Section-14 Medical Services Resource Manual	**MSRM-140137-05**	**Page: 1**	**Effective Date: 10/23/17**
Management of Seizure Disorder	**ACA Standards: 4-4359M, 4-4367**		
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Management of Seizure Disorder

Seizure disorders are characterized by recurrent, episodic neurologic disturbances caused by abnormal electrical activity in the brain. Seizures may be a result of neurologic injury or a structural brain lesion, systemic medical diseases, select medications or may be idiopathic.

Isolated, non-recurrent seizures may occur in otherwise healthy individuals for a variety of reasons, and under these circumstances the individual is not said to have a seizure disorder.

I. Seizure Disorders

The most common types of seizures are classified as follows:

A. Partial or focal seizures – begin in one area of the cortex

1. Simple – without loss of consciousness

2. Complex – involves loss of consciousness

B. Generalized seizures – involve the entire brain

1. Tonic-clonic (grand mal)

2. Absence (petit mal)

C. Status epilepticus refers to prolonged or repetitive seizures without a period of recovery between attacks. When tonic-clonic seizures are involved, this state can be life threatening.

II. Initial Evaluation

The initial evaluation should determine whether there is a previous history of seizures and their treatment; events, diseases, medications, or symptoms which might reveal a cause for the seizures; and rule out other disorders such as syncope, transient ischemic attack, or migraine. Documentation of the chronic illness visit will be in accordance with OP-140137 entitled "Chronic Illness Management" and on the "Chronic Illness and/or Routine/Physical Examination" DOC 140137A.

A. History

1. Head trauma

2. Meningitis or encephalitis (fever)

3. Headache

4. Change in mental status

5. Accurate description of the event

6. Diabetes, thyroid disease, alcoholism, liver failure, renal failure

7. Medication use:

Common formulary medications that can cause seizures:	
Antidepressants (especially TCAs)	Penicillins
Antipsychotics	Phenothiazines- (promethazine, prochlorperazine)
Buproprion	
Isoniazid	Theophylline

B. Examination

1. Complete neurologic exam

2. Cardiovascular exam (look for causes of syncope)

3. HEENT exam (look for trauma or deformities)

4. Check for injuries sustained during seizure

C. Lab and other Diagnostic Studies

1. Complete metabolic profile (electrolyte abnormalities, liver failure, renal failure, glucose abnormalities)

2. RPR, if not previously done

3. EEG if not previously done

4. CT or MRI indicated if focal neurologic signs or symptoms are present

5. A prolactin level drawn within 30 minutes of a generalized tonic-clonic seizure may help differentiate if pseudoseizure is suspected clinically. A dramatic increase is common after a true seizure but is absent after a pseudoseizure. The predictive value of this test is not 100% but a positive test is a good indicator of true seizure activity.

III. Treatment

A. Injury Prevention

1. Bottom bunk assignment

2. Disapprove for work in the kitchen, no work around dangerous machinery

3. Patient education regarding warning signs (aura)

B. Treat Secondary Causes

1. Hypo- or hyperglycemia

2. Sodium, potassium, calcium abnormalities, uremia

3. Acute alcohol withdrawal

4. Remove offending medications, if possible (See Section II, A7.)

C. Seizure Medications

1. **Generalized tonic-clonic**

1st line - Phenytoin, Valproic Acid, Topiramate

2nd line - Carbamazepine, Lamotrigine, Phenobarbital, Levetiracetam,

2. **Partial seizures**

1st line - Phenytoin, Carbamazepine, Valproic Acid.

2nd line - Lamotrigine, Topiramate, Phenobarbital

3. **Absence** – Valproic Acid

Drug Name	Dosage	Side Effects	Monitoring	Common Drug Interactions
Phenytoin	300-400 mg/d	Gum hyperplasia, hirsutism, ataxia, incoordination, confusion	Drug level – if seizures uncontrolled or toxicity symptoms present	Carbamazepine, Phenobarbital, Cimetidine, Fluoxetine, Warfarin, Sulfonamides, Isoniazid
Carbamazepine	600-1200 mg/d	Bone marrow suppression, liver toxicity, GI upset	Drug level – if seizures uncontrolled or toxicity symptoms present CBC – every 6 mo. **Hepatic Function Panel- every 6 mo**	Phenytoin, Phenobarbital, Erythromycin, Proproxyphene, Cimetidine, Fluoxetine, Isoniazid
Phenobarbital	60-120 mg/d	Sedation, ataxia, confusion	Drug level – if seizures uncontrolled or toxicity symptoms present	Valproic Acid, Phenytoin
Valproic Acid	750-1250 mg/d	Bone marrow suppression, liver toxicity, GI upset	Drug level – if seizures uncontrolled or toxicity symptoms present CBC – every 6 mo. **Hepatic Function Panel every 6 mo.**	Carbamazepine, Phenytoin, Phenobarbital, Cimetidine
Topiramate	200 - 400 mg/d	Psychomotor slowing, sedation, weight loss	Complete metabolic profile every 6 months	Carbamazepine, Phenytoin, Phenobarbital
Levetiracetam	1000- 3000 mg/d	Sedation, incoordination, anemia, Leucopenia Psychosis GI upset; weakness, ataxia.	CBC – every 6 months Therapeutic blood level not established. Withdraw gradually.	Carbamazepine
Lamotrigine	150-500 mg/d	Sedation, ataxia, headache, Stevens-Johnsons syndrome, toxic, epidermal necrolysis	N/A	Carbamazepine, Phenytoin, Phenobarbital, Valproic Acid

1. A first – line medication should be used initially, and titrated until seizures are controlled, or side effects prevent further dose increases.

   If seizures continue at maximum dose, a second agent is added and titrated as before, when seizures are controlled, the first agent should be gradually withdrawn.

2. Treatment with 2 medications is rarely needed, and more than two medications is almost always unhelpful.

3. Clinical response is more important than drug level in determining dose. Drug level monitoring is only indicated for suspected non- compliance or toxicity.

4. Continued poor seizure control may necessitate hospitalization or neurology consult to assist in achieving control.

D. Status Epilepticus (These treatments are not indicated for an isolated seizure)

   1. Protect airway

   3. Prevent injury

   3. D50 25-50ml IV AND

   4. Ativan 2-4 mg IM: repeat in 10 minutes if necessary, **OR**

      Ativan 2-4 mg IV, no faster than 2 mg/min; repeat in 10 minutes if necessary.

   5. Phenytoin 15-20 mg/min IV, no faster than 50 mg/min (do not mix in glucose-containing solution); or Fosphenytoin 15-20 mg/kg PE (phenytoin equivalents) IV no faster than 150mg PE/min.

   6. Emergency room evaluation and treatment ASAP

IV. Goals of Therapy

A. Acceptable seizure control (individualized for patient)

B. Minimize medication side effects and drug interactions (see medication table Section III, item C.)

C. Patient education

D. Lifestyle modifications (stress and smoking)

E. If patient meets all goals of treatment without medications and seizure free for 12 months, a health care provider can discharge them from chronic clinic enrollment.

V. Routine Follow-Up

A. Chronic Clinic Visit

1. History

a. Frequency of seizures

b. Medication adherence

c. Medication side effects

d. Changes in symptoms

2. Exam

a. Neurologic exam

b. Evaluate any injuries

c. Complete set of vital signs (weight, temperature, pulse, respiration, blood pressure)

3. Laboratory

See medication table Section III. item C.

4. Categorize in accordance with “Severity Classification of Common Chronic Illness” (OP- 140137, Attachment A).

B. Annually

1. Complete history and physical exam

2. Laboratory

   a. See medication table Section III. item C.

   b. Complete metabolic profile

3. Oral exam by health care provider with referral to dental as needed.

C. Vaccines

1. Influenza (annually)

VI. Stopping Medication Therapy

Many patients require medication therapy for life. However, approximately half of seizure-free patients can stop their medications and remain seizure-free for life. A trial of gradual medication tapering over at least 2-3 months can be considered under the following circumstances:

A. No seizures for 2-5 years

B. Single type of partial seizure or single type of primary generalized tonic clonic seizure

C. Normal neurological exam – no structural brain lesion

D. EEG normalized with treatment

VII. References

OP-140137 entitled "Chronic Illness Management"

Based on Harrison's Principles of Internal Medicine – 17th edition

Pharmacotherapy: A Pathophysiologic Approach – 7th edition

2004 Current Medical Diagnosis and Treatment

American Academy of Neurology Guidelines 2004

American Epilepsy Society Antiepileptic Drug Guidelines 2007

VIII. Action

The chief medical officer, Office of Medical Services will be responsible for compliance with this procedure.

Any exceptions to this procedure will require prior written approval from the director.

This procedure will be effective as indicated.

Replaced: Medical Services Resource Manual 140137-05 entitled "Management of Seizure Disorder "dated October 19, 2017.

Distribution: Medical Services Resource Manual

Referenced Forms	Title	Located In
DOC 140137A	"Chronic Clinic Note/Physical Examination"	OP-140137

Attachments

Attachment A	"Severity Classification of Common Chronic Illness"	OP-140137