Seizure Management (Adult/Pediatric)

Site Applicability

All VCH & PHC sites

Practice Level

Basic Skill for the following Professions:

- RN, RPN, LPN, NP
- Vancouver Community Primary Care Clinic MDs

At some sites insertion of oral airways is an advanced nursing skill requiring further training, refer to your site policy/guideline.

Need to Know

The term Patient is used throughout this document but is intended to be synonymous with Client or Resident

This guideline is a general guide to managing seizures in the adult and pediatric population. Individual facilities may have specific guidelines that should also be referred to.

Seizures are the manifestations of periodic, excessive and sudden outbursts of electrical activity from dysfunctional neurons in the brain. This may be accompanied by an abrupt alteration in motor and sensory function and level of consciousness. A single seizure can occur as a result of trauma, tumour, stroke, Infection / fever, electrolyte imbalance drug / alcohol [1] use or withdrawal, hypoxemia, hypoglycemia.

An obstetrician should be consulted **immediately** when a pregnant woman has a seizure. Eclampsia (a complication of pregnancy) can cause seizures or loss of consciousness. Refer to the Perinatal Services of B.C. Obstetric Guideline 11, Hypertension in Pregnancy for appropriate management of eclampsia.

A condition of recurring seizures is known as epilepsy. Epilepsy occurs in approximately 0.5 – 1% of the population with only about half of those having an identifiable etiology.

Most seizures last less than 2 to 3 minutes and in patients with a known seizure disorder are not usually a medical emergency – the exception being status epilepticus, which is defined operationally for treatment purposes as:

- 5 or more minutes of continuous seizures, or
- 2 or more discrete seizures between which there is incomplete recovery of consciousness

This is considered a medical emergency requiring prompt attention to prevent further morbidity with first line treatment being intravenous administered Ativan (lorazepam) (UpToDate, 2015). In VCH/PHC community settings, there is little support and on-going competence for intravenous starts, therefore the recommended course of action is to call 9-11 and continue with supportive measures as laid out in this guideline.

Patients with no previous history of seizure activity or those with a known alcohol misuse history should be referred to a physician/nurse practitioner (NP) as soon as possible for further assessment and possible transfer to tertiary care services for alcohol withdrawal management support.

All seizures require the patient to be monitored and protected until patient has returned to pre-seizure level of consciousness.

For more seizure information see Appendix A.

[1] Alcohol lowers seizure threshold and interacts with medications

Practice Guideline

Note: Additional measures may be required if patient is pregnant (e.g. fetal assessment)

Equipment & Supplies (as available / applicable in your setting)**:**

- Oxygen
- Pulse oximeter
- Suction equipment and supplies
- Disposable gloves
- Pillows / rail padding
- Oral airway

Assessment - During Seizure	Interventions - During Seizure
Assess type, duration and characteristics of seizure activity including: **ABC's** • Airway patency, breathing (respiratory rate, rhythm, depth), O_2 saturation (if possible & equipment available). • Change in lip/face colour **Responsiveness** • Responsive or unresponsive • Glasgow Coma Scale, including pupils (if possible) **Duration, Progress & Characterization of Each Seizure Phase** • Pre-seizure activity • Order of events (e.g. started with head, progressed to left arm) • Head and limb movements including automatisms (jerking, lip smacking etc) • Eye movements, eye deviation (note which direction) pupil size and reaction • Incontinence of bladder and / or bowel	• **Stay with patient at all times** during seizure activity. Delegate activities that are not at patient's side. • Position patient safely - If standing, guide to the floor, place in lateral position with head flexed slightly forward if possible (airway). If in bed, place bed in lowest position, and place pillows or rail padding along side rails • Protect patient's head from injury; cushion the head, clear objects from the surrounding area. • Loosen restrictive clothing, and clear surrounding area of hazards. • Do not restrain patient. • Do not put anything in the mouth. • Provide as much privacy as possible during and following the seizure. • Provide reassurance (verbal). **Call Code Blue/911 immediately if:** • Concerned about an obstructed airway, respiratory or cardiac arrest or patient's colour indicates hypoxemia OR you need immediate assistance • Seizure activity lasts for more than 5 minutes • Refer to Level of Interventions/DNAR orders as appropriate • You are in a community setting and the client does not have an existing seizure care plan to follow. **Other interventions if available:** • Administer oxygen if necessary to maintain oxygen saturation level above 92%. If seizure length sustained / patients colour indicates hypoxemia patient may require intubation to maintain airway. • Suction excessive saliva or emesis if needed (do not try to suction or place anything beyond teeth during seizure) • Administer seizure medication if ordered. Check PRN orders: 'If Seizure occurs'. If none ordered, in hospitalized patients, delegate colleague to call physician/NP for stat orders. Other settings call patients physician/NP as needed.

Assessment – Following Seizure	Interventions Following Seizure

• Assess vital signs, oxygen saturation and sedation level at 15 to 30 minute intervals until patient is conscious and has returned to pre-seizure level of orientation.
  ○ In community follow the individual care plan if one exists. Call 911 for transport to hospital if required.
  ○ In hospital & PRN assess Q30 min x 1 and Q1H x 2, or as prescribed by physician
• Assess patient's neurological status after seizure (level of sedation, orientation, headache, language deficits, coordination, weakness/paralysis, behaviour changes).
• If a fall occurred or is suspected to have occurred, do not move patient until they are assessed for injury.
  ○ Follow site/agency specific Falls Guidelines as appropriate
  ○ In Community, paramedics or onsite Physician/NP should assess
• Assess patient for other traumatic injury. (New areas of pain/discomfort, bruising, abrasions, skin tears etc)
• Assess for bowel/bladder incontinence.
• Inform physician/NP of seizure activity, if not already aware
	All Care Settings (as applicable)**:**
	• Position in the recovery or lateral position to allow drainage from mouth.
	• Consider use of oral airway prior to potential intubation for compromised airway.
	• If vomiting occurs, clear the airway
	• Maintain environment free of potential safety hazards.
	• Ensure patient safety until he/she returns to pre-seizure LOC. Consider keeping patient on close care (within eye sight of care provider)
	• Develop individualized seizure management plan as needed, include seizure triggers, type/usual pattern of seizure, usual frequency and current effective management (including medication).
	
	In hospital:
	• Patients should be accompanied when going off an inpatient unit if seizure within 24 hours or is known to have frequent seizures
	
	For patients with known seizure disorders / recurrent seizures:
	• Ensure emergency equipment such as oxygen /suction is easily accessible either at bedside or in a nearby location
	• Suction PRN after seizure activity has stopped
	• Ensure PRN medications are readily available
	• Use padded side rails /pillows as needed to protect patient. Consider implications of having side rails up (restraint)
	
	In Residential Care / Community Settings:
	The Care Plan should specify an individualized seizure plan (if history indicates one is needed). If seizures are frequent, the daily care instructions should provide specific guidance.

Patient / Family Education: (for pregnant patient, advice of perinatal team should be obtained)

1. Caution patient to lie down and advise others if experiencing pre-seizure 'aura' (in facilities – tell your nurse.
2. Inform patient of any clinician orders restricting activity.
3. Discuss with patient the importance of familiarity with their medications and maintaining their medication regime to prevent breakthrough seizures.
4. Encourage showering instead of bathing (in facilities – inform client to alert staff if going to shower).
5. Advise avoidance of alcohol, street drugs due to incompatibility with seizure medications.
6. Encourage patient to wear a medical alert bracelet or carry identification card.
7. Hypoglycemia, fatigue, stress and illness have potential to initiate seizure activity. A balanced diet and adequate sleep are recommended.
8. Some medications may interfere with effectiveness of oral contraceptives, making pregnancy a possibility. Advise patient to talk to their clinician if they are planning to become pregnant as soon antiepileptics are teratogenic.
9. Driving restrictions may be implemented
10. Some patients need to wear a helmet to prevent head trauma
11. Review seizure management plans

12. Resources:
    - Nurse Clinicians (where available)
    - Pharmacists
    - Physicians
    - Epilepsy Canada (www.epilepsy.ca) includes useful resources such as: PDF booklets Seizures and First Aid and Answers to Your Questions
    - Patient Health Education Materials: (PHC and VCH)

Documentation

1. Document assessments and interventions, including patient's responses. Include:
    - Pre-seizure aura or symptoms
    - Pre-seizure activity (what was the patient doing prior to seizure)
    - Was this a first seizure (warrants immediate medical investigation)
    - Any aggravating or precipitating factors identified (e.g. sleep deprivation, illness, etc)
    - Sequence of events: date, time and duration of seizure activity, characteristics of seizure, recovery phase
    - Loss of consciousness (confused, excited, unconscious)
    - Vital signs
2. Document medications given on the Medication Administration Record
3. Update care plan as required

Related Documents

PHC:

NCS6083: Oxygen Therapy, Acute Care
RCS6017: Oxygen Therapy, Residential Care
IDG1052: Falls Injury Prevention and Management Acute and Sub Acute Care
IDG1098: Falls and Injury Prevention Guideline in Residential Care

VCH:

D-00-07-30033: Falls and Injury Prevention Guideline in Acute Care
D-00-07-30034: Falls and Injury Prevention Guideline in the Community

VCH-PHC: BD-00-07-40028: Falls and Injury Prevention Guideline in Residential Care

References

1. Berg, A. T., Berkovic, S.F. Brodie. M.J. Buchhalter, J. Cross, J.H., et al. Revised Terminology and concepts for organization of seizures and epilepsies: Report of the ILAE Commission on Classification and Terminology, 2005 – 2009. *Epilepsia,* (2010) 51(4):676–685.
2. Child Health B.C. Guideline for the Management of Children with Epileptic Seizures in British Columbia. Author (2011) Retrieved from http://www.childhealthbc.ca/guidelines/category/53-epileptic-seizures
3. Constantinou, E. (2010). Client safety. In P. A. Potter, A. G. Perry, J. C. Ross-Kerr, & M. J. Wood (Eds.), *Canadian fundamentals of nursing revised 4th edition* (p.825). Toronto, ON: Elsevier Canada.
4. Hendrickson, S. G., Elms, S. A., & Shaw, V. (2010). Nursing management: Chronic neurological problems. In S. L. Lewis, M. M. Heitkemper, S. R. Dirksen, L. Bucher, P. G. O'Brien, M. A. Barry, S. Goldsworthy, & D. Goodridge. (Eds.), *Medical-surgical nursing in Canada: Assessment and management of clinical problems Canadian 2nd edition* (pp. 1626-1657). Toronto, ON: Elsevier Canada.
5. Hospital Bed Safety Workgroup. (2003). Clinical guidance for the assessment and implementation of bed rails in hospitals, long term care facilities, and home care settings. Retrieved from http://www.ecri.org/Documents/Patient_Safety_Center/BedSafetyClinicalGuidance.pdf?ecripdf=true
6. Michoulas, A, Farrell, K, Connolly, M. Approach to a child with first afebrile seizure. (2011) BCMJ. Vol 53, July, August pp 274 – 277
7. Ministry of Health Acute and Emergency Services Saskatchewan Health. (2011). Saskatchewan emergency treatment protocol manual: Seizures. Retrieved from http://www.health.gov.sk.ca/ems-protocol-manual

8. Nursing and Allied Health University Health Network. (January 2006). Policy and procedure manual – Clinical seizure monitoring. Retrieved from UHN Intranet Policy Number 3.30.001.
9. Perry, A. G., & Potter, P. A. (2010). *Clinical nursing skills & techniques 7th edition*. Toronto, ON: Elsevier Canada.
10. Providence Health Care. (2011). Seizures: Protocol. Retrieved from PHC Intranet NCS6358.
11. Pullen Jr., R. L. (2003). Protecting your patient during a seizure. *Nursing*, 33(4), 78.
12. Riviello, J.J, Ashwal, S, Hirtz, D, et al. Practice Parameter: Diagnostic assessment of the child with status epilipticus (an evidence based review). Report of the Quality Standards Subcomittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. *Neurology* (2006) 67: 1542. http://www.neurology.org/content/67/9/1542.full.html
13. Schachter, S.C., Overview of the Management of Epilepsy in Adults in: UpToDate. Pedley, T.A, Wilterdink, J. L (Ed.) Waltham MA, 2012
14. Surrey Memorial Hospital. (1996). Patient care guidelines: Seizures – Guidelines for care of patients. Retrieved from Fraser Health Intranet PO-1000.
15. Thompson, H. J., Fisher, R. E., Long, L. (2007). Care of the patient with seizures 2nd edition: American Association of Neuroscience Nurses clinical practice guidelines series. Retrieved from http://www.aann.org/pdf/cpg/aannseizures.pdf
16. Vancouver Coastal Health PolicyNet, (1995). Vancouver Acute. Guideline: Seizures. Care and management of patient with seizures – PCG S-060. Retrieved from VCH Acute Intranet.
17. Verellen, R.M, Cavazos, J.E. (2011) Pathophysiological considerations of seizures, epilepsy and status epilepticus in the elderly. Aging and Disease 2: 4 278 – 285

Revised by

(2016) Primary Care information added
Clinical Practice Leader, Primary Care, Vancouver Community, VCH

Development Team 2012:
Clinical Nurse Educator, Neurosciences Program VCH
Clinician Residential Care Evergreen House VCH
Clinical Resource Nurse, Professional Practice VCH
Community Services
Clinical Educator G. F. Strong Rehabilitation Centre
Clinical Nurse Educator Elder Care Program PHC
Clinical Nurse Educator / Case Manager Provincial Tertiary Eating Disorders
Program for Adults PHC
Interim Clinical Pharmacy Specialist - Emergency
Medicine PHC
SN UBC.
Clinical Nurse Specialist, Medicine, PHC
Clinical Nurse Specialist, Surgery, PHC
Educator, Emergency Department, Vancouver Acute, VCH
Staff Nurse ICU SPH, PHC
Nursing Support Services, Vancouver Regional Pediatric Team

Persons/Groups Consulted
Policy Manager, Nursing & Allied Health; University Health Network, Toronto
Knowledge Exchange Lead Practice Lead, Addiction Services, VCH
Nurse Educator HIV/AIDS PHC
Clinical Nurse Educator Spinal Cord Injury Program G. F. Strong Rehab Centre
Nurse Educator Medicine, PHC
Obstetrician/Gynecologist, Richmond
Nurse Educator, Clinical Information Resources, PHC
Senior Nursing Policy Analyst Saskatchewan Ministry of Health

Endorsed by

(2016)

Vancouver Medical Advisory Councils (Vancouver MAC)

Health Authority Medical Advisory Council (HAMAC)

(2012)

VCH: *(Regional SharePoint 2nd Reading)*

- Health Authority Profession Specific Advisory Council Chairs (HAPSAC)
- Health Authority & Area Specific Interprofessional Advisory Council Chairs (HAIAC)
- Operations Directors
- Professional Practice Directors
- Pediatrician, Child Health Centre, Richmond
- Medical Director, BC Perinatal Health Program

PHC:

- Clinical Nurse Specialist, Surgery, St Paul's Hospital
- Nurse Educator, Clinical Information Resources, Professional Practice & Nursing

Final Sign-off & Approved for Posting by

Vice President Professional Practice and Chief Clinical Information Officer, VCH

Professional Practice Standards Committee - PHC

Date of Approval/Review/Revision

Approved: November 5, 2012

Posted: November 7, 2012

Revised: June 24, 2016

March 8, 2023 – removed archived link – seizure levels

Appendix A:

1. A seizure would be considered an emergency if:
   - Seizures do not stop within 5 to 10 minutes
   - Prolonged period of confusion following seizure (more than 10 – 15 minutes)
   - Person remains non responsive after the seizure
   - Prolonged airway/breathing compromise (especially following seizure)
   - First time seizure
   - Significant change in the type or character of the seizure from persons usual pattern

2. Seizures in the elderly:
   - Higher incidence of acute seizure, epilepsy and status epilepticus compared to other age groups
   - Commonly related to cerebrovascular disease.
   - Clinical presentation in the elderly often focal and subtle.
   - Memory impairment and confusion are common.
   - Recovery phase can be prolonged contributing to falls and other injuries

3. **Focal (Partial) Seizures:** No or partial loss of consciousness. Involve one of the brain's hemispheres and can have previously been classified further into simple, complex and partial with secondary components.
   - ***Simple Partial Seizures:*** may occur on their own or prior to the beginning of a generalized seizure (aura). They involve no impairment of consciousness and are characterized by behavioral, motor and sensory phenomena such as clonic jerking of a body part, localized pain, or visual, cognitive, auditory disturbances.
   - ***Complex Partial Seizures:*** impair consciousness and they are characterized by blank stare and extremity automatisms (repeat movements).
   - ***Partial Seizures evolving to secondary generalization***: Progress from a simple or complex seizure to a general seizure bilaterally with tonic posturing and clonic jerking.

4. **Generalized Seizures:** Generalized seizures cause complete loss of consciousness and involve the entire cortex. (Previously referred to as Grande Mal seizures). They can be non-convulsive (absence) or convulsive (myoclonic, clonic, tonic or atonic)

5. **Status Epilepticus:** Non-convulsive or convulsive (generalized tonic-clonic) seizures that last longer than 5-10 minutes (some literature defines as 30 minutes or more) or two or more sequential seizures that the patient does not recover from. This kind of seizure requires increased metabolism and muscle activity and will result in inadequate glucose and oxygenation to the brain with the potential of permanent hypoxic damage. **Status epilepticus is considered a medical emergency and requires immediate intervention**

6. Patients with epilepsy have a higher than expected risk of mortality (including sudden death), injury, and motor vehicle accidents. Seizure frequency is a major risk factor for these complications.

7. Mood problems, anxiety, and depression are more prevalent in persons with epilepsy than in the general population. In addition, antiepileptic drug therapy has been associated with increased incidence of suicidal ideation/attempts.

8. **Pediatric Seizures:** Children who have a seizure in the setting of acute illness (e.g. infection) have a low risk of recurrence compared to other children with first seizure.