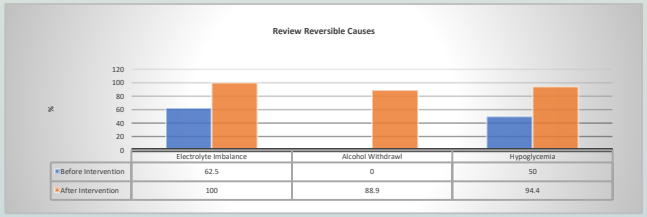
	Before Intervention	After Intervention
Recovery Position	47.8	88.9
Start Timing	72.7	100
Attach Monitor	56.5	100



	Before Intervention	After Intervention
Check Glucose	21.7	100
ECG	13.6	66.7
IV Access+Blood	79.3	100

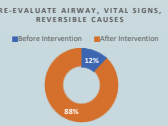


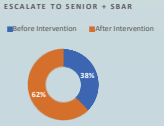
	Before Intervention	After Intervention
Review Antiepileptics	79.3	100
Review Diagnosis Epileptic vs Non-Epileptic Seizures	13	82.4

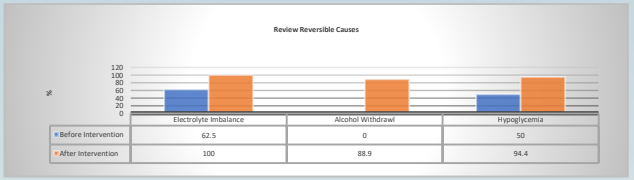


	Electrolyte Imbalance	Alcohol Withdrawl	Hypoglycemia
Before Intervention	62.5	0	50
After Intervention	100	88.9	94.4

5-10mins







	Electrolyte Imbalance	Alcohol Withdrawl	Hypoglycemia
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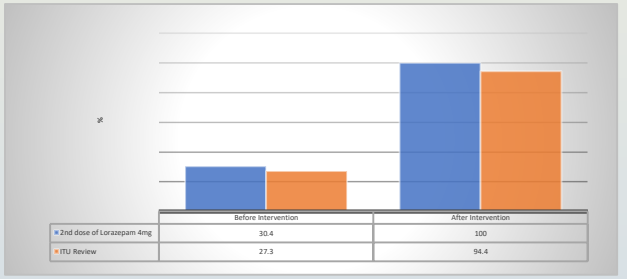
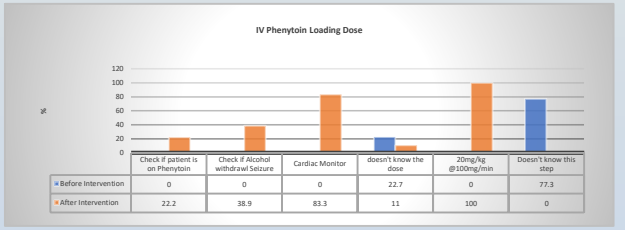
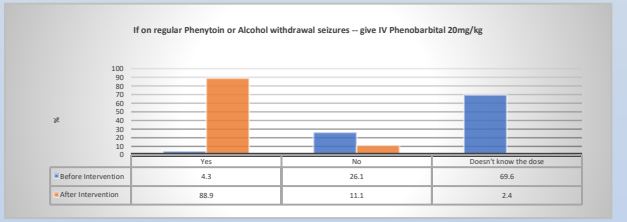


	Before Intervention	After Intervention
2nd dose of Lorazepam 4mg	30.4	100
ITU Review	27.3	94.4



	Check if patient is on Phenytoin	Check if Alcohol withdrawl Seizure	Cardiac Monitor	doesn't know the dose	20mg/kg @100mg/min	Doesn't know this step
Before Intervention	0	0	0	22.7	0	77.3
After Intervention	22.2	38.9	83.3	11	100	0



	Yes	No	Doesn't know the dose
Before Intervention	4.3	26.1	69.6
After Intervention	88.9	11.1	2.4

Conclusion

Based on our findings, a remarkable improvement was observed in the knowledge and confidence in managing a seizing patient among junior doctors. This is essential in having a positive impact on patient-safety and care.

References

1. Fields MC, Labovitz DL, French JA. Hospital-onset seizures: an inpatient study. JAMA Neurol. 2013 Mar 1;70(3):360-4. doi: 10.1001/2013.jamaneurol.337. PMID: 23319087

2. National Institute for Health and Care Excellence. Epilepsies: diagnosis and management. February 2020 [internet publication].