



Australian Government
Repatriation Medical Authority

Statement of Principles
concerning
SEIZURE
(Reasonable Hypothesis)
(No. 37 of 2022)

The Repatriation Medical Authority determines the following Statement of Principles under subsection 196B(2) of the *Veterans' Entitlements Act 1986*.

Dated 29 April 2022

The Common Seal of the
Repatriation Medical Authority
was affixed to this instrument
at the direction of:

Professor Terence Campbell AM
Chairperson

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1 Name

This is the Statement of Principles concerning *seizure (Reasonable Hypothesis)* (No. 37 of 2022).

2 Commencement

This instrument commences on 30 May 2022.

3 Authority

This instrument is made under subsection 196B(2) of the *Veterans' Entitlements Act 1986*.

4 Repeal

The Statement of Principles concerning epileptic seizure No. 77 of 2013 (Federal Register of Legislation No. F2013L01897) made under subsection 196B(2) of the VEA is repealed.

5 Application

This instrument applies to a claim to which section 120A of the VEA or section 338 of the *Military Rehabilitation and Compensation Act 2004* applies.

6 Schedules

Any item in a Schedule to this Instrument has effect according to its terms.

7 Kind of injury, disease or death to which this Statement of Principles relates

(1) This Statement of Principles is about seizure and death from seizure.

Meaning of seizure

(2) For the purposes of this Statement of Principles, seizure:

- (a) means an acute, nonrecurring episode of paroxysmal brain dysfunction due to sudden, abnormal, excessive neuronal discharge manifesting as seizure; and
- (b) includes status epilepticus; and
- (c) excludes:
 - (i) movement disorders such as restless legs syndrome, periodic limb movement disorder, chorea and tics;
 - (ii) muscle dystonia or spasms associated with tetanus, drugs or chemical poisons;
 - (iii) psychogenic seizures;
 - (iv) seizures occurring during electroconvulsive therapy; and

- (v) spontaneous movements occurring with syncope, vertigo or migraine.

Death from seizure

- (3) For the purposes of this Statement of Principles, seizure, in relation to a person, includes death from a terminal event or condition that was contributed to by the person's seizure.

Note: *terminal event* is defined in the Schedule 1 – Dictionary.

8 Basis for determining the factors

The Repatriation Medical Authority is of the view that there is sound medical-scientific evidence that indicates that seizure and death from seizure can be related to relevant service rendered by veterans, members of Peacekeeping Forces, or members of the Forces under the VEA, or members under the MRCA.

Note: *MRCA*, *relevant service* and *VEA* are defined in the Schedule 1 – Dictionary.

9 Factors that must exist

At least one of the following factors must as a minimum exist before it can be said that a reasonable hypothesis has been raised connecting seizure or death from seizure with the circumstances of a person's relevant service:

- (1) having a moderate to severe traumatic brain injury within the 20 years before the clinical onset of seizure;
- (2) having concussion within the 6 months before the clinical onset of seizure;
- (3) having an electrical injury of the brain before the clinical onset of seizure;

Note: Electrical injury of the brain excludes transcranial magnetic stimulation and electroconvulsive therapy.

- (4) having a surgical procedure which involves a craniotomy or cranioplasty within the 20 years before the clinical onset of seizure;
- (5) having cardiac surgery or extracorporeal membrane oxygenation at the time of the clinical onset of seizure;
- (6) having brain radiotherapy to treat primary or secondary brain neoplasia or to treat brain arteriovenous malformation before the clinical onset of seizure;
- (7) having an hypoxic cerebral insult within the 2 months before the clinical onset of seizure;

Note: *hypoxic cerebral insult* is defined in the Schedule 1 – Dictionary.

- (8) having a central nervous system vascular lesion from the specified list of central nervous system vascular lesions within the 20 years before the clinical onset of seizure;

Note: *specified list of central nervous system vascular lesions* is defined in the Schedule 1 – Dictionary.

- (9) having autoimmune encephalitis at the time of the clinical onset of seizure;

Note 1: Examples of diseases that can cause autoimmune encephalitis include granulomatosis with polyangiitis (Wegener granulomatosis), Hashimoto encephalopathy, multiple sclerosis, neuromyelitis optica, paraneoplastic neurological syndrome and systemic lupus erythematosus.

Note 2: *autoimmune encephalitis* is defined in the Schedule 1 – Dictionary.

- (10) having an infection of the brain or meninges within the 1 year before the clinical onset of seizure;

- (11) having infection with human immunodeficiency virus at the time of the clinical onset of seizure;

- (12) having septicaemia at the time of clinical onset of seizure;

- (13) having an intracranial space-occupying lesion within the 20 years before the clinical onset of seizure;

Note: *intracranial space-occupying lesion* is defined in the Schedule 1 – Dictionary.

- (14) having dementia as specified at the time of the clinical onset of seizure;

Note: *dementia as specified* is defined in the Schedule 1 – Dictionary.

- (15) having a medical condition affecting the brain from the specified list of medical conditions at the time of the clinical onset of seizure;

Note: *specified list of medical conditions* is defined in the Schedule 1 – Dictionary.

- (16) having alcohol intoxication, alcohol withdrawal or moderate to severe alcohol use disorder, at the time of the clinical onset of seizure;

Note: *alcohol intoxication*, *alcohol withdrawal* and *moderate to severe alcohol use disorder* are defined in the Schedule 1 – Dictionary.

- (17) having malignant hypertension or hypertensive encephalopathy within the 4 weeks before the clinical onset of seizure;

Note: *malignant hypertension* is defined in the Schedule 1 – Dictionary.

- (18) having eclampsia within the 4 weeks before the clinical onset of seizure;

Note: *eclampsia* is defined in the Schedule 1 – Dictionary.

- (19) having acute liver failure at the time of the clinical onset of seizure;

- (20) having acute renal failure or chronic renal failure at the time of the clinical onset of seizure;
 Note: *acute renal failure* and *chronic renal failure* are defined in the Schedule 1 – Dictionary.
- (21) having an amniotic fluid embolism or fat embolism at the time of the clinical onset of seizure;
- (22) having hypoglycaemia at the time of the clinical onset of seizure;
 Note: *hypoglycaemia* is defined in the Schedule 1 – Dictionary.
- (23) having hyperglycaemia at the time of the clinical onset of seizure;
 Note: *hyperglycaemia* is defined in the Schedule 1 – Dictionary.
- (24) having diabetes mellitus at the time of the clinical onset of seizure;
- (25) having an electrolyte abnormality at the time of the clinical onset of seizure;
 Note: *electrolyte abnormality* is defined in the Schedule 1 – Dictionary.
- (26) having carbon monoxide poisoning within the 30 days before the clinical onset of seizure;
- (27) having sleep deprivation at the time of the clinical onset of seizure;
 Note: *sleep deprivation* is defined in the Schedule 1 – Dictionary.
- (28) having exertional heat stroke at the time of the clinical onset of seizure;
- (29) being dehydrated at the time of the clinical onset of seizure;
- (30) undergoing organ or tissue transplantation, excluding corneal transplant, within the 1 year before the clinical onset of seizure;
 Note: *organ or tissue transplantation* is defined in the Schedule 1 – Dictionary.
- (31) taking a drug specified in the Schedule 2 - Drugs of this Instrument, within the 24 hours before the clinical onset of seizure, and if multiple seizures occur, the first seizure occurred within 24 hours of taking the drug;
- (32) taking a drug which is associated in the individual with:
- (a) the development of a seizure within 24 hours of first taking the drug; and
 - (b) the redevelopment of a seizure on rechallenge with the same drug;
- (33) being exposed to radiographic contrast media within the 24 hours before the clinical onset of seizure, and if multiple seizures occur, the first seizure occurred within 24 hours of exposure to the radiographic contrast media;
 Note: Examples of radiographic contrast media include meglumine carbamate, metrizamide and iohexol.

- (34) reducing the intake of, or withdrawing from, a chronically administered sedative drug within the 2 weeks before the clinical onset of seizure;

Note: *sedative drug* is defined in the Schedule 1 – Dictionary.

- (35) being exposed to partial pressures of oxygen above 1.2 atmospheres absolute (120 kPa) from:

- (a) breathing oxygen enriched air during diving;
- (b) receiving hyperbaric oxygen therapy;
- (c) saturation diving; or
- (d) the use of closed or semi-closed rebreathing apparatus;

within the 24 hours before the clinical onset of seizure;

- (36) being exposed to an abrupt reduction in the pressure of the air surrounding the person, resulting in the development of cerebral arterial gas embolism or decompression sickness, within the 24 hours before the clinical onset of seizure;

- (37) being poisoned with a metal from the specified list of metals, as demonstrated by clinical, haematological or biochemical evidence of such poisoning, at the time of the clinical onset of seizure;

Note: *specified list of metals* is defined in the Schedule 1 – Dictionary.

- (38) inhaling, ingesting or having cutaneous contact with a neurotoxic substance, or a food or compound containing a neurotoxic substance, within the 24 hours before the clinical onset of seizure, and:

- (a) other signs and symptoms of poisoning are present; and
- (b) if multiple seizures occur, the first seizure occurred within 24 hours of exposure to the neurotoxic substance;

Note: *neurotoxic substance or a food or compound containing a neurotoxic substance* and *signs and symptoms of poisoning* are defined in the Schedule 1 – Dictionary.

- (39) experiencing animal envenomation within the 24 hours before the clinical onset of seizure;

- (40) inability to obtain appropriate clinical management for seizure.

10 Relationship to service

- (1) The existence in a person of any factor referred to in section 9, must be related to the relevant service rendered by the person.
- (2) The factor set out in subsection 9(40) applies only to material contribution to, or aggravation of, seizure where the person's seizure was suffered or contracted before or during (but did not arise out of) the person's relevant service.

11 Factors referring to an injury or disease covered by another Statement of Principles

In this Statement of Principles:

- (1) if a factor referred to in section 9 applies in relation to a person; and
- (2) that factor refers to an injury or disease in respect of which a Statement of Principles has been determined under subsection 196B(2) of the VEA;

then the factors in that Statement of Principles apply in accordance with the terms of that Statement of Principles as in force from time to time.

Schedule 1 - Dictionary

Note: See Section 6

1 Definitions

In this instrument:

acute renal failure means a kidney disorder characterised by rapid decline of glomerular filtration rate and retention of nitrogenous waste products.

alcohol intoxication means recently consuming a quantity of alcohol such that the person exhibits the following behaviours and signs and symptoms:

- (a) clinically significant problematic behavioural or psychological changes (for example, inappropriate sexual or aggressive behaviour, mood lability, impaired judgment) that developed during, or shortly after, alcohol ingestion;
- (b) one (or more) of the following signs or symptoms developing during, or shortly after, alcohol use:
 - (i) slurred speech;
 - (ii) incoordination;
 - (iii) unsteady gait;
 - (iv) nystagmus;
 - (v) impairment in attention or memory; or
 - (vi) stupor or coma; and
- (c) the signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication with another substance.

alcohol withdrawal means ceasing or reducing the intake of alcohol after a continuous period of at least 2 weeks of heavy alcohol use.

autoimmune encephalitis means a diffuse brain injury due to autoimmune inflammation of the brain.

chronic renal failure means:

- (a) having a glomerular filtration rate of less than 15 mL/min/1.73 m² for a period of at least 3 months; or
- (b) a need for renal replacement therapy (dialysis or transplantation) for treatment of complications of decreased glomerular filtration rate which would otherwise increase the risk of morbidity and mortality; or
- (c) undergoing chronic dialysis.

dementia as specified means one of the following forms of dementia:

- (a) Alzheimer dementia;
- (b) Creutzfeldt-Jakob disease with dementia;
- (c) dementia pugilistica;
- (d) frontotemporal dementia;
- (e) Huntington's chorea with dementia;
- (f) neurocognitive disorder with Lewy bodies;

- (g) Parkinson's disease with dementia;
- (h) vascular dementia; or
- (i) any other type of dementia.

eclampsia means a condition occurring in pregnant or puerperal women, characterised by hypertension, coma, convulsions, oedema or proteinuria.

electrolyte abnormality means:

- (a) hypercalcaemia;
- (b) hypocalcaemia;
- (c) hypomagnesaemia;
- (d) hyponatraemia; or
- (e) hypophosphataemia.

Note: An example of a condition in which electrolyte abnormality occurs is tumour lysis syndrome.

hyperglycaemia means a serum glucose concentration greater than 17 mmol/L.

hypoglycaemia means a serum glucose concentration less than 3 mmol/L.

hypoxic cerebral insult means an event which results in either a decreased rate of cerebral blood flow or decreased oxygen content of cerebral arterial blood for a sustained period.

inhalants means a breathable chemical that produces psychoactive vapours and includes organic solvents, aerosols and some anaesthetics.

Note: *organic solvents* is also defined in the Schedule 1 – Dictionary.

intracranial space-occupying lesion means a pathological entity occupying volume within the cranial cavity, including intracranial aneurysm, neoplasm and abscess.

iron overload means an accumulation of excess iron in tissues and organs which has been confirmed by elevated ferritin or transferrin saturation levels.

Note: Causes include haemochromatosis and blood transfusions.

malignant hypertension means a severe hypertensive state characterised by papilloedema of the ocular fundus, retinal haemorrhage and exudates, cardiac decompensation and declining renal function.

moderate to severe alcohol use disorder means a psychiatric disorder characterised by a problematic pattern of alcohol use leading to clinically significant impairment or distress, as manifested by at least 4 of the following criteria, occurring within a 12-month period:

- (a) alcohol is often taken in larger amounts or over a longer period than was intended;
- (b) there is a persistent desire or unsuccessful efforts to cut down or control alcohol use;
- (c) a great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects;
- (d) craving, or a strong desire or urge to use alcohol;
- (e) recurrent alcohol use resulting in a failure to fulfil major role obligations at work, school, or home;

- (f) continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol;
- (g) important social, occupational, or recreational activities are given up or reduced because of alcohol use;
- (h) recurrent alcohol use in situations in which it is physically hazardous;
- (i) alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol; or
- (j) tolerance, defined by either:
 - (i) a need for markedly increased amounts of alcohol to achieve intoxication or desired effect; or
 - (ii) a markedly diminished effect with continued use of the same amount of alcohol.

MRCA means the *Military Rehabilitation and Compensation Act 2004*.

neurotoxic substance or a food or compound containing a neurotoxic substance means:

- (a) abrin (*Abrus precatorius*);
- (b) anatoxin;
- (c) camphor;
- (d) chemical weapon agents sarin, soman and VX gas;
- (e) colloidal silver;
- (f) cyanide;
- (g) cyclotrimethylenetrinitramine (RDX or C4 explosive);
- (h) domoic acid;
- (i) ethylene glycol;
- (j) eucalyptus oil;
- (k) *Illicium henryi* or *Illicium anisatum*;
- (l) methyl bromide;
- (m) N,N-diethyl-m-toluamide (DEET);
- (n) organochlorine insecticides;
- (o) organophosphates;
- (p) picrotoxin (*Anamirta cocculus*);
- (q) sodium azide;
- (r) star fruit (*Averrhoa carambola*);
- (s) strychnine (*Strychnos nux-vomica*);
- (t) tetramine; or
- (u) any other epileptogenic neurotoxic compound.

organ or tissue transplantation means the transplantation of:

- (a) all or part of an organ or tissue; or
- (b) a substance obtained from an organ or tissue.

organic solvents means:

- (a) aliphatic hydrocarbon solvents; or
- (b) aromatic hydrocarbon solvents; or
- (c) chlorinated organic solvents; or
- (d) oxygenated organic solvents.

relevant service means:

- (a) operational service under the VEA;
- (b) peacekeeping service under the VEA;
- (c) hazardous service under the VEA;
- (d) British nuclear test defence service under the VEA;
- (e) warlike service under the MRCA; or
- (f) non-warlike service under the MRCA.

Note: *MRCA* and *VEA* are also defined in the Schedule 1 - Dictionary.

sedative drug means a psychoactive agent used therapeutically to suppress central nervous system activity, including barbiturates, benzodiazepines, anticonvulsants, sedatives and hypnotics.

seizure—see subsection 7(2).

signs and symptoms of poisoning means one of the following signs and symptoms which are not attributable to seizure:

- (a) behavioural impairments including loss of motor control and loss of consciousness;
- (b) blurred vision and eye irritation;
- (c) central nervous system excitation and depression including agitation, lethargy and perceptual disturbances;
- (d) cough, acute lung injury and respiratory depression or failure;
- (e) dermatitis and skin irritation;
- (f) ear, nose and throat irritation and hypersalivation;
- (g) gastrointestinal symptoms including nausea, diarrhoea and vomiting;
or
- (h) neurocognitive deficits including stupor, confusion and memory deficits.

sleep deprivation means having not slept within the 36 hours after the end of the last period of 4 hours or more of uninterrupted sleep, or having less than 4 hours sleep for 3 consecutive 24-hour periods.

specified list of central nervous system vascular lesions means:

- (a) cerebral venous thrombosis;
- (b) cerebrovascular accident;
- (c) subarachnoid haemorrhage; or
- (d) subdural haematoma.

specified list of medical conditions means:

- (a) cerebral hyperperfusion syndrome;
- (b) cerebral vasoconstriction syndrome;
- (c) Creutzfeldt-Jakob disease;
- (d) Huntington's chorea;
- (e) iron overload;
- (f) Parkinson's disease and secondary parkinsonism;
- (g) posterior reversible encephalopathy syndrome;
- (h) sarcoidosis; or
- (i) sickle-cell disease.

Note: *iron overload* is also defined in the Schedule 1 – Dictionary.

specified list of metals means:

- (a) lead;
- (b) nickel; or
- (c) tungsten.

terminal event means the proximate or ultimate cause of death and includes the following:

- (a) pneumonia;
- (b) respiratory failure;
- (c) cardiac arrest;
- (d) circulatory failure; or
- (e) cessation of brain function.

VEA means the *Veterans' Entitlements Act 1986*.

Schedule 2 - Drugs

Note: See Section 6, Subsection 9(31)

1 Specified drugs

1. amantadine	2. aminophylline	3. amphetamine and its derivatives, including methylenedioxy-methamphetamine (MDMA)
4. amphotericin B	5. antibiotics excluding antimycobacterial agents	6. anticholinesterase drugs used to treat Alzheimer disease and myasthenia gravis
7. antidepressants	8. antineoplastic agents excluding etoposide, carboplatin and oxaliplatin	9. antipsychotics
10. apalutamide	11. atovaquone with proguanil	12. atropine
13. baclofen	14. benztropine	15. bupropion
16. chloroquine	17. cinacalcet	18. cocaine
19. cycloserine	20. danazol	21. dantrolene
22. desmopressin	23. diazoxide	24. digoxin
25. disulfiram	26. efavirenz	27. enzalutamide
28. ephedrine	29. esmolol	30. fampridine
31. fentanyl	32. flucytosine	33. foscarnet
34. gamma hydroxybutyrate (GHB)	35. general anaesthetics excluding ketamine	36. guanine analogue antiviral agents including acyclovir, ganciclovir and valganciclovir
37. heroin	38. immunomodulatory agents	39. inhalants
40. isoniazid	41. ivermectin	42. kratom (<i>Mitragyna speciosa</i>)
43. lidocaine	44. lithium	45. mannitol
46. mefloquine	47. memantine	48. methylphenidate
49. mexiletine	50. non-topical local anaesthetics	51. ondansetron
52. opioid analgesics	53. perhexiline	54. phencyclidine
55. phentermine	56. phenylpropanolamine	57. pizotifen
58. pranziquantel	59. pyrimethamine	60. ranolazine

Schedule 2 - Drugs

61. rasburicase	62. salicylate in overdose	63. sedating antihistamines
64. synthetic cannabinoids	65. theophylline	66. tranexamic acid
67. trihexyphenidyl		

Note: *inhalants* is also defined in the Schedule 1 – Dictionary.