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DGAFMS MEDICAL MEMORANDUM NO 188 "GUIDELINES FOR MANAGEMENT AND DISPOSAL OF CASES WITH SEIZURES/ EPILEPSY IN THE ARMED FORCES"

1 Soft copy (CD) of DGAFMS Medical Memorandum No 188 titled "Guidelines for management and disposal of cases with Seizures/ Epilepsy in the Armed Forces" is fwd herewith for info and further dissemination to units under your AOR.

2. It can also be downloaded from DGMS (Army)/ DGMS-5A website.

(Yogender Yadav)
Lt Col
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DGAFMS MEDICAL MEMORANDUM NO. 188

GUIDELINES FOR MANAGEMENT AND DISPOSAL OF CASES WITH SEIZURES / EPILEPSY IN THE ARMED FORCES

(Issued in 2015)

These guidelines are being brought out to help clinicians to reach a proper diagnosis and give clear disposal in cases of Seizures and Epilepsy.

1. **INTRODUCTION.** At the outset it is essential to differentiate between Seizures and Epilepsy. A seizure is a clinical event presumed to result from an abnormal, excessive and hyper-synchronous neuronal discharge in the brain. The clinical symptoms are paroxysmal and may include motor, sensory, autonomic, and psychic events, with or without impaired consciousness. Epilepsy is a chronic disorder characterized by a tendency for recurrent unprovoked seizures. Hence, at least two unprovoked seizures are required for the diagnosis of Epilepsy. Multiple seizures occurring in a 24-hour period are considered to be a single seizure episode. All individuals with epilepsy have seizures, but all those who have seizures do not have epilepsy.

2. INCIDENCE AND PREVALENCE. It is estimated that 5 - 10% of the population will have a seizure in their lifetime. The prevalence of epilepsy in the population is 0.5 to 1%.

3. ESTABLISHING THE DIAGNOSIS OF SEIZURE. Diagnosis and evaluation of a suspected case of seizure requires careful search for seizure mimics like syncope, Transient Ischemic Attack (TIA) or complicated migraine. Detailed history and examination, with special reference to ictal events is essential. At seizure onset, speech arrest (ictal aphasia), and abnormal posturing of an extremity or neck (ictal posturing) have significant lateralizing value. Post-ictal Todd's paresis should be documented. Clinical examination should include a careful search for neurocutaneous syndromes such as facial nevus, and café-au-lait spots, dysmorphic features, and signs of systemic illness. A clinical proforma with a detailed eyewitness account is attached as Appx 'A' to this document. This should be filled and initiated by the Authorised Medical Attendant (AMA).

4. CLASSIFICATION OF SEIZURES (ETIOLOGICAL)

(a) **Symptomatic Seizures** are seizures caused by a structural or metabolic disorder. This type of seizure is associated with a past or ongoing CNS insult known to increase the risk of developing seizures. They are further sub-classified as:-

(i) *Acute Symptomatic Seizures.* These occur following a recent (within one week) acute disorder such as a metabolic insult, toxic insult, CNS infection, stroke, brain trauma, cerebral hemorrhage, medication toxicity, alcohol withdrawal, or drug withdrawal. An example of an acute symptomatic seizure is a seizure that occurs within one week of a stroke or head injury.

(ii) *Remote Symptomatic Seizures.* These are seizures that occur more than one week following a disorder that is known to increase the risk of developing seizures. An example of a remote symptomatic seizure is a seizure that occurs in the setting of a calcified granuloma in the brain, or more than one week following a traumatic brain injury.

(b) **Idiopathic Seizures** describe clinical syndromes with specific age-related onset, specific clinical and electro-encephalographic characteristics, and a presumed genetic mechanism.

(c) **Cryptogenic or Unknown Seizures** are those in which the nature of underlying cause is currently not known. All types of epilepsies with normal neuroimaging and no genetic, metabolic and immune etiology are classified as cryptogenic seizures.

5. **CLASSIFICATION OF SEIZURES (SEMIOLOGICAL).** Seizures can also be classified based on the pattern of motor, sensory or autonomic events seen or reported during the clinical episode.

(a) **Generalized Seizures**

(i) Tonic

(ii) Clonic

(iii) Tonic-clonic

(iv) Atonic

(v) Absence (Typical or Atypical)

(vi) Myoclonic

(b) **Focal Seizures (Motor, Sensory, Psychic, Autonomic)**

(i) With dyscognitive changes (earlier called Complex Partial Seizures)

(ii) Without dyscognitive changes

(iii) Focal with secondary generalization

The final diagnosis of a seizure case needs to incorporate both the etiological and semiological classification so as to facilitate further evaluation and correct disposal. For example a seizure occurring in a soldier with previous stroke can be classified as: Remote symptomatic seizure (Right focal motor).

6. EVALUATION OF A CASE OF SUSPECTED SEIZURE

All cases with a first episode of seizure, after initial stabilization and clinical evaluation for seizure mimics, should be referred to the nearest service hospital with Medical Specialist facility along with the seizure proforma (Appx A). Detailed eyewitness account should be meticulously documented. In order to correctly classify the disorder in the etiological and semiological format, these cases are to be sent to a Neurology centre for the next review i.e. after 24 wks. All cases with recurrence of seizures should undergo detailed evaluation at a Neurology centre so as to identify epilepsy syndromes and localization related epilepsies. Personnel with seizures or epilepsy syndromes after necessary investigations need to be disposed as per the latest ICD classification. (Appx D)

All cases of seizures should be investigated with complete blood counts, liver and renal function tests, serum electrolytes including calcium, blood glucose and electrocardiogram. They should undergo contrast-enhanced CT scan/ MRI of the Brain, and Electroencephalography (EEG). If necessary, toxicology and serum drug assays should be done.

7. **TREATMENT OF SEIZURE CASES.** Once a clear etiological and semiological diagnosis is established, treatment for idiopathic and symptomatic seizures will be offered as per current guidelines on the subject.

8. **CATEGORIZATION AND DISPOSAL (see Appx 'C').** Initial evaluation and continuation in LMC of seizure cases after review by Neurologist at the end of 24 weeks, can be done by a Medical specialist. Final upgradation of medical classification to P1, will be at the nearest service Neurology centre by a Neurologist, countersigned by a Sr Adv / Consultant (Medicine).

(a) **Acute Symptomatic Seizures.** Individuals with acute symptomatic seizures need not be placed in LMC for seizures, and the disposal shall be as per the primary medical condition. Even in cases with primary CNS insults like meningitis, encephalitis, stroke, and head injury, the individual need not be placed in LMC for seizures and the disposal shall be based on the primary CNS condition. However in some clinical situations like drug withdrawal seizures or acute post-traumatic seizures, a brief spell of LMC for 3 - 6 months may be needed, at the discretion of treating clinician. In cases of solitary ring-enhancing lesions, a shorter period of observation (6-12 months on AEDs) may be sufficient. Thereafter, after a seizure-free period of one yr without medication, they may be considered for upgradation to medical classification P1.

(b) **Remote Symptomatic Seizures.** All cases of remote symptomatic seizures are to be placed in LMC with AED therapy for at least 2-3 years initially P3 (T-24) followed by P3 (Permanent). They may be considered for upgradation only on completion of 2-3 years seizure-free period on AED, followed by minimum of a 1 year seizure-free period without AED.

(c) **Idiopathic/Cryptogenic Epilepsy.** These cases need long-term AED therapy for at least 3-5 years tailored to the epilepsy syndrome. They may be considered for upgradation only after completion of 3-5 years seizure free-period on AED, followed by a minimum 1-year seizure-free period without AED.

(d) Special Considerations

(i) *Solitary Seizures Managed Without AED*. Most of the cases of solitary seizures can be managed without AED. Indls with solitary seizure without AEDs are to be observed in LMC for one year (P3 T24 + 24 wks) and upgraded directly to P1, if they are seizure-free and follow-up EEG & Neuroimaging is normal.

(ii) *Solitary Seizures managed With AED*. Indls with solitary seizures on AEDs are to be placed in LMC while on AED therapy. Thereafter, they can be considered for upgradation after a further one year seizure-free period without AED. Indls in whom AED therapy is proposed to be initiated should be referred to nearest Neurology Centre.

(iii) *Non-Epileptic Seizures.* At any stage during evaluation of seizure-like events, if the clinical events appear to be non-epileptic in nature, then further detailed evaluation with drug levels, video EEG monitoring, mobile-phone video reviews and serum Prolactin levels, may characterize the episode as non-epileptic. Psychiatric consultation should be taken in such cases.

(e) **Recurrence after Upgradation.** In case of recurrence, all cases of seizures who have been upgraded should be referred to a Neurology centre for evaluation and observation in medical classification P3.

9. EMPLOYABILITY RESTRICTIONS. Any serving personnel in LMC for Seizure disorder / Epilepsy will be considered unfit for employment in the following duties :-

(a) Serving in High Altitude Areas (HAA)
(b) Vehicle driving
(c) Handling firearms
(d) Working at heights
(e) Working near open fire / open water bodies

(f) Working near heavy machinery

(g) Swimming/Diving

(h) Afloat duties

The above list is not exhaustive and special precautions may need to be advised by the treating clinician. When these employability restrictions apply, all personnel with seizure / epilepsy will be placed in LMC P3 and once considered fit they will be upgraded to P1 without placing in intermediary categories.

Disposal in respect of Air Force personnel will be as per the directions issued by Air HQs.

10. INVALIDMENT

(a) *Cadets and Recruits.* Any cadet/recruit with seizures will be invalided out of service.

(b) *Serving Personnel.* Invalidment will be considered for cases of poorly controlled epilepsy (two or more seizures per month, while on two or more appropriate AEDs for more than two yrs). In other cases, not satisfying these criteria, invalidment may be considered by the Neurologist if adequately justified.

11. PRINCIPLES OF MANAGEMENT

The aim of therapy in epilepsy is total seizure freedom without clinically significant adverse effects (see Appx 'B'). Correct seizure and often syndrome diagnosis is a precondition for the success of therapeutic decisions. Pharmacological treatments are ineffective for approximately 20% of patients with epileptic disorders, who have an unacceptable quality of life because of continuing seizures and adverse reactions to AEDs. These patients are candidates for non-pharmacological treatments such as neurosurgical interventions, stimulation techniques, mainly vagus nerve stimulation and a ketogenic diet.

(a) Principles of Antiepileptic Drug Treatment in Epilepsy

Antiepileptic drug (AED) treatment is the mainstay of management of epilepsy. The decision to treat is based on a careful evaluation of the balance

between the likelihood of further seizures and the risk of adverse effects of treatment. This is achieved in around 50–70% of patients with a single appropriately selected AED at target therapeutic doses. This seizure-free rate varies significantly with the type of seizure and epileptic syndrome. Polytherapy should be avoided if possible, but it is inevitable in approximately 30–50% of patients who fail to respond to single-drug therapy. The drug treatment of epilepsies requires thorough knowledge of the AEDs with regard to mechanisms, pharmacokinetics, doses, indications, drug interactions and acute and chronic adverse effects.

(b) Starting Antiepileptic Drug Treatment

Starting on an AED often implies continuous daily medication for many years, which is sometimes lifelong. Therefore, this should be strictly initiated for those with an unacceptably high rate of seizure recurrence or high risk of seizure injury. Some patients do not need prophylactic treatment as in febrile and benign childhood focal seizures. In others the avoidance of precipitating factors may be sufficiently prophylactic as in some reflex seizures or individuals with a low threshold to seizures. Start monotherapy with the chosen first-line AED, initially at low doses titrating up to the low maintenance dose. The first line AEDs include phenytoin, carbamazepine and valproate. If seizures continue, titrate to the limit of tolerability, which will achieve additional seizure control in approximately 20% of patients. A guide to dosages in the commonly used AEDs is given below in the table:

Drug	Dose	Side effects
Phenytoin	5 mg/kg	Dizziness, Diplopia, Ataxia, Incoordination, Confusion, Gum hyperplasia, Lymphadenopathy, Hirsutism, Osteomalacia, Facial coarsening, skin rash
Carbamazepine	15-20 mg/kg	Ataxia, dizziness, aplastic anemia, leukopenia, GI side effects, hepatotoxicity, hyponatremia
Valproic acid	20 mg/kg	Ataxia, Sedation, Tremor, hepatotoxicity, Thrombocytopenia, Gastrointestinal irritation, Weight gain Transient alopecia, Hyperammonemia
Lamotrigine	3-6 mg/kg	Ataxia, dizziness, Skin rash, Stevens-Johnson syndrome

Phenobarbital	2-6 mg/kg	Sedation, Ataxia, Confusion, Dizziness Decreased libido, Depression, skin rash
Clobazam	10-40 mg/d	Ataxia, drowsiness
Levetiracetam	40-50 mg/kg/d (1-3g/d)	Ataxia, dizziness, drowsiness

(c) Monotherapy vs Polytherapy

Monotherapy with an appropriately selected AED at an appropriate target dose achieves complete control of seizures in 50–70% of patients. The advantage of monotherapy is to minimize side effects and interactions with other AEDs or non-AEDs as well as achieving better compliance. The risks of polytherapy include more side effects, frequent unwanted interactions with other AEDs or non-AEDs, an increased risk of teratogenicity, an inability to evaluate the efficacy and side effects of individual AED agents and poor compliance. If the initial treatment is unsuccessful, then monotherapy using another drug can be tried. Caution is needed during the changeover period. Switching between AEDs must be carried out cautiously, slowly withdrawing the first drug only after the second drug has reached an adequate therapeutic dosage. Polytherapy (combination, adjunctive or 'add-on' therapy) should only be considered when attempts at monotherapy with AEDs have not resulted in freedom from seizures.

(d) Possible reasons for failure of monotherapy

The decision for polytherapy should first scrutinize the possible/probable reasons why the monotherapy failed. The following possibilities should be thoroughly examined, which often requires re-evaluation of the diagnosis

- The patient does not suffer from epileptic seizures.
- The patient has both genuine epileptic and non-epileptic seizures.
- The AED used as monotherapy was not suitable for the particular type of seizures in this patient either because of contra-indications (eg.carbamazepine in absences or myoclonic jerks), weak efficacy (eg. valproate in focal seizures).

- Non-compliance can vary from unwillingness to take medication to occasionally forgetting or missing the AED dose.
- Patients may violate instructions to avoid seizure-precipitating factors such as photic stimulation, sleep deprivation and alcohol or drug abuse.

(e) Rational Polytherapy

Rational polytherapy is often needed for 30–50% of patients with epilepsies who are unsatisfactorily controlled with a single AED. This is much higher in patients with symptomatic focal epilepsies than patients with Idiopathic Generalized Epilepsy (IGE). The choice of a second or sometimes a third drug depends on many factors such as efficacy, adverse effects, interactions with other drugs, mode of action and the need for laboratory testing. Polytherapy with more than three drugs is discouraged because adverse reactions become more prominent, with little if any seizure improvement.

(f) Antiepileptic Drug Withdrawal

Attempt can be made to withdraw AEDs in patients who are seizure free for more than 3–5 years provided that they do not suffer from epileptic syndromes requiring long-term treatment such as Juvenile Myoclonic Epilepsy (JME). Withdrawal can be attempted earlier in certain situations like solitary neurocysticercosis which disappeared on follow up images with therapy. Discontinuation of AEDs should be extremely slow, in small doses and in long steps of weeks or months. The rate of relapse increases with a faster rate of AED discontinuation. Prior to AED withdrawal, there is a need for a thorough re-evaluation of the patient. The presence of even minor and infrequent seizures specifies active disease. Conversely, the occurrence of such seizures in the process of AED discontinuation mandates restoration of AED medication.

(g) Therapeutic Drug Monitoring (TDM)

In general TDM is useful in the following situations:

- Evaluating potential causes of lack of efficacy such as suspected non-compliance
- Evaluating potential causes of toxicity
- Evaluating potential causes of loss of efficacy

Repeated TDM in patients who are well controlled and with no sign of adverse reactions is discouraged.

(h) Surgery for Epilepsy

Early surgical intervention may benefit for certain forms of epilepsy with well-defined pathophysiological substrates that are known to have a poor prognosis after failure of a few AEDs and an excellent surgical prognosis. The main surgically remediable epileptic syndromes are as Mesial temporal lobe epilepsy and extra-temporal neocortical symptomatic focal syndromes with discrete easily resectable structural lesions.

(j) Stimulation techniques

Procedures which are being researched as adjunctive therapy in refractory epilepsy include vagus nerve stimulation, deep brain stimulation and transcranial magnetic stimulation.

Appx- 'A'

EYEWITNESS PROFORMA

Name:

Rank:

No:

Unit:

Age:

Sex:

Date & time of occurrence:

Place of occurrence:

H/O Alcohol/Drug Abuse:

Past h/o head injury:

Known Co-morbidities:

Medication history:

Pre-Ictal:

Activity being performed by individual immediately preceding the event

Activities and other employment over the last 24 hours which could have precipitated the event

Ictal (Eye witness account):

Name/Rank/No/Unit/Contact No of eye witness

Presence of aura (Given by patient)

Whether focal onset (motor/sensory/autonomic/psychic)

Duration of seizure

Sphincter incontinence

Injuries due to fall or tongue bite

Post-Ictal:

Confusion

Sleep

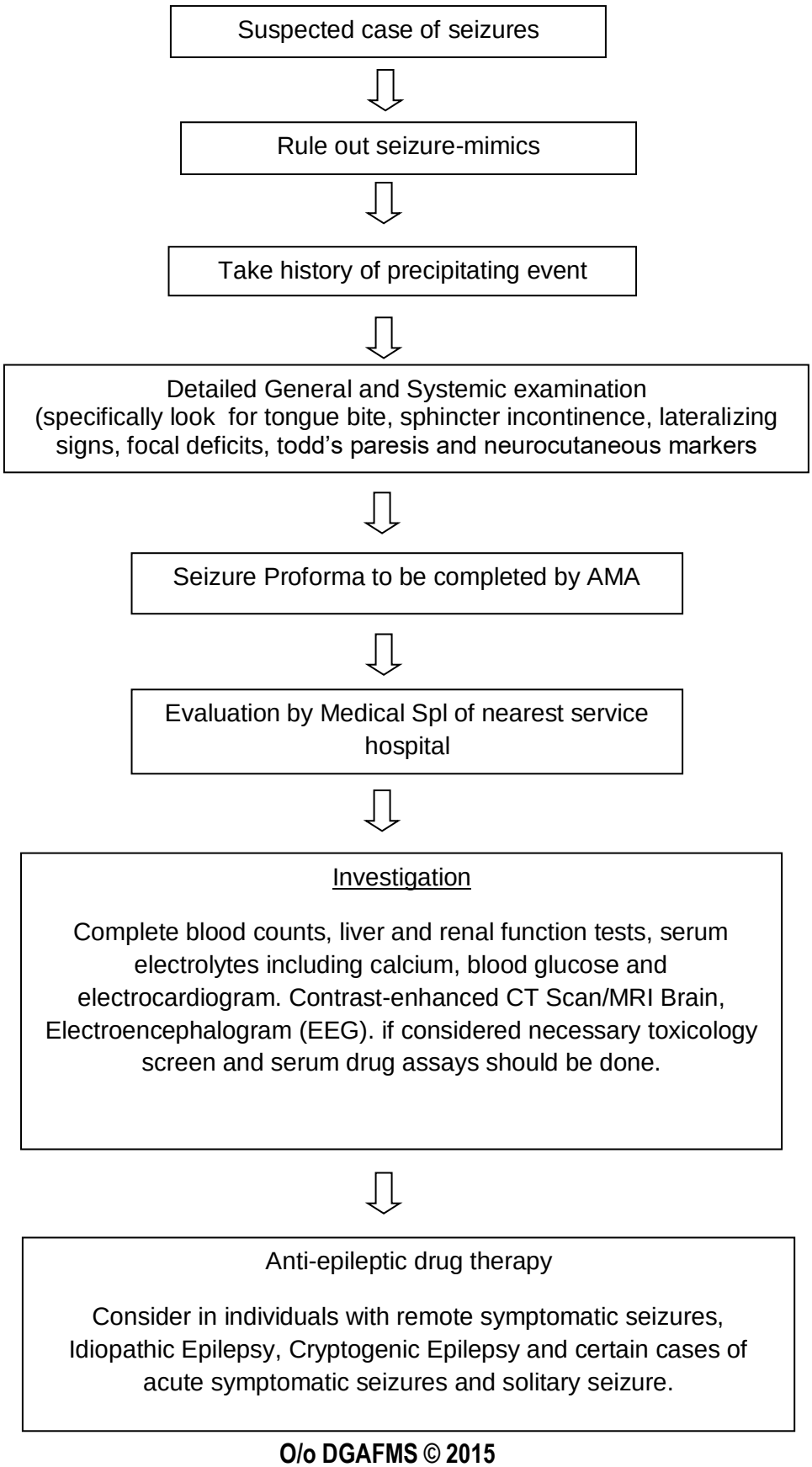
Unilateral weakness/sensory loss

Any other symptoms noted

Signature of AMA

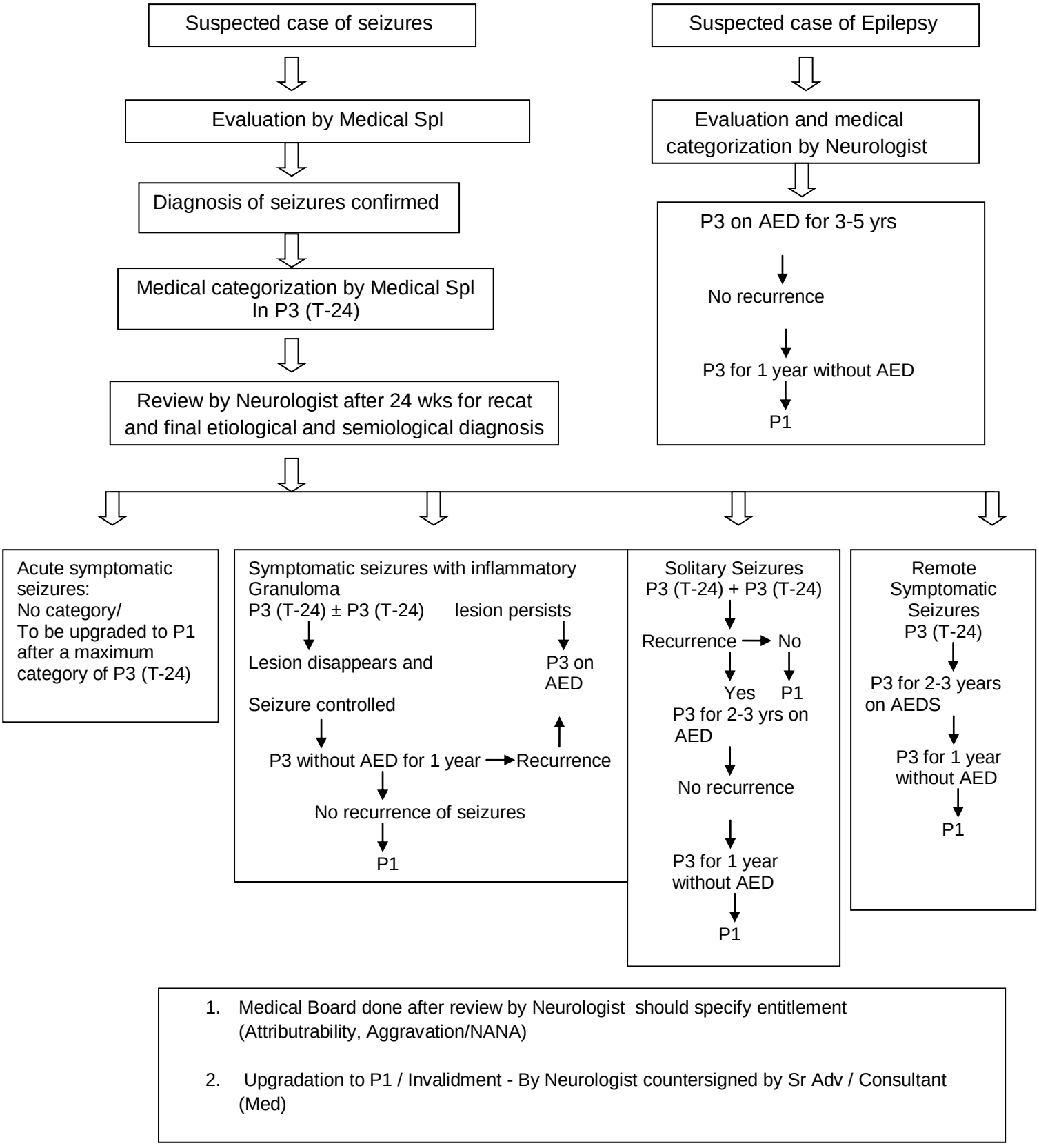
Appx- 'B'

ALGORITHM FOR MEDICAL MANAGEMENT OF SEIZURE / EPILEPSY



Appx 'C'

ALGORITHM FOR DISPOSAL CASES OF SEIZURES / EPILEPSY



1. Medical Board done after review by Neurologist should specify entitlement (Attributrability, Aggravation/NANA)

2. Upgradation to P1 / Invalidment - By Neurologist countersigned by Sr Adv / Consultant (Med)

Appx 'D'

WHO INTERNATIONAL STATISTICAL CLASSIFICATION OF DISEASES AND RELATED HEALTH PROBLEMS TENTH REVIEW (ICD 10 VERSION 2015)

- G40 Epilepsy and recurrent seizures
  - G40.0 Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset
    - G40.00 Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset, not intractable
      - G40.001 …… with status epilepticus
      - G40.009 …… without status epilepticus
    - G40.01 Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset, intractable
      - G40.011 …… with status epilepticus
      - G40.019 …… without status epilepticus
  - G40.1 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures
    - G40.10 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, not intractable
      - G40.101 …… with status epilepticus
      - G40.109 …… without status epilepticus
    - G40.11 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures, intractable
      - G40.111 …… with status epilepticus
      - G40.119 …… without status epilepticus
  - G40.2 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures
    - G40.20 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, not intractable
      - G40.201 …… with status epilepticus
      - G40.209 …… without status epilepticus
    - G40.21 Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, intractable
      - G40.211 …… with status epilepticus
      - G40.219 …… without status epilepticus
  - G40.3 Generalized idiopathic epilepsy and epileptic syndromes
    - G40.30 Generalized idiopathic epilepsy and epileptic syndromes, not intractable
      - G40.301 …… with status epilepticus
      - G40.309 …… without status epilepticus
    - G40.31 Generalized idiopathic epilepsy and epileptic syndromes, intractable
      - G40.311 …… with status epilepticus
      - G40.319 …… without status epilepticus
  - G40.A Absence epileptic syndrome
    - G40.A0 Absence epileptic syndrome, not intractable
      - G40.A01 …… with status epilepticus
      - G40.A09 …… without status epilepticus

- G40.A1 Absence epileptic syndrome, intractable
  - G40.A11 …… with status epilepticus
  - G40.A19 …… without status epilepticus

- G40.B Juvenile myoclonic epilepsy [impulsive petit mal]
  - G40.B0 Juvenile myoclonic epilepsy, not intractable
    - G40.B01 …… with status epilepticus
    - G40.B09 …… without status epilepticus
  - G40.B1 Juvenile myoclonic epilepsy, intractable
    - G40.B11 …… with status epilepticus
    - G40.B19 …… without status epilepticus
- G40.4 Other generalized epilepsy and epileptic syndromes
  - G40.40 Other generalized epilepsy and epileptic syndromes, not intractable
    - G40.401 …… with status epilepticus
    - G40.409 …… without status epilepticus
  - G40.41 Other generalized epilepsy and epileptic syndromes, intractable
    - G40.411 …… with status epilepticus
    - G40.419 …… without status epilepticus
- G40.5 Epileptic seizures related to external causes
  - G40.50 Epileptic seizures related to external causes, not intractable
    - G40.501 …… with status epilepticus
    - G40.509 …… without status epilepticus
- G40.8 Other epilepsy and recurrent seizures
  - G40.80 Other epilepsy
    - G40.801 …… not intractable, with status epilepticus
    - G40.802 …… not intractable, without status epilepticus
    - G40.803 …… intractable, with status epilepticus
    - G40.804 …… intractable, without status epilepticus
  - G40.81 Lennox-Gastaut syndrome
    - G40.811 …… not intractable, with status epilepticus
    - G40.812 …… not intractable, without status epilepticus
    - G40.813 …… intractable, with status epilepticus
    - G40.814 …… intractable, without status epilepticus
  - G40.82 Epileptic spasms
    - G40.821 …… not intractable, with status epilepticus
    - G40.822 …… not intractable, without status epilepticus
    - G40.823 …… intractable, with status epilepticus
    - G40.824 …… intractable, without status epilepticus
  - G40.89 Other seizures
- G40.9 Epilepsy, unspecified
  - G40.90 Epilepsy, unspecified, not intractable
    - G40.901 …… with status epilepticus
    - G40.909 …… without status epilepticus
  - G40.91 Epilepsy, unspecified, intractable
    - G40.911 …… with status epilepticus
    - G40.919 …… without status epilepticus